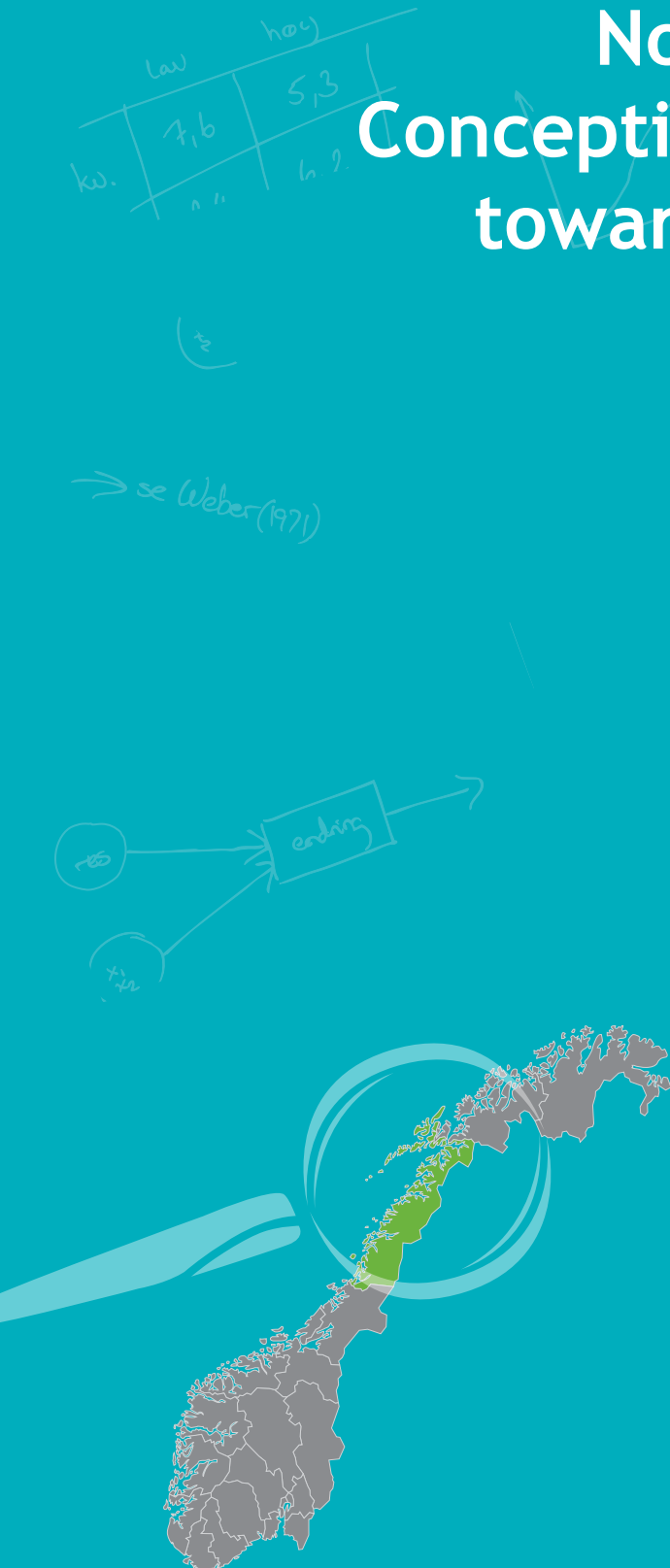


Norwegian Teachers' Conceptions of and Stances towards Active Learning

Wenche Rønning



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NORWEGIAN TEACHERS' CONCEPTIONS OF AND STANCES TOWARDS ACTIVE LEARNING

Wenche Rønning

Submitted in accordance with the requirements for the degree of
Doctor of Philosophy

The University of Leeds
School of Education

August 2010

The candidate confirms that the work submitted is her own and that appropriate credit has been given where reference has been made to the work of others.

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REFERENCE PAGE - ***NF-Report can be ordered on E-mail: nf@nforsk.no***

Title Norwegian Teachers' Conceptions of and Stances towards Active Learning	Accessibility: General	NF-Report No.: 11/2011
	ISBN No. 978-82-7321-618-2	ISSN No. 0805-4460
	Number of pages: 352	Date: August 2010
Author Wenche Rønning	Project Manager (sign.) Wenche Rønning	
	Reserach Manager Terje Olsen	
Project Active Learning in Schools	Principal Norwegian Research Council	
	Principal Reference Research programme FRISAM	
Summary The present study first examines the theoretical and historical background of the longstanding focus on active learning ideas and approaches within Norwegian compulsory education. Secondly it investigates what Norwegian teachers today view as active learning and what stances they have towards what they conceive of as active learning.	Key words Active learning Compulsory education Teacher thinking Hierarchical focussing Teachers' conceptions Teachers' stances	
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ACKNOWLEDGEMENTS

I would first like to thank my employer, the Nordland Research Institute, and the Norwegian Research Council for providing the financial means to enable me to carry out this study. I would also like to thank the teachers who took part in this study and who were willing and interested enough in my work to share their thoughts with me in a very open-minded and frank way.

My special thanks to my Supervisor Professor Peter Tomlinson for the academic and moral support he has provided throughout this study, and for all that I have learnt from him during the more than ten years we have cooperated through various educational and research projects. Without his support and encouragement this would not have been possible.

A very special thanks to Janet Hodgson for her friendship and hospitality and all the knowledge, experience and wisdom that she has shared with me since we met many years ago. Thanks again to Janet, and to my colleague, Anne Sofie Skogvold, for taking on a major workload to relieve me from other responsibilities, thus enabling me to work full-time to complete my thesis.

Thanks to my colleague Karl Jan Solstad for all that he has taught me during the more than 20 years that we have worked together, and for all the interesting discussions we have had together with Anne Sofie and other colleagues during all these years.

I would also like to thank my family for their support and encouragement. An extra thanks to my father who 'pushed' me into teacher training at a time when I was young and undecided and everything was open. Life is full of coincidences. If he had acted otherwise, I would probably have ended up elsewhere, most likely happy and content doing something totally different. However, the road he pushed me onto has been one interesting to walk and I am sure it has challenging and exciting paths ahead.

ABSTRACT

The stimulus for the present study was the long-standing interest in and repeated attempts at promoting active learning within Norwegian compulsory education, and an equal awareness that such efforts have not succeeded. The study attempts to illuminate this situation by investigating the conceptions of and stances towards active learning held by those who would be central to such implementation, namely Norwegian teachers.

The thesis reviews the theoretical, historical and methodological background to such a study by tracing the influences of Dewey, Piaget and others on Norwegian curricula over a number of decades and summarises this in a pedagogical framework forming the conceptual basis of the study.

Taking account of recent work on teacher thinking and debates regarding research approaches, the investigation involved interviewing a convenience sample of 24 teachers working across the three levels of Norwegian compulsory education. Use was made of the hierarchical focusing approach, allowing elicitation of respondents' spontaneous ideas whilst also ensuring access to their views on aspects and instances traditionally associated with active learning.

Major features of the findings include:

- The impromptu nature of the teachers' responses.
- Although all educational sub-facets designated in the pedagogical framework featured in the teachers' conceptions collectively, the main finding was of great individual variability
- The failure of cluster analysis to uncover homogenous subgroups within this variation may have been due to the limitations imposed by the relatively small sample size.
- Teachers were able to deal spontaneously in general ideas, but there were some indications of more situated thinking when active learning aspects and instances were supplied to them.

- Notions of assessment and to some extent planning seemed to be lacking from the teachers' spontaneous conceptions of AL, and were only dealt with when specifically put to them.

These findings were discussed against the background of recent issues and changes in the Norwegian education system.

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INTRODUCTION TO THE THESIS

During my education to become a teacher and throughout my work career I have developed an interest in the teaching profession, and in particular what it is that makes teachers work the way they do and what makes them change. Since before World War (WW) 2, the National Curricula in Norway have promoted in various ways teaching approaches that have their roots in progressive education, approaches that in some of the curricula have been characterised as *active learning*. As a student and newly educated teacher I worked to implement the curriculum for the 1970s. In my later position as an advisor and consultant at the National Education Office (the Ministry of Education representative at county level) in my home county, Nordland, I took part in the support and development work that took place to implement new curricula in the 1980s and 1990s. Last, but not least, I have been able to follow the implementation of new curricula since I started working as a researcher ten years ago. During these decades I developed an interest in the progressive elements in the curricula, and when it became possible to study active learning in the Norwegian context more closely through my PhD work, I made use of this opportunity. To present in more depth how this interest has developed, I will take an autobiographical approach and sketch briefly my education and work career since I completed upper secondary education and started my training and work within the Norwegian education system.

When I completed upper secondary education a very long time ago, back in 1977, I was very undecided about what to do next. Upper secondary school had not been a very pleasant experience with regard to creating motivation for further studies. Most of my teachers used very traditional, teacher directed methods and it felt like every lesson was similar to the previous one. In one of my in-depth subjects, French, this was certainly true. Every lesson contained exactly the same activities, and always in the same order. The lesson started by us students reading aloud from the textbook a text we had studied at home. The first student read a paragraph in French and then translated the same paragraph into Norwegian. The next student took the next

paragraph, in exactly the same way, and it continued like this until we had gone through the whole text. The teacher then asked the questions that followed the text in the textbook. We put up our hands and answered if we were able to find the right sentence in the text. Because of the way the questions were framed, the challenge was mostly about identifying words from the question in the text and reading the sentence out aloud, not so much about understanding what we actually expressed. If there was any time left after these activities, we wrote down the same answers in our exercise books or did grammatical exercises. Homework for the next day was to complete what we hadn't finished regarding written work, plus prepare for the next lesson by reading the next text in the textbook. There were never any attempts at free oral communication, talking about things that might interest us or that we might need to talk about in case we met anybody who was French. I can still recreate the feeling of tremendous boredom and that this would last eternally that I felt, sitting at my desk. The only deviation from this pattern was the last lesson before the Christmas holiday and the last lesson before the summer holiday when we were allowed to sing French songs aloud, accompanied by an old tape recorder with recordings with bad sound quality.

After three years of studying French for 5 hours per week, including two written exams, I graduated from upper secondary school, or gymnasium as it was called at the time, with good results, but without any skills regarding communicating orally in French. The first time I visited Paris my attempts at talking in French with the receptionist at the hotel I was staying, asking about a room for the next night, resulted in the receptionist looking at me, smiling, and answering in English. Our French teacher was terribly sweet, and we never dared to say how boring we thought her lessons were. Instead, we took turns skipping the lessons, never more than two at a time, because our teacher got very sad when there were few of us at the lesson, and we didn't want to disappoint her. Graduation day felt like being set free, and I didn't want to commit myself to more boredom, at least not at once, by getting into higher education. When my parents asked what my plans were, I answered vaguely that perhaps I would get a job, earn some money, and just have a year off before continuing my education. My father thought this was a very bad idea. He was not looking forward to having a 19-year old in the house, sleeping half of the day and

staying out late at night, with constant requests for pocket money. As it happened, my father had an old acquaintance who worked at the local teacher training college and one day, after the academic year had just started, he phoned his friend and asked whether there were any places left at the courses they offered at the college. The friend answered that he thought there was a place left at the course for teaching English as a foreign language, resulting in my father replying: *"Fine. I am sending a student over to you."* In this very haphazard way my future work career was decided – I became a teacher. The reason I accepted my father's efforts at getting me started with higher education, was because I liked English, not least because my teacher at upper secondary school had been different from the rest. Not only did he dry his hands on the curtains after having cleaned the blackboard, something which we found hilariously funny, but he taught us in a different way. At the time I was not able to articulate very clearly what this difference consisted in but, looking back at it, I now know it was because he used different ways of working, in particular ways of working that engaged us as students in a different way than what the activities in the French lesson did. It felt freer, more open, less teacher-directed, and we were allowed to communicate in English instead of spending a lot of time translating into Norwegian.

My first year in teacher training gave me a very different experience from the one I had in upper secondary school. I was treated as an adult, no homework was given, and I was asked about my views about different issues, and last, but not least, I was asked to take responsibility for activities in the classroom, alone or together with others through group work. One of the tutors at the course was particularly inspiring. She had experience teaching in primary and lower secondary school, so she was able to relate what we were doing to 'real life', and she often used what I conceived of as untraditional methods. We did oral exercises in twos, worked together in groups discussing questions regarding current issues, and she introduced *project work*, something I had never been engaged in previously. We developed teaching materials ourselves, and she challenged us in various ways to make us think about what we wanted the children to learn and in what way the activities we planned for and the material we developed could support the pupils' learning. What I recall most clearly from that year, however, was how this tutor tried to stimulate *creativity* in language learning, and her favourite expression was: *"A good language learner is a good*

guesser.” With this she changed my previously established view of foreign language usage as something which was good or bad, right or wrong. She instead focussed on the communicative aspect of language teaching and learning and loved telling a story from when she was teaching in primary school. Every English lesson she had asked the pupils about what they had done the previous evening, and one boy wanted to tell that he had helped make dinner. He had been responsible for preparing the potatoes, but didn’t know the word *peel*. She described how she could see him searching through his brain for the right word, and then suddenly his face lit up in a smile as he said: *“I shaved the potatoes.”* Which of course, everybody understood, even if the word he used was wrong.

During that first year and throughout the next two years of teacher training, I gradually developed an understanding of what teaching was about and what my role as a teacher consisted of. Since this was in the late 1970s (I graduated in 1980) the National Curriculum at the time was M74 (cf. Section 2.3.2 below for further detail). However, I cannot claim that I had a clear view of what M74 was about, what view of learning it maintained, what pedagogical approaches it suggested, when I graduated. Looking back at it I can still see that this curriculum must have influenced the way we were trained, and in particular the ways of working that at least some of our tutors tried to make use of. In our pedagogy courses most of the work was carried out as group work, and we even had group exams. In the mathematics course we were doing experiments with paper airplanes to learn about statistics, we developed games to use in teaching practice when teaching pupils about multiplication, and we even carried out maths projects to develop plans and create teaching materials for particular topics in primary school maths. The maths tutor always asked us to have in mind that our plans had to allow for pupil participation and influence – we should plan for flexibility so that we could make use of the pupils’ contributions. These experiences all link with M74’s focus on pupil activity, support of group work and use of local, concrete resources and pupil participation (cf. Section 2.3.2).

However, our teaching observation practice, which was done in student groups in school together with a so-called ‘training tutor’, often gave us a very different view of what teaching was about, and this view was much more in line with our own

experiences from being a pupil in compulsory education. Teachers relying heavily on the use of textbooks, mostly teacher directed teaching and very little opportunity for pupils to influence what was going on in the classrooms. Our training tutors encouraged us to make use of methods we had learnt in college, so we tried out group work, investigations etc., often with very little success and quite a lot of chaos since this was something the pupils had not been trained to do, and they seemed to view our visits to their classrooms more as time off to have fun than as 'proper' school work. Because of lack of success when trying out more pupil active, 'free' methods of teaching, we soon adjusted our efforts to be more in line with what the pupils normally experienced in the classroom. More traditional methods made it easier to stay in control, our training tutors knew these methods well, and since they were the ones who assessed our teaching practice it also felt safer. Since there was very little, if any, contact between our training tutors and our college tutors, life at college and life out there in the schools, in 'the real world', seemed like two different worlds all together. When we tried to ask our training tutors for different teaching experiences, the responses we got strengthened the view that college and school were in fact different worlds.

The literature we studied in teacher training included books on group psychology and group sociology, child and youth psychology, and I have a very particular memory of a book about Jean Piaget and the implementation of his ideas into school which was called *Piaget i skolen* (Piaget in School; Hundeide 1973). The book was first published in 1973 and had only very recently been introduced into teacher training, and I can remember how we discussed and tried to make sense of these new ideas. We struggled in particular with the concepts of assimilation and accommodation and the names of the different stages in his stage theory, names we felt were very foreign to the way we talked and therefore difficult to remember and make sense of. Since we had quite a lot of adult students with children of their own in our year (even my own mother) our discussions about Piaget's stages (cf. Section 1.2 below) often prompted these colleagues to come up with stories about their own children to exemplify what Piaget was trying to impart to us. Never did we question whether this theory could be used as the answer to questions about pupils' development or as a guide to our own planning of teaching.

After three years of training I got my teacher certificate and started teaching in a lower secondary school. There was no shortage of teachers at the time, and since I was the last teacher to be appointed and did not have a permanent job, I got the classes and subjects that were left after the other teachers had got what they wanted. My teaching week consisted of teaching music, German (I had no training in teaching either of these subjects), physical education and, fortunately, English. While I realised from the beginning that my German teaching would have to be a matter of survival, being a few pages ahead of the pupils in the textbooks, I had higher ambitions for my English teaching. I wanted to make use of what my English tutor had taught me. Since the only teaching resources that were available at the school, apart from textbooks, were some old editions of classic English novels, I contacted my tutor and got help to buy additional resources which allowed for more pupil active ways of working and more focus on communication, such as resource books about drama in EFL, integration of music and EFL, games, project work in EFL etc. I spent quite a bit of time trying to put into practice what I had been stimulated to do during my training to become an English teacher. I thought that if I could cooperate with other teachers it would be easier to manage, and I soon managed to develop good relations with two other teachers who also taught English, and we shared material and discussed issues regarding language teaching. This cooperation was entirely coincidental and happened because they were generous enough to allow a novice to enter their already established little team. There were other similar teams at the school, but no efforts from the school management to make sure all teachers were included in teams and engaged in development work and pedagogical discussions.

During the three years I taught at the school I was never visited by the head teacher or the deputy head; I was alone in my classroom with my class and nobody ever made any efforts at quality assurance of the teaching experiences I was providing for my pupils. Also, I cannot remember any staff meetings or other planned incidents when we discussed pedagogical issues more generally, and implementation of the National Curriculum, M74, more specifically. Issues for discussion in planned meetings were mostly related to practical matters and had very little potential for post graduate development. I don't have any secure information about to what extent M74 was

actually implemented in the classrooms at my school, but my guess is that it differed a lot from classroom to classroom. Some teachers expressed very clearly that they thought the new curriculum contained a lot of nonsense, and that the only way to get through the 'required' reading, i.e. the textbook, was to abstain from any use of the modern methods that the curriculum supported. The fact that there was no such thing as required reading defined in the curriculum, or that the curriculum required them to use varied resources and methods, did not seem to make much impact. Others were more willing to try out new things and thought the new curriculum offered exciting opportunities, but complained about too little time for developing local curricula and local teaching resources.

After three years of teaching in lower secondary education I decided I wanted to study more and went to university for two years to study English and, a new subject at the time, ICT. During my time at the university I had very little contact with the teaching profession and did not keep track of the new developments within compulsory education. When I returned to my home town again after my studies I started working in upper secondary education and then took a position as systems programmer in a software section of the Norwegian telephone company, something which was possible since I had studied ICT at university and there was lack of programmers. After two years of ICT work I was bored with machines, and when I saw an ad in the newspaper for a position at the National Education Office in my county in the summer of 1988, I applied. When I was invited to an interview I didn't have any clear view of what the role of the office was, nor what current issues within the education sector were. When the director asked me what I thought about the new national curriculum, M87 (cf. Section 2.3.3 below), I had to admit that I didn't know that a new curriculum had been launched and, subsequently, no idea what the changes from the previous were, but that I was willing to learn. The job I had applied for should mainly focus on follow-up of the implementation of M87, so when I left the interview I was quite sure I would never be offered the job. I was wrong. The same autumn I started my new job, and found myself in an environment where nearly every discussion and everything we did circled around the implementation of M87.

My main responsibility during the first years of working at the National Education Office was to assist the Director of Education, Karl Jan Solstad, in conducting a research project he had got funding for from the Norwegian *Program for Utdanningsforskning* (Programme for Educational Research), and later also funding from the Norwegian Ministry of Education. The research focussed on investigating the implementation of M87 in Nordland county, at a time when not only a new curriculum was launched, but when major changes were taking place with regard to how the education sector was managed. This involved decentralisation of power from national to local level and de-standardisation with regard to national regulations for a number of conditions regarding the running of schools. Through working with the research project I was privileged to get an insight into the implementation process in a number of schools and municipalities in the county. It gave me important access into a number of different schools and an awareness of how development work was approached and which issues the schools were struggling with when they were trying to implement the new curriculum.

To support the implementation of M87 in the schools, so-called M87-coordinators were appointed in all municipalities, paid for by state money, and these, together with regional coordinators were the people we cooperated with in order to support the schools' implementation of the new curriculum. Different support schemes were developed, including a management training programme for head teachers. In connection with these support programmes I was able to go on study visits to the UK together with other representatives from the support team in the county. This was at a time when topic work was still quite an important part of work in primary schools in the UK, and I can still remember how impressed we were by the results we were presented from cross-curricular topic work, in particular how teachers used a variety of different learning resources, made colourful and creative displays to stimulate pupils' work with the topics, and used what we conceived of as fairly open and pupil active ways of working with very little textbook usage. Compared with our Norwegian tradition this felt much more in line with what the new curriculum was asserting – local curriculum planning based on locally relevant cross-curricular topics and local teaching resources, more open ways of working, less teacher directed work etc. With regard to how the day, the week and the learning areas were organised we also found practices

in the UK that we felt would be profitable for Norwegian schools in their work to implement M87; more flexible timetabling, organisation of classrooms to allow for more group activities, and a variety of learning resources available near where the children were working. During the years of the implementation period people from the UK were also invited to come and present their work as part of in-service training and development work in Nordland. Results from the previously mentioned research project showed that Norwegian schools struggled to implement the aspects of the curriculum that in particular alluded to more locally relevant and pupil active ways of working (Solstad 1994, 1996). Also, during the first few years of the 1990s it became clear that a new curriculum was being prepared. A very high profile Norwegian academic, Gudmund Hernes, was appointed as Minister of Education towards the end of 1990, and he soon proclaimed that a new national curriculum would have to be developed to meet the challenges of the 21st century.

As the National Education Offices cooperated closely with the Ministry and were even involved in processes with the development of the new curriculum, we were able to follow the developments at national level. We took part in discussions and writing processes during an early phase of the development of the new, common core curriculum which was launched as early as 1993 (cf. Section 2.3.4 below for more detail). When the subject curricula were being developed in 1996, our office became responsible for the coordination of the work with the new social studies curriculum. During these processes and several meetings with national authority representatives, I was able to follow the process of developing the new curriculum closely. The person heading the so-called Basic group, which was responsible for the later requirements about theme and project work in the new curriculum, L97, was an old acquaintance and also colleague in the management (I had become Deputy Director in 1994) group of the National Education Offices. He shared with us the results from their work, so we soon became aware that we would face a major challenge to prepare the schools in our county for the new regulations concerning theme and project work that were being planned.

When the new national curriculum was launched in 1997 we had already planned cooperation with the University of Leeds, which we had previously cooperated with

regarding the teaching of English as a foreign language. Now, however, the focus was on cross-curricular theme work and project work, and we knew that the experiences that professionals from the University had from the topic work tradition in UK schools would be very valuable in our own efforts to support the schools. The University of Leeds therefore developed a two-year in-service training programme with teachers from Nordland, and I was their contact person at the National Education Office. Through the two years that this project lasted, I developed my understanding of the challenges and pitfalls of ways of working that are often related to the progressive tradition, or in L97 terms, *active learning*. Previously, I must admit that I had been rather naive and had viewed more pupil active ways of working as entirely positive, without any limitations regarding pupil self-determination, use of local resources, teacher role etc. When meeting professionals who had long experience teaching according to the progressive tradition themselves, but also training teachers to teach, I got to know the difficulties that topic work and other forms of progressive education ways of working had meant in the UK. During the two years that the in-service project lasted I learnt a lot about what the Norwegian teachers were facing when trying to implement the fairly extensive requirements in L97 of usage of cross-curricular theme work and project work. I also got acquainted with experiences from topic work in the UK that I had not previously been aware of during my study trips to schools in the UK.

The relationship with the University of Leeds developed during our two year project and has lasted since. The Director of Education, Karl Jan Solstad, chose to leave his position in 1999 to go back into educational research again. When he received funding for a three-year project following the implementation of L97, with a particular focus on studying teachers' implementation of theme and project work, and their use of local teaching resources, in the year of 2000, I was recruited and decided to leave the National Education Office and start working at the research institute he was based at. During the next years I studied the implementation of L97, and learnt more about how progressive education elements were present in the curriculum, and also about to which degree and how teachers actually implemented these aspects of the new curriculum. During all this time I have learnt very much from cooperating with professionals from outside Norway. Getting an external view of the situation and what we have been trying to promote in Norwegian education with regard to active learning

efforts, has made me more conscious of the issues in question in a country that has been trying to promote active learning since before WW2.

Research on the implementation of active learning elements in the curricula since 1939, although scarce and fragmented, have shown that in spite of what one may claim has been a fairly persistent focus on at least some elements of progressive education in all curricula since N39 (National Curriculum from 1939), practice is not following to the degree that one might expect. Also, the studies that deal with progressive education elements within Norwegian education seem to focus on the implementation or non-implementation of these aspects. I have not been able to find studies that try to investigate what teachers conceive of as active learning and what they think of such aspects within the different curricula that have been in use over the last decades. This inspired me to ask the following questions: What do Norwegian teachers understand by active learning? What do they think about it in principle? And, what do they think about the practical implementation of such elements in the Norwegian classrooms? These questions combine my interest in teacher thinking with what has been a central issue throughout my education and work career – the efforts in Norwegian education to implement *active learning*.

The theoretical and historical background which is presented in Part I, in Chapter 1 and Chapter 2, will show that *active learning* is not a concept which it is easy to define. Not only are different terms such as progressive education, child- or student-centred education, open education etc. used to describe the different sets of ideas that have shaped how we understand this during time and in different geographical contexts, but the educational approaches suggested and central elements within teaching such as the role of the pupil and the teacher, learning resources, organisation of learning activities etc. have varied over time with the different curricula. However, what has been persistent is the view that active learning is about *teaching*, about different ways of promoting learning that share certain characteristics. After having presented the backcloth of this in the first two chapters, I will therefore review and summarise my findings within an educational framework in Chapter 3. This framework was central to the design of the study which will be discussed in Part II, and will also frame the presentation of the findings from the empirical study that I have conducted, something

which is presented in Part III. In the final part, Part IV, I provide an integrated summary and discussion of the findings against the background sketched in Part I.

PART I: HISTORICAL AND THEORETICAL BACKGROUND

INTRODUCTION TO PART I

As indicated in the previous chapter, my own interest in active learning arose while training to become a teacher in the late 1970s and was later sustained while working to support teachers' implementation of new national curricula during the 1980s and 1990s, and when I moved into educational research at the turn of the millennium the opportunity to study this systematically opened up. However, the historical background to active learning in the Norwegian educational context can be traced much further back in time, to the first decades of the 20th century and, more concretely, to the development and implementation of a common national curriculum in 1939, N39.

While my interest in active learning arose in the Norwegian context and related to important curricular reforms in Norway, it is important to recognise that the developments within the Norwegian education system did not happen in isolation. Background trends and issues concerning active learning have been, and still remain, internationally widespread. A thorough treatment of active learning in Norwegian national curricula could perhaps best be accomplished with an historical discussion of the issue, while weaving in relevant sources as they occur. However, since this is not an historical thesis, and since sources may influence at different times, fade out and return again, this is very hard, if not impossible to accomplish. Also, since curriculum makers don't necessarily state their influences, it is also hard to know which theoretical approaches have been influential more specifically at the different points in time. Because of that I have chosen to first review possible international influences on active learning in the Norwegian context, before dealing with active learning attempts in the Norwegian education system.

Therefore, Part I of the thesis will start with a chapter (Chapter 1) on the broader international background, in particular of pedagogical theory, to the study of active learning. The next chapter (Chapter 2) will consider historical trends regarding active learning within the Norwegian educational context, bringing it up to the current situation regarding active learning elements in compulsory education in Norway.

Chapter 3 will present a short summary of and my reflections on the findings in the previous two chapters and will end by presenting a framework for the study of teachers' interpretations of active learning, both with regard to their conceptions and their stances, in principle and in practice, in the Norwegian educational context.

The choice of studying active learning as interpreted by Norwegian teachers is based on the centrality their conceptions of and views on this have for their mediation of educational policy regarding active learning and their planning for and actual implementation of this in their daily practice. The study of teacher thinking regarding active learning requires a methodological approach which allows for getting at their conceptions and views, and Chapter 4 will discuss the theoretical and methodological background which is relevant to such a study.

1. ACTIVE LEARNING – ORIGINS AND DEVELOPMENT

1.1 BRITISH AND AMERICAN PROGRESSIVISM

To understand the development of active learning and reform pedagogy in Norway we will have to seek the roots abroad and in particular in the so-called progressive education tradition. According to Darling (1990) progressive education must be understood as stemming from radical dissatisfaction with traditional practice, characterized as teacher directed, subject centred, mostly use of whole class instruction and with an emphasis on the mastery of factual information. In contrast progressive developments, also called for instance child-centred education (UK) or open education (USA), focussed on the pupil and his/her right to self determination – to choose, to decide and to think for themselves. Accordingly teacher - pupil interaction, a lot of pupil activity, organisation of classroom to facilitate conversation and cooperation are considered central elements in progressive education (ibid.).

John Dewey is viewed as one of the founding fathers of progressive education (Hartmann & Lundgren 1980), even if he didn't join the Progressive Education Association after it was founded in 1919, but only accepted an honorary position nine years later, not least to oppose the most radical elements within the association (ibid.). Dewey has been a central influence to reform pedagogy in Scandinavian countries (Hartmann & Lundgren 1980; Dale 2001) during major parts of the 20th century and is as such an important source to the understanding of active learning efforts in Norwegian education.

Dewey's philosophy of experience which in particular is outlined in his book *Experience and Education* (1938, 1997) has influenced national curricula in both Norway and Sweden, something which will be discussed in more detail in Section 1.4 and Sections 2.2 and 2.3 below. What are the key elements of his philosophy, and why are these linked to our study of active learning efforts in Norway? In line with Darling's assertion, Dewey develops his philosophy as a criticism of what he calls traditional education. However, central in his discussion is also disapproval of the most radical interpretations of progressive education. The table below contains Dewey's summary

(ibid.:19) of the most central differences between traditional education and what he chooses to call new education.

Table 1 Dewey's summary of differences between traditional and new education

Traditional education	New education
Static view of knowledge	Dynamic view of knowledge
External discipline	Free activity
Learning from texts and teachers	Learning through experience
Acquisition of isolated skills and techniques by drill	Acquisition of skills and techniques as means of attaining ends which make direct vital appeal
Preparation for a remote future	Making the most of the opportunities of present life
Static aims and materials	Acquaintance with a changing world

Dewey warns against interpreting this as an either – or relationship; instead new education should incorporate elements from traditional education. The most central concept in Dewey's theory of education is *experience*, and the two principles of experience, namely *continuity* and *interaction* where the latter refers to the relationship between teacher and pupil and between pupils, while the former is concerned with the continuous process of gaining experiences and growing as a human being. The importance Dewey puts on interaction leads him to define education essentially as a social process (ibid.:58) and the teacher as the mature member in this process, as the leader of group activities.

Dewey criticises traditional education for not relating subject matter to real life conditions, something which he claims (ibid.:48) makes people forget what they have learnt, because there is nothing for them to relate their knowledge to. Instead he claims that:

Anything which can be called a study, whether arithmetic, history, geography, or one of the natural sciences, must be derived from materials which at the outset fall within the scope of ordinary life-experience (ibid.:73).

Since life experience should form the basis of education, Dewey states that a single course of studies for all schools is impossible (ibid.:78), something which forms the basis for the development of local curricula. Dewey also claims that instruction must always begin with the pupils' experiences, i.e. that the teacher must always relate

work to the pupils' existing knowledge (ibid.:74). While planning, both existing knowledge and the pupils' capacities must be taken into account to provide as good learning conditions as possible (ibid.:58). With these clarifications Dewey outlines the principle of *adapted education*, a central principle in Norwegian education since before WW2 (cf. Section 2.2 below). Not only should pupils' experience be taken into account, but the pupils should also take part in defining the objective, or the *purpose*, for their work.

There is, I think, no point in the philosophy of progressive education which is sounder than its emphasis upon the importance of the participation of the learner in the formation of the purposes involved in his studying... (ibid.:67).

After having based the work on pupils' existing experience and their participation in defining the purpose, the next step in the education process is defining a *problem*. According to Dale (2001), Dewey's education model can be summarised as follows: 1) Start with a situation the pupils find interesting. 2) A problem arises in the situation and stimulates the pupils' thinking. 3) The thinking process; pupils make observations and collect information to work with the problem. 4) The pupils suggest solutions to the problem. 5) Clarification; the pupils test their ideas through application of their suggested solutions and discover the quality of their suggestions. As we will see (cf. Section 1.5 below) this approach is very similar to project work.

As mentioned above, Dewey is critical of the most extreme versions of progressive education that he has experienced. He warns against looseness with regard to subject matter, i.e. there being no direction from the teacher but it being up to the pupils to define the content of education. Instead he says that the development of subject matter must be an orderly development, where the teacher must secure organisation, expansion and progression (ibid.:77). Dewey also warns against underestimating the importance of the teacher. He confronts the tendency within the progressive education movement to interpret freedom as no direction or facilitation by the teacher.

Since freedom resides in the operations of intelligent observation and judgment by which a purpose is developed, guidance given by the teacher to the exercise of the pupils' intelligence is an aid to freedom, not a restriction upon it. Sometimes teachers seem to be afraid even to make suggestions to the members of a group as to what they should do. I have heard of cases in which children are surrounded with objects and materials and then left entirely to themselves, the teacher being loath to suggest even what might be done with the materials lest freedom be infringed upon (ibid.:71).

His criticism echoes later research on progressive education development and how it has been interpreted in the UK (Alexander 1984) and Norway (Rønning 2004).

From the early 1930s and onwards another American, the psychologist Carl Rogers, came to influence clinical psychology and counselling, and, in turn, the view of progressive education (Palmer 2001). Rogers developed his psychological theory in opposition to the psychoanalytic and behavioural traditions which prevailed at the time. Rogers rejected these approaches because they left the client's self-understanding out of the picture and instead based counselling on a therapist with the competence to cure the client's problems. Rogers was influenced by Dewey and Kilpatrick (ibid.) and his approach is compatible with the more individualistic side of progressive education and is often referred to as child- or student-centred education. Central to child- or student centred education is that the child or youth should be in control of their own development. To allow for this the teacher needs to be a *facilitator* of learning rather than the adult in control of and managing the situation. Radical expressions of this such as: "*Teaching, in my estimation, is a vastly over-rated function*" (Rogers 1985:122) or "*I know I cannot teach anyone anything. I can only provide an environment in which he can learn*" (Rogers 1965:389) have been used to undermine the role of the teacher in approaches inspired by Rogers.

According to Rogers (1985) learning needs to be meaningful to become *real* learning. With meaningful learning Rogers associates experiential learning which has the following characteristics (ibid.):

- The essence of learning is meaning, and meaning is built into the experience that the pupil is undergoing.
- The whole person is involved, both emotional and cognitive aspects are central.
- It is self-initiated and based on pupils' discovery.
- It is pervasive.
- It is evaluated by the learner because the learner intuitively knows whether it meets his/her needs.

Rogers claims that in the traditional educational approach with a prescribed curriculum, similar assignments for all, lecturing as the main mode of instruction, standardised tests and teacher chosen grades, meaningful learning in his sense is at its lowest. Instead education should shift from a focus on teaching to a focus on the learner; the *facilitator* of learning, i.e. the teacher, must trust the student to develop.

This kind of radical approach within progressive education proposed amongst others by Rogers has been heavily criticised, for example recently by Reichenbach and Oser (1995). In his critique of the British progressive education development in the 1960s and 70s, Alexander (1984:10) lists and confronts what he claims are the underlying assumptions of progressive education:

- Children are curious and explore independent of adult intervention.
- Active exploration in a rich environment facilitates learning.
- Young children's play is not distinguished from work.
- Children will learn if they get help to select materials and questions they want to pursue.
- Children go through similar stages of intellectual development – at their own pace.
- Children grow intellectually through concrete experiences followed by abstractions.
- Knowledge is a function of one's personal integration of experience and does not fall into separable disciplines.
- There is no common minimum of knowledge that we all ought to know.
- The teacher should respect each child's style of thinking and acting.

- The teacher is one of many sources of information in the classroom.

Alexander criticises the false dichotomies which he claims characterised the rhetoric within the progressive education movement; 'We teach children, not subjects,' and 'Learning, not teaching.' He is also critical of the tendency of the followers of progressive education to characterise teaching through caricatures, as mere 'telling' or 'instructing', and to view others' concern for the children's curriculum as incompatible with a concern for the children. When summarising the rhetoric and language of the child-centred or progressive tradition, he points to:

... the language through which primary ideology is expressed, and highlighted its heavy use of aphorism, false dichotomy, caricature, and other devices which serve to diminish and debase educational concepts like 'curriculum', 'knowledge' and 'teaching' to the extent that a failure to engage in serious discussion of them can be 'justified', paradoxically, as 'child-centred' (ibid.:19).

1.2 JEAN PIAGET'S INFLUENCE ON PROGRESSIVE EDUCATION

Another important influence on progressive education movements in the UK and Scandinavia comes from Jean Piaget's theories. Piaget claims that human beings are active, independent meaning-makers who actively construct their knowledge instead of 'receiving' it from an outside agent such as a teacher (Moore 2000). Piaget sees learning as an essentially active process on the part of the pupil. Central to his theory are the two concepts *assimilation* and *accommodation*. Assimilation describes the process whereby the human being incorporates elements or objects into their current and developing understanding (Piaget 1950:8-9), while accommodation describes the process whereby the person adapts his/her understanding to the realities of the social and physical world in order to improve his/her understandings. To function in the best possible way the person needs to arrive at a balance between these two processes, what Piaget calls *equilibrium* (ibid.).

According to Moore (2000) Piaget's theory about human beings acting upon and adapting to the physical and social world supports activities and approaches to

education which have been characterised as *child-centred* or *student-centred*, or progressive education. Moore (2000) has chosen *Active Learning* as the heading of the section where he discusses Piaget and his learning theory and defines Piaget's framework as (ibid.:13):

...the model implied by Piaget is one in which active learning is aided and abetted by sensitive and interactive teaching that takes full account of the child's existing knowledge and understandings of the world, using existing concepts as the basis on which to promote fuller and more complex understandings.

In opposition to other influences within progressive education (cf. for instance Section 1.1 above and Section 1.5 below) Piaget advocates not only an active learner, but also an active teacher. Piaget claims that a central task for the teacher is to identify the child's current status, his/her current understandings, so that the teacher can act as the provider of relevant tasks and the assessor of progress to guide the choice of future activities (ibid.).

Another central aspect of Piaget's learning theory is his theory of how the child develops through a series of stages. According to Alexander (1984:24) the developmental aspect of progressive education (cf. list of assumptions above in Section 1.1) is inspired by Piaget and his stage theory. The four development stages described by Piaget are:

- Sensori motor stage; from birth until approx. 2 years - children experience the world through movement and senses and learn permanence.
- Preoperational stage; from ages 2 to 7 – acquisition of motor skills.
- Concrete operational stage; from ages 7 to 11 – children begin to think logically about concrete events.
- Formal operational stage; after age 11 – development of abstract reasoning.

Piaget's theories have been very influential within curriculum development and teacher education (Alexander 1984; Moore 2000) and have for instance directly inspired the development of particular teaching schemes within mathematics

education (Alexander 1984:23). Piaget's theory of stages has been criticised and confronted, and may have been misused to underrate children's capacities and to impose hurdles on their cognitive development (Alexander 1984), and may also have been used to dismiss pupils who appear to fall behind in terms of what is viewed as 'normal' progress as cognitively deficient, instead of confronting possible deficits with teaching styles or curriculum content (Moore 2000).

Piaget shares many of the other elements of progressive education previously mentioned. In an essay written for the UNESCO Piaget (1976) outlines the challenges and his preferred route for future education. Amongst the elements he proposes are the use of *active methods*. The central principle in active methods is, according to Piaget (ibid.:26), that to understand is to discover or rebuild through rediscovery. He claims that the real reason why traditional education fails is because it starts with language and proceeds with figures, pictures etc., instead of starting with the real, material situation. Children must be allowed to conquer the truth instead of just reproducing it, because if not it will remain a half-truth (ibid.:86).

Piaget says that all teaching must be transboundary, cross-disciplinary and should focus on studying the relationship between things and phenomena. For the child this means that he/she must be allowed to discover and rediscover to be able to understand and, accordingly, to change. When experimenting and discovering, children must be allowed full freedom to take initiatives; if not, they will not gain any real experience (ibid.:26). Building on children's interests helps children overcome learning difficulties because it helps remove the emotional inhibitions that make children feel incompetent in school (ibid.:80).

Piaget also refers to the *active school* which he puts in opposition to the traditional school. The active school focuses on quality instead of quantity, teaches the children to learn how to learn and has well qualified staff with regard to psychological knowledge and insight. And, as mentioned above, the *active* teacher does not wait for children to ask for help; he/she is actively facilitating children's learning. The active school presupposes a work community that uses both individual and group work, since to develop intellectually people have to be part of a collective (ibid.:87). With this Piaget

has come to share Dewey's view that education is a social process (cf. above) and he also links with Vygotsky and his focus on education as fundamentally a social process (Moore 2000).

1.3 LEARNING AS A SOCIAL AND CULTURAL PROCESS – VYGOTSKY AND BRUNER

One may claim that Dewey, Piaget and Rogers mainly focussed on the *individual* aspects of progressive education (Moore 2000). With Vygotsky's contribution to educational theory we get a view of learning as an essentially social activity which takes place with actors partaking in socially constructed situations. Collaborative learning is central in Vygotsky's work, and he claims that teacher instruction should always be followed by dialogue between teacher and student, or between students, to allow the students to elaborate their socially available skills and knowledge. To allow for such collaborative learning to take place, the classroom needs to be organised in such a way that it facilitates this (ibid.).

Vygotsky shares aspects with Piaget and others of the previously mentioned influences on progressive education, in particular in focussing on learning as an *active* process, but in Vygotsky's case the focus is primarily on learning as an *interactive* process. Vygotsky also shares with Piaget the view of the student developing through a set of stages, i.e. a developmental theory, but Vygotsky's theory does not imply waiting for the child to be ready to enter the next stage (ibid.). Instead, one of Vygotsky's most important contributions to educational theory is his concept of the Zone of Proximal Development (ZPD), the gap between what a child can do unassisted and what he/she is able to do with adult assistance. With regard to education the teacher's role is central in this idea, since the teacher is the one responsible for making sure that the student has the necessary support to move forward in his/her ZPD. To provide the required support the teacher needs to assess the pupil's progress and make use of the information that this assessment gives; formative assessment is an integral part of the instruction process (ibid.). This is in line with current developments such as *Assessment for Learning* (Wiliam 2009; Engh *et al.* 2007), something which is currently influencing Norwegian educational policy to a large extent.

Another important aspect of Vygotsky which is also influential within the current Norwegian educational reform (cf. Section 2.3.5 below) is his focus on meta-cognition. According to Vygotsky, the main psychic functions involved in studying various subjects are interdependent; their common functions are conscious and deliberate mastery. *Consciousness* and *deliberation* are central concepts in Vygotsky's theory (Moore 2000) and the conscious, deliberate learner is able to reflect on what he/she has learnt, i.e. has meta-cognitive skills.

While one may claim that Vygotsky built his work on parts of Piaget's theories, Jerome Bruner makes use of Vygotsky's contributions to educational theory (ibid.). In this context one of the main contributions that may have influenced active learning efforts in Norway is Bruner's focus on the *cultural* aspects of learning. According to Bruner (1995) the teacher needs to be aware of and take into account the social and cultural context that the learning takes place in, and how styles of learning may vary depending on the child's background. This also includes supporting children in becoming aware of their own preferences and what may help their learning, i.e. the development of meta-cognitive skills. The findings and arguments within Norwegian educational research in the 1970s (cf. Section 2.3.2 below) and changes in national curricula in the 1980s (cf. Section 2.3.3 below) focussing on building on pupils' experiences and making use of the local environment through the development of local curricula and use of local learning resources was influenced in particular by Bruner's theoretical contributions about the cultural context of learning (Høgmo *et al.* 1981).

With this overview and summary of some of the central elements of and influences on progressive education internationally, I will now turn a country whose developments have influenced the developments within Norwegian education more directly, not least because of the common history and long traditions of cooperation that exist between Norway and its neighbour, Sweden.

1.4 PROGRESSIVE EDUCATION IN SWEDEN

Norway was in union with Sweden until 1905, when Norway again became an independent country, but Sweden has kept influencing Norway in many ways also after

the union was dissolved. Historically, developments within the Swedish welfare state, including the educational system, have influenced changes made in Norway, particularly in the post-war period when Norway was recovering after WW2, while Sweden had the economic powers to speed up the development of the modern welfare state. The latest example of Swedish influence is the current Norwegian national curriculum, LK06, where Norway has adopted a curriculum model based on defining competence aims, a model that has been made use of in Sweden since 1994 (LPO94). In the following paragraphs I will briefly sketch the history of progressive education in Sweden as a background to how developments within Swedish educational history may have influenced changes in Norway.

In their preface and introduction to a 1980 Swedish edition of some of John Dewey's texts Lundgren and Hartman (Dewey 1980) sketch the historical background of progressive education in Sweden. The reason for wanting to do so is, they claim, that a lot of the ideas which are at the forefront of the pedagogical debate and reform work in Sweden in the 1980s have their roots in the so-called progressive pedagogy formulated by, amongst others, Dewey, at the beginning of the 20th century. These roots are, according to Hartman and Lundgren, seldom made visible in the debate or in documents, but are still there to a large extent.

John Dewey was presented to a Swedish audience as early as 1902 when one of his articles was translated into Swedish and published in a Swedish journal, and at a conference in 1907 Fridtjuf Berg, one of the most influential advocates for the development of the principle of unity school in Sweden, presented Dewey's ideas to primary school teachers (ibid.). Hartman and Lundgren claim that by 1910 Dewey was beginning to get fairly well-known in Sweden. One of the people who helped in advocating his ideas was the internationally renowned Swedish writer Ellen Key. In her influential book *The Century of the Child* (1900), Ellen Key expressed ideas that formed the basis for the development of reform pedagogy and progressive education in Sweden. Key was strongly influenced by Dewey, and in the second edition of *The Century of the Child* (Key 1911) she wrote about Dewey's work *School and Society*. The University College in Gothenburg had been a centre for progressive education in the

first half of the 20th century (Dewey 1980), and academics at this institution translated and published Dewey's *The Child and the Curriculum* as early as 1912.

According to Hartman and Lundgren (ibid.) there was a lot of interest in progressive education in Sweden in the first decades of the 20th century, and these ideas were also made into educational policy through the development of new national curricula. In the 1919 National Swedish curriculum the *work school principle* was introduced, and home knowledge, where the local environment should be an important learning arena, was introduced as a new subject. The teaching programme in this curriculum was summarized in four phrases that echoes Dewey and other writers within the progressive education tradition (ibid.:23):

- *Learning by doing.*
- *The work of the hand.*
- *The mental struggle with problems.*
- *School as a laboratory and not as a lecture hall.*

While the work school principle was central to Swedish educational development in the first two decades of the 20th century, *activity pedagogy* became central to the pedagogical debate in the 1930s (ibid.). Elsa Köhler, an Austrian academic who lived and worked in Gothenburg, Sweden, in the 1930s published a book called *Aktivitetspedagogik (Activity pedagogy)*, in 1936. Central to activity pedagogy was that the pupils had to be *active*, something which was also central to the work school principle. What distinguished activity pedagogy from work school was the strong focus that activity pedagogy had on using scientific theory and psychological research as a basis for development work in school.

While Elsa Köhler went back to her homeland Austria in the late 1930s and later became a victim of Nazi terror during WW2, her Swedish activity pedagogy students carried on the work that she had started. In 1947 some of them published a book that became important for pedagogical development in Swedish schools but also for teacher training for the next decades (Falk 1947). The book was called *Vårt Arbetssätt (Our Way of Working)*, and defined the elements that should be enhanced within activity pedagogy: spontaneity, community, individualization, development through

assistance, stimulation of the personality, creative work, pupils' areas of interest and, finally, that principled considerations had to be made when selecting the content for the curriculum.

However, the activity pedagogues said that one could not rely totally on children's 'natural' interests when selecting content, since there was actually a curriculum to attend to. Instead, one of the teacher's main responsibilities was to awaken children's interest through working in the following way:

1. Children's interests are connected to the topic they are going to work with. Stimulation.
2. Children and teacher collect material which is related to the area of interest and develop a plan for the work together.
3. The actual work takes place – children work on their own or in groups.
4. Pupils present their own work for other pupils and for their teacher. They assess their own work showing what they have been able to acquire or master while they have been working with the topic.

Even though Sweden did not take part in WW2, the efforts to implement progressive education came to a halt in the early 1940s, but later came to influence in particular the way pre-school education was defined and developed in Sweden in the 1950s and onwards, but also how creative arts and design was treated within compulsory education (Dewey 1980).

Alva Myrdal, who later became very well known for her peace efforts (she won the Nobel Peace Prize in 1982), was for decades central to the development of the Swedish welfare state model, in which the principle of the unity school was focussed. She sat on the 1946 school committee which presented its report in 1948, where, in addition to 9 year compulsory education within the unity school, principles to develop democracy as a central value to the Swedish education system were promoted. The report defined the school's responsibility for developing democratic citizens, something which should happen through free growth, using laboratory methods based on activity pedagogy. With regard to adapted education the report said that it was no longer right to differentiate by putting pupils in ability groups. Instead the teaching

should be individualized in such a way that it was possible to take into account the pupils' individual differences.

According to Hartman and Lundgren (Dewey 1980), the 1946 school committee was inspired by Dewey and their work formed the basis for curriculum development in Sweden in the 1960s and 70s. During this time the Swedish pre-school pedagogy was developed, influenced to a great extent by progressive education, in particular Dewey, but also by the Italian educator Maria Montessori and the Belgian educator Ovide Decroly. One explanation why progressive education was recognised in Sweden and why it came to influence Swedish educational policy to such an extent is because of the ground it found in the major political influences at the time. Hartman and Lundgren conclude in the following way (Dewey 1980:35):

...progressive education has people's movements, first and foremost the labour movement, as one of its main channels into Sweden.

Towards the end of the 1970s and entering into the 1980s it is, according to Hartman and Lundgren (ibid.), not easy to say how much of Dewey's ideas influenced practice in Swedish classrooms, even if progressive ideas and directions still remain in curricula and in the objectives for Swedish education. However, a later international study with Swedish participation (Hameyer *et al.* 1995), documents that progressive education ideas are still found in Swedish schools and that the curriculum allows for practices in line with what the authors describe as open education or child-centred education. The study includes examples of investigations of so-called activity-based science, and the authors make a clear link between such practices and *productive schools*, even if none of the cases from the four different countries actually contain any efforts at measuring possible effects of the activity-based practices. Rather, these practices are defined as productive in themselves, so the study instead focuses on to what degree that practices are being implemented *productively*. When looking for activity-based practices, the signs they were looking for in the participating schools were reduction in teacher directed practices in favour of hands-on activities, pupil-directed discovery and experiments, either individually or in groups. With regard to *active learning* and the role of the teacher, they conclude that (ibid.:13):

Top-down patterns of teacher-focussed instruction seem to prevent students from active learning, and, even more, from learning how to learn.

When outlining their pedagogical approach they list the following underlying beliefs and ideas, that:

- Learning depends on the pupils' prior conceptions.
- Each pupil has his/her unique beliefs and knowledge structures.
- The learner must construct his/her own meaning.
- Learning is contextual, i.e. that learning depends on the particular context where it is taking place.
- Learning depends upon shared understandings which are negotiated with others in collaborative situations.

Their stances link well with educational theories previously discussed in this chapter, and this is confirmed when they describe in more detail the conceptual framework for the activity-based science approach in four steps (ibid.:14):

1. *The pupils develop their own ideas for inquiries, experiments or constructive work. They search for explorative methods to clarify and illuminate the questions which they consider meaningful.*
2. *Students investigate meaningful questions or problems on the basis of their own ideas. They explore their ideas and apply different methods.*
3. *Students analyze, discuss and evaluate what they have found or constructed; they display their results in the classroom or other places.*
4. *Students express their understanding of what they have learnt. They exchange findings or constructive results, and they draw conclusions where possible and appropriate.*

The degree of pupil control and management of their own learning situation is emphasised, and there is little, if any, mention of the teacher's role other than implicitly suggesting that the teacher is primarily a facilitator whose main function is to

make sure appropriate and meaningful learning resources and situations are available to the pupils. Also, there is no discussion of the possible deficits or pitfalls of heavily pupil-directed learning approaches, in spite of the fact that this has been problematised since the beginning of the progressive education movement (Dewey 1997; Alexander 1984).

Ekholm's Swedish example is from a primary school (ages 7 to 13) which was selected because of its reputation of being a well-developed school, participating in a Nordic network of successful schools (Hameyer *et al.* 1995). Activity-based practices, as defined by the researchers, are well established in the school and not limited to science teaching but also evident in other subjects such as for instance Swedish (mother tongue) teaching, where teachers used an approach which became popular and fairly common both in Norway and in Sweden in the 1980s, *læring på talemålets grunn*, learning to read and write based on the pupils' oral language. Ekholm does not discuss the degree to which activity-based practices are commonly used in Swedish primary schools, but the fact that the school was chosen for participation in a prestigious international project, and the fact that teachers from the school, according to Ekholm (*ibid.*:94), have also been used as resource personnel in in-service training for teachers from other schools in the area, suggests that this practice which is clearly within the progressive education tradition, is still valued and considered successful within Swedish education in the early 1990s.

1.5 THE DANISH PROJECT MOVEMENT

Another source of influence on the development of active learning in Norway is what we may call the Danish project movement. During the mid-1970s the project work method experienced a remarkable breakthrough in Danish, and to some extent also in the other Scandinavian countries', educational theory and practice (Illeris 1999). In Denmark this development was closely connected to the establishment of a new university, Roskilde University Centre (RUC), in 1972. When the new university started its work in September 1972 the major work method chosen was problem oriented project work, while more traditional work methods within higher education such as lectures and other more teacher directed methods should only be used as

supplementary methods. Problem oriented project work, participatory control/management and co-ownership are still central elements within the educational approach at Roskilde University today¹.

Central in the development of RUC and its work methods in the 1970s was Knud Illeris, who published an influential book in 1974 where he outlined the social rationale for, the psychological basis for, and the major principles of project work (Illeris 1974). The book became a bestseller in Scandinavia, set the scene for the pedagogical debate in Denmark in the late 1970s and was also influential in Sweden and Norway (Illeris 1999). However, it was not until the 1990s that project work really gained ground in other parts of the educational system with the introduction of project work as a compulsory work method in Danish compulsory education (ibid.). A similar development took place in Norway in the 1990s when project work was first made compulsory in upper secondary education from 1994 within an important structural reform and a new curriculum for post-compulsory education, and then in compulsory education with the implementation of a new national curriculum in 1997, as we shall see in Section 2.3.4 of the next chapter.

In Illeris' recollection of the emergence of project work in Denmark he links this to William H. Kilpatrick who worked to convert Dewey's ideas into practical pedagogy through the development of the project method (Illeris 1999). The only major deviation from Kilpatrick's method was that while he described this as a work method for the individual, the Danish project movement interpreted and developed the project method as collaborative group work. Illeris also states Jean Piaget's learning and developmental psychology as a central source of influence (ibid.). The main principles of project work, as it was implemented in the Danish education system were as follows:

- Problem orientation,
- Participatory control/government,
- Cross-curricularity,
- Group work and

¹ Source of information: <http://www.ruc.dk>

- The exemplary principle.

With regard to the first and second elements above Illeris underlines the importance of pupil participation in problem formulation. The process should be such that the solution to the problem or the illumination of central elements related to the problem should form the aims for the pupils' work. When deciding upon the problem or the subject matter for project work, a number of aspects must be taken into account. The problem or content must be:

- Relevant and important for the pupils.
- Pupil centred.
- Representative of the relevant area of knowledge; i.e. that it should focus on the basic ideas and concepts and their relations and patterns that may later be used to solve future and related problems. This is related to the last element above – the exemplary principle (Klafki 2002).
- Socially relevant and oriented towards communication, i.e. it must be suited for group work.
- Adapted to the child's developmental stage.
- Be suited to strengthening the pupils' ability to view social phenomena from different viewpoints and acknowledge structural relationships between individual life stories or experiences.

Pupil participation should not be limited to problem formulation and decisions about content; pupils should also take part in decisions about process, product (i.e. what should be the outcome of the project) and the actual system of decision making that is in use (Illeris 1974; Berthelsen *et al.* 1977). When project work was developed in Denmark in the 1970s it was as a reaction to traditional methods within higher education, but it was also closely connected to radical powers within Danish society and it was viewed as a means of empowerment. Illeris explains the reason why it happened in the 1970s by referring to the development within the Danish society's economic conditions and changes in the labour market which demanded a workforce with new qualifications to meet the challenges of the 21st century (Illeris 1999). The

table below summarises the major differences between traditional education and project work, according to Illeris and colleagues (Bethelsen *et al.* 1977:19).

Table 2 Differences between traditional education and project work according to Illeris and colleagues

	Traditional education	Project work
Learning form	Teaching starts with the general, i.e. with theories and principles and the task for the pupils is to employ the general in concrete (deductive learning).	Teaching starts with immediate problems that are expected to portray structures in society. Pupils work continuously to understand bigger connections (inductive learning).
Meaning of learning	To achieve knowledge and skills you previously didn't have.	To arrive at realisation about how parts make up the whole – to understand how things connect.
Learning process	Happens through the teacher's transfer of his own and other subject authorities' knowledge, experience and insight to the pupils.	Happens through pupils choosing problems, makes investigations, acts and confronts the results with superior societal values and theories.
Learning needs	Pupils generally need to learn the same things.	Depending on problem areas and developmental level, pupils need different kinds of learning.
Teacher role	Teacher is the expert; he/she lectures, presents theory, hands out the content, literature references – and demonstrates.	The teacher facilitates the outer framework and is continuously confronting the pupils with the superior aim of education.
Pupil role	The pupil receives and works with the content that she received from the teacher. She takes notes and instils. During the actual teaching situation the pupil is relatively passive – knowledge is not translated into practice.	The pupils work purposefully towards revealing new case circumstances. She confronts theory and practices, systematises and imparts her knowledge to others. She actively takes part in efforts to change unsatisfactory conditions.
Responsibility	The teacher is responsible for the pupils' learning.	The teacher is responsible for the pupils' starting point and the relevance of the problem at hand. The pupil is responsible for the society and for herself with regard to relevant learning.
Errors	Pupils should strive to make as few mistakes as possible during the teaching.	During teaching new paths must be tried without fear of making mistakes. In external situations one must try avoiding mistakes that may harm the project's aims.
Control	Learning is controlled by checking whether the pupil can answer correctly or sensibly to questions/tasks during teaching or in an exam.	Learning is controlled by checking whether the pupils can make use of what is learnt outside teaching situations.
Assessment	Teacher assesses, accepts or rejects pupils' learning/outcomes by giving grades based on the education system's rules.	The pupil self-assesses – with support from the teacher - her own learning and acts in relation to its societal usage.
Learning outcome	Learning is relatively intellectual and theoretical.	What you learn is new acts and ways of solving problems, and new insight into societal matters.

Illeris and the Danish project movement influenced the previously mentioned development in Norway in the 1990s when the project work method became compulsory both in compulsory education and in upper secondary education (cf. Koritzinsky 1997 and Section 2.3.4 below). His focus on pupil participation and pupil decision-making in particular influenced the way teachers interpreted how this way of working should be implemented within compulsory education, with negative consequences in particular with regard to how the teachers interpreted their own role (Rønning 2003). This will be discussed in more detail in Section 2.3.4 below.

2. ACTIVE LEARNING IN THE HISTORICAL CONTEXT OF NORWEGIAN EDUCATION

2.1 THE FORERUNNERS OF THE NORWEGIAN REFORM PEDAGOGY MOVEMENT

Helga Eng, the first woman to become professor at the Faculty of History and Philosophy at the University of Oslo in 1938, had studied psychology in Germany in the first years of the 20th century, and later also in the USA. Through these studies she was strongly influenced by the new ideas of reform pedagogy in Europe and progressivism in the USA (Lønnå 2004). Back home in Norway she advocated these ideas and had a strong influence on the development of education, and in particular on educational research. One of the things she advocated was the introduction of practical experiments into Norwegian education, a method she had taken directly from being in contact with schools and educational academics in Germany (ibid.)

However, Helga Eng didn't herself take part in the actual struggle to implement these ideas through development work in schools and the development of new curricula. Instead, she dedicated her working life to building up educational research in Norway just before and after WW2, through establishing and developing the Pedagogical Research Institute (PRI) at the University of Oslo. She believed strongly that the planned changes to the Norwegian education system should be research-based, an objective she shared with two other persons that she influenced and inspired, Anna Sethne and Bernhard Ribsskog. This consideration was also shared with the development of activity pedagogy in Sweden (cf. Section 1.4 above).

Anna Sethne is the person who is most often mentioned as the main driving force for the introduction of reform pedagogy in Norway in the interwar period (Myhre 1982). Sethne held various positions, including being a head teacher at a school which carried out important development work inspired by the new ideas, but, most importantly, Sethne sat on the committee which developed a new national curriculum before WW2, N39, and her contribution to this curriculum development was considerable (Dale 2004). Anna Sethne had been an advocate of these new ideas for decades before

the new curriculum models were launched. As early as 1913 she wrote the following (cited in Myhre 1982:94):

*It has been shown that one has overestimated the factor that memory plays in children's acquisition of knowledge. **Learning by doing** gives richer knowledge than learning by remembering.*

In this statement she uses a phrase which has often been connected to John Dewey, *learning by doing*, and Sethne and the people she worked together with to promote these rather radical ideas in Norway were much influenced by Dewey's works (Engelsen 2003:127). One of the people Sethne worked together with was Bernhard Ribsskog, the leader of the N39 committee. He advocated strongly that educational change in Norway should be based on reform pedagogy, but also that it had to be based on experiences from and research on the actual implementation of reform pedagogy ideas in Norwegian classrooms. To cater for such changes he supported, as one of the central educational bureaucrats in Norway, development work carried out by Anna Sethne and educational research at PRI, headed by Helga Eng. To Ribsskog it was of fundamental importance that the implementation of reform pedagogy ideas and progressivism should be linked with the development of the 'unity school' (enhetsskolen) principle in the Norwegian education system (Aas 2004). The unity school principle aims at establishing a common school for all, independent of gender, social background etc. (see Section 2.2 below for further presentation of the principle). Ribsskog and Sethne, as leader and member of the committee which developed N39, were the central people who shaped the new curriculum, and they were inspired by Helga Eng and the ideas she brought back home from her studies abroad.

2.2 NORWEGIAN EDUCATIONAL REFORM IN THE INTERWAR PERIOD – N39

As mentioned above, one may claim that the 20th century's reform pedagogy had a major breakthrough in Norway in the interwar period. Formally this change happened with the development and implementation of two major documents in the 1930s – the 1936 Elementary Education Act (Folkeskoleloven av 1936) and the 1939 Curriculum

Models², *Normalplanane av 1939*, N39 (Lønnå 2004:161). The 1936 Elementary Education Act stated that a common national curriculum should be developed. Previous curricula had been voluntary for the municipalities, and some municipalities had developed their own curricula. The new curriculum, however, should be compulsory for all the municipalities.

The 1939 Curriculum Models, developed by amongst others the previously mentioned Sethne and Ribsskog, represented a radical change from previous curricula (Engelsen 2003). The founding ideas for the new curriculum were taken from and were closely linked to the growth of progressive education and ideas within pedagogy which in later curricula are referred to as active learning (cf. for instance Section 2.3.4 below). Prior to the introduction of this education reform, the Norwegian education system had been criticized for being part of 'the old book school' tradition, a tradition where, for most of the time, the teacher is trying to impart a common, standardized curriculum content to pupils who sit, more or less passively, receiving this curriculum. The reform aimed at changing this situation considerably (Engelsen 2003; Aas 2004).

Another important reason for the school reform was the political objective of developing a 'unity school' (enhetsskolen) system in Norway. The idea of the unity school can be traced back to the 1850s, but was given more importance and launched as a political objective for more systematic efforts in the interwar period. The aim of the unity school is a more equitable education system – a common school system where all children will have the same access to and opportunity to succeed within the education system, regardless of social background, gender, whether they live in a town or in the countryside etc. The Elementary Education Act of 1936 which had measures to make the education provision in the rural areas more similar to that in urban areas, formed the starting point for more systematic efforts towards more equitable education provision. However, implementing the unity school would take time, and continued efforts to reach this objective have been central to the development of the Norwegian education system in the whole post-war period, in particular associated

² There were two curriculum models – one for elementary schools in rural areas (N39a), and one for the schools in urban/'city' areas (N39b).

with the Labour movement and the Labour party, both central forces in the formation of the Norwegian welfare state after WW2 (Telhaug 1982).

The influence of reform pedagogy in Norway in the interwar period was part of a rather complex international movement. However, what distinguishes Norway from many other countries was that it was the public school system which was the arena for the introduction of reform pedagogy and the development work that the new ideas resulted in (Aas 2004: 190).

So what were the central ideas related to active learning in the interwar education reform in Norway? In the introductory chapter in the 1939 Curriculum Models it is stated that the *principle of the work school (arbeidsskoleprinsippet)* should guide the educational provision (N39a:9). This principle was defined in the following way:

*...the plan [N39] does not place the main focus on the pupils' work to remember, but rather on their more comprehensive, independent work with the education content. In other words, **the plan aims at implementing the principle of the work school, the principle of pupil activity**, to such an extent as it is possible, and in such a way that the work offers as good conditions as possible for free and harmonic growth for the children (ibid.:15, emphasis added).*

The main aim for the work school principle, as defined here, and as strengthened throughout the text of N39, was that pupils should be allowed to be as **active** as possible, in particular through practical tasks. The work school principle is more closely defined and exemplified for each subject in N39. The curriculum promotes a cross-curricular approach, in particular in the 'orienteering subjects'³, aiming at connecting school work to real-life through using authentic teaching resources, investigating real life issues, using nature as a learning arena etc.

³ The orienteering subjects included home place knowledge (heimstadiære), history, geography and science. Home place knowledge was taught through years 1-3 and included themes from the three disciplines geography, history and science. These subjects were taught as separate disciplines through years 4-7.

With regard to the actual work methods, the curriculum gives recommendations as to how the work school principle could be implemented in the different subjects. In science, for instance, the curriculum states that the pupils should be allowed to conduct practical experiments which should be carried out in the following way: setting the problem/question, planning the experiment, doing the experiment, writing down the results and drawing conclusions based on the results (ibid.:117). Building on the pupils' interests and making the work methods and issues treated as concrete, authentic and relevant as possible, is emphasised throughout the whole curriculum text.

The curriculum states that practical activities are central to the work school principle and should be documented in the pupils' work books. These work books should be (ibid.:16):

*...real **work** books for the pupils... (emphasis added)*

and the plan stresses that:

...it shouldn't take too much time to document the practical tasks.... Sketches and drawings should be as simple as possible so that they don't take the children's time away from the real work with the topic (ibid.:16).

Also, to prevent pupils losing interest in the work, the teacher is asked to focus less on details regarding content, and also asked to spend less time on tidiness and spelling, since:

The most important thing is that the pupils themselves get enough time and opportunity to work with the topic, and that they achieve as good results as possible with reasonable use of time. Compared to this, spelling and decorative writing must come last – but of course without this resulting in sloppy and messy work (ibid.:16).

With regard to learning resources, N39a (p.18) states that the schools should provide a varied selection, including things from nature, models, devices for teaching science, maps, pictures etc. The resources should preferably be easily accessible and could be placed in corridors and other areas that pupils have easy access to. Also, schools should try to cater for a reading room with books and other tools that pupils might need for their work. Such a reading room would enable the pupils to train how to work independently, finding out about things on their own (ibid.:18).

Another important principle raised in N39 is individual adaptation. To be able to adapt the educational provision to the individual pupil, an important precondition is that the teacher knows the pupil's current situation, their strengths and weaknesses, and their interests. The claim made in the curriculum is that individual adaptation can best be brought about through involving the pupils in all parts of the education processes, including making a plan for their work, discussing and deciding about tasks and ways of working, and deciding about learning content (ibid.:13-14). By doing so, it is claimed that pupils will become interested in their work at school and feel responsible for carrying out the work as planned, and with their best efforts.

The underlying idea in N39 is that children are inherently eager to learn and interested in becoming independent and self-sufficient pupils and that they have a self-drive which enables them to govern their own work. This is spelt out quite clearly in the following statement from the curriculum plan:

Children should not be disturbed while playing or working. It is preferable to let them keep on as long as they want to. It is the natural and best thing to do – it is particularly preferable during the first years at school. This is one of the great commandments within child-raising (ibid.:13).

2.3 ACTIVE LEARNING IN POST-WAR NORWEGIAN NATIONAL CURRICULA

2.3.1 Introduction

In April 1940 Norway was invaded by Germany and was at war for the next five years. Because of WW2 and the difficult situation in the country in the years immediately following the war, N39 was not implemented in a systematic way. The late 1940s and the beginning of the 1950s were characterized by public poverty, and huge efforts to rebuild the country were made. Within education the main efforts were focussed on trying to implement the unity school principle, i.e. to develop education provision in such a way that existing differences between rural and urban areas, between girls and boys etc. with regard to amount of education, the subjects taught, and, not least, access to and use of further education after the 7 years of compulsory education, were reduced. Extending the amount of compulsory education to 9 years was a major objective which took both huge efforts financially and with regard to developing the work force.

During this period less attention was given to the content and the ways of working described in the N39 curriculum, even if there were efforts to try and implement the work school pedagogy principle which was central to N39. This was done through publishing works of methodology to assist teachers in their work (Engelsen 2003). The curriculum opened up for individual teachers and schools who wanted to implement the new ideas, but there were no national or other systematic efforts to do so on a large-scale basis.

Voices of concern about the influence reform pedagogy and the progressive movement had made on the development of N39 were raised in the post-war years. N39 was in particular criticised for viewing methods/ways of working as more important than the content (ibid.:49). One of the persons who raised this critique was the previously mentioned Helga Eng, who had been central in bringing reform pedagogy ideas to Norway before WW2 (Husby 1999). Eng pointed to three elements that she found worrying. Firstly, that the project method used in some of the progressive schools in Norway, was in opposition to subject teaching, something which Eng feared could result in low standards. Secondly, she questioned whether the

approach could result in important cultural heritage not being covered in the schools' curricula and important values being rejected. Husby (ibid.:32) cites Eng commenting on the way of working promoted in N39:

The way of working does not give solid and thorough knowledge and does not train the pupils to work systematically. A negative approach to subject knowledge gains the pupils' social development, but does not give them solid knowledge.

Finally, Eng claimed that Dewey's pragmatism (cf. Section 1.1 above) and its belief in human intelligence did not take enough into account other human needs and abilities such as the aesthetic, ethical and religious. She claimed that experimentalism, a movement developed by Dewey, overestimated intelligence as the way to happiness. Another reason why the work school principle in N39 was not implemented fully in the Norwegian education system, was that in spite of the rather radical ideas advocated in the curriculum it was still a plan which stated minimum standards that the pupils had to achieve before being able to pass on to the next level of education. This was not easily combined with the ideas of building on pupil interest, pupil participation and focussing mainly on methods and not content (ibid.).

During the late 1950s and early 1960s some municipalities started development work to implement the new structure of 9 years of compulsory education. A preliminary and incomplete curriculum for the 9 year compulsory education was launched in 1960, and this curriculum shared principles and guiding ideas with its predecessor, N39. A new Education Act was launched in 1969, stating the principles of adapted education through pedagogical differentiation within contrasted classes instead of through organisational differentiation which had previously been the case in the basic subjects Norwegian, Maths and English. Since the new act made it compulsory for all municipalities to implement 9 years of compulsory education and the new principle of pedagogical differentiation, a new national curriculum had to be developed.

During the 1960s the newly established Council for Development and Innovation within Education (Forsøksrådet for skoleverket) started different development projects

focussing on methods/ways of working. However, the work school concept was no longer central in the pedagogical terminology used, but instead concepts such as study technique and active learning were coming into use (Engelsen 2003:140).

Before I proceed to present and discuss post WW2 national curricula in Norway, it is important to point out how curricular development and implementation processes in Norway are conducted. While the Ministry of Education is responsible for developing the curriculum, the Norwegian *Storting* (Parliament) makes the decision to pass the curriculum. Normally, the Ministry engages professionals from universities and teacher training colleges in the writing process, but the way this is conducted may vary from one curriculum to the next. When the Storting has passed a new curriculum, it is the responsibility of the municipalities, i.e. the “school owners”, to make sure the curriculum is implemented. The implementation process is normally supported from national level through the provision of financial means for in-service training and development work. Unlike in the UK, there is no inspectorate in Norway responsible for quality assurance of curriculum implementation, whether at national or local levels. Instead, the system is very much built on trust between national and local level. However, as will be presented below, some curriculum implementation processes have been followed by research programs.

2.3.2 The 1974 Curriculum Guidelines for Compulsory Education in Norway, M74

M74, the *Curriculum Guidelines for Compulsory Education in Norway, Mønsterplan for grunnskolen*, was completed and made compulsory from 1974. As previously mentioned, critical voices of the superior position of methods over content which had characterized N39 were being heard. In particular the possible continuation of the work school principle was problematised. Preliminary works to the 1969 Education Act claimed that *content* needed to be focussed to a greater extent than what had been the case with N39, but without leaving the focus on pupil activity as the guiding principle for work in the classrooms (Husby 1999).

The curriculum committee which laid down the basic principles for the development of M74 expressed a positive view of the value of having a focus on methods. However,

they were critical of the transferability of ways of working to other areas of the pupils' work and life, and in particular they problematised the view that they felt had prevailed in N39 that using pupil active ways of working almost automatically led to good conditions for the children's upbringing and formation [dannelse] (Engelsen 2003). Instead, the committee expressed the view that the main function of the methods/ways of working promoted in the curriculum should be to provide good and effective conditions for the acquisition of knowledge and skills.

Many of the central principles connected to the progressive education movement (see Section 1.1 above for more details about progressivism) and conveyed in N39 are also taken onboard in M74. M74 states that a pupil-centred view should govern the schools' daily activities (M74:22). When commenting on the relationship between teacher and pupil the curriculum says that the relationship should be non-authoritarian where cooperation between teacher and pupil should be central, what Telhaug (1982) defines as a subject - subject relationship instead of a subject - object relationship where the teacher is seen as the active part (subject) who is trying to transfer a body of knowledge to the pupil (object).

M74 defines pupil-centred as a situation where the pupils are allowed to influence what goes on in school in various ways, and where pupils are met with understanding and respect by the teachers, always being open for and allowing discussion with the pupils. In contrast to its predecessor, M74 does not, as outlined in more detail below, define minimum standards that pupils have to meet. Instead it is founded on the principle of a guiding framework where the actual selection of content, ways of working and teaching resources is left to the teachers. This principle gave the teachers ample opportunities to select content based on pupils' interests and local circumstances, two ideas that are advocated in the curriculum. Also, the curriculum states that teachers should be modest with regard to the amount of content they try to cover, since:

The amount of content must not be of such a character that it gets in the way of ways of working such as group work, discussions, excursions, camp school etc. (ibid.:28).

Even though both preliminary works to M74 and the general educational debate in the 1960s stated that more focus must be put on content, M74 continues the focus on pupil active ways of working. Koritzinsky (1997:56) even claims that M74 provided a stronger mandate for pupil active methods and cross-curricularity. In what way is this conveyed in the curriculum?

M74 spends a whole chapter discussing ways of working in the introductory part of the curriculum, in addition to commenting on methods/ways of working in other introductory chapters and also in each of the subject curricula. The first heading in the chapter on ways of working is *Pupil Activity* (M74:31). Throughout the chapter some central principles are advocated. In line with N39, M74 also states that the pupils must be allowed to participate in planning of the school's daily activity, and that they should be made responsible for carrying out what has been planned, both with regard to working with the different subjects, but also other activities within the school.

With regard to ways of working it is stated right at the beginning of the curriculum text that pupils need to acquire mastery of rational ways of working so that they become independent and efficient pupils. The principle of learning-to-learn and the objective of developing the pupils' meta-cognitive skills are presented in the introductory chapter and are developed further in the chapter on ways of working. Right from the very beginning of their schooling pupils should be taught effective study techniques, and they should be encouraged to actively assess their own ways of working, asking questions such as: Am I working in the best way possible? How can I work better, more rationally?

Throughout the chapter on ways of working (ibid.:32-55) M74 advocates in particular approaches that will train the pupils to work together, defined as *group work* (ibid.:39), suggesting that pupils should learn democratic skills and how to cooperate through play, through working together in twos, working together across age groups etc. Group work as a method is described in detail and in such a way that it resembles another approach which is promoted in a later curriculum (cf. Section 2.3.4 below), and which has been central to the progressive movement in Denmark (cf. Section 1.5 above),

namely project work. The phases defined for group work in M74 are as follows (ibid.:41-43):

- **Introduction and motivation**, where the teacher needs to create an urge in the pupils to want to know more about the topic they are going to work with,
- **Planning**, a phase where the pupils should gradually be given a shared responsibility for decision-making about how to:
- **Carry out the group work**, which is a phase where the teacher makes sure that learning resources are available, leads the start up of the work, but then delegates responsibility to the group leader, but also more generally to all the pupils.
- **Presentation**, a phase that the pupils prepare and make decisions about themselves, and finally,
- **Assessment phase**, when pupils and teacher assess the work and the process together.

With regard to teaching resources it is stated that pupils should be encouraged to use many and varied resources; the textbook is by far not enough to achieve the aims of the curriculum, and as far as possible pupils should meet things in their natural environment, i.e. schools should make use of the natural and social environment as learning arena. Also, M74 states that teaching should have its starting point in things or events that fit the pupils' view of the world, starting from the pupils' understanding and interpretation of the world. Schools should also have self-instructive learning resources to be able to meet the individual pupil's needs. This is expressed in the following way in the section discussing teaching resources:

If the individual pupil is to get opportunities to develop based on his/her own abilities and conditions, traditional classroom teaching where the teacher talks to all pupils at the same time and gives all pupils the same tasks and tests to complete must give way to group work and more individual work (ibid.:55).

The new principle of the curriculum as a guiding framework broke with the strong focus on developing a unity school through common standards for education for children from rural and urban areas, for girls and boys etc., an approach which had

influenced curriculum work in Norway since the interwar period. So, why did this new principle get a breakthrough in the 1970s? During the 1960s and early 1970s new educational ideas were brought to the front, some of them based on the radicalisation process that took place in many countries during this period, exemplified in particular by the student revolt in France in 1968.

Telhaug (1982) claims that there were four related changes within pedagogy that influenced this change in Norway, firstly what he called the de-schooling pedagogy. By de-schooling pedagogy he refers to a movement where it is claimed that learning needs to be connected to meaningful and useful work that the pupils carry out for the best of their society. Secondly, he mentions the sociological ethnographic development where it was claimed that the school represents and conveys the values and priorities of the urban middle classes (Høgmo *et al.* 1981), something which makes education less relevant and less manageable for children from working class families and children in rural areas. Thirdly, he claims (Telhaug 1982) that the emerging social pedagogy was influential on this change by its focus on children and youth being formed not only by their formal education in the education system, but also by what happens to them and what they take part in doing in their local community. Finally, Telhaug claims that the development in the 1960s and 70s was influenced by what he calls critical pedagogy, or dialogue pedagogy, a movement which criticised traditional pedagogy because it tended to view the pupil as an 'object' that should be 'filled with knowledge'. In contrast, critical pedagogy claims that there needs to be a dialogic relationship between teacher and pupil, a subject – subject relationship instead of a subject – object one (*ibid.*).

Common to all the four developments Telhaug mentions was their critique of the knowledge-centred school which, they claimed, was very far from the pupils' reality and the issues they were interested in. The alternative presented was an approach where the local culture formed the starting point for the education, and where the pupils should be allowed to partake in decision-making about their education. However, a natural consequence of such an alternative was that this would not be possible if the curriculum continued defining a minimum standard that all children needed to meet to be allowed to pass on to the next class/grade. Instead, it was

argued, the curriculum needed to offer flexibility and opportunities for schools to adapt to local conditions, something which the principle of the curriculum as a guiding framework aimed at doing. Major development projects, such as for instance the Lofoten project (Høgmo *et al.* 1981; Klette 1984) brought teacher trainers, researchers and teachers together to try and develop the teaching resources, the competence and new practices that were needed to meet the challenges of the new approach.

What happened to M74? In what way and to what extent were the new ideas and practices promoted actually implemented? Did the teachers use the freedom to define the amount of content and the nature of it themselves, and did they make use of the opportunities for adaptation to local conditions that the curriculum offered?

A large-scale national follow-up study of the implementation of M74, the so-called *Oppfølging av Mønsterplanens Intensjoner* (Follow-up of the Curriculum's Intentions) – OMI (OMI 1983) showed that little had changed by the early 1980s, in spite of the new curriculum and the public educational debate where the new and more radical ideas of pupil activity, pupil participation in decision-making, individual adaptation of the educational provision etc. had been voiced. Instead, OMI (*ibid.*) showed that whole-class teaching through teacher directed methods prevailed, while few examples of teachers using more pupil active ways of working could be found. Most teachers focussed on the formal training of language skills and on the teacher imparting facts, frequently using written tests to control the pupils' acquisition of this knowledge. The study claims that there is a close relationship between the teachers' practices (choice of content, teaching methods and assessment practices) and their conscious or unconscious view of what knowledge and competence is. OMI claims that the traditional view of knowledge is reproduced in the education system through national standardised tests and exams.

Also, according to OMI (*ibid.*) the principle of individual adaptation had not been taken on board. The study found little evidence of efforts to differentiate and meet the needs of the individual pupil, and also few attempts at adapting the content and the use of teaching resources to the local conditions. The textbook was, according to OMI, viewed as the unofficial curriculum, and was allowed to dominate the teaching and

define the content. However, the study claims that the textbook had changed and had become more extensive and more varied as compared to the situation before M74 was launched. Finally, OMI showed that the intention to bring subjects together in cross-curricular work was not followed up by the teachers. The conclusion from the OMI study was that M74 was taken on board only to a very limited degree as the kind of guiding framework as it was intended to be; the teachers did not make use of the freedom given to them.

The main factors hindering the implementation of the pedagogy promoted in M74 was, according to the teachers (*ibid.*):

- the exam system,
- that pupils had to be graded,
- that there was too much content for the teachers to cover to be able to make use of more pupil active approaches since these take more time than more traditional approaches,
- that there was too little time for the teachers to get to know the individual pupils and their needs properly,
- that the way the school was organised and structured was not adapted to the new pedagogy, and finally,
- that the parents had other expectations than the new, more radical approaches that the new curriculum tried to promote.

During the latter part of the 1970s a major critique of M74 was voiced. The critics demanded more focus on knowledge, on content, and claimed that the principle of the curriculum as a guiding framework allowed too much freedom for the teachers, and that this would result in low and varying academic standards. This critique came first from the political right, but was later also joined by more radical forces on the political left. The reason why was because good academic standards were viewed as an important force for the working class, and that children of the working class would be at loss in a school that did not put enough focus on knowledge. Responding to the critique, central obligatory topics were developed and presented by the Ministry in 1981 (*ibid.*).

In a response to some of the critique Kirsti Klette (1984) claimed that the problem with what she called *the new pedagogy* was that it was not pupil-centred to a large enough degree, or rather that it was quasi pupil-centred – it pretends to be pupil-centred, but it is not succeeding. She argues that the reason why the approaches connected with the new pedagogy are failing is that they are posing challenges that need to be met visibly, and that these pedagogical consequences were invisible in the previous subject-centred tradition in Norwegian schools. The new pedagogy demands pedagogical competences related to pupils' learning processes that were previously not known, and it also presupposes competence regarding cross-curricular work. The teachers have been given neither the time nor the training to be able to meet these challenges (ibid.:11).

2.3.3 The 1987 Curriculum Guidelines for Compulsory Education in Norway, M87

As described above, the national follow-up study of the implementation of M74 showed that the schools had not taken on board the part of the curriculum that supported teachers to use pupil active ways of working and selecting content based on pupils' interests and local conditions (OMI 1983). Also, the critique of M74, combined with the fact that there was more space for curriculum development work once the big structural efforts of the 1960s and 70s had been consolidated, made way for a process to develop a new national curriculum in the first half of the 1980s (Engelsen 2003). First it was claimed that the curriculum work should only be a revision of M74, but major changes were made, so some claim that it was a totally new curriculum that was implemented first in a preliminary version in 1985, and then in a final version in 1987 (Solstad 1997:34). The influence of reform pedagogy and progressivism was continued, and, some claim, even strengthened in the new curriculum, called M87 (ibid.:53).

In the introductory chapter in M87 (M87:17-25), where the aims and objectives for compulsory education in Norway are outlined, the school's responsibility for building on and developing democratic values is central. To develop democratic values pupils' participation in decision-making is stressed, as is also the shared responsibility that teachers and pupils have for the work in the school. The introductory chapter also

mentions the school's responsibility for making use of the local environment in such a way that the pupils can work with tasks that build on the pupils' experiences in their local community. The chapter on *The School in Society* (ibid.:26-32) takes this forward and describes in more detail how the school should try to work in close cooperation with its local surroundings. Under the heading *Learning in the Local Community* it is stated that this should not be limited to some subjects, but should pervade all areas of the school's work:

*In order to make the schooling practical and true to life, the school must try to make the instruction **in all subjects and on all topics** as concrete and relevant as possible. The themes and working methods chosen by the school must clearly show the pupils the connection to situations and conditions which they meet in the society outside the school (ibid.:29 emphasis added).*

It is also stated that the school should not only make use of the local environment as a learning arena, but should also try to benefit the society in more ways than just providing good-quality education for the society's children. Pupils must be given the opportunity to work for the best of their community through what the curriculum calls *Practical, Social and Cultural Activities* (ibid.:30), often abbreviated PRASOK, an element in the curriculum which is described in detail in the subject curriculum part and which, similar to all other subjects, has been assigned a certain number of teaching periods⁴ per stage throughout the nine years of schooling. The aim of PRASOK is based on promoting the school to:

...link the task of learning in the school to life and reality in the local community. The intention is to show the connection between theory and practice and create a balance between these two aspects of the pupils' education (ibid.:101).

Under the heading *Equitable and Suitably Adapted Education* (ibid.:32-35) a whole chapter is dedicated to outlining a fundamental principle in M87, namely adapted education. To achieve adapted education the curriculum states that the schools have

⁴ Each pupil should have a total of 275 teaching periods in her/his schooling time (M87:100).

to work to provide comprehensive and varied ways of working for the pupils so that they are stimulated to learn. Another important aspect of adapted education is to make use of learning opportunities in the class through stimulating the pupils to learn from each other through working in twos, in groups etc. M87 follows its predecessor in defining that adapted education should not be promoted through establishing ability groups, but instead through differentiating and adapting ways of working, content and amount of work to the individual pupil's needs. With regard to what kind of learning experiences the teachers should try to provide, the curriculum states the following:

The school must make sure that the pupils learn different methods of work and take part in different processes for solving problems. For example, the pupils should acquire experience in observing, experimenting, asking questions, interpreting, understanding and explaining, in looking for the whole and for component parts, for contrasts and connections. These are ways of thinking and working that will have a positive impact on the pupils' further development, and provide experience that can be turned into valuable knowledge. The processes must be adjusted to the pupils' aptitudes and opportunities, and should ensure that the work of learning incorporates active participation and involvement by the pupils themselves (ibid.:51).

In line with its predecessors M87 has a separate chapter describing ways of working, called *Learning Environment and Teaching Methods* (ibid.:54-67) in which the focus on variation in ways of working and the school's responsibility for providing a stimulating learning environment is stressed. The introductory paragraphs of this chapter state that this aims at laying the foundation for **active learning**, the first time the terminology chosen for this study is used as such in a Norwegian curriculum:

*A good learning environment is marked, inter alia, by variation in working methods which provide a basis for **active learning** (ibid.:54, emphasis added).*

Meaningfulness in learning is another quality promoted in the curriculum. According to M87 meaningfulness can be achieved by placing what the pupils do in each period and in each subject in a wider context (ibid.:54), having a holistic, comprehensive

approach, for instance through cross-curricular work and multi-grade approaches where pupils from different age groups work together for longer periods of time (ibid.:59). The timetable must allow for such cross-curricular and multi-grade approaches, and the schools must also engage in developing their own local curriculum (ibid.:72) to cater for such work.

With regard to ways of working that enable meaningful, cross-curricular approaches the curriculum mentions group work, both within and across age-groups. While its predecessor, M74, did not mention project work but only described approaches that had elements in common with project work, M87 promotes the project work method and states that through working with projects one can achieve the following (ibid.:61):

- An opportunity to combine subject matter from different subjects,
- Focus on a specific theme or problem area, which can preferably be taken from the local community,
- Allow active participation from the pupils in planning the work,
- Allow pupils to study issues in more detail, preferably giving them direct experiences of interviewing relevant persons, collecting material from sources other than textbooks etc.

The curriculum states that project work offers relevant learning experiences and opportunities, through its variation, for adapting the work to the individual pupils in such a way that they can all contribute (ibid.:61):

Participating in a project gives the pupils an opportunity to assess what constitutes relevant knowledge in relation to a specific problem, and how to obtain the necessary information. It also gives them an opportunity to collect information themselves and work on it in different ways. It is necessary to use different ways of working and different forms of expression. The different assignments and activities in a project are a very good way of giving pupils with different capabilities opportunities to contribute to the group.

The project method is not described in great detail, but through the way it is outlined one can see that the curriculum designers think that there should be a process

whereby the pupils take part in selecting an issue or problem for study, engage in a planning process where content, methods, scope and duration of work are established, carry out the work where collection and use of information from a wide variety of sources is important, and then present their work in such a way that:

...the final product should enable the knowledge and experience of the project to be passed on to others (op. cit.).

Finally, pupils and teacher assess the project together, a task that allows the pupils to reflect on knowledge in such a way as to stimulate the development of meta-cognitive skills.

This evaluation gives the pupils an opportunity to discuss their learning across subject boundaries, and to consider what knowledge and skills can be used and developed further through concrete work on a particular theme (op. cit. p. 61).

The way project work is described in M87 promotes it as an approach that enables meaningfulness and relevance with regard to the content of the work, varied learning experiences, opportunities for pupils' reflecting on their learning and thereby developing meta-cognitive skills, and also an opportunity for others to learn from the final products that the project results in.

As mentioned above, M87 states that schools have to develop their own local curriculum based on the national curriculum guidelines (ibid.:72-74). The local curriculum should be a tool whereby the schools can adapt their teaching to the pupils, to the local environment, making use of local learning arenas outside school, local culture, folk traditions, local history and local organisations and businesses. With regard to the pupils' role on the development of a local curriculum, M87 states that:

The pupils must be made aware of the efforts to provide local curricula, by letting them share in discussions on the formulation of the objectives of the school and the measures taken to achieve these objectives. When the work is placed in a meaningful context it can be motivating and instructive for the

pupils to make specific contributions to the preparation of local teaching plans, for example by registering relevant sources of information (ibid.:73)

Contrary to the implementation of the previous national curriculum, M74, the process of implementing M87 was not followed by research or any national follow-up programme. Because of this there is little information about whether central elements in M87 such as the principle of local curriculum plans, use of local learning resources and use of the project work method were actually implemented. One of the very few examples of research is Halvor Bjørnsrud's work (1993) when he in the early 1990s was commissioned by the Ministry of Education to conduct a study of teachers' views and experiences with regard to local curriculum development.

Bjørnsrud's study was limited to teachers and school leaders in two counties and concluded that both teachers and school leaders viewed the development of local curricula positively, because they thought that local plans and use of local teaching resources would increase pupils' motivation for and commitment in the learning processes. However, their views of what local curriculum work actually contained varied considerably, and they also expressed uncertainty with regard to one of the principles that they conceived of as important in local curriculum development, cross-curricularity (ibid.). Bjørnsrud also found that newly educated teachers experienced local curriculum development as particularly challenging, and neither such teachers nor more experienced ones felt that they had received the necessary support through in-service education to be able to carry out this work in a qualitatively good way.

The other major study conducted was a study of the implementation of M87 in schools in one of Norway's 19 counties, Nordland (Solstad 1994, 1997). However, the study focuses on *organisational* elements of the implementation process and does not present findings regarding the actual implementation in the classrooms or elsewhere of the active learning principles that one may claim that M87 supported. Some of the organisational elements that Solstad (1994:435) defined as representing the 'new', M87-school were open classrooms (as a contrast to one teacher and his/her class behind a closed door), organisation of classrooms to allow for more open methods, flexible timetabling, extensive cooperation between teachers, systematic school-based

in-service and development work, and, not least, a school which took an active role in its own community, what Solstad defines as the *community active school*.

The findings of Solstad's study show that with regard to organisational characteristics, the schools in Nordland were changing during the period of study (1989 – 1991). Traditional organisation of classrooms (pupils in rows) and traditional timetabling (45 minute lessons with 10 minute breaks) were still common in 1991, but more schools had implemented flexible timetabling and made use of more open ways of organising the classrooms, allowing for instance more collaborative work. He also finds that the schools have implemented structures that allow for more collaboration between teachers and that the amount of time for pedagogical debates has increased during the period. However, when looking more closely at what teachers are actually discussing, he finds that local environmental issues, which are closely linked with making use of local teaching resources and locally relevant issues, have lost ground from 1989 to 1991. Whether this is due to restorative or 'back to basics' trends in educational ideas (cf. Section 2.3.4) is a question he leaves unanswered (ibid.: 349). In his discussion of findings, Solstad concludes that (ibid.: 352):

Many schools have, since the mid 80s, demonstrated great advances in the directions asked for. Too many schools, around 20 -30 percent, do not demonstrate the kind of organisational structures and cultural climates which are most likely to provide young people with an education according to the principle of equity through diversity.

Solstad's conclusion is that the schools in Nordland have changed, as a result of M87, but as previously mentioned, the study is limited to organisational factors, and does not provide information about the implementation of active learning practices such as for instance project work, use of local learning resources etc.

The two studies referred to above are the only two major studies conducted to investigate the implementation of M87, even if Koritzinsky (1997) concludes, at the time of the implementation of yet another national curriculum in Norway in 1997, that the 'old', i.e. the traditional, school's ways of working have proven more persistent

than the progressive features of the two previous curricula, M74 and M87. He suggests some explanations as to why this is the case, not least that the road from national intentions to classroom practice contains many tripwires, such as the way teachers interpret the curriculum, textbooks and other teaching resources, assessment regulations and practices, teacher training, the view of the teacher's role and finally, the way schools are fitted up and resourced (ibid.:31).

Support for progressive education elements in Norwegian educational policies have, similar to the developments in Sweden (Dewey 1980), been linked to the political left. During the 1980s the right wing scepticism of the fairly progressive national curriculum increased, in particular focussing on claimed declining standards (Solstad 1994). According to Solstad this criticism also gained ground on the political left when a governmental committee headed by Gudmund Hernes, who later became Minister of Education for the Labour party, published a report on research and higher education which reflected what one may claim were right wing ideas on knowledge and education (Solstad 1994). Solstad (ibid.:79) summarises the part of their critique which is relevant to M87:

- *The educational system from kindergarten upwards has, as its main task, to 'distribute' 'system knowledge', 'fundamental knowledge', 'basic knowledge' or 'core knowledge' (NOU 1988:28, especially pp9-10).*
- *The schools and teachers have too many non-academic related tasks [social care etc.] which draw attention away from their main task [i.e. teaching basic knowledge].*
- *The M87 idea on local curriculum leads to too much variation, too large inequalities and makes pupils' change of schools difficult. Therefore, a more strictly defined national curriculum, including more specific objectives for each subject, is to be recommended.*
- *A system of national approval of textbooks has to be developed to warrant the highest possible subject specific standards.*

Even if the committee's view of knowledge and their critique of ideas underlying M87 did not have any direct effect on the implementation of M87 (ibid.), the ideas

prevailed and when Gudmund Hernes took up the position of Minister of Education in 1990, a position he held until December 1995, he started extensive reform work within the Norwegian education system. His efforts resulted in a large reform in upper secondary education launched in 1994, and then he laid the ground for a reform in compulsory education which was implemented in full scale from 1997.

2.3.4 The 1997 Curriculum Guidelines for the 10-year Compulsory School in Norway, L97

Koritzinsky (2000:34) calls the 1990s *the decade of educational reforms* in Norway. The reforms in the 1990s were aimed at the whole education system, from compulsory education to higher education and adult education. Even the Norwegian research system was reformed during this decade. Telhaug (1997) claims that these reforms were characterised by what he calls *restorative ideas*. By this he means that while childhood had been recognised as important and valuable in itself, particularly in the development of pre-school education in Norway in the 1970s, but also in the previous compulsory education reforms, focus had now returned to childhood and education as a preparation for adulthood, a perspective that was prevalent in society before the 1970s. This, he claims, was due to economical challenges in many countries, including Norway, that led national authorities to focus on education as a means to a more productive and competitive society. Because of this, central values in education such as pupils' development of criticality, their participation in decision-making etc., were toned down and exchanged with a focus on competence, efficiency and productivity. According to Telhaug the reforms were driven by a worry over the quality of the 'products' of the education system (ibid.). Norway was not doing too well on international comparisons, and OECD had expressed concern regarding our quality assurance system in their review of the Norwegian education system in 1987 (OECD 1988), something which caused major concern at national level.

Koritzinsky (2000) claims that the restorative approach in the reforms in the 1990s constituted a break with the progressive tradition, but as we will see below one can still find remnants of progressive ideas in the new curriculum for compulsory education, L97. Supported by Telhaug (1997), one may therefore claim that L97 is characterised both by elements that can be claimed to represent restoration of ideas

of education as a means to an effective society, but also by elements that are linked with progressive education ideas, in particular when one relates this to how the teachers actually interpreted the new curriculum, something we will return to below when presenting research on the implementation of L97. Telhaug calls this a *mixed pedagogy*, a pedagogy characterized both by progressive and restorative elements.

L97 represents a mixed pedagogy because it in such clear terms continues important principles from progressive and pupil-centred pedagogy. It shows respect for practical work, for the aesthetic perspective, for cross-curricularity, pupil-participation, teachers' teamwork and pupils' teamwork. ...However, teachers' freedom is still reduced as compared to M87, because one may claim that the curriculum plan focuses more strongly on imparting the common national culture.

Reform 97 in compulsory education was, like many of the other educational reforms during the 1990s, both a structural and a content reform. With regard to the structural reform in compulsory education, the main element was lowering school starting age from 7 years to 6 years. Great concern was voiced about this, both from parent organisations and the teacher unions, in particular the pre-school teacher branch of the main teacher union. To settle this concern, and to provide what was thought to be the best educational provision for the 6 year olds, the solution chosen was to bring some important elements from kindergarten to school, elements that one may claim contributed to the fact that one can describe at least parts of the new curriculum, L97, as characterised by progressive ideas and not just the restorative trend of the 1990s. Pre-school teachers were invited to start working in school at the lower primary stage, after having taken a post graduate course and *play* was introduced as an educational approach at primary stage (L97:80):

Education at the primary stage should be based on the traditions of both the kindergarten and the primary stage and provide a smooth transition from kindergarten to school. There must be scope for wonder, curiosity, and exploration through play. The first year should be along distinctly preschool

lines, with the emphasis on learning through play and on activities for mixed age groups throughout the primary stage.

With regard to Reform 97 as a content reform Koritzinsky (2000) claims that the new national curriculum which was developed, L97, was characterised both by a focus on more common, national content and in-depth work with subjects, but at the same time cross-curricular approaches through theme and project work. This characterised the development not only in compulsory education during the 1990s, but also in the study programs for teacher training (ibid.).

L97 consists of three different parts; the *Core Curriculum* which contains the rationale for the content and approaches which are presented in the two other parts, the *Principles and Guidelines* section, and the subject curricula.

The Core Curriculum was made compulsory and implemented from 1993, not only in compulsory education but also in upper-secondary education and adult education, to ensure cohesion and continuity throughout the education system (Koritzinsky 2000). It is a beautiful document, with lots of illustrations from our national but also international cultural heritage. The language used is fairly old-fashioned and solemn, something which Koritzinsky claims was done not only to link with its focus on our cultural heritage, but that it was also aimed at replacing the language of the professional pedagogues which had characterised previous curricula. According to Koritzinsky (ibid.:91) this was done partly to make it more relevant and comprehensible to the public, but also to distance itself from the progressive and child-centred pedagogy which had been predominant in M87. However, even if Koritzinsky claims that the Core Curriculum aims at distancing itself from progressive education, the curriculum text contains various statements that can be linked with progressive education, and *active learning* is actually used as heading for one of the sections in the Core Curriculum (L97:37).

The Core Curriculum conveys the values and visions of the Norwegian education system through presenting seven different aspects of the human being; the spiritual, creative, working, liberally-educated, social, environmentally aware and integrated

human being. In the section on the creative human being, the curriculum states that education should build on three traditions; *'innovative work, intellectual inquiry and artistic expression'* (L97:28), where the first tradition is linked with *'...practical work and learning through experience'*, the second to gaining *'...new knowledge through theoretical development, tested by logic and facts, experience, evidence and research'*, and the third to our *'...cultural tradition, mediated by body and mind, embedded in arts and crafts'* (ibid.).

The same section referred to above states that pupils should be *active* (ibid.:30) and should be trained in scientific thinking and in developing meta-cognitive skills. The view of learning expressed through the Core Curriculum focuses on the pupil as the agent in his/her own learning process (ibid.:34):

Pupils build up their knowledge, generate their skills and evolve their attitudes largely by themselves. This process can be stimulated and spurred or curbed and blocked, by others.

The curriculum clearly states that teaching must start from the pupil's existing experience and build on already acquired skills and concepts, and that teaching must be adapted to the individual pupil.

To explain something new implies mooring it to something familiar. This is accomplished by the teacher using expressions, images, analogies, metaphors and examples which convey meaning to the pupil. New perceptions must build on what is already well-founded – that which the pupil already knows, can do or believes beforehand (ibid.:36).

The last two excerpts from L97 echoes with Jean Piaget's contribution to progressivism, focussing on the individual pupil's development, something which was discussed in Section 1.2 above.

The view of the teacher conveyed through the curriculum is very ambitious and is presented in a language that alludes to the teacher role of times long gone, to the

times when the teacher, the priest and the doctor were the main pillars of society. In Norway this kind of teacher, the dedicated, knowledgeable, inspiring teacher, is often referred to as 'Bård skolemester' (Bård, the schoolmaster), a character in Bjørnstjerne Bjørnson⁵'s novel *En glad gutt* (A cheerful boy), and this reference was often used by people to describe what they felt about the teacher role in the Core Curriculum when it was first launched. The *good* teacher needs to possess a variety of abilities and skills and act according to a professional code of conduct:

The teacher's command of his or her field is vital when the experiences of the young are to be converted into insight. The good teacher is master of the subject – his or her section of our common cultural heritage (ibid.:36).

...Subject proficiency is not enough to make a good teacher; enthusiasm and communicative ability are also needed. Good teachers have a sure grasp of their material, and know how it should be conveyed to kindle curiosity, ignite interest and win respect for the subject (ibid.:37).

...The most important tool teachers have is themselves. For this reason they must dare to acknowledge their own personality and character, and to stand forth as robust and mature adults in relation to young people who are in a process of emotional and social development (ibid.:38).

The view of the pupil portrays a child who is inherently interested and eager to learn, open to everything new and unknown, curious, continuously asking questions and seeking new knowledge. Pupil participation is stressed, and pupils should be allowed to take part in the different stages of the educational process, from planning, through practice in the classroom, to assessment (ibid.).

The second part of the L97 curriculum, the section on *Principles and Guidelines for compulsory education* contains specifications with regard to which approaches should be used to transfer the values of and link the Core Curriculum to the subject curricula which follows in the third and final section of L97. The *Principles and Guidelines* part continues the previous curricula's focus on adapted education, both with regard to the

⁵ Bjørnstjerne Bjørnson is one of Norway's most well-known and cherished authors from the 19th century, and he wrote, amongst other things, the text for Norway's national anthem.

individual, but also adaptation to the local environment. In the section on methods, the curriculum states that:

Pupils should learn by doing, exploring and experimenting, and in doing so acquire new knowledge and understanding (ibid.:83).

Play, drama and other creative forms of expression are promoted, and:

...pupils must be confronted with concrete practical tasks which trigger questions that call for reasoned answers. This is a way of showing pupils the connections between practice and theory and between action and knowledge (ibid.:84).

According to Koritzinsky (1997, 2000) the many guidelines during the 1980s and 1990s for using pupil-active ways of working were collected, summarised and presented in the recommendation in the *Principles and Guidelines* section to use theme and project work as a central way of organising the content and approaching the work with the content. In the consultative version of L97 there was a separate curriculum for theme and project work with detailed descriptions for pupil-active ways of working (Engelsen 2003). When the final version was launched, however, this chapter was no longer there. Instead the curriculum demanded that a minimum of 60 per cent of the time at the lower primary stage should be set off for cross-curricular theme work, a minimum of 30 per cent at upper primary stage, and that project work should gradually be introduced and take up a minimum of 20 per cent of the time at lower-secondary stage. This was a rather radical demand and was met with some concern and opposition, something which led the Ministry of Education to change the status of these demands from being legally binding to advisory in 1999 (Koritzinsky 2000; Husby 1999).

The Principles and Guidelines section also contained specifications with regard to locally defined learning content. The figure included to visualize the distribution between nationally defined content and local adaptation suggests that half of the content at the lower stages should be locally based, while at the final grade about one-

third should be based on local resources and issues (L97:75). This was, in addition to the demands regarding thematic work and project work, a major challenge for the schools, and led to efforts regarding local curriculum planning, to ensure inclusion of local content and cross-curricular issues through themes and projects.

The last part of the curriculum, section three, contained the curricula for the different subjects. As previously mentioned, critics expressed concern that the claimed focus on a common base of knowledge, focus on our common cultural heritage and our common values could undermine the more progressive elements expressed in the Principles and Guidelines section (cf. Koritzinsky 1997), in particular since the amount of content for the different subjects were considered quite large.

The previously mentioned Minister of Education, Gudmund Hernes (cf. Section 2.3.3 above), influenced the development of the curriculum quite extensively, first by engaging very intimately in the writing of the Core Curriculum which was launched in 1993, and later by involving himself personally in not just appointing, but also in selecting, members for the different groups that were going to develop the subject curricula (Broadhead 2002; Koritzinsky 2000). It is claimed that he influenced the development of the curriculum to a large extent even after he left the Ministry of Education to become Minister of Health in December 1995 (Broadhead 2002). Hernes was particularly focussing on the idea of the curriculum as a main tool of transferring and enhancing our common cultural heritage, and has as such been given both the blame and the credit for the way the subject curricula in particular were formulated, with a number of references to particular pieces of written work that should be included in the study of the different subjects. I include an example of the curriculum for teaching English in Grade 6 in Norwegian schools:

Pupils should have the opportunity to

- *Listen to and read a rich selection of texts from different periods, including fables, legends, tales, extracts from children's books, e.g. 'Doctor Doolittle' by Hugh Lofting, 'Black Beauty' by Anna Sewell and 'The Little House on the prairie' by Laura Ingalls Wilder, poems, e.g. from 'Old Possum's Book of Practical Cats' by T. S. Eliot...*

Concern was voiced about giving such specific suggestions with regard to the appropriateness of the suggestions and what would happen to the texts when they had to be abbreviated and adapted to readers with a different mother tongue, something which one assumed would happen when textbook authors started their work. Another important argument used was that this would lead to a de-professionalization of the teachers (Engelsen *et al.* 1993), since detailed specifications and demands with regards to approaches that should be used, even if these were advisory specifications, would deprive teachers of their right and obligation to make such decisions themselves, to be able to adapt their teaching to the specific context they were working in.

Koritzinsky (1997) claims there were few, if any, linkages between the demands for progressive education approaches, as they were outlined in the Principles and Guidelines section, and the subject curricula. The concepts and their practical implications were not pursued in the subject curricula, and teachers were left on their own to tackle the task of putting the principles into practice. According to Koritzinsky (*ibid.*:31) this was not only the case in L97, but had also been a deficiency in previous curricula such as M87 and M74. However, one may argue that Koritzinsky is overlooking the fact that objectives defined in the subject curricula of L97 may *implicitly* contain references to active learning features. Examples from the science curriculum for Grade 6 and 7 may exemplify this:

Pupils should have the opportunity to:

- *Plan and carry out experiments with light and study examples of different sources of light.*
- *...*
- *Explore the principal properties of water, and by experimenting find out about the importance of water to living organisms (L97:227).*

The link between active learning features discussed in the Principles and Guidelines section of the curriculum and the subject curricula may not be made explicitly, but the

references are there implicitly. Through local curriculum work teachers were supposed to make such linkages, not just within but also across subjects to implement the approach of cross-curricular theme work.

To what extent were the progressive elements in L97 and in particular the demands for cross-curricular, open ways of working such as theme and project work taken on board by their teachers in the implementation process? Contrary to the situation when the previous curriculum was launched, the implementation of L97 was followed by a research programme managed by the Norwegian Research Council. The research projects within the programme focussed on a number of issues relevant to the new curriculum, including questions about to what extent thematic work and project work were actually implemented (Rønning 2002; Solstad 2003; Solstad and Engen 2004). Our own analysis of L97 concluded that the curriculum to a large extent followed up the principles of de-standardisation of the content and the progressive ideas which were central in M87 (Solstad 2003:65), since the curriculum stated that a relatively large part of the curriculum content should be defined and developed locally to take account of local conditions (L97: 75) and since open teaching methods such as project work should be applied.

However, as Koritzinsky (1997) expressed concern about before the curriculum was implemented, both teachers and school management found it difficult to unite the demands for locally relevant curriculum content and open ways of working with the fairly detailed specifications in the subject curricula (Solstad 2003). A survey in year 2000 comprising nearly 2300 teachers from a stratified sample of schools revealed that the advisory specifications with regard to amount of thematic and project work at the different stages in compulsory education were not followed by the teachers (Rønning 2003:67). Another important finding was that even if a great majority of the teachers were of the opinion that theme and project work promoted basic conditions for learning such as interest, motivation, opportunities for active involvement, they questioned the learning outcome of such work, and interestingly, chose not to use these more open methods in subjects or subject areas that they felt were of specific importance. This was in particular related to Maths and Norwegian, but also parts of

other subjects, where focus on progression and development within the subject led them to choose more traditional, teacher directed approaches (Solstad 2003).

In-depth studies of teachers' implementation of theme and project work revealed that the teachers interpreted theme and project work, and in particular the teacher and pupil roles in such work, in a rather problematic way (ibid.). Project work, and to some extent also thematic work, was seen as largely led and managed by the pupils themselves, something which made teachers less able to control the amount of time spent on a project or theme, and which led to projects and themes taking up much more time than teachers had originally meant to spend. This worried teachers, since they then felt that they were not able to cover the content specified by the subject curriculum for the year in question.

The view of the independent, self-managing pupil was linked with a view of the teacher as a rather passive and withdrawn role, implying non-interference from the teacher unless the pupils specifically asked for help. In spite of the fact that many teachers expressed concern regarding such a role, they seemed to think that this was the correct role for the teacher particularly in project work (ibid.). According to Koritzinsky (1997:58) Knud Illeris has influenced the way Norwegian education viewed project work, and Illeris' focus on pupil independence and decision-making (cf. Section 1.5 above) may partly have inspired providers of in-service training and as such promoted these kinds of interpretations of teacher and pupil role in project work.

The previously mentioned in-depth studies also revealed that teachers not only let pupils manage by themselves with little interference by the teachers, but that the teachers had even neglected the training of the kinds of skills that pupils need to master to be able to deal with open ways of working. There was little focus on study skills, skills regarding planning of their work, selection of resources to be used etc. (Solstad 2003). When the outcome of the project work failed to meet the teachers' expectations, teachers often explained this by referring to pupils' immaturity and lack of concentration, instead of relating it to lack of training in skills and lack of experience in dealing with less structured learning situations than they had previously been accustomed to (ibid.).

Even if previous curricula also had demands regarding the use of local learning material and local issues, studies have revealed that such use had not been as common as for example M87 presupposed (Solstad 1997). The previously mentioned in-depth studies of use of theme and project work also included an investigation of the use of locally adapted teaching resources, and the study concludes that the expectations in L97 of the amount of local teaching content was not met by the teachers (Solstad 2003). The study suggests that the reasons for this are lack of belief in or understanding of the opportunity of meeting more general objectives for pupils' learning and intellectual development through studying local issues and using local teaching resources, but also that the teachers lack the necessary pedagogical and methodological competence to be able to use local resources effectively when implementing the curriculum. Instead they base much of their work on centrally developed and produced resources such as textbooks and their supplementary material, comprising teacher guides, pupil workbooks etc., and subsequently, electronically stored learning resources (Christophersen 2004).

The status of the textbook is strong in Norwegian schools, and a number of different studies have confirmed this over the last decade (Berg 1999; Falck-Ytter 1999; Michaelsen 1999; Heyerdahl-Larsen 2000; Bachmann 2004; Christophersen 2004; Hodgson *et al.* 2010) and also problematised whether the extensive use of the textbook is in line with the intentions of the National curriculum.

Research on the implementation of L97 provided a rather pessimistic picture of whether the intentions of the national curriculum were followed up in the classrooms (Imsen 2004a; Klette 2004; Solstad & Engen 2004). Imsen (2004b) concludes that even if one may claim that progressive ideas of teaching and learning are firmly anchored in the Norwegian curricular tradition, practice is not following, at least not to the extent and in the form that one might expect based on the messages conveyed through the curricula. To the extent that we find examples of progressive education, Imsen claims that:

...progressive ways of working in the classroom take place within a particular framework. This results in a large amount of individual work and a supposedly adapted education which may not be very successful in practice. At the same time we find that they [progressive ways of working] are limited because of the concern for common content and social community in the form of whole-class teaching. ...In practice we find a kind of progressivism which is framed within authoritarian structures such as the demand for common content and the way the teaching is designed. The new pupil role allows for discussions with an anti-authoritarian teacher, but the central aspects of teaching are not up for negotiations. The teachers are balancing on a fine line between the collective upbringing ideas of whole-class teaching and the openness for diversity and variation within progressivism (ibid.:69).

In line with what happened with M87, L97 did not last very long either. As the conclusions from the research programme on the implementation of L97 were becoming public in 2003, the framework for a new curricular reform was already defined. The conservative-centre coalition government in office from 2001 until 2005 launched an important white paper in 2004 (UFD 2004), called *Kultur for læring* (*Culture for Learning*). The white paper established that Norway as a nation had good conditions for being able to succeed in developing a well-functioning education system, but that the country had major hurdles to pass to make it happen. Amongst these challenges were: too weak a *culture for learning*, lack of focus on the ‘products’ or the results of education efforts, vague learning objectives and too little focus on the pupils, not enough focus on acquisition of good basic skills and learning-to-learn skills (Engelsen 2008:10).

2.3.5 Curriculum for Knowledge Promotion, LK06 – the Current National Curriculum

The above mentioned white paper (UFD 2004) claimed that a change of political system was required to meet the challenges listed in the paper. By change the government defined that they now wanted to establish a system whereby the national authorities, through the curriculum, should define the *objectives* for compulsory education, but that the local level should be given freedom to decide *how* to organise and facilitate the work to reach the objectives. The idea of giving responsibility to ‘the

one who knows where the shoe pinches' was voiced - the white paper establishes on the first page that the teachers will be given more trust and responsibility, since they are the professionals (ibid.). However, at the same time as the teachers were seemingly given more freedom, a new system of quality assurance was being built up, something which made researchers conclude that *distance control* was exercised (Engelsen 2008) instead. By this is meant that while the national level in principle left room for considerable degree of decision-making at local level, they instead controlled through the development and implementation of different control measures, such as a system of national tests and a web portal where the schools' results were made public.

LK06 consists of three parts – the Core Curriculum which was kept unchanged from L97, the Quality Framework which replaces the Principles and Guidelines section of L97, and the subject curricula. Engelsen and Karseth (2007) claim that the three sections of LK06 represent three different curriculum models. They describe the Core Curriculum as a *content-driven* curriculum (Ross 2000) with its main focus on a common cultural framework and, as a consequence, common curricular content (cf. Section 2.3.4 above). The Quality Framework is described as a *process-driven* curriculum (Engelsen & Karseth 2007), focussing on the individual pupil's learning process, a process which, according to Engelsen and Karseth (ibid.:410), can be claimed that LK06 sees as being to some extent self-governed. According to Ross (2000) it is this curriculum model which most clearly links with the progressive education tradition which means that it is in the Quality Framework that we are most likely to find possible traces of the progressive tradition in the current national curriculum.

The third and last part of the curriculum, the subject curricula, is, according to Engelsen and Karseth (2007), making use of an *objective-driven* curriculum model (Ross 2000). Engelsen and Karseth (2007) claim that the subject curricula section represents a change from a tradition where education mainly was viewed as a cultural project, into a tradition where education is viewed as a means for economic development. This is in line with Telhaug's (1997) critique of L97 as a return to the restorative tradition (cf. Section 2.3.4 above). Telhaug (ibid.) also claimed that L97 represented a *mixed pedagogy*, and according to Engelsen and Karseth (2007) this is also the case with LK06. According to research on LK06 published so far, the curriculum is conveying a

mixed message to the teachers. Engelsen and Karseth point out that national authorities claim that LK06 represents a *broad* view of knowledge without defining what they mean by this, and that this claim disguises important differences in the view of knowledge from one part of the curriculum to the next, instead of making it clear to the teachers what the curriculum is trying to achieve (ibid.:411).

When studying the Quality Framework, I find that, in line with what was suggested by Engelsen and Karseth (2007), there are traces of progressive education aspects in this part of the curriculum. The Learning Poster⁶ (Quality Framework:2) states aims for the way in which the schools should work to implement the new curriculum, including aims for pupil participation, varied use of ways of working, adapted education, involvement of local community in education and the development of pupils' learning strategies and their ability for critical thinking. Originally, the consultative version of the Quality Framework only included the Learning Poster, but was extended when the conservative-centre government stepped down towards the end of 2005 and was replaced by a left-wing coalition government. This section now also contains parts which describe in more detail how the schools should work to achieve pupil participation, training of learning strategies, cooperation with local community etc. The section on pupil participation (ibid.:4) states that an important objective for pupil participation is to develop active citizenship and prepare pupils for active participation in democratic processes at different levels in society. Pupils should be allowed to take part in all phases of the education process, from planning to assessment of their work. To cater for such participation the Quality Framework (p. 4) states that:

Pupil participation requires that they are familiar with the choices they can make and the possible consequences of these choices.

The benefit of such participation is that it:

...is positive for the development of social relations and motivation for learning at all stages of the education.

⁶ The English version is found on the following website: <http://www.udir.no/Artikler/Lareplaner/english/Core-Curriculum-in-five-languages>

The section which describes in more detail how the schools should work with learning strategies focuses on pupil choice, too. However, this should be done within a framework of:

...clear competence aims and [the schools] facilitating for varied and goal-oriented activities (ibid.:3).

With regard to learning strategies, the Quality Framework defines these as:

...the procedures pupils use to structure their own learning. These are strategies for planning, carrying out and assessing their own work to satisfy nationally stipulated competence aims.

As previously mentioned, Engelsen and Karseth (2007:408) claim that the Quality Framework represents a process-driven curriculum model, since it focuses on the learning process and that this focus is mainly on the *individual* pupil's process, not so much on learning in social contexts. However, other parts of the Quality Framework also state the importance of developing the pupils' social competence, through cooperation, dialogue and allowing differences of opinion to come to the surface. With regard to the use of teaching resources, the curriculum no longer states that a certain amount of resources should be local, which is a change compared with L97. However, in the section on *Adapted education and equal opportunities* (ibid.:4-5), the curriculum states that:

Adapted education for each and every pupil is characterised by variation in the use of subject materials, ways of working and teaching aids, as well as variation in the structure and intensity of the education.

Variation is recommended, but the focus on local resources in the previous curricula is not spelt out clearly, even if schools in the last section of the Quality Framework (ibid.:6-7) are requested to develop a good relationship with the local community.

As mentioned above, the subject curricula contain so-called *competence aims* that the pupils will have to meet at certain stages during their compulsory schooling. For the first stage, lower-primary school, which comprises years 1 to 4, competence aims are stated after Year 4, apart from three subjects – Norwegian, Maths and English, where there are also competence aims after Year 2. For the next two stages, upper-primary and lower secondary, comprising Year 5 to 7 and Year 8 to 10, respectively, there is no such differentiation. The competence aims for all subjects are stated after Year 7 and Year 10, which in both cases is at the end of the stage, and with respect to lower-secondary, also at the end of compulsory education.

The rhetoric from national level when LK06 was launched was that the competence aims should be very *clear* with regard to which competences pupils should have at the different stages during their compulsory education (Engelsen & Karseth 2007), thus making it easy for the teachers to assess whether the pupils possessed the required competences. However, research shows that neither do all competence aims fulfil this requirement (Engelsen 2008; Rønning *et al.* 2008; Dale & Øzerk 2009), nor do teachers interpret the aims as clear and concise (Hodgson *et al.* 2010). Instead, local curriculum work, which is also a requirement in LK06, is needed to develop the competence aims into units which in a better way than the original aims can guide teachers' daily planning and teaching (*ibid.*).

The objective-driven curriculum model for the subject curricula in LK06 has also led researchers to claim that the tendency to move away from the tradition of progressive education and becoming more influenced by what Telhaug (1997) called *restorative ideas*, has been strengthened with LK06. Ottosen (2009) suggests that this may be due to neoliberal ideas which have become influential even in the Norwegian Labour party, previously an important source for the inclusion of progressive education ideas in the Norwegian curricula since N39. This may explain why, even after the conservative-centre coalition government stepped down in 2005, no major changes were made to the subject curricula by the new Labour dominated coalition government before the new curriculum was launched in 2006 (*ibid.*).

*Before we were supposed to make flowers, dance and climb trees. Now it is all about the subjects.*⁷

The above citation is from a recent article in our local newspaper where some teachers are commenting on the changes from the previous curriculum, L97, to the current one, LK06. The context is that the newspaper is presenting results for pupils in Bodø municipality from last year's final exams in compulsory education and results from national tests, both of which have improved considerably over the last few years. The teachers are very positive about this and relate it to the new curricular approach in LK06. The reason I include the citation is because it says something important about how some teachers now view L97, in hindsight, and what they conceive of as the demands in the current curriculum. The latter is particularly interesting since the data collection for the present study was conducted during the second year of the implementation of the new national curriculum, LK06, and the data must be interpreted against this background, something which I will return to below.

⁷ Source.: *Avisa Nordland* on April 29th 2010

3. RETROSPECT AND PROSPECT: THE FOCUS OF THE PRESENT STUDY

3.1 INTRODUCTION

In the previous two chapters relevant sources with regard to active learning influences in Norwegian national curricula have been investigated and I have also presented how active learning ideas and approaches have been promoted in the national curricula since before WW2 up until the current curriculum, LK06. Through these investigations a set of ideas and aspects have been established, and it is these which will now form the test ground for studying teachers' understanding of active learning. Research findings presented in Chapter 2 have shown that there has been a relative non-implementation of active learning aspects of national curricula in Norwegian schools. Due to the decisive role teachers play in curriculum implementation (cf. Pajares 1992), it is important to study how teachers view active learning and what they think about it, both in principle and in practice, to be able to understand why, in spite of a long-standing focus on active learning, this has not resulted in such approaches being implemented to any major degree in Norwegian compulsory education. In this chapter I will therefore summarize the findings from the previous two chapters as a basis for developing a framework for the present study of teachers' thinking about active learning in the current context.

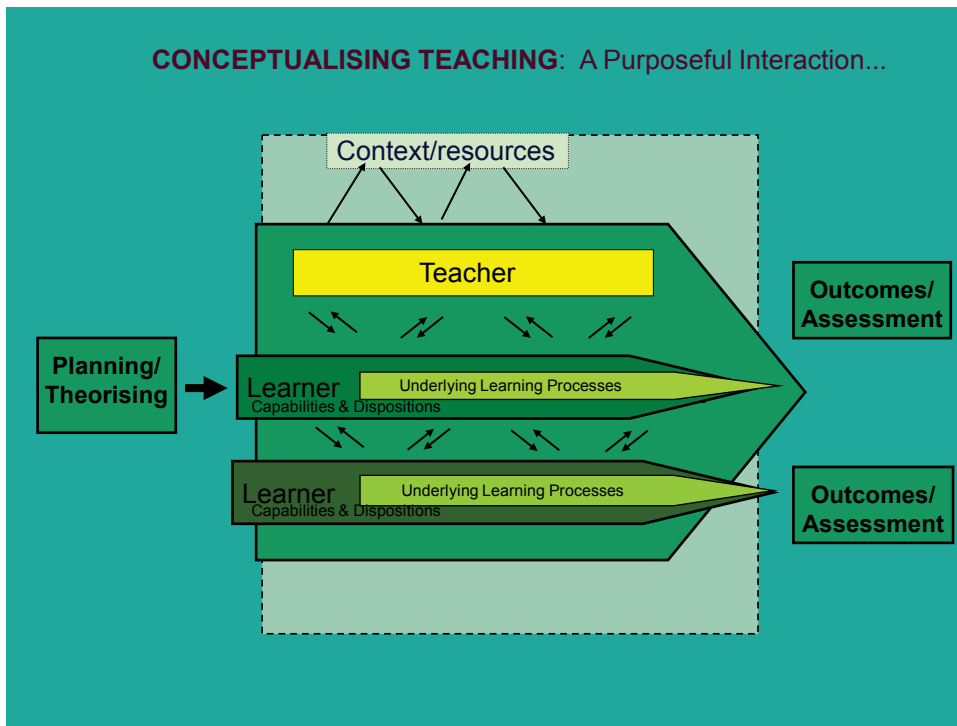
It is a rather messy picture that appears as a result of the study so far. Not only are different terms used to name the different movements that one may claim are associated with what I have decided to name active learning; progressive education, reform pedagogy, child- or student-centred education etc., but the different movements or developments within educational theory relevant to active learning also vary with regard to which messages they convey and which approaches they support. To be able to investigate Norwegian teachers' understanding and views of active learning, an organising framework is needed to integrate the different aspects that appear as a result of the investigation into theoretical background and previous and current Norwegian curricula.

3.2 THE CONCEPT OF TEACHING

The investigation reported above into theory and Norwegian curricula reveals that the term *active learning* is not only about learning, but is an *educational* idea. Active learning aspects are presented in the context of promoting learning through *educational provision*, and, one may claim, are as such about *teaching*, since teaching is at its most basic the making of systematic attempts to promote learning (Hirst 1971; Fenstermacher 1986; Tomlinson 1995). To develop a framework suited for investigating teachers' understanding of active learning, a pedagogical framework which allows for investigation of the different *facets* that are involved in teaching is therefore needed.

Teaching is, as mentioned above, activity that is designed with the intention to promote learning, even if it may not always succeed in doing so. Learning in this respect means the acquisition of or change in capacities or tendencies through action or experience (Tomlinson 1995). Another important quality of teaching is its *interactive nature* (Hirst 1971; Fenstermacher 1986; Tomlinson 1995). As expressed by Tomlinson (1995) it involves a teacher and one or more learners who interact in a learning/teaching process which is designed to promote the learners' acquisition of the intended capability. This teaching – learning process happens in a particular context, and with the use of resources, whether these are concrete resources in the form of a book or other teaching tools that a teacher might use or facilitate pupils' use of, or resources that the teacher himself/herself possesses.

Tomlinson summarises the facets of teaching (ibid.:10) and states that they include, as mentioned above: *teacher, learner, intended learning outcomes, a teaching/learning process* and a *context* which includes *resources*. He emphasises that these facets cannot be seen as being in isolation; instead they interact and influence each other throughout the process. Since teaching is a purposeful activity which aims at certain intended learning outcomes, it will have to include some form of planning activity on behalf of the teacher, either in advance of the teaching activity, or as an integral part of it, depending on the pupils' responses. A visual representation of this view of teaching and its facets is given in Figure 1 below.

Figure 1 Teaching as purposeful interaction: key elements⁸

It may be noted that there is no facet called *content* (cf. Fenstermacher 1986 and his generic concept of teaching) on its own in this framework, and this is due to the possibility that content could be seen as being included in several of the facets in our framework. Content could firstly be seen as being included in the *intended learning outcome(s)*, the knowledge or skill that it is intended that the learner should acquire, secondly it can be argued to be part of *the teaching - learning process*, i.e. what you are dealing with and what takes you into the learning activity, and, finally, it is closely related to *resources*, what you are doing something with or on. Broadly accepting the basics shared by Oser and Baeriswyl's (2001) *Choreographies of teaching and learning* and Tomlinson's (2008) *Learning Promotion Potential* frameworks, the figure also includes a focus on the *underlying learning processes*, i.e. what is going on inside the pupil, the invisible processes that the learning activities are trying to stimulate and support.

⁸ The figure was developed by Peter Tomlinson and presented at a seminar on active learning in Bodø in December 2005.

3.3 ACTIVE LEARNING - PEDAGOGICAL FRAMEWORK

The teaching facets discussed above form the basis for my summary of active learning aspects in educational theory and their representation in Norwegian national curricula in Table 3 below. The main purpose here is to present a mapping of the framework that later will guide the presentation of findings in Part III. For a full discussion of the more detailed aspects of active learning I refer to Chapters 1 and 2 above.

Table 3 Active learning aspects in educational theory and Norwegian national curricula for the different teaching components

Teaching facets	Aspects of AL in Educational theory	Aspects of AL in Norwegian national curricula
Planning	Pupils and teacher plan together (Dewey, Köhler, Illeris). Pupils decide and plan own learning themselves (Rogers).	Pupils take part in planning (all curricula).
Intended learning outcomes (ILOs)	Real-life, authentic issues (Dewey, Rogers and Piaget). Cross-curricular (Dewey, Piaget, Illeris)). Build on pupils' experience and existing knowledge (Dewey). Social and cultural context should influence content and methods (Bruner). Relevant for the pupils and suited for group work (Illeris).	Real-life, authentic issues (N39). Democratic attitude and skills (all curricula). Cross-curricular (M74, M87, L97). Locally based (M74, M87, L97, LK06). Build on pupil knowledge and experience (all curricula).
Assessment	Pupils assess their own learning (Rogers). Teacher assesses pupil progress (Vygotsky). Pupils self-assess with support from teacher (Illeris).	Pupils assess own work, assisted by teacher (M74, M86, L97, LK06)
Pupil activity and interest	Learning through experience (Dewey). Pupils in control; self-initiated learning (Rogers). Collaborate with others (Vygotsky). Pupils have to be active (Köhler; Activity pedagogy). Pupils experiment and learn through discovery (Rogers, Piaget). Pupils discuss with teacher (Vygotsky).	Collaborate with others through group work and project work (M74, M87, L97). Experiment and learn through discovery (all curricula). Discuss with teacher and other pupils (all curricula)
Teacher activity	Leader of learning activities (Dewey). Teacher is only facilitator (Rogers). Teacher is an active facilitator and must use pupil-active methods (Piaget). Teacher facilitates outer framework and follows up (Illeris).	Knows pupils needs and abilities and adapts accordingly (all curricula). Teacher as guide or facilitator (L97).
Learning resources	Concrete, authentic resources (Dewey, Rogers).	Varied, concrete, real-life resources (all curricula).
Underlying learning processes	Pupils construct their own knowledge; assimilation and accommodation. Pupils develop mentally through stages (Piaget). Pupils construct their knowledge through collaboration (Vygotsky, Bruner). Pupils develop through stages, but can be assisted to move from one stage to the other (Vygotsky). Pupils reflect on own learning – development of meta-cognitive skills (Vygotsky).	Pupils construct their own knowledge (all curricula). Meta-cognition (M74, M87, L97, LK06).

What we have derived from the discussion in Section 3.2 above are the following broad facets⁹ of teaching which are presented in the left-hand column of the table above; *planning*, *intended learning outcomes*, *assessment* of these outcomes and of learning progress, *teacher* and *learner activity* in the teaching–learning process, *learning resources*, and finally, the *underlying learning processes*.

As we can see from the middle column in the table above, all facets have *active learning aspects* derived from the discussion of educational theory in Chapter 1, and also from the investigation of Norwegian national curricula in Chapter 2, presented in the right-hand column. The fact that all facets include active learning aspects strengthens the contestation that active learning is, in fact, about teaching in its basic sense, about systematic attempts to promote learning.

As the summary of aspects in the middle and right-hand column shows, there are some aspects that are shared by different educational theories and which also feature in the Norwegian national curricula, even if the actual suggested implementation may differ somewhat from one source to the other. With regard to pupil participation in *planning*, for instance, Rogers represents a more radical approach in suggesting that pupils themselves should decide and plan their own learning activities, while others support pupil *participation* in a planning process governed by the teacher. It is this latter version which the Norwegian national curricula have adopted.

With regard to *intended learning outcomes*, there is a focus on real-life issues, authenticity and that facilitation of pupils' development of knowledge and skills should build on their existing experiences and already acquired knowledge and skills (middle column). This focus is followed up in all Norwegian curricula which have been studied (right-hand column). Since real-life issues typically require content from several disciplines or subjects, cross-curricularity is proposed, something which is supported explicitly in most curricula, and which is also strengthened through requirements regarding local curriculum planning. Connected to the focus on real-life issues and

⁹ The colours correspond with the later presentation of findings in Part III.

authenticity is the promotion of usage of concrete learning *resources*, instead of abstract representations in books.

With regard to the two central actors in the teaching process, *the teacher and the pupil*, there is a focus on pupil empowerment. Pupils should be engaged as active participants in their own learning process, and gradually be able to take more and more responsibility for their own learning activities. Here Rogers (row four, middle column) also represents, together with the most extreme interpretations of the Danish project movement, a more radical version in insisting on pupil control and little intervention by the teacher unless the pupil asks for assistance. The teacher as facilitator (row five) has been central in Norwegian curricula, in particular in L97, where teachers' interpretations of this focus resulted in a situation which echoed Rogers to a large extent (cf. Section 2.3.4 above). This kind of interpretation of the teacher as a passive onlooker to the pupils' learning process was, however, something Dewey warned against in the early years of progressive education (cf. Section 1.1 above).

Active learning aspects derived from educational theory concerning the learners' *underlying learning processes* (final row, middle column) focus on pupils' constructing their own knowledge by engaging in experiments and other kinds of discovery activities (row four, middle column). While the early proponents of progressive, child-centred education focussed mainly on the individual's construction of his/her knowledge, later influences, such as Vygotsky and Bruner, give importance to the social construction of knowledge through collaboration and discussion. Such influences can be traced in Norwegian national curricula's promotion of group work (M74) and, later, project work (L97).

As mentioned above, pupil empowerment through partaking in decision-making and gradual development of independence in and responsibility for own learning process, is a shared aspect. To become an independent learner who is able to make good choices regarding own learning work, the development of meta-cognitive skills is important, something which we find emphasised in the educational literature (final row, middle column), and followed up in Norwegian national curricula during the last

decades, and in particular strengthened in the current national curriculum, LK06 (final row, right-hand column).

All aspects presented in Table 3 above are potentially important when investigating teachers' understanding and views of active learning, something which means that when we are conducting the study we will want to track if, and to what extent, these aspects feature in the teachers' views. The aspects become the framework which we use for mapping what teachers have to say about active learning, both spontaneously, through an open-ended approach, but also through a systematic investigation of teachers' views of active learning by way of supplied aspects derived from the investigation in the two previous chapters and summarised in the table above. I will leave the details regarding these approaches until I have discussed further background regarding the study of teacher thinking and methodological approaches to studying teacher, which is what I turn to in the next chapter, Chapter 4.

4. THEORETICAL AND METHODOLOGICAL PERSPECTIVES INFORMING THE PRESENT STUDY

4.1 INTRODUCTION

Having decided to investigate Norwegian teachers' ideas and evaluations of active learning, it becomes important to take account not only of any previous findings relevant to this area, but also of the considerable developments that have occurred in relation to what are arguably the two main aspects of such an investigation: (a) theoretical perspectives on teachers' thinking and action, and (b) issues and perspectives concerning appropriate research methodology. It is recognised that theoretical perspectives on teacher cognition, on the one hand, and research methodological strategies and assumptions with respect to their investigation, on the other, are often very closely intertwined, so that it can sometimes be difficult even to decide under which heading a particular perspective belongs. Nevertheless, it is hoped that by introducing these two sets of considerations in separate sub-sections, a clearer picture will be presented of their integration in the present context. Any insights gained should be useful for a subsequent consideration of empirical work around teachers' conceptions and stances in the area of active learning, in the final section of this chapter.

4.2 THEORETICAL PERSPECTIVES REGARDING TEACHER KNOWLEDGE AND THINKING

Although research into teachers' thinking or "professional knowledge" has taken place largely since the early 1970s, with Wittrock (1986) pointing out that prior to his third edition of the *Handbook of Research on Teaching* previous *Handbooks* had not contained chapters analogous to the teachers' thought processes entry in his, this is an area that has nevertheless grown enormously. It not only arose in part from the take-up of cognitive psychology in education, but has also in due course taken on board considerable developments in cognitive theorising seen in this period, not least regarding relationships between cognition and action, that have arisen from a variety of sources and disciplines. A number of useful reviews of such work are available, including Carter (1990), Calderhead (1996) and Munby, Russell and Martin (2001). The latest of these, Munby *et al's* chapter, identifies a multiplicity of approaches in the

area of teacher professional knowledge and its development, with these authors tending to emphasise various kinds of issues and tensions existing amongst such approaches, and perhaps implying a pluralist stance. Nevertheless, whilst adding that some of these positions are themselves subject to critiques and alternative versions, Tomlinson, Hobson and Malderez (2010) claim that it is equally important on the other hand to recognise that, in various ways and to varying degrees, these perspectives overlap and combine to support a number of general themes, even if some of these in turn have difficult relationships. Tomlinson *et al.*'s somewhat extended tabular version of the Munby *et al.* range of perspectives offers an economical summary and is therefore reproduced below as Table 4.

The general themes Tomlinson *et al.* claim (*ibid.*) to discern as supported or at least recognised by several amongst these perspectives on teacher professional cognition and learning are as follows:

- (a) Professional learning requires practical action and experience.
- (b) Importance of explicit knowledge and conscious reasoning/reflection.
- (c) Intuitive character of developed know-how.
- (d) Power of learner-teachers' pre-conceptions.
- (e) Developmentally staged nature of professional learning.
- (f) Promotion of responsible autonomy.

Table 4 Recent perspectives on teacher professional knowledge and its acquisition, from Tomlinson, Hobson and Malderez (2010)

Perspective	Central features
1. Reflective practice	Emphasis, associated particularly with Dewey, on the importance of conscious problem-solving for effective practical action; Schön's extension to include thinking within the course of action as well as outside it, plus his rejection of the traditional idea that professional capability is simply the application of abstract knowledge.
2. Craft knowledge	(Teaching) craft as situated intelligent know-how involving intuitive sensitivities, awarenesses and action capabilities; anchored in personal experience and educable through reflection, but not reducible to explicit rules, principles or routines. Associated particularly with Grimmett, who draws on aspects of 1, 7, 11 and 12.
3. Personal practical knowledge	Associated particularly with Elbaz; strong overlap with 2, but recognition of explicit theory as well as theory embedded in action. Connelly & Clandinin emphasize the embedding of knowledge in teachers' personal narratives and metaphors.
4. Practical reasoning	Emphasis mainly by philosophers on role of explicit critical thinking and argument in deciding on and justifying educational actions.
5. Explicit teacher knowledge	Focus on what types and content of declarative knowledge are required as a basis for effective teaching. Associated particularly with L. S. Shulman's emphasis on integration of subject knowledge with pedagogical insight.
6. Values and personal engagement	Teaching seen as a craft that is inherently moral by way both of affecting persons and requiring commitment and motivation from persons. These are thus integral aspects of teacher professional capability.
7. Constructivism	Originally a psychological theory that human awareness, knowledge and capability are formed not just passively by the impact of external reality, but by an interplay between this and what the person brings to the encounter with it and how they actively think about issues. Disagreements amongst proponents as to how far the influence of such individual preconceptions and processes can be modified by outside/social agents, and as to the epistemological consequences of a constructivist psychology.
8. Study of Expertise	Recently developed psychological investigation of typically complex human forms of capability and their development, typically by means of expert-novice comparisons.
9. Cognitive psychology of skill	Post-second world war psychological study of skill and skill acquisition, originally using information-processing models and focussing on simple manual activities, later extending to more complex capacities, including social skills.
10. Situated cognition and learning	Psychological-anthropological stance arguing that knowledge and capability are gained within and relate to particular social and historical situations, as opposed to dealing in abstract generality. Cognitive capacities are seen as typically distributed across and involving coordination amongst members of social groups, and inherently involving use of tools, whether physical or conceptual.
11. Implicit cognition and learning	Philosophical tradition, mainly associated with Ryle, emphasizing that intelligent action capability or "knowing how" does not necessarily involve explicit declarative knowledge or "knowing that". Recent experimental psychological research confirming not only that cognitive processes involved in action may occur unconsciously, but that acquisition of some kinds of capability may occur without conscious deliberation.

Whilst it is important to recognise the tensions and even potential contradictions amongst some of these themes, it is also no less important to see the possibilities not just of consistency and reconciliation, but even of mutual support and joint application. For example, when it comes to understanding teachers' classroom action, theme (b) *importance of explicit knowledge and conscious reasoning/reflection* might appear to be in competition with theme (c) *intuitive character of developed know-how*. However, a healthier conclusion would arguably be that neither principle can be taken as the *sole* basis for investigating such action: they ought if possible to be combined (cf. Tomlinson 1999a, 1999b). There is also the possibility that different themes may apply more centrally or even exclusively to different aspects, context or phases in the development of teacher cognition and action, so that deciding which themes/principles are most relevant would depend on what is driving the researcher's inquiry.

This applies to the present investigation in that, as indicated in the previous chapters, one concern prompting it was to understand why, in the face of such a sustained history of government attempts to promote what have been called active forms of learning in the Norwegian educational system, such approaches do not appear to have been taken up at all widely at classroom level. Whilst many factors at different levels might be involved, it was argued that, as supported by a well-known paper by Pajares (1992), teacher agency is particularly worthy of investigation in that it represents an obviously significant locus of influence in the system, through which many other factors may have their effects. In terms of the themes/principles just reported as emerging from teacher cognition research, the author would argue that such teacher agency is likely to centrally involve conscious decision-making and planning, which makes teachers' explicit thinking concerning active learning an obvious target at least for an initial investigation in this area.

Apart from this specific argument, the general importance of conscious reasoning and declarative knowledge can also be stressed. Thus, in their collation of approaches and themes in teacher cognition and development, Tomlinson *et al.* (2010) see explicit knowledge and conscious reasoning as *central emphases* of four of the eleven major perspectives they list (see Table 4 above), namely (1) reflective practice, (5) explicit

teacher knowledge, (4) practical reasoning; (9) cognitive psychology of skill. They also see this theme as *at least included* within: (3) personal practical knowledge, (6) values and personal engagement, (7) constructivism, and (8) study of expertise. I would argue that conscious thinking may also be seen as a component, even if often implicit, of the situated cognition approach. In any event, because of their potential implications for research methodology and interpretation in the intended investigation, at this point it seems worth extending attention to constructivism and to ideas about human conceptualisation.

4.2.1 Psychological Constructivism

A major influence in the modern psychology of cognition, the set of ideas generally referred to under the title of *constructivism* was initially associated particularly in developmental and educational psychology with the work of Piaget (1954, 1971) and in the broader area of social and personality psychology with the contribution of Kelly (1955). At the core of this viewpoint and well supported by empirical evidence (Tomlinson 1981) is an emphasis on the active role of humans' existing cognitive resources in both perception and thinking.

There is widespread support for the view that rather than simply perceiving reality through a process of passively undergoing impressions caused exclusively by external reality, humans bring existing concepts and expectations to their encounters with the world. They interpret and literally 'make sense of' the world by tending to fit incoming sense data to their existing experiences and ideas, and there is evidence that this may often occur at an unconscious level, as in the case of some perceptual illusions (Gregory 1970). Such experiences and concepts, or as Kelly (1955) influentially termed them, constructs, are likely to vary across individuals as a function of the particular experiences and settings from which they have been generated, as well as to the resources those individuals themselves brought to such encounters. Furthermore, the ensuing conceptual change focus of recent developmental and instructional psychology (cf. Schnotz, Vosniadou & Carretero, 1999) has correspondingly found that once established, changing people's conceptions and ways of thinking is typically difficult, a finding which extends to teachers' thinking (Richardson 1997).

Recognising the constructive nature of human cognition implies, in common with the grounded theory approach introduced further below, the considerable importance in terms of research methodology of accessing the particular ways in which individuals do actually frame their experiences and decision making, rather than assuming, for instance, that a common set of conceptualisations and outlooks exists or, more subtly, that commonality of terminology necessarily indicates sameness of meaning and concept. Strategies for achieving such access are therefore needed in any study of the sort envisaged here.

Having recognised the importance of constructivist ideas within the sort of pluralist outlook recommended by Tomlinson *et al.* (2010), a qualification may be appropriate. Namely, in some research methodological circles, particularly amongst some qualitativist (see below) writers such as Smith and Deemer (2000), constructivism has been taken further to imply an anti-realist emphasis on subjectivity. It is therefore perhaps important to point out that the insights being taken on board here have been referred to as *psychological* constructivism in order to emphasise that they concern only the nature of the psychological processes involved in the interaction between person and world, both of which the researcher takes to be real, though often difficult to access (Bickhard 1995; House 1991; Robson 2002).

4.2.2 Conceptual Cognition

Given my general intention to investigate Norwegian teachers' conceptions of active learning, it seems important, given its possible implications for the intended study, to consider what is involved in human conceptualisation. Whilst everyday discourse includes a wide range of elements and usages touching on this topic, it is one that has been central to the discipline of philosophy for centuries, and has seen considerable modern developments, in particular from the combination of philosophy with cognitive psychology and other fields within cognitive science (cf. Gardner 1985; Margolis & Laurence 2008).

The Classical View

Traditionally, 'concepts', 'conceptions', 'conceptualisation' have been associated with a number of linked strands, centrally including: grouping and classifying elements and

aspects of the real world, the meaning of words and symbols, and the nature and currency of thinking, in particular generalised thinking. Underlying all this is the fact that as pointed out long ago by Bruner, Goodnow and Austin (1956), humans would be overwhelmed if all distinguishable parts and features of reality had to be treated individually, whereas to the extent that things do share features, they will tend to behave in the same ways, and it is useful to deal with them in such classes. Thus the classical view of concepts (cf. Tomlinson 1981; Margolis & Laurence 2008) was that things may be classified, i.e. grouped on the basis of common characteristics which they share and which thereby define group membership or exclusion. Such classification can be communicated socially through language, by way of words labelling such concepts, so that the meaning of such a term, the concept, has two aspects: (a) the features or criteria distinguishing between members and non-members of the concept class – which have been variously referred to as the *sense*, *definition* or *intension* of the concept – the 'idea' side, and (b) the actual entities that possess such features and are thus the members of the class - which were labelled the *reference*, *instances* or *extension* of the concept - the 'reality' side.

The classical view tended to be rationalistic in the further sense that it tended to be assumed not only that particular concepts could in principle be defined in terms of simpler concepts, but that human beings are consciously aware of and can explicitly communicate the nature of their ideas, i.e. the definitions of their concepts. It was recognised that such definitions might be complex and have varying kinds of criteria, for example some criteria might be sufficient on their own, others might only be part of a range of necessary partial criteria.

Although we shall see below that the straightforwardness of the classic view has been somewhat modified by later developments, it does offer some lasting insights that may be of use in studies such as the present one. Firstly, it allows us to distinguish between a word and a concept (though relationships between language and conceptual thought continue to be a topic of some controversy). Secondly, following from this and linking with psychological constructivism, it raises the possibility that different conceptions may be associated with the same word label. Thirdly, it raises the possibility that

people may choose to characterise their concepts either by explaining definitional criteria or by citing instances (or both).

Later Developments

A number of developments have modified the picture presented by the classic view of concepts, their deployment and their development. In philosophy, the later work of Ludwig Wittgenstein (1953) tended to undermine the formalism of the traditional position. In particular Wittgenstein argued against our tendency to assume generality, i.e. that concepts involve universal criteria possessed by all members of the class involved. He was well-known for the alternative view that a more indeterminate form of similarity may be involved in concept membership which he labelled 'family resemblances', citing his now classic example 'the Habsburg look', which may involve alternative subsets of features such as the Habsburg chin, or the Habsburg nose, the Habsburg forehead. He also emphasised the often intuitive character of conceptualisation and conceptual communication as depending implicitly on extensive shared experience or 'forms of life'.

As well as being the topic of philosophical controversy, classical concept theory has come under increasing pressure from findings in cognitive anthropology and psychology over the last 30 years (cf. Murphy 2002). Rosch's (1978) work, for example, echoes Wittgenstein in indicating that many 'natural concepts' such as dog, cat, child, are deployed on the basis not of a set of explicit defining criteria which the concept user can articulate and use to make clear-cut decisions about class membership, but rather by way of an implicit 'prototype' or 'generalised template' which instances may match more or less fully. Candidates closer to the prototype tend to be seen as more typical members of the class, and are identified more quickly and confidently. Such findings fit well with two other developments in psychological theorising and research: (a) considering cognitive processing in terms of models of neural networks operating at a more fine-grained level of detail than the traditional 'mind-as-symbol-container' and (b) evidence in a number of forms not only that human cognitive processes may occur unconsciously, but that so also, concept learning can occur implicitly (cf. Tomlinson 1999a).

Recent years have seen increasing influence of the idea of 'situated cognition' (Brown, Collins & Duguid 1989; Lave & Wenger 1991), the idea that the 'currency of thinking' is not mental abstractions, so much as relatively concrete representations, and that their deployment may be very closely tied to particular action contexts. Whilst this view can cite long-standing experimental evidence (e.g. Wason & Johnson-Laird 1972) considerable controversy remains concerning the degree of concreteness - generality of such cognition (cf. Anderson, Reder & Simon 1996, 1997; Greeno 1997).

Margolis and Laurence (2008) argue that pluralism is in order regarding issues about conceptual structures, in that different features of conceptual structure may coexist, but be relevant to different kinds of concept-using activity and context. Whilst the material in this section clearly cautions against expecting readily provided, clear-cut abstract personal definitions of the meaning of active learning in response to direct questions, its historical status as an issue in and part of a human professional culture (of education) rather than it being a simple, concrete physical concept may make it less likely that teachers who are questioned about it will suffer extreme challenges to explicit articulation. Thus, there seems good reason to think that it would be worthwhile to take an explicit approach to investigating teachers' ideas of active learning, as long as one both provided unhindered opportunities for them to indicate how they relate to the subject, whether by way of constituent aspects or particular instances of the idea, and supplied possibilities they might for any reason not articulate naturally. Below I shall indicate a research interview method which combines such features.

4.3 APPROACHES IN EDUCATIONAL RESEARCH

In addition to situating the framing of the present study in relation to theoretical perspectives in its chosen field of teacher cognition, it is arguably also important to situate its methodological approach in relation to the more general, if also somewhat stormy recent history of thinking about basic assumptions in educational and social research. The present section will therefore start by doing this at a relatively general level, and will move in subsequent subsections into a consideration firstly of the

relevance of the grounded theory approach, and secondly, of more specific issues of interview methodology.

4.3.1 Quantitative and Qualitative Aspects of Educational Research

In the last three or four decades, educational and social research has seen the development of an increasing range of methods and approaches, along with thoroughgoing reflection on their differing characteristics, underlying assumptions and claims. A number of main stances emerged, but overall, many writers came to see things in terms of a 'war' between two basic 'paradigms' or sets of ideas: a previously dominant *quantitative paradigm* and a newer *qualitative paradigm* (Donmoyer 2001). Recently there has been considerable reappraisal of this way of thinking and increasing calls to move beyond what many now regard as a simplistic dichotomy, towards more flexible combinations of methods and approaches suiting particular research issues. However, in order to understand this newer position and because in any case 'paradigm talk' and qualitative-vs-quantitative differences are still very much part of educational research discourse, it is important to examine the history of the proposed distinction.

The Quantitative Tradition

Exceptions and minority positions can be found, but by the 1950s and 60s the dominant tradition in educational research in the English-speaking world was one that very much stressed the need for rigour and precision. The field generally saw itself as an applied branch of social science, looking in particular to psychology and sociology for its ideas and principles. Although sociology had seen early disputes concerning appropriate research assumptions and methods, psychology had long striven to emulate the successes of the natural sciences, in particular physics, by modelling its methods on what it saw as theirs.

Thus educational researchers generally took for granted an emphasis on experimental and survey approaches, seeking numerical data generated by precise measurement of clear, pre-defined variables. Correspondingly, results would be summarised using descriptive statistics and analysed with a view to generalisation by the application of inferential statistics tests. As one influential pair of writers complained:

A newcomer to educational research (...) might be excused for concluding that all he [sic] needs is a knowledge of statistics. (Nisbet & Entwistle 1970:7).

Given this centrality of numerical data and statistical analysis, it is not surprising that this tradition came to be characterised as ‘quantitative’.

The Qualitative Turn

Increasing awareness of other research traditions and strategies contributed to the arrival around the late 1960s, of a range of influences and developments in educational research, a central impact being that of the ‘new’ cognitive micro-sociology (Young 1980; Cicourel 1973). This shifted attention from systems and social structures to interacting individuals seen as personal agents, whose social actions were to be understood in terms of what made sense to them, rather than in terms of external causes acting upon them. In line with the ideas of phenomenology, a philosophical approach stressing the independence and uniqueness of subjective, ‘lived’ experience (Kockelmans 1967; Holstein & Gubrium 1994), intentions were to be understood in relation to the differing ways particular individuals experience their situations.

For a while this new movement was known by the label of the anthropology-based research methodology it favoured: *ethnography*, i.e. sustained observation as a participant observer interacting naturally with others in the midst of the real-life situation, or *field*, under investigation (see Wilson 1984). An influential linked strand was the *grounded theory* approach of Glaser and Strauss (1967), to which I return in more detail below.

Correspondingly, in contrast to the quantitative tradition’s preference for economical numerical summaries and statistical test coefficients, the data yielded by these newer forms of research tended to be in the form of extended, rich descriptions and accounts. The contrast was marked by referring to such procedures and this kind of approach as ‘qualitative’.

The Rise of 'Paradigm Talk'

During the 1970s and 80s, educational research saw not only the advent of further qualitative (in the above sense) strategies and ideas, but also explicit accounts of these developments and their underlying justifications by promoters of what was increasingly seen as a new and alternative movement to the traditional 'quantitative' approach. Such contributions tended to make use of a central idea from the influential work of the historian-philosopher of science Thomas Kuhn. Kuhn (1970) claimed that scientists in a given field tend to share what he referred to as a '*paradigm*', or set of core ideas and assumptions that in effect define the realm of interest and prescribe the sorts of problems and methods constituting 'proper' science. He then distinguished between two kinds of scientific activity: (a) '*Normal science*', i.e. science as traditionally conceived, namely the development and testing of hypotheses in the relevant domain, or, as he put it, 'solving the puzzles' framed by the paradigm; and (b) '*Revolutionary science*', i.e. changing the paradigm itself. Although new phenomena and insoluble problems may require such changes in underlying assumptions, paradigm shifts do not occur easily, because paradigms focus attention on certain issues and away from others, they do so largely implicitly and they bind and give identity to the science community in question. Kuhn also contended that new paradigms are 'incommensurable' with their predecessors. Paradigm change therefore tends to be rare and to be resisted by the existing community of scholars. If and when it does occur, according to Kuhn it tends to have many of the social characteristics of a revolution.

Many educational and social researchers saw the emergence of qualitative research methods during the 1970s as evidence that their field was undergoing such a Kuhnian 'paradigm revolution', with leading representatives of this stance such as Guba and Lincoln (e.g. 1985; 2000) arguing that the traditional and newer approaches differed not merely in methodological aspects of data gathering and analysis, but also, and more importantly, with respect to basic underlying assumptions. According to Guba and Lincoln, such contrasts included differing philosophical assumptions concerning the nature and appropriateness of scientific method, concerning what can or can't be known (epistemological stances) and even concerning issues as to what is actually real (ontological stances).

Thus, by the 1980s and into the nineties, educational research writing and teaching became increasingly dominated by this 'Kuhnian-inspired paradigm talk' (Donmoyer 2001), its implication being that researchers have to choose, all-or-none, between two totally contrasting paradigms, alternative packages of ideas and practices. The labels used for these alternatives varied depending on particular authors and which aspects of contrast were given prominence, but it was this *qualitative vs. quantitative* terminology that appeared to attain the widest currency as labelling for the alternative paradigms on offer - as illustrated, for instance, by the appearance of the first *Handbook of Qualitative Research* (Denzin & Lincoln 1994) and what Gage (1989) referred to as the ensuing 'paradigm wars'.

'Past the Paradigms'

In due course the educational research paradigm-dichotomy claims of writers such as Guba and Lincoln attracted critical examination (for example: Hammersley 1996; Pring 2000; Donmoyer 2001; Robson 2002). In this third phase debate shifted from argument between proposed paradigms to questioning the terms of such an argument.

So, for example, writers such as Hammersley (1993, 1996) have attacked the notion that the issues can be reduced to choice between two competing monolithic packages of ideas. The quantitative and qualitative 'paradigms' appeared namely to be seen by the paradigm view proponents (who were self-proclaimed qualitativists) as involving a collection of contrasts with respect to key features, including:

- (1) *Basic data*: Numeric dimensions in the quantitative paradigm, versus Non-numeric meaningful categories in the qualitative.
- (2) *Instances/Cases*: Many cases/replications in the quantitative paradigms, versus single case focus in the qualitative.
- (3) *Characterisation of Findings*: Descriptive statistics in the quantitative mode, versus rich ('thick') verbal accounts in the qualitative.
- (4) *Generalisation*: Use of probability sampling for representativeness and inferential statistics as bases for generalisation in the quantitative paradigm,

versus focus on particular cases and settings without concern for generalisation in the qualitative.

(5) *Artificialism/naturalism*: Artificial approach involving pre-defined variables and often interventional, experimental hypothesis-testing focuses in the quantitative approach, versus a naturalistic/exploratory/discovery orientation involving openness to the nature of the field in the qualitative.

(6) *Concept of the Person*: Positivist view of persons and behaviour as parts of the physical world in the quantitative approach, versus an interpretive approach to understanding personal action as guided by intention and meaning in the qualitative.

(7) *Ontology/Epistemology*: (naive) realist, absolutist assumptions in the quantitative paradigm, versus subjectivist/relativist stance in the qualitative.

However, Hammersley (1993) pointed out that it was by no means the case that one had to either take on all of the qualitative features, or all the quantitative features. Various mixtures of features might be used and which were appropriate would depend upon the nature of the context and questions under investigation. In this vein it could also be argued that some of the claimed features, particularly those attributed to the 'quantitative paradigm' were questionable oversimplifications. For instance, whilst positivist/externalist assumptions might have been key features of traditional psychological behaviourism, this could hardly apply to the currently dominant cognitive approach in psychology. Others such as Donmoyer (2001) questioned not just the applicability of the Kuhnian paradigm concept to educational research approaches, but also the coherence of some features of that concept as such, such as the claim of incommensurability between paradigms.

Consistent with the above, the last decade has witnessed an increasing trend towards a flexible pluralism in which researchers are recommended to select approaches and particulars of data-gathering and analysis according to the nature of the issues and contexts they are investigating, combining methods where appropriate (for example Mertens 1998; Robson 2002; Gorard & Taylor 2004). Without claiming that all relevant issues and tensions in this area have now been cleared away and 'solved', this flexible

pluralist stance is the one adopted by the writer and applied in the present research investigation.

4.3.2 Grounded theory and research interviewing

As indicated in Chapter 3, the general aim of the present research was to explore Norwegian teachers' ideas about and evaluations of practical learning. This focus and in due course the methods to be used in pursuing this goal were informed by the constructivism perspective already outlined in Section 4.2.1, a major concern being to find ways of getting at the teachers' own ideas in their own terms, and to avoid influencing the framing of their views, especially through the terms of any questions put to them. Nowadays in social/educational research circles, such an aspiration often tends to be associated (cf. Robson 2002:492) with the influential 'grounded theory' approach originally proposed by Glaser and Strauss (1967). The relationship of the present study to grounded theory will therefore be sketched by means of a brief review of this approach, before moving on to consider research interviewing as a potentially suitable data gathering method in this context, in particular the form of research interviewing proposed by Tomlinson (1989) under the label of 'hierarchical focussing'.

Grounded Theory

'Grounded theory' was an approach formulated by two American sociologists, Glaser and Strauss (1967), in reaction to the prevailing stance in their field at the time, which insisted that research studies should be informed by existing formal theory. However, real-life fields may not be readily catered for by existing theory, and the naturalism of deriving one's theory from an examination of the situation in question was very much in line with the early qualitative trends of that era (cf. Section 4.3.1 above). Glaser and Strauss developed quite specific procedures for data collection and data analysis, with these two aspects interacting and progressively mutually influencing each other during progressive revisiting of the research context, whence the title 'constant comparison' for this approach. Data analysis consists initially in seeking categories of information (properties or event types) of the phenomenon being studied (the *open coding* of the data). This followed by *axial* or *theoretical* coding, in which the researcher seeks connections and relationships between the categories. Finally, these interrelationships

are conceptualised and understood through *core* or underlying explanatory categories derived at this last stage of *selective coding*.

The present research was not intended to embody the above, relatively ‘full model’ of grounded theory analysis, though in seeking to explore teachers’ own ideas and terms, it may like many current studies be seen as following at least one aspect of what Robson (2002:492) called the ‘general style’ of grounded theory. In fact, as will be made clear below, the present study was built specifically on a research interview approach – hierarchical focussing – that was proposed independently of grounded theory, but by way of attempting to deal with a dilemma that seems in fact to have led, in the grounded theory movement, to a pronounced split in approach between the two original founders, Glaser and Strauss (cf. Charmaz 2000; Robson 2002).

Research Interviewing

Robson (2002) points out that grounded theory studies typically include the use of interviews. This is not surprising insofar as research interviews are intended to give the researcher access to what others feel about particular matters and think about the worlds in which they live and operate, where as King (1994:16) puts it ‘*a study focuses on the meaning of particular phenomena to the participants*’. Research interviews can, however, come in a variety of forms, with distinctions commonly being made between ‘structured’, ‘semi-structured’ and ‘unstructured’ versions, this variation being to some extent a matter of the ‘depth’ of response sought (Robson 2002).

Interviews can thus be flexible and useful tools of investigation that can provide rich and informative material. Unlike the questionnaire, the interview allows the interviewer to respond to and pursue particular lines of enquiry and to ask for further elaboration of the information offered by the interviewee. Miller and Crabtree (1999) suggest that minimal prompting and allowing the respondent maximum freedom to say whatever they like on a particular topic promotes ‘depth’ in the responses - a contrast to the responses gained from the fully structured interview, which is characterised by predetermined questions with fixed wording, pursued in a set order.

On the other hand, such flexibility carries the potential for a lack of standardisation and consistency across a number of interviews, and in traditional terms this may be seen as a threat to reliability and validity. Interviews are also time-consuming. The balance in relatively open-ended interviewing between accumulating insufficient and too much data can be difficult to judge. Issues of timing can also impact upon a prospective interviewee's willingness to participate and the number of interviews it may be possible to conduct. There are also matters of timing that impact upon the researcher. The issue of data preservation poses major dilemmas. Where the researcher takes notes, there is the issue of recording and organising these, as well as concern for data loss and selectivity. Where audio-recording is used, there is the issue of impact on the interviewee and the time and resources needed for subsequent transcription – as an indicator, Robson (2002) suggests that one hour of tape takes up to ten hours of transcription!

Interviews therefore demand careful preparation and thought. The interviewer must establish the lines of enquiry and the associated parameters of investigation as well as considerations of language and matters of interpretation. As Kvale (1996) has pointed out, interviews are a 'conversation' focussed upon a particular topic or theme of enquiry. Successful interviews depend upon social interaction between the interviewer and the interviewee and the central emphasis upon the use of language is one that the researcher cannot ignore. Not all individuals have the same skills and levels of articulation and people have different perceptions and interpretations of meaning. Yet this writer also contends that: *'There are no standard methods, no via regia, to arrive at essential meanings and deeper implications of what is said in an interview'* (Kvale, 1996:180).

Again, the interview presents particular issues associated with reliability and validity – not least because of human interpretation of language, understanding, context and personal priorities and agendas. The impact of such idiosyncratic interpretations and values may be presented as two-stranded. Firstly, there is the extent to which the researcher follows their own priorities, biases and interpretations at the expense of those offered by the interviewee. Secondly, there is the extent to which the researcher

pursues the priorities, biases and interpretations of the interviewee at the expense of their own research agenda.

Thus in order to establish and employ a meaningful method for data accumulation and analysis, not only is it essential that the researchers recognise this double-headed challenge and the potential interchangeable use of terminology and language, but also that they be clear about their own definitions and parameters within the research focus.

4.4 HIERARCHICAL FOCUSING

In the face of this latter challenge and the problem that respondents may hold certain construals, yet not spontaneously externalise them, Tomlinson (1989, 2003) proposes 'Hierarchical Focussing' as a research interviewing technique that allows a strategy for 'having it both ways'. That is, the approach is designed on the one hand to minimise any influence on the interviewee's framing and responding, and to facilitate expression of the interviewees interpretations and understandings, whilst on the other hand nevertheless still managing to access all those aspects of the domain the researcher considers important to her research questions.

As its title indicates, this takes the form of setting up a research interview agenda in the form of a hierarchical map setting out aspects of the topic from the more general to the more specific aspects embedded within these. These aspects are converted into questions and the interview commences with the posing of a relatively global, i.e. minimally framed, question. The respondent is invited to develop their responses in their own terms, which could in principle lead to them covering the whole of the researcher's agenda. However, to the extent that this does not happen, and only to that extent, the terms of the hierarchical structure may be introduced and used as further prompts and guidance, but going from more global to more specific. In this case, the researcher still adopts a contingent, general-to-specific stance, introducing progressively more specific items along a particular agenda branch only as necessary in order to raise and introduce the researcher's pre-chosen sub-topics to the interview, and thus ensure coverage of the researcher's topic agenda.

In general terms, the structure flows from the general to the specific, with the interviewer only raising topics if they are not covered spontaneously by the interviewee. Thus the researcher is in principle able to address what they want/need using a strategy designed to influence the respondent as little as possible. It is possible, for example, that in some cases one or two relatively general/ high-level sub questions may suffice to prompt complete coverage of the whole agenda. On the other hand, the approach allows for the possibility that a respondent may, for whatever reasons, fail to deal with a quite extensive range of agenda aspects until actually prompted explicitly and directly.

Tomlinson (1989:162) provides the following overview of the process principles underpinning the technique:

1. *Carry out and explicitly portray an analysis of the content and hierarchical structure of the **domain** in question as you, the researcher, construe it.*
2. *Decide on your research focus: identify those **aspects and elements** of your topic domain whose construal you wish to elicit from interviewees.*
3. *Visually portray a **hierarchical agenda** of questions to tap these aspects and elements in a way that allows gradual progression from open to closed framing, combining this as appropriate with contextual focussing. Include with this question hierarchy a **skeleton of the same structure** for use as a guide and record.*
4. *Carry out **the interview as open-endedly as possible**, using the above strategies within a non-directive style of interaction so as to minimise researcher framing and influence. Tape record the proceedings.*
5. *Make a verbatim transcript and analyse the protocols, with use of the audio tape record where appropriate.*

Further practical detail of hierarchically focussed interviewing is provided in Tomlinson (2003) and issues involved in deciding whether to use this approach are covered by Hobson (1998).

The hierarchical focussing approach seems unique in seeking to specifically address the framing versus coverage dilemma referred to above. As indicated at the beginning of Chapter 3, such a double concern lay at the centre of the present writer's interest, since her intent was to investigate not only what Norwegian teachers took active learning to mean and how they evaluated this educationally, but also to make sure of tracking what they might think in relation to a range of potentially key aspects of active learning suggested by a variety of sources in the educational field. It was therefore decided in principle to adopt the hierarchical focussing approach as the research interview approach providing a plausible main method for the present study.

4.5 TEACHERS' VIEWS OF ACTIVE LEARNING: PREVIOUS WORK

4.5.1 Search approach and limitations of included studies

It has so far been established that the focus of the present study was to be Norwegian teachers' conceptions of active learning - what they take the term to mean - and their stances regarding active learning, both in principle and in practice. Before proceeding to design and implementation of the study, it was important to investigate what previous studies were to be found regarding this issue.

The studies presented in the following two sections were located through electronic searches in a number of different databases. The main search engine I used is called Scopus and is provided by my local university college library. Scopus includes searches through a number of different English language article databases¹⁰ such as for instance SpringerLink, Informaworld, ProQuest Education Journals, Blackwell Synergy and Wiley Interscience. The Norwegian database Idunn was used for searches regarding active learning and the corresponding Norwegian expression. For searches for books and book chapters, in both English and Norwegian language, I used BIBSYS¹¹ which is the main Norwegian supplier of electronic library services to institutions of higher education and research. I also used more general search engines such as Google Scholar and ISI Web of Knowledge, and these work well for both languages.

¹⁰ For a full list of databases with full-text articles that I have had access to, see following website: <http://www.hibo.no/?ID=11287&etype=11>

¹¹ Website: <http://www.bibsys.no/english/pages/index.php>

Since research about active learning is not a very well-defined and delimited area, but includes traditions and approaches such as progressive education, child- and student-centred learning, project work, etc. (cf. Chapters 1 and 2 above) I also included these other terms in the searches. Also, when using the previously mentioned terms, the searches also tended to return studies focussing on constructivism, problem-based learning and self-regulated learning, terms which one may claim are related to active learning. With regard to my specific interest relating to these terms, *teachers' understandings or interpretations and their stances*, I used combinations such as teachers' views, teachers' understandings, teachers' perspectives and teachers' beliefs in combination with the above mentioned terms active learning, progressive education etc.

The result of my searches presented some challenges. I found very few, if any, studies that investigate teachers' interpretation of and view on active learning specifically, and still less that did so in a comprehensive way. Instead, the searches rendered a number of references to a wide variety of sources focussing on supporting the implementation of active learning and studies of the actual implementation of active learning approaches. Before I turn to the presentation of specific findings, it is salient to indicate some general features of these search yields.

Firstly, my impression is that searches relating to active learning and cognate terms generally tend to return a number of references to 'how to' sources, including books, articles and websites, these tending to deal particularly with science education, technology, medicine and nursing.

Secondly, the term active learning seems to be very closely connected with practical activity. My searches returned many research studies from science education focussing on pupils' or students' laboratory work, doing practical exercises, using problem-solving approaches, particularly within physics and chemistry.

Thirdly, insofar as there are studies concerning themselves with teachers' understanding, they tend to have a considerably narrower focus than active learning as such. There are for instance studies focussing on teachers' understanding of and views

on what one may view as *particular instances* of active learning, such as project work, problem-based learning and self-regulated learning. There were also studies focussing on the implementation of new technology such as computer based programmes designed to create virtual learning environments. Some of these studies focus almost solely on teachers' understanding and views, while others include findings about teacher thinking as part, but usually only a minor part, of implementation studies. The latter is for instance true regarding the investigation of Norwegian teachers' attempts at implementing theme and project work in Norway during the L97 period reported in Section 2.3.4 above.

Fourthly, studies of attempts at implementing different versions of active learning may *implicitly* provide information about teachers' interpretation of active learning and related terms in that they report on what teachers do and what they think about what they do. Fifthly, there were studies and overview articles about the effectiveness of active learning approaches for promoting learning. And, finally, there were studies of teachers' beliefs about teaching and learning more generally, where the researchers describe the findings in terms such as constructivist, student-centred vs. teacher-centred, progressive vs. traditional, etc.

In the summaries below of studies in the Norwegian and international context, I have limited myself to the following kinds:

- Studies that explicitly focus on teachers' understandings of and views on active learning and related concepts, and
- Studies that focus on implementation of active learning approaches and that explicitly or implicitly provide information about teachers' interpretations.
- I have also given priority to more recent studies in cases where similar studies have been found.

These limitations were chosen since they were expected to bring forth studies most relevant for the current one, and because going beyond these boundaries would have thrown up an unmanageably huge number of studies. In the presentation below I will first describe the studies that were most relevant to the intended focus of my own investigation, i.e. studies that explicitly focus on teachers' conceptions of active

learning or related terms. I will then turn to implementation-focussed studies that also deal, explicitly or implicitly, with teachers' conceptions.

4.5.2 Findings from international and Norwegian studies

The searches described above did not return any Norwegian studies that focussed explicitly and in a comprehensive way on teachers' conceptions of the term active learning or closely related concepts such as student-centred, child-centred, pupil-centred, progressive, etc. Instead, the only Norwegian studies I found were studies which focussed on implementation of active learning instances such as project work, the use of authentic learning resources, etc., and which, explicitly or implicitly, included information about teachers' conceptions and stances about the approaches studied. One may claim that this finding is surprising considering the position that active learning has had in Norwegian curricula since before World-War II. Since no Norwegian studies of the most relevant kind were found, I will start by presenting some international studies.

Powell (2005) describes a study from the U.K. where nine primary and secondary teachers took part through engaging in video-stimulated reflective dialogues of classroom practices that the teachers had chosen to be illustrative of active learning. The findings are presented as case studies. Regarding teachers' conceptions of active learning the study finds that teachers associate active learning with learner autonomy, empowerment, the development of higher order thinking skills and cooperative group activities. They see their own role as devolving control to the pupil, but still maintaining the responsibility for and right to monitor, guide and intervene in pupils' learning process when needed. With regard to the actual classroom practices, in our terms *instances*, teachers emphasised discourse between learners and with teacher, discovery learning and forms of learning that focus on learning as a social process as active learning approaches.

As mentioned above, I found studies where active learning and student-centred learning was related to technology, in particular the usage of computer software to create virtual learning environments. I therefore include examples of two implementation studies which also included an investigation of teachers' conceptions

of the term student-centred. Pedersen and Liu (2003) report a study from the USA which focussed on the implementation of software designed to support student-centred learning in science. The study comprised 15 middle-school teachers and the research approach used was unstructured telephone interviews, but including prompts to ensure coverage of themes. The interviews were conducted before and after teachers used the software package, and also included observation of practice. The pre-implementation interview included open-ended questions about their definitions of and beliefs about classroom practices relevant to student-centred learning (ibid.:62). Based on the teachers responses' the researchers derived a set of assertions about various beliefs that teachers held about student-centred learning. These assertions were further developed during focus group interviews later in the implementation process and are presented in Table 1 below.

Table 5 Teachers' definitions of student-centered learning (Pedersen & Liu 2003:65)

Definition	In student-centred learning
1	The teacher considers the interest and needs of the students in class and then provides instruction based on them. The teacher tries to make sure that students acquire the information and understands the concepts presented before moving on to more difficult material. The teacher takes into account individual differences and makes adjustments to accommodate individual students.
2	The teacher prepares an activity that requires the students to be actively engaged. These activities are often 'hands-on' and collaborative, but they do not need to be. The teacher explains the steps students need to go through in the activity, and helps to redirect students if they have trouble following the steps.
3	The teacher presents students with a complicated activity but does not tell students how to complete it. Students must figure out what to do, which means that they sometimes try things that don't work. Teacher questions students about their thinking, but do not solve their problems for them or tell them what to do. When students encounter difficulties, they turn to their peers for support; therefore collaboration grows naturally out of student-centred learning.
4	The teacher presents a topic students are supposed to learn about, then allows each student to investigate whatever aspect of that topic interests him or her. This means that students are often working on widely different projects that they themselves have developed. If students have difficulty choosing what to investigate or finding materials, the teacher helps them by asking questions, but does not tell them what to do or provide a model or detailed expectations for a product. The teacher questions students about their work and students present what they learn to their classmates.

Most teachers held definitions three and four, but otherwise there were major variations as to their conceptions of student-centred learning. Some teachers said they thought student-centred learning was too difficult since there were no established learning objectives. Because of the lack of common understanding revealed through the pre-implementation interviews, the researchers decided not to use the term

student-centred learning in the implementation part of the project. They also propose not to use terms such as student-centred learning or facilitator in future implementation research, but instead carefully build common definitions of central terms together with the teachers (ibid.:74).

Zheng (2004) reports another study from the USA involving one teacher implementing a computer programme in a middle-level school (Grades 6-8). The computer programme was designed to immerse children in educational tasks such as travelling to virtual countries, build virtual personae, etc. The methodology used was similar to Pedersen and Liu (2003) presented above; unstructured interviews before and after implementation, where the pre-implementation interview focussed on the teacher's beliefs and perceptions of her role in the regular classroom and how she was foreseeing the new role in the student-centred virtual learning environment. The teacher perceives herself as becoming a facilitator in the new situation (Zheng 2004). To her being a facilitator meant facilitating what students do, not so much leading the activities, but instead handing control over to the students, including the freedom to choose what they want to learn. Facilitating also meant not giving teacher-directed knowledge, and she described that she wanted to see herself as being at the students' level, learning together with them. The teacher found the student-centred approach difficult, and discrepancy between the researcher's and the teacher's understandings of the term caused difficulties in the study.

As mentioned above, no Norwegian studies of teachers' conceptions of active learning or similar concepts have been found. Instead, there are studies of specific instances or aspects connected with active learning, and I will present some of these. In the previously mentioned research on the implementation of L97 (cf. Section 2.3.4 above), I was involved in a study investigating the implementation of theme and project work (Rønning 2003, 2004) and the use of local teaching resources (Solstad 2003; 2004). The study comprised both a nation-wide questionnaire survey with more than 2300 teacher respondents and a more in-depth study of 58 teachers, where the latter included unstructured interviews and observation of practice. The interviews included questions about their conceptions and stances regarding the three terms mentioned above – theme work, project work and local teaching resources. The national

curriculum had stated that theme work should be central in primary school, while project work should have a central place in lower-secondary school, but both approaches could be used at both primary and secondary level.

Our study revealed that teachers interpreted both theme and project work as being fairly open and with less teacher control as compared to other ways of working. Project work, in particular, was interpreted as handing over control more or less fully to the pupils, often including decision-making regarding what to learn, who to learn with and which resources to use (Rønning 2003, 2004). Teachers described their role in project work as facilitator, and the observation studies revealed that this very often meant a rather passive, withdrawn role, where the teacher only intervened if pupils were very clearly off track or because of disciplinary problems. The interviews supported this since many teachers thought that if they intervened it wouldn't be proper project work, since project work implied pupil control of the learning process. Some teachers also raised concern regarding this kind of teacher role, in particular because they felt it led to ineffective and low-quality work. Because of this teachers believed that there were some subjects that were too important to be used for project work, for instance Maths (*ibid.*).

With regard to the use of local teaching resources, the teachers supported this aspect in L97, but found it difficult to implement, particularly since schools didn't seem to have any systematic approach to collecting and sharing relevant resources. Instead, the textbook was the most commonly used teaching resource. Initially, L97 had regulations, and later just recommendations, regarding the amount of time that should be used for theme and project work, and it also had recommendations for the use of local, authentic, issues and teaching resources. Our study showed that the teachers didn't follow these recommendations – the amount of theme and project work and use of local teaching resources was much smaller than what was recommended (Rønning 2003; Solstad 2003).

I have only found one Norwegian study which explicitly uses the term active learning, but it is not an investigation of teachers' conceptions, but instead active learning is used and defined by the researcher, as a contrast to more traditional approaches. In a

study of four pre-school teachers working in primary school¹² Eide (2009) defines active learning as containing the following aspects:

- Pupils choose freely between different tasks.
- Pupils work independently with open tasks.
- Cooperation between pupils is a natural part of the process.
- Pupils do projects and present their work.
- Pupils try out what is to be learnt through practical work.
- Pupils experiment, investigate and go on excursions.
- Computers are an important learning resource

Eide's (ibid.) study finds that the pre-school teachers meet a different culture and tradition in primary school as compared to what they have been used to in the kindergarten. They support the active learning, child-centred approach outlined above, but meet a tradition in primary school which is much more teacher-centred and teacher-directed, something which makes them change their practice to become more traditional (ibid.).

4.5.3 A recent Dutch study

After surveying the theoretical, historical and research background outlined in the previous chapters and the studies reported above, I designed a study (cf. Section 5.1 and Section 5.4 below for the details) which focussed on teachers' conceptions of and stances towards active learning, deriving its questions and coding systems from Oser and Baeriswyl (2001) and Tomlinson (cf. Chapter 3), and using the hierarchical focussing approach (cf. Section 4.4). It was only at this point, after the current study had been designed that I came across a Dutch study within my general search criteria (Oolbekkink-Marchand *et al.* 2006) which appeared to show similarities to my aims and design, if also some key contrasts.

The study in question involved 36 Dutch secondary and university teachers, and claimed to investigate their perspectives on self-regulated learning. The methodology used was semi-structured interviews in which the researcher presented different pre-

¹² When school starting age was lowered to six years in 1997, pre-school teachers were allowed to work in lower primary school provided they took a half-year post-graduate course designed to train them regarding teaching basic reading and writing skills.

specified metaphors relating to learning and teaching, to support the explication of teachers' beliefs. The development of the coding system was done after the data collection was conducted and resulted in a system consisting of six themes that each included seven categories of description with embedded content. The themes were: *Goals, Learning, Characteristics of the learning process, Students and Regulation*. Examples of content descriptions were (ibid.:602):

Students are expected to initiate learning activities on their own... Students are expected to be capable of performing tasks on their own... Learning is practising/applying skills/knowledge.

The examples above are content descriptions within the theme *Students* and the categories *Active-initiative* and *Capacity*, and the theme *Learning* and the category *Apply* and have been chosen because they resemble facets and aspects within the current study. Other content descriptions have less resemblance to the current study's facets and aspects.

Oolbekkink-Marchand *et al.* (ibid.) report that all themes and most description categories were found in both teacher groups, but with varying intensity. While secondary school teachers tended to focus on variety between students and the need to adapt the learning process accordingly, university teachers tended to focus more on variety of content. Both groups agreed, however, that regulation of the learning process, i.e. who is in control of the process, should be shared between the teacher and the students, and that students at least in part should have to take responsibility for their own learning.

It must be pointed out, however, that these claimed findings, and certainly their interpretation, are called into question by various factors, not least the forms of operationalisation employed by these authors, namely:

*First, we compared the **absolute frequencies** of the description categories for each group. If a frequency was more than twice as high in one of the groups as in the other, the description category was considered to be more important for*

*the first group. We used this criterion as a rule of thumb and **did not correct for the unequal number of interviews** in the groups: 16 interviews with secondary teachers and 20 interviews with university teachers. In addition, we looked at the average number of words (length) of the quotations belonging to a category to check if the quotations were of similar length (Oolbekkink-Marchand et al. (2006:603 – my emphases added).*

In addition, although the title of their paper refers to ‘Teachers’ perspectives on self-regulated learning’, it may be pointed out that these authors' did not actually pursue their respondents’ conceptions (of SRL) as such, since they tell us (ibid.:599):

In these [pilot study] interviews the teachers were asked directly for their beliefs on self-regulated learning. The use of this term appeared to be problematic because (i) the teachers related the concept to educational innovations in (secondary) education, which not all of them appreciated, and (ii) not all teachers understood its meaning correctly (jargon). We concluded that the explanation teachers gave of the meaning of a metaphor especially would provide us with valuable data.

This may be consistent with their adoption of an apparently unusual sense of the term ‘perspective’ from Pratt (1992), for whom ‘perspectives consist of intentions, beliefs and actions’. In more traditional terms, however, it would probably be more accurate to characterise their study as investigating the extent to which teachers indicate what might be taken as aspects of self regulated learning when stimulated to talk about teaching in response to being presented with a range of evocative metaphors.

Thus, the comparability of this Dutch study with the investigation I had designed turned out to be considerably less than had initially appeared. Although its specific topic was never taken to be active learning, a study involving the cognate conceptualisation of self-regulated learning would have had some relevance. However, as just argued, the Dutch study turned out not to have done this. The two approaches do appear to share some degree of communality, including a degree of openness of method, even if my adoption of hierarchically focussed technique (cf.

Section 5.4 below) can be argued to go somewhat further in this direction than the early presentation of pre-specified metaphors. Also, the facets and sub-facets used in the Dutch study overlap to some degree with those of my interactive model (cf. Chapter 3 above), a welcome finding since it may be seen as further support to the framework chosen here.

It should also be noted that, in addition to the crucial difference of focus pointed out above, there is a difference of context - the Netherlands as opposed to Norway, and a difference of sample type - secondary and university teachers versus teachers from all levels of Norwegian compulsory education.

Thus, when adding this study to the review of research presented above it remained the case that that when the present study was designed there were no studies, international or Norwegian, substantially resembling it. However, the various studies I found focussing on active learning and related terms have revealed similar facets, aspects and instances to those that the current investigation into theoretical (Chapter 1), historical (Chapter 2) and methodological (Chapter 4) sources revealed, and which have informed the actual design and implementation of the study which will be outlined in Part II.

PART II: AIMS, DESIGN AND PROCEDURES OF THE INVESTIGATION

5. AIMS, DESIGN AND IMPLEMENTATION OF THE STUDY

5.1 AIMS AND DESIGN

As has already been signalled, particularly in the previous chapter, against the background detailed in Part I, I decided to conduct a study to investigate Norwegian teachers' conceptions of and stances towards active learning. This would attempt to maximise the likelihood of getting at teachers' own ideas by minimising anything that might tend to influence the expression of such ideas, but I did also wish to pursue the extent and manner in which elements traditionally attributed to active learning might feature in their outlooks. Whilst it might be argued that such a set of concerns could only be realised through the sort of naturalism involved in full-blown ethnography, such an approach seemed unrealistic in terms of time and resources needed, and overly limited in terms of getting much indication of any of the ways in which teachers' ideas might vary at all and, if so, as a function of such variables as educational phase or subject taught.

Rather, as also indicated above, it seemed to me that the more direct approach of in-depth interviewing would be feasible as well as appropriate, especially given the surprising dearth of work, particularly of Norwegian studies, in this area. Specifically, the hierarchical focussing approach seemed an obvious candidate by way of a research interviewing technique that takes on board psychological constructivism and embodies some desirable features of the grounded theory approach, but that also goes beyond this in attempting to cater for specific areas of concern to the researcher. In the present case, these would relate to the instances and characteristic aspects of active learning found in the review and framing of the field presented above in Part I. Such focuses would complement the more open stance in both of the main phases of the interviewing: (a) in the interview itself, as instances and potentially defining features that could be supplied by the interviewer insofar as they did not emerge in the interviewee's spontaneous responses to initial, more open questions, and (b) in the analysis of the interview responses, providing obvious coding categories, but whose consideration would not prevent the adoption of other categories grounded in/emerging from the interviewees' contributions.

The following sections describe in some detail the various facets of the study as implemented. It may be mentioned at this point that although the study was designed and piloted in 2005, unforeseen personal and professional events meant that it could not actually be conducted until 2008.

5.2 ETHICAL ISSUES

All social science research projects conducted in Norway need to get approval from the Norwegian Social Science data Services¹³. The present study received such approval, and the letter of approval is enclosed as Appendix 5. Since no sensitive data were collected as part of the study, the study underwent the general procedure for approval which states that the researcher must comply with the following:

- Receive oral confirmation from the interviewees, and before asking for such confirmation:
 - Provide oral information to the interviewees about the following:
 - The researcher's contact information,
 - The purposes of the research project and what the data collected will be used for,
 - The kind of data that will be collected,
 - The kind of methods used for collecting data and what this entails for the interviewees,
 - How data will be stored and how confidentiality is ensured,
 - That participation in the study is entirely of the interviewee's own will and that he/she can withdraw at any point without having to state a reason why, and, finally,
 - Information about when the project will be finished and what will happen to the data after this date.

After completion of the research project all information that may identify the interviewees directly or indirectly are removed from the data files. In addition to the obligatory procedures mentioned above, I also offered the interviewees access to their interview transcripts. Two interviewees asked for their transcripts which were then

¹³For more information the following website can be consulted: <http://www.nsd.uib.no/nsd/english/index.html>

sent to them. They did not exercise their right to withdraw after having read the transcripts nor did they ask for changes to the transcripts.

5.3 SAMPLING

The sample of interviewees was a convenience sample arrived at in the following way. I contacted 12 schools by sending an e-mail to the head teacher, containing information about the study, what it was about, how it would be conducted and what sample I wanted to get at, as indicated below. The schools were selected to provide variation with regard to school type and level within Norwegian compulsory education; primary school (pupils aged 6-12), lower secondary school (pupils aged 13-16) and comprehensive school (pupils aged 6-16). For practical and financial reasons the schools were chosen from the area where I live which is a provincial town in the North of Norway, with surrounding rural municipalities. Five municipalities¹⁴, including my home municipality, are represented in the sample. The ten schools in the sample represent 24% of the total number of schools in the area and were ordinary municipal schools with no particular characteristics other than that they represented different school types.

In the e-mail to the head teachers I described briefly the study I wanted to conduct, stating that I wanted to investigate what teachers understand by active learning and what they think about it. I also informed the head teachers that the interview would last 45-60 minutes and would be tape-recorded if accepted by the teachers. If not, I would take notes. I also wrote that I wanted to interview teachers teaching at the middle year of each educational phase of compulsory education (lower primary, upper primary and lower secondary), which meant teachers teaching at Year 3, Year 6 and Year 9. Further requirements were that the teachers had to teach science, social studies, or both subjects, and that I wanted both male and female teachers. I asked the head teacher to respond via e-mail within a set date, preferably with names and e-mail addresses of interviewees.

Seven head teachers responded back via e-mail within the time limit set. Two head teachers wrote back saying that teachers at their school were unable to participate

¹⁴ The municipalities in Norway, of which there are 433, are responsible for compulsory education.

since the school was involved in a national research project which took up a lot of the teachers' time. Five head teachers responded with names and e-mail addresses of teachers who were willing to be interviewed. The remaining five schools did not respond within the date set and I therefore contacted them by phone. They all said they had forgotten to respond and later came back with names of teachers I could get in touch with.

The sample I arrived at after these contacts with head teachers comprised 24 teachers from 10 different schools; five primary schools, three comprehensive schools and two lower secondary schools. I contacted the teachers via e-mail and by phone to arrange dates and times for the interviews. The e-mails and telephone conversations comprised a very brief description of the study (as above to the head teachers), how it would be conducted and information that their participation had to be of their own free will. All interviews were conducted in May and early June in 2008. More detailed information about my sample is summarised in the table below.

Table 6 Overview of sample

Gender		Educational level			Subject			Age			Experience		
M	F	Year3	Year6	Year9	Science	Social studies	Both	<=40	41-50	>50	<=10	11-20	>20
9	15	8	5	11	6	8	10	8	8	8	5	8	11

With regard to gender within each educational phase, it is difficult to arrive at a reasonably balanced sample, since women are in majority in compulsory education in general, and in particular at lower primary level. In my sample there are seven women and one man at lower primary level, three women and two men at upper primary level, and five women and six men at lower secondary level.

Since participation in research projects has to be fully of the participant's own will, one may expect a certain degree of self-selection of teachers who are experienced and feel confident to talk to a researcher. However, the topic for the interview was not thought to be threatening in any way; there was no element of control or checking whether the teacher was acting according to current rules and regulations, but instead an investigation into their thinking about a term which is relatively open and general. This may have attracted teachers who are interested in and like to talk about pedagogy, but

there are no indications in my data to suggest that the teachers who participated in my study were exceptional in any way.

5.4 INTERVIEW AGENDA

An English translation of the interview agenda is presented in Appendix 1, where it will be seen that the interview starts with a general open-ended question asking what the interviewee understands by active learning, including what they might consider to be examples of active learning, what they think of it as a pedagogical principle and whether they have any views on the practical implementation of active learning in schools. The first part of the interview agenda then provides for probing and detailed follow-up of these replies and concludes with a check whether the interviewee wants to mention any further aspects or instances and a request to indicate if there are any characteristics or ways of working that the respondent would regard as contrasting with active learning.

Following a linking explanation, in accordance with hierarchical focussing design, Question 3 then supplies four possible ways of working (Project Work, Whole Class Teaching, Practical Investigations in Science, Outdoor Education), asking with respect to each whether the interviewee sees it as an instance of active learning, what they understand by that way of working, what they think of it from a pedagogical point of view and how feasible they think it is to implement it in practice.

The remainder of the interview offers various combinations of aspects that have been associated in the literature with active learning and for each one asks the same four sub-questions as in the previous paragraph. Various considerations, most notably time limitations, made it necessary (a) to select from amongst the AL aspects from the different educational interaction facets noted in the historical review (cf. Table 3 above) and, even then, (b) to offer them in combinations, as seen in the agenda by way of questions 3.2 - 3.5 and their sub-items. All facets except for underlying learning processes/principles (ULPs) were represented, these being omitted because of (a) time limitation: their inclusion would have considerably extended an already substantial interview, and (b) their secondary and second-order nature: the focus of the study lay

primarily with respondents' conceptions and stances regarding active learning. Further thinking in terms of ULPs and the reasons for their stances would be of interest and could well emerge spontaneously or in responses to other questions, which is why ULPs were included from the outset in the coding system (see below). However, pursuing them through the supplying of specific possibilities during the interview was deemed a luxury that could not be afforded.

5.5 INTERVIEW PROCEDURES

All interviews took place in a separate, usually quiet, room at the teacher's school, in which the only people present were the interviewer and the interviewee. They were mostly conducted during the school day – during periods when the teachers were not teaching, during the break in the middle of the day, but some also after the pupils had left, during the teacher's planning and preparation time.

After having gone through the procedures reported above (Section 5.2) and using the formulations reproduced at the beginning of the interview agenda (see Appendix 1), the interview was opened by the researcher indicating the purpose, nature and likely length of the interview, making clear the interviewee's anonymity and rights, and asking the interviewee's consent to tape-record the interview. All but one interviewee accepted this and for the one who did not, the researcher took written notes instead. No respondents chose to exercise their rights to terminate the interview or its recording, or to ask for any deletions or changes to what they had been recorded as saying. Interviews lasted between 33 and 81 minutes, with a mean of 56 minutes and a standard deviation of 11 minutes. Impressions concerning interviewee reactions and response styles are reported below in Chapter 6.

5.6 CODING SYSTEM

Having decided to use the MAXQDA qualitative data processing package (MAXQDA 2007¹⁵) as a vehicle for storing and coding the interview transcripts, it was necessary to develop a coding system based on the pre-existing generic analysis of teaching

¹⁵ Information about the package is available at the following website: www.maxqda.com

interactions presented above in Chapter 3, but which should also take account of what the interviewees provided.

The coding system was therefore designed only after the data collection and interview transcription phases of the study, so that it could also be grounded in what emerged through involvement in these. Additionally, part of the reason for choosing the MAXQDA package was the further possibility of amending the coding system in the light of ideas encountered only during the actual coding process, as is traditional practice in qualitative data analysis (cf. Miles & Huberman 1994) and which occurred in the present case. The eventual coding system turned out to be very complex in terms of elements and levels of embeddedness: its major features will now be progressively indicated.

As pointed out earlier in Chapter 4, pursuing interviewees' meanings and stances regarding active learning involves pursuing and coding for two central kinds of items: (a) the *aspects* they see as characterising or defining active learning, their 'sense' of the concept, and (b) the *instances* they include and exclude as cases of active learning, what they regard as the 'reference' of the concept.

5.6.1 Aspect Coding

Given my assumption that in the Norwegian educational context the expression *active learning* is actually taken to refer to an educational or teaching approach, then an obvious approach to generating potentially relevant codes would be to base oneself in the first instance of the facets of educational interaction indicated in Chapter 3 and then to proceed to more specific possibilities within these, taking account also of what I had actually heard from the respondents during the interviews.

I thus arrived at the following list of facets or broad aspect areas: *1 Planning, 2 Intended Learning Outcomes (ILOs), 3 Assessment of Progress and Outcome, 4 Learning-Teaching Interaction, 5 Underlying Learning Processes/Principles*. These were then broken down into further levels and in some cases sub-levels, for example, *1 Planning* was differentiated first into four sub-code areas: *1 No Planning, 2 Teachers Plan, 3 Teachers and Pupils Together Plan, 4 Pupils Plan* and then the last three of

these opened into four further sub-codes dealing with the content/object of the planning: *1 What to Learn, 2 How to Learn, 3 Who to Learn with, 4 What Resources to Use*. All aspects featuring in the code system as it appeared in the MAXQDA project are presented in Appendix 2.

It was then necessary to extend the code system to cater for the issues at stake in this study regarding such aspects, namely whether the respondent saw the aspect as characterising AL, what they thought of such an aspect in pedagogical principle and how they judged the practical feasibility of its implementation in Norwegian schools. Each of the lowest level sub-aspects therefore had attached to it a further three sub-branches dealing with these definitional and evaluative issues. This led to a rather massive coding system and for the sake of economy Appendix 2 illustrates this further sub-branching only in the case of *Teachers Plan What to Learn* (or to give it its full system address: *1 Planning\2 Teachers Plan\1 What to learn*). It will be seen that, guided also by my experience of the interviewing and transcription, provision was made in the definitional sub-area (coded *1 re AL* in Appendix 2) for respondents indicating that an aspect was for them definitely part of AL, neutral with respect to AL status (with sub-codes recording views concerning its importance and dependence on other issues), or as negative and actually disqualifying with respect to AL status. The remainder of the definitional sub-area provided for something that had been encountered clearly if rarely during interviewing, namely the attribution of any of this range of responses to other people.

With respect to in-pedagogical-principle (*PrnEval*) and practical feasibility (*PracEval*) judgements, the same three coding possibilities were provided for each sub-aspect, namely: positive/acceptance, negative/rejection and neutral/undecided.

5.6.2 Instance Coding

As well as aspects potentially defining/characterising it, the other important facet of an understanding and evaluation of active learning concerns what people count as *instances* of it. As seen above and in Appendix 1, in line with hierarchical focussing strategy and drawing on the background reviewed in Part I, a selection of four teaching approaches were supplied in questions 3.1.1 – 3.1.4 for respondents' consideration by

way of AL status, pedagogical desirability and practical feasibility: *Project Work, Whole Class Teaching, Practical Investigations in Science, Outdoor Education*. These potential instances or ways of working (abbreviated 'WoWs') obviously had to be included in the coding system, but so did any ways of working respondents had provided spontaneously in answer to the initial question in the interview. This generated the following set: *Project Work, Theme Work, Practical Science, Outdoor Education, Discussions, Storyline, Practical Work general, Teacher Lecturing, Station Work, Learning Strategies, Drama, Use of ICT, Group Work, Learning Styles*.

The complexity of the coding system was further increased by the requirement that each of these potential instances needed further coding possibilities catering not only for the trio of definitional inclusion/exclusion, in-principle pedagogical evaluation and practical feasibility judgements described above, but also for the whole range of *aspects* that might be mentioned in interviewees' responses concerning AL instances. Each potential instance code was therefore extended into four sub-code areas, the first three containing the definitional, in-principle evaluation and in practice evaluation branches indicated in the previous subsection, whilst the fourth contained the entire aspect coding system described above.

5.6.3 Response Modality

It was further necessary to code for what may be called response modality. The hierarchical focussing design had already envisaged the need to distinguish between *spontaneous* responses (i.e. responses to open questions which do not themselves provide response possibilities) and responding to specific possibilities *supplied* by the interviewer. This distinction would apply both to defining aspects and to illustrative instances of AL.

However, in the course of the conduct and transcription of the interviews, a need for further response modality categories was realised, particularly with respect to characteristic aspects of AL, leading to the following set of possibilities:

- *Spontaneous Aspects*: AL aspects emerging fully spontaneously, i.e. in direct response to the initial interview question and before any of the supplied instances or aspects had been introduced.

- *Semi-spontaneous Aspects*: AL Aspects emerging after the supplied part of the interview had started at Question 3, i.e. either in the supplied instances part or in the supplied aspects part - but in cases where the respondent makes clear that they are talking generally about what is involved in active learning and not just the (potential) instance or aspect that was being discussed. Typical indications might be: 'Oh yes, and that reminds me that active learning is...'.
- *Situated Aspects*: Aspects that come up in the context of an instance, whether spontaneous or supplied, but where it is not clear whether the respondent is referring to AL in general or just to the instance in question

It had been hoped to combine all these coding features into one very large MAXQDA project, so as to facilitate cross-referencing of text retrieval and the analysis of trends. However, although within the published limits of the parameters of the package, it proved necessary to split the coding into five smaller projects each carrying the same set of interview transcripts. These were: *Spontaneous Aspects*, *Spontaneous Instances*, *Supplied Instances*, *Supplied Aspects* and *Semi-Spontaneous Aspects*.

5.7 TRANSCRIPTION AND CODING

All interview recordings were transcribed verbatim by myself, using Microsoft Word, into Rich Text Format files which were inserted as texts into MAXQDA projects. There were no problems of audibility/interpretation with any of the interviews. The multiplicity of MAXQDA projects referred to above made it necessary sometimes to code using two projects simultaneously, for instance *spontaneous aspects* and *semi-spontaneous aspects*.

5.7.1 Inter-judge Coding Reliability

Although the 'paradigm wars' between qualitative and quantitative research approaches (cf. Chapter 4 above) have included quite basic differences in approach to issues concerning the evaluation of research, respected qualitatively-oriented writers such as Miles and Huberman (1994) have long recognised the importance of 'verifying the conclusions' of research and having 'standards for the quality of conclusions' (ibid.: 277). They have also recognised the range of aspects this may involve and have proposed a range of tactics that may be useful.

Amongst these, one of the more obvious is *member-checking*, in which one gets feedback from one's informants regarding the accuracy of what one has made of their contributions. This was not pursued in the present study, partly because of a lack of time on my behalf and partly because the coded nature of the data might have been seen as a somewhat strange medium by these teachers. However, Miles and Huberman also include amongst their *Standards for the Quality of Conclusions* 'Were coding checks made, and did they show adequate agreement?' (ibid.:277), which parallels the traditional 'quantitative' precaution of establishing inter-judge reliability or consistency.

Nevertheless, whilst sounding more straightforward, on closer examination a number of issues arise with such an approach. On the one hand, for example, full agreement might require the independent application of precisely the same codes to precisely the same text segments by two judges using the coding system on the same full transcript or transcripts. On the other, it might be argued that it would be sufficient in terms of supporting the data actually employed if the two judges merely found the same codes to apply within the transcript as a whole, without necessarily pursuing whether they agreed on the particular segments involved. In the event, I opted for the admittedly weaker but more practical compromise of introducing a researcher colleague to the coding system and then asking her how far she agreed with my codings of segments in a combination of excerpts from four transcripts chosen for the range of codes involved and a variation in the difficulty I had experienced encoding them. On this basis my colleague agreed with 93% of my codings.

5.8 DATA ANALYSES

The aims of the present study combine those that have characterised the 'qualitative' and 'quantitative' research traditions. In keeping with the first of these, it was my intention to explore teachers' construals and opinions of active learning in depth and detail. In line with the second, I also wanted to see what kinds and ranges of variation these might show across different individuals and possibly different groups.

Whilst the pursuit of these questions would rely heavily on analysis and synthesis of aspects of the coded data, I thought it important to avoid the possible fragmentary effects of relying solely on any such detailed coding system (cf. Crotty 1998). As a strategy for doing this I therefore decided I should note any relevant impressions I might pick up from my direct experience of the interviewing and from a first reading of their transcripts before any detailed coding, on the basis that this might be particularly useful in relation to features such as the clarity and confidence of the interviewees' responding, the degree of integration and coherence of the views, the nature of any assumptions and emphases on their part.

Quantitative analysis of the data codings would be important by way of establishing central tendencies and variation, but such analyses conducted separately on particular codes would not be sufficient on their own. It would also be important to explore the extent to which these teachers held views involving particular combinations of the detailed categories I would be coding for and how far they might be differentiated into groups holding contrasting sets of such ideas or opinions of active learning. A technique that fulfils these complementary functions and therefore seemed worth applying is cluster analysis. Although this has featured in some well-known UK educational research projects, it appears not to enjoy widespread familiarity and a relatively detailed introduction is therefore offered in Appendix 3. This outline is based on Aldenderfer and Blashfield (1984), Tomlinson (1996) and Wishart (2006).

PART III: FINDINGS

INTRODUCTION TO PART III

As described in the previous Part, the present study was designed to investigate Norwegian teachers' conceptions of and stances, in principle and in practice, towards active learning. Such an investigation was taken to require both eliciting the teachers' spontaneous views, whatever these might include, and pursuing their positions vis-à-vis instances and aspects featuring in the historical development of active learning ideas reviewed earlier in Chapters 1 and 2. The hierarchical focussing (HF) approach to research interviewing was deemed particularly appropriate to these joint purposes, and Part II described in detail an HF interview agenda, its implementation in data gathering and the development and application of a detailed coding system using the MAXQDA qualitative data processing computer package. We now turn in Part III to the findings of this study.

Whilst in deriving these findings heavy emphasis will be placed on analysis and synthesis of aspects of the coded data, it is important to avoid possible limitations and effects of relying solely on any such detailed coding system (cf. Crotty 1998). A first strategy for doing this will be to devote the first chapter (Chapter 6) of this Part to reporting general features of the researcher's direct, pre-coding experience of the interviewing, including the nature of the interviewees' responding and their treatment of the issues, as well as some overall impressions regarding the content of their views. A second strategy in all chapters in this Part will be to supply as far as possible direct, contextualised quotations from the interviews, although it is recognised that achieving an economical blend of such qualitatively 'thick' material with quantitative information constitutes one of the more obvious challenges of reporting mixed method research.

Following Chapter 6, we turn to analysis of the coded data both to report trends regarding particular codes and subsets of codes, and to investigate the extent to which patterns combining different components may occur amongst different groups of respondents. Given the complexity and detail involved, such reporting will be structured into the chapters covering major areas defined by interview content and approach, and within each chapter I shall seek to assist the reader by adopting a

systematic order of presentation from global facets to specific details. Thus Chapter 7 will consider aspects offered spontaneously by respondents as characterising AL; Chapter 8 will consider ways of working proposed as instancing AL, including those coming spontaneously from the respondents and those supplied by the interviewer; Chapter 9 will investigate aspects that feature as part of respondents' AL instances, termed situated aspects; Chapter 10 add to this their responses to the potentially defining aspects supplied by the interviewer; and finally in this Part, Chapter 11 will consider the teachers' pedagogical stances towards aspects and instances of AL, both in principle and in practice.

6. GENERAL IMPRESSIONS OF THE INTERVIEWS

6.1 INTRODUCTION

The presentation and discussion in the current chapter is based on my immediate impressions while conducting and transcribing the interviews. Notes were made immediately after the interview had been conducted and were augmented by further notes during the process of transcribing. These notes form the data basis for the presentation in the sections below. Coding of the interviews was done only after the notes had been taken and this chapter had been produced in a draft version. Such an approach is important since the actual process of coding causes splitting up of the text and may lead to a fragmentation unless additional approaches are utilised. A holistic presentation of the interviews, in the way that is attempted in the current chapter, in addition to the systematic approach enabled through the use of structured software for analysing qualitative data, provides a more complete investigation of the data produced through this study. Some aspects of these impressions may also lend themselves to triangulation against the coded data.

6.2 IMMEDIATE IMPRESSIONS

As described in Section 5.3 above, the interviewees were informed in advance about the focus of the study, but no in-depth information about the approach was provided. Some details regarding amongst other things how the interview would be conducted were presented at the start of the interview (cf. Section 5.5 above).

In spite of the fact that the teachers knew the topic in advance, including in fact the specific terminology that the interview would focus on, namely *active learning*, none of them seemed to have made any preparations. The ones who commented on this, while greeting me or having a cup of coffee together with me in the staff room before the interview started, asked if they perhaps should have prepared in advance, but if so they simply hadn't had the time. I responded by saying that the interview didn't require any preparations, and all they needed was themselves since what I wanted to study was their thinking. I also tried to settle any uneasiness they might be feeling by saying that there are no right or wrong answers to this, and that the fact that teachers

tend to think differently about active learning is something which is interesting for me as a researcher.

Teachers' work days are busy, and all interviews were conducted at school, either in between or after all their daily activities, so time for any immediate preparation would have been difficult. Another reason why I have reason to believe that no or very little preparation had taken place, is that quite a few of them explicitly expressed uncertainty regarding the term active learning in the beginning of the interview, or explicitly said that this was a term they hadn't thought about for a very long time. One of the latter referred back to her own teacher training in the 1970s and the well-known phrase 'learning by doing', and she also talked about having her teaching practice in one, at the time, very modern school which used project work as its main teaching approach. Another teacher replied that the term reminded him most of all, initially, about some textbooks produced when a new, integrated science and social studies subject was launched (O-fag) in connection with the implementation of M74 (cf. Section 2.3.2 above). These responses, both the ones expressing uncertainty and the ones relating it to times long gone, imply that the term active learning is not something which is at the forefront of the supposedly ongoing pedagogical discussion in the staff rooms of these schools. However, all of them were still willing to talk about what they understood by the term, and did so in various ways which will be commented below, some with a firm conception of active learning and others with a conception that appeared to develop as they were talking.

After the interview was finished, several of the interviewees commented that being interviewed about active learning, in the way that it was done, had been an interesting and rewarding experience, adding that it was not often that they got the chance to talk about such basic pedagogical ideas and having somebody interested enough to listen at the other side of the table. Some also commented that they had been a bit worried in advance, but that it now felt an unthreatening experience which had also made them think more deeply about some central educational ideas. Such comments strengthen my impression that active learning, and its related instances and aspects, is not something often discussed in Norwegian schools.

As mentioned above, the interviewees' readiness to talk about active learning varied. Some talked freely and without hesitating or stopping to ask whether they were answering my question, while some were a bit worried and halted sometimes to ask whether they were going in the right direction. After having conducted about half of the interviews I started wondering about whether there could be differences with regard to gender, or possibly stage, regarding the teachers' degree of confidence talking about active learning. I had a clear impression that some of the male teachers were generally more willing to reflect freely about the term active learning as compared to the female teachers, and they also seemed more confident and less preoccupied with what I thought about their responses. My first thought was that perhaps I was unconsciously influencing the interview in such a way as to cause such differences, so I discussed this issue with a colleague who also checked the tapes with me to see whether I was behaving differently, but could not find anything suggesting that this might be the case. Perhaps it was simply that a female researcher was less threatening to male teachers than to female teachers?

A further thought that struck me was that these might actually be differences regarding the stage they were teaching at, since men tend to be working in lower secondary and women tend to be in vast majority in lower primary, and also in majority in upper primary. I wondered whether teachers in lower secondary might feel less intimidated by a visit from a researcher since teachers in lower secondary often have a higher degree of education, at least regarding subject competences. As the overview of my sample (cf. Section 5.3 above) shows, there is a reasonable balance between men and women from lower secondary school and for upper primary, while in lower primary there is only one man and seven women in my sample. I cannot provide a definite answer as to whether my feeling was justifiable, and, if so, what the reason to the difference with regard to confidence between male and female teachers was. It would have been very difficult to operationalise this kind of variable in the coding of the texts, since a lot of this is based on my immediate impressions probably based on a number of subtle aspects, and is less likely to come out in a more systematic and more rigid treatment of the data. However, where possible and feasible I will try to cater for analyses regarding stage and gender in the chapters below.

6.3 CENTRAL TENDENCIES AND VARIATIONS

As discussed above, (cf. Section 4.2.2) people may hold concepts in different ways. Firstly, they may come up with *defining criteria*, which in this study I have referred to as aspects and sub-aspects of active learning within teaching facets such as planning, monitoring, teacher–learner interaction etc. Secondly, they may come up with *instances*, in this study referred to as ways of working or educational approaches with their component aspects. Quite often, however, they will have a mixed approach, where both defining criteria and instances feature. For a more detailed description of how this is attended to in the interview agenda and the coding system, refer to Section 5.4 and Section 5.6 above, respectively.

6.3.1 Tendencies and variations – open-ended part of interview

A general impression regarding how the teachers in my study conceived of the term active learning when they defined it freely, in the open-ended part of the interview (cf. Section 5.4 above), was that they varied with regard to whether they initially based their conception in aspects or instances, and they also varied with regard to the degree to which aspects or instances featured in their responses. My impression is that only a few started with an instance right away, while the majority started with an aspect, but soon turned to an instance, often taken directly from their own experiences in the near past, while a few talked in the form of aspects for most of the time and only towards the end of this section of the interview brought in some instances.

With regard to the degree to which aspects and instances featured in their spontaneous conception of active learning, some teachers only, or nearly only, talked in the form of aspects and did not bring in instances until explicitly asked about them in the supplied instances part of the interview. Others responded mostly in the form of instances, for instance outdoor education or science experiments, with its component aspects, something which will be investigated more in depth below in Section 6.4.2. Others again, mixed aspects and instances more evenly.

However, the teachers never commented reflectively on the way in which they held their concept of active learning, for instance by saying something like: ‘When I think of active learning I mean some specific criteria or characteristics such as pupils being

cognitively active and pupils reflecting on their own learning.’ or, alternatively: ‘I think of active learning in the form of specific ways of working such as project work and science experiments.’ They did not talk in this kind of style which would have required meta-cognitive reflection about their interpretation and understanding of active learning. Instead, they referred directly to the aspect or the way of working, for instance in the following way, starting with an aspect:

By active learning I understand that the pupil must be active in more ways than just using his head, that's what I think regarding AL, I think that they should be allowed to use their hands... (Teacher 18, paragraph 6¹⁶).

Or in this way, starting with an instance:

Yes, when I think about active learning, then I first and foremost think about the outside areas, using the outside areas. For example some years ago we had outdoor education, and our class 1 pupils were learning the letters, and then we were making shapes of letters outside, in nature. ...And we have this approach called Active Children, a lesson we do every day, where we use our Troll Forest, and we have been up unto the mountains... (Teacher 21, paragraph 6).

Many teachers seemed to start by linking active learning with the word *active*, referring to pupils being active in some sort of way, either physically or mentally. In some cases it was not clear whether they meant being active physically or cognitively, since they may only have referred to pupils having to be active in the learning process, that active learning is about activity, without giving any further detail. One may claim that this further supports the inference made above that most teachers did not come to the interview with a very explicit and established conceptualisation regarding the pedagogical issue of active learning, stemming from their teacher training, in-service training courses, from discussions with fellow teachers, or even from any systematic personal reflection about the term in advance of the interview.

¹⁶ Paragraph 6 is the first paragraph that contains statements from the respondents, since paragraphs 1-5 contain information about the interview and the interviewer's initial question.

Another fairly vague impression, was that few teachers introduced aspects that were related to what we in Chapter 3 above have referred to as the *planning* and *monitoring*, or assessment, facets of teaching. Instead, they talked about the other facets, related their interpretation of active learning to aspects regarding the pupil and teacher roles in the interaction between teacher and learner, that the pupil had to be active in various ways in this process, that learning resources had to be concrete and authentic, that authenticity was important regarding the content or issues involved in active learning. With regard to pupil activity, I had a clear impression that most teachers started with reference to some kind of physical activity and only later in the interview brought in cognitive activity as an aspect of active learning. In one case I will come back to in the presentation of cases in Section 6.4 below, a sudden realisation that active learning might also include cognitive, invisible (Oser and Baeriswyl 2001) activity, led the teacher to almost totally redefine his understanding of active learning towards the end of the open-ended part of the interview.

My immediate impressions of the teachers' spontaneous responses regarding their conceptions of active learning confirm Clark and Peterson's review (1986) of research on teachers' thought processes, that teachers' thinking about teaching and learning is typically implicit and not very well specified, but that their thoughts can be elicited and made more explicit through assistance, for instance through a research interview such as in the current case. Clark and Peterson (*ibid.*) also refer to a wide variety with regard to the content and orientation of teachers' implicit theories, and that these often come in the form of mental images, something which is also in line with how the teachers in my study describe their understanding of active learning.

6.3.2 Tendencies and variations – supplied part of interview

The more structured part of the interview offered, as described in Section 5.4 above, both potential instances, in the form of project work, science experiments etc., and a number of different potential aspects within all facets of teaching apart from underlying learning processes, i.e. the invisible activity. With regard to the supplied instances my impression is that most teachers included science experiments and project work in what they thought of as active learning, while there were more reservations regarding whole-class teaching and outdoor education. Another tendency

was that, even if they included project work as an instance of active learning, they had reservations regarding the use of this way of working. Their description of how project work tend to be interpreted was very much in line with Illeris' rather radical definition of project work (cf. Section 1.5 above), and also in line with how many teachers interpreted project work during the period when the previous national curriculum, L97, was operating, with a lot of pupil responsibility for planning and structuring the work and a teacher who did not interfere unless asked (cf. Section 2.3.4 above). Their criticism involved being critical of their own interpretation and practice during L97, and the elements they were particularly critical about were that project work was often chaotic, that pupils just divided the work between themselves instead of collaborating, that projects often extended the time limits set which made it difficult to cover all areas of the curriculum, that it lead to low-quality pupil work, but in particular that project work was not good for weak pupils. One teacher expresses this in the following way:

But for weak pupils it fell flat – they are not able to structure their work well enough. They need a teacher beside them, and then it isn't project work since project work is supposed to be a free way of working (Teacher 01, paragraph 16).

However, they rarely related their criticism to deficits with regard to their own interpretation and implementation, but referred instead to the practical effects as mentioned above. This is also in line with research findings (Rønning 2003) previously referred to in Section 2.3.4 above. Some teachers were also quite critical about outdoor education, and often for the same reasons as mentioned above regarding project work – it takes too long, is not structured enough, and does not offer good working conditions for effective learning. Outdoor education was also quite important during L97, and the teachers' criticism might be viewed as another example of hindsight regarding previous practices. However, some were still very positive both about project work and outdoor education, and thought these ways of working were excellent ways of realising active learning in practice.

With regard to the supplied aspects, my impression was that most teachers agreed with the statements that activities had to be active and exploratory, that pupils should be allowed and encouraged to ask questions and discuss. For most of the other statements they had some reservations or were even negative with regard to whether these aspects were part of their understanding of active learning. The latter included for instance that active learning does not include final assessment of outcome, or that the teacher should never intervene unless asked. Quite a few had reservations regarding pupils planning what to learn and who to learn with on their own, and that the teacher never gives the right answer if asked. For some of the other statements the teachers reacted negatively if they interpreted the statement in the sense that it *always* had to be the case that active learning needed to have certain characteristics, e.g. be cross-curricular or that you needed a wide variety of concrete, authentic resources. According to the teachers these aspects might be positive regarding active learning, but weren't essential for the implementation of active learning.

Finally, all teachers disagreed with the last statement offered to them that active learning is for developing pupils' democratic values and independent reasoning capability, and not for acquiring specific curricular knowledge or skills. Instead, they said that these two aspects are interrelated and depend on each other. To be able to make use of your democratic values and reasoning capability you need curricular knowledge and skills, and to develop knowledge and skills you depend on reasoning capability and sound values.

6.4 SOME CASES

During the interviewing process I began seeing patterns with regard to how the teachers responded to my initial open-ended question about active learning. As mentioned above, they either tended to start with an aspect and then included an instance, or start with an instance before including aspects, and then mixed aspects and instances as they went along. With regard to aspects, pupil activity and practical activities were central, and they also tended to include aspects regarding authenticity of issues and resources, and to focus on concreteness instead of abstraction with regard to content and resources. However, there were some teachers who stood out

as being very different, either because they had a very different understanding of active learning than the majority, or because of the way they reflected about the term active learning. Below I will present a brief description of some of these cases, a 'typical' one, one with a very firm and well-established understanding of active learning, and a case where the teacher develops and nearly totally changes his understanding while reflecting about active learning. The teachers have been given fictitious names to preserve their anonymity.

6.4.1 A 'typical' case

Annie (Teacher 23) is a female teacher in upper primary. She teaches natural science and social studies, and she is an experienced teacher with more than 20 years practice. Annie's understanding of active learning is closely connected to practical activities, in particular in natural science. Most of the instances she comes up with are from natural science, pupils doing different practical investigations or experiments. Annie says that active learning is something which happens when the pupils are in activity and that it is through the use of practical skills that knowledge is transferred to theory in the head. She says that the practical tasks are often a prerequisite for learning, and that it is a way of training pupils in abstract thinking. She also says that through practical tasks pupils get a more positive approach to education and to learning – it raises motivation.

With regard to her own role as teacher, she says that in active learning she has to act as a guide. When it comes to the pupils she says that some pupils are theoretical and some are practical, and whether it is at all possible to start from the theory (reading about it in a book...) will depend on pupils' level of maturity, and whether they can make use of theory in practice. Annie says there is something called passive learning, and to describe this term she comes up with examples of pupils reading quietly and pupils listening to their teacher talking and writing on the blackboard. However, she says that if the teacher manages to get the pupils involved and interested, catching their attention, these kinds of activities can also be active. She says that if pupils reflect on something it becomes active learning, while if they only listen and take it in, without testing it out through reflection or through practical tasks, it remains passive.

6.4.2 An 'outlier'

John (Teacher 04) is a male teacher in lower secondary. He teaches maths, social studies and science, and he has been teaching for more than ten years. John starts out very differently as compared to the others by defining how *others* think about active learning, something which he disagrees very strongly with. He says that active learning has been connected to an idea of large projects, a main focus on practical activities and very little focus on and time for in-depth work, something which he links very clearly with the previous national curriculum, L97. According to him this understanding of active learning has caused a lot of damage and prevented rather than enhanced learning. To him the main aspect regarding active learning is the pupils' cognitive activity. Practical activity, for instance through practical investigation in science, may form the starting point for active learning, but for him the active learning part is the mental activity that takes place after the practical activity, through the follow-up work where questions about why things happened are raised. John says that this follow-up part should include reflection, analysis, efforts to try and generalize what you have seen in practice.

John says that there is no such thing as passive learning; if you're not mentally active no learning is taking place. He refers to examples of unsuccessful project work as activity without learning – the pupils were only conducting practical activity without any mental activity, something which he describes as “...*just a happening*”. For learning to become robust, he says that pupils have to do things many times, in different ways, using different senses, discussing, reflecting.

With regard to the teacher role in active learning he says that the teacher is a resource and has strong subject knowledge, is responsible for using a variety of ways of working, for posing the right questions, for using a variety of assessment strategies, and for challenging pupils in such a way that he prevents them from developing routine behaviour in learning situations. John says that *interest* is central to active learning, and that teachers are responsible for stimulating pupils' interest. He says interest can start from knowledge or the other way around – that teachers create interest and then pupils can develop knowledge. He says that the first bit – where

interest comes from already existing knowledge - is the fundament for self-driven learning processes.

6.4.3 A 'developing' case

Richard (Teacher 07) started working as a teacher when Reform 97 was launched. He teaches natural science in lower secondary school. Richard has not heard of active learning before and says it is not part of what he thinks of as his pedagogical platform. However, he is willing to start defining what he understands by it. Initially, he says he understands active learning as a situation where the pupils are at the centre of the process, being active. He uses two other concepts - pupil-governed and activity-based - to express what he understands by it. The active learning instances he mentions are connected to physical education and outdoor education, a focus on *physical* activity. He also mentions the use of real-life objects and authentic situations as examples of active learning. He says that pupil interest is central to active learning, and to learning in general, and claims that pupils who struggle in school often have few interests.

Initially he has a conception of *passive learning* which he defines as the classic 'fill the jar' model where pupils sit passively, receiving something others have produced in advance for them to look at or listen to. As the interview progresses he seems to be developing and changing his understanding of active learning. He suddenly says that even teacher lecturing, which he previously has defined as passive learning, can result in active learning if the monotony of the teacher's monologue is broken in some way or other. Richard then starts questioning his own idea of passive learning and whether it is at all possible to have something called passive learning. He ends up with an image of passive learning as the pupils acting as computers in rest mode – they are physically there, but mentally turned off. With regard to active learning he concludes that it is perhaps most about being mentally active and not so much about being physically active, and that it is pupil interest that activates the mental processes. In line with John, Richard also has an idea of robustness of knowledge. He says that for knowledge to be stored, not just kept in the short-term memory and then lost, you need to question and problematise issues related to it.

6.5 AL IS GOOD – IF IT IS NOT GOOD THEN IT IS NOT AL

An impression that ran through both the spontaneous and supplied part of the interview was that teachers seemed to link what they thought of as active learning with something positive, something that had pedagogical value. And, conversely, that if an aspect was not a good pedagogical principle, then it was not part of what the teachers conceived of as active learning. This impression was particularly strong during the supplied part of the interviews as I found that some aspects that were supplied to them, in particular regarding (lack of) assessment, were rejected both as being part of active learning and as pedagogical principles that should be followed.

Whilst it is very difficult to specify what gave rise to the impression that this was based on an “AL is a good thing” assumption, and I am alert to the dangers of ‘going beyond the information given’, it nevertheless seemed at times as if respondents were working from such an assumption, in that - and the impression was: so that - anything they disapproved of pedagogically was not to be seen as part of active learning. I therefore report this impression here.

The current chapter has dealt with my immediate impressions regarding the teachers’ spontaneous thinking about active learning aspects and instances, as well as their responses to active learning instances and aspects supplied by me in the more structured part of the interview. I have also exemplified teachers’ views in somewhat more depth through presenting some teachers who I found were representing what I conceived of as a typical view and two more exceptional cases. In the following chapters I will now turn to the more systematic investigation and analysis of the interviews based on their detailed coding, and will also try to bring my more immediate analysis presented in this chapter together with the systematic analysis to see how these compare.

7. CONCEPTIONS OF ACTIVE LEARNING: SPONTANEOUS DEFINING ASPECTS

7.1 INTRODUCTION

In this chapter I begin the presentation of findings based on interview transcript coding by considering the aspects respondents came up with more or less spontaneously in response to being asked what they understood by active learning (AL). The aspects involved in this chapter may be labelled '*extended definitional aspects*', in that they include not only features respondents positively identified with active learning, but also extensions to such 'definitions' (see the previous chapter for comments on the logical/psychological status of respondents' constructs) such as particular features being neutral/optional with regard to AL, or even some features being thought to be disqualifying in relation to AL.

More specifically, in fact, the aspects interviewees provided were coded as *spontaneous* only if they were provided in direct response to questions in the open-ended part of the interview, and *semi-spontaneous* if they were mentioned only once respondents had been supplied either instances or aspects, and if they were new aspects, i.e. aspects that were not connected to the supplied instance/aspect in question (cf. Section 5.6.3 above). Whilst it seemed a worthwhile precaution to maintain such a detailed distinction in the coding, it now seems important only to distinguish between ideas proposed independently by the interviewee and those introduced by the interviewer. This chapter will therefore deal with the first of these, which will include definitional aspects that were originally coded as either spontaneous or semi-spontaneous, which may be referred to in abbreviated style as '*Spss*'.

At this point we are interested mainly in whether there is evidence at all of particular elements being part of an individual's conception of AL, which we operationalise as whether they talk in such terms on at least one occasion. This means dealing with the relevant data in *binary* terms, that is, converting one or more instances of a code per individual to 1, otherwise leaving it at zero. By contrast, interpretation of the number

of times they have mentioned particular aspects appears rather problematic and will therefore not be a major focus. There will be nevertheless be occasions where it may add a useful perspective to present such *rates of mention*.

As was described in Chapter 5, the adopted coding system is relatively complex and extensive, extending to large numbers of detailed *aspect* codes. This detailed complexity poses problems for the presentation of findings, particularly insofar as one wishes to keep sight both of specific details and their place within the overall picture. In the face of such demands, it seems particularly appropriate to utilise visual presentation strategies (Stelma 2003) that combine maximum detail with synoptic integration. In doing so, I shall make use of the fact that the adopted coding system is systematically organised around the major general **facets** of teaching interaction derived in Chapter 3, which can be further differentiated into **Sub-facets**, as follows in Table 7 below.

Table 7 Facets and Sub-facets of Teaching Interaction

Facets	Sub-facets
A Planning	<i>A1 Tchrs pl</i> = Teacher does the planning <i>A2 TP Pl</i> = Teacher and pupils plan jointly <i>A3 Ps Plan</i> = Pupils do the planning
B Intended Learning Outcomes (ILOs)	<i>B1 ILOs</i> = Aspects relating to ILOs
C Assessment	<i>C1 Assessment</i> = Aspects relating to assessment of progress or outcome
D Pupil Involvement	<i>D1 Pupil Interest</i> = Aspects emphasising pupil agency and motivation <i>D2 Pupil Activity</i> = Aspects relating to pupil side of learning-teaching interaction
E Learning Resources	<i>E1 Learning Resources</i> = Types of learning resource
F Teacher Activity	<i>F1 Tchr Activity</i> = Aspects relating to teacher side of learning-teaching interaction
G Underlying Learning Processes (ULPs)	<i>G1 ULPs</i> = Underlying learning processes/principles

Such a structure offers possibilities of both progressive introduction of levels of detail and visual portrayal of data in synoptic, colour-coded figures, strategies that will be used in this and the following chapters. Thus, the first main section of the chapter will

deal with interviewees' spontaneous constructions of AL in terms of the educational interaction facet and sub-facet level, whilst the second section extends this to the more detailed level of specific coded aspects.

Finally, as was indicated earlier in Chapter 4, in exploring the varying ideas teachers may have concerning the nature of AL, whilst establishing the content elements is of prime concern, their prevalence arguably requires analysis regarding at least two kinds of issue: (1) the extent to which each of the elements is shared across the sample of interviewees as a whole, and (2) the extent to which particular combinations of such elements are to be found to form contrasting profiles characterising different groups of respondents. The first of these requires only the simplest of descriptive statistics, whilst the second corresponds to the function of cluster analysis, as outlined in Appendix 3.

7.2 SPONTANEOUS/SEMI-SPONTANEOUS AL DEFINITION: TEACHING INTERACTION FACET LEVEL

7.2.1 Evidence of Conception (Binary Data)

Visual Representation Conventions

As a starting point and prototype for further data presentation, Figure 2 below shows the proportions of the whole sample citing particular sub-facets of the teaching interaction at least once in their indications of what they take AL to mean. In fact, respondents never referred to these *sub-facets* as such, they talked and were coded in terms of more detailed, specific *aspects* (which we will progress to in section 7.3). However, Figure 2 offers a first approach to this data by dealing at a more general level, in terms of sub-facet areas that were represented by the mention of any of their constituent specific aspects. These facets and sub-facets are presented across the horizontal axis of the graph and are colour-coded at two levels: colour range and specific hues.

Starting at the left, facet *A Planning* extends across three hues in the red-orange range: sub-facet *A1 Tchrs pl* (■), indicating presence of any of the specific defining aspects involving teachers doing the planning in AL; sub-facet *A2 TP Pl* (■), indicating presence of any of the specific defining aspects involving teachers and pupils doing the planning

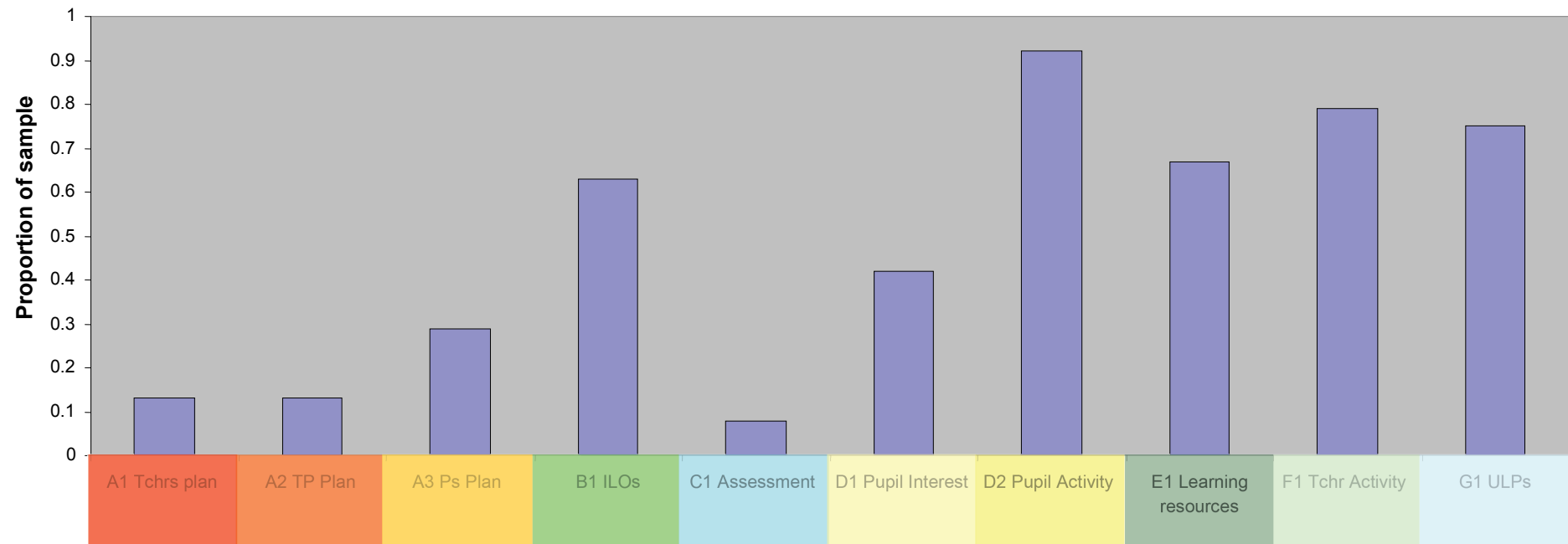
jointly; and sub-facet *A3 Ps Plan* (■), indicating presence of any of the specific defining aspects involving pupils doing the planning.

Next, the facet indicated above as *B ILOs* is preserved as detail-facet *B1 ILOs* and is colour-coded bright green (■), covering use of any of the specific defining aspects involving reference to ILOs. Moving across the remainder of the horizontal axis of Figure 2 takes us through the seven facets and ten sub-facets of teaching interaction featuring from top to bottom of Table 7, with corresponding colour-coding. Figure 2 summarises the binary data regarding teaching interaction sub-facets, with its vertical axis indicating the proportion of the overall sample of teachers who were coded as making at least one reference to any of the specific detail aspects grouped under such sub-facets in conveying their conception of AL. In considering Figure 2 it must be remembered that it includes only those ideas (and then only in terms of teaching interaction sub-facets) that were actually forthcoming from respondents in an essentially spontaneous way (*Spss*).

General Trends in Extended Definitional Sub-Facet References Binary Data

Perhaps the only universal feature to notice in the figure is that all the teaching interaction sub-facets differentiated above are cited by at least some members of the sample, the minimum being two (8%). However, there is also considerable variation in their prevalence, with no single sub-facet being cited by everyone. In fact, the mean number of sub-facets cited at least once by members of the sample was 4.83, with a standard deviation of 1.60. The suggestion is therefore that teachers tend to think of AL in limited pedagogical terms. Indeed, in keeping with the historical emphasis on process in the AL literature, the sub-facets most prevalently associated with AL in this sample are *D2 Pupil Activity* (22 respondents or 92%), *F1 Teacher Activity* (19 respondents or 79%) and *E1 Learning Resources* (16 respondents or 67%). Likewise, the relative absence of reference to *C1 Assessment* (2 respondents or 8%) and to planning generally, but in particular *A1 Teachers Planning* and *A2 Teachers and Pupils Planning jointly* (each 3 respondents or 13%) may echo the combination of a traditional ‘naturalistic’ student-centred emphasis on pupil interest/self-determination (cf. 11 people or 42% mentioning *D1 Pupil Interest*) with the process emphasis.

Figure 2 Proportions of whole sample spontaneously citing extended definitional aspects of AL in terms of sub-facets of teaching interaction



However, in slightly surprising contrast to these latter expectations is the considerable number of respondents talking about AL in terms of *B1 ILOs* (15 people or 63%). Finally, given traditional bemoaning of the lack of theoretical/reflective thinking amongst teachers (cf. Brown & McIntyre 1993; Calderhead 1996; Oser & Baeriswyl 2001), the relatively widespread spontaneous reference to *G1 Underlying Learning Processes* (18 respondents or 75%) is something of a welcome surprise.

The varying rates of mention of particular sub-facets we have seen across the sample as a whole are compatible with the possibility that different profiles may characterise different groups. This can be explored in two ways: firstly by examining profiles as a function of teacher variation in known attributes, i.e. gender, subject taught, educational level of pupils, teacher age, teacher experience; secondly, by applying cluster analysis to the whole sample.

Trends as a function of teacher attribute variables

The figures on the following pages show the profiles of trends in sub-facet citation as a function of variation in teacher gender (Figure 3), educational level of pupils taught (Figure 4), subject taught (Figure 5), teacher age (Figure 6) and teacher experience (Figure 7). It must be remembered that these variables overlap with each other to some extent, which, added to the very small numbers involved, makes interpretation and any generalisation highly hazardous. Nevertheless, it makes sense to explore these pictures. It will be seen that across these figures there are very few strong contrasts across any of the groupings in any of the sub-facets. In Figure 3 there are no striking contrasts between female and male respondents. Across the pupil educational levels in Figure 4 one might note the contrasts in reference to D1 Pupil Interest/Initiative, A3 Pupils Plan, and F1 Teacher Activity, where in each case the upper primary level leads the proportions citing, but the lower secondary and lower primary having different relative positions according to sub-facet. In some respects, AL appears to be something of an upper primary phenomenon in terms of spontaneous teacher citing of elements belonging to particular sub-facets of the educational interaction.

Figure 3 Percentages by gender of respondents citing educational sub-facets spontaneously

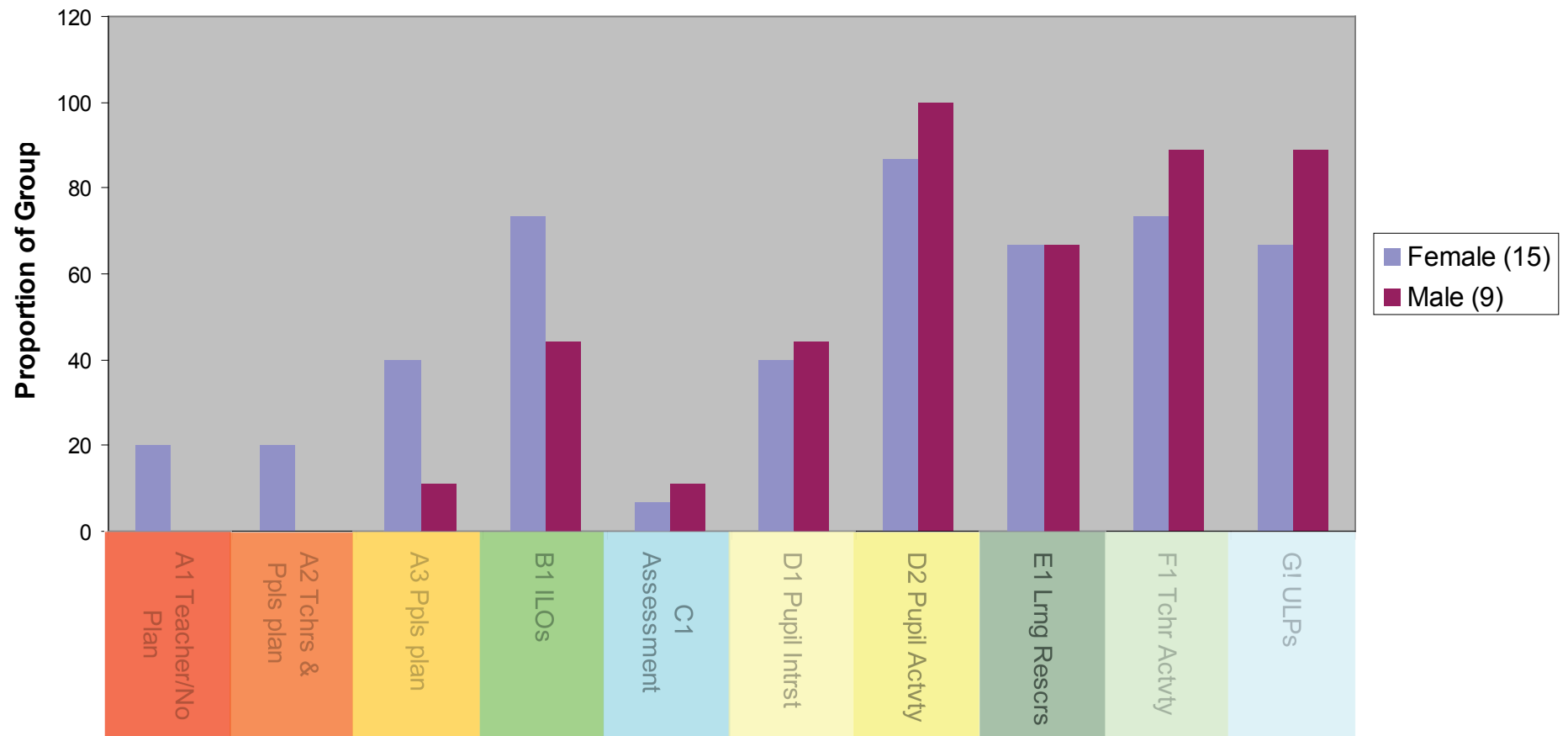


Figure 4 Percentages of teachers by pupil educational level citing sub-facets spontaneously

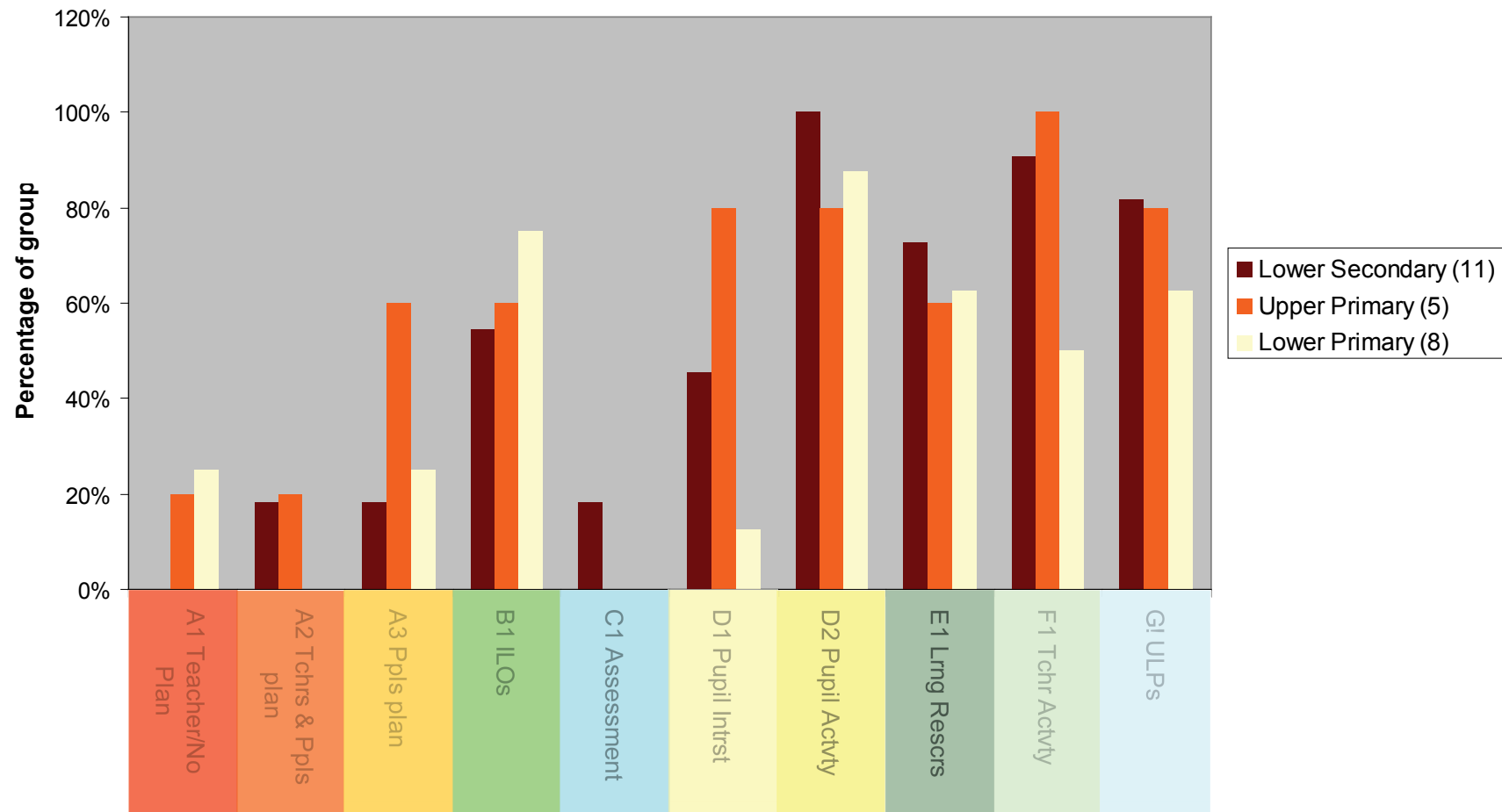


Figure 5 Percentages of teachers by subject taught citing sub-facets spontaneously

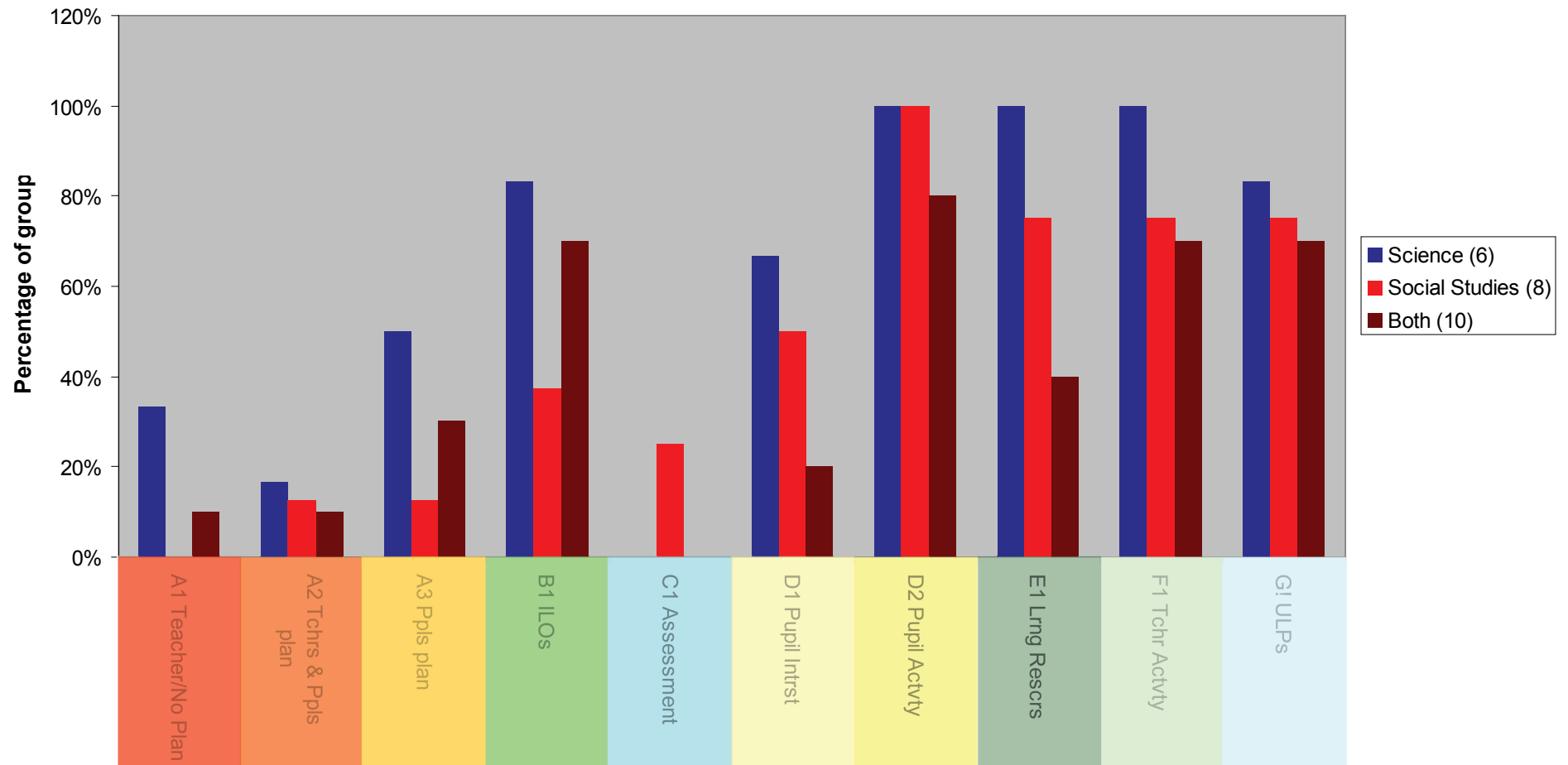


Figure 6 Percentages of teachers by age level citing sub-facets spontaneously

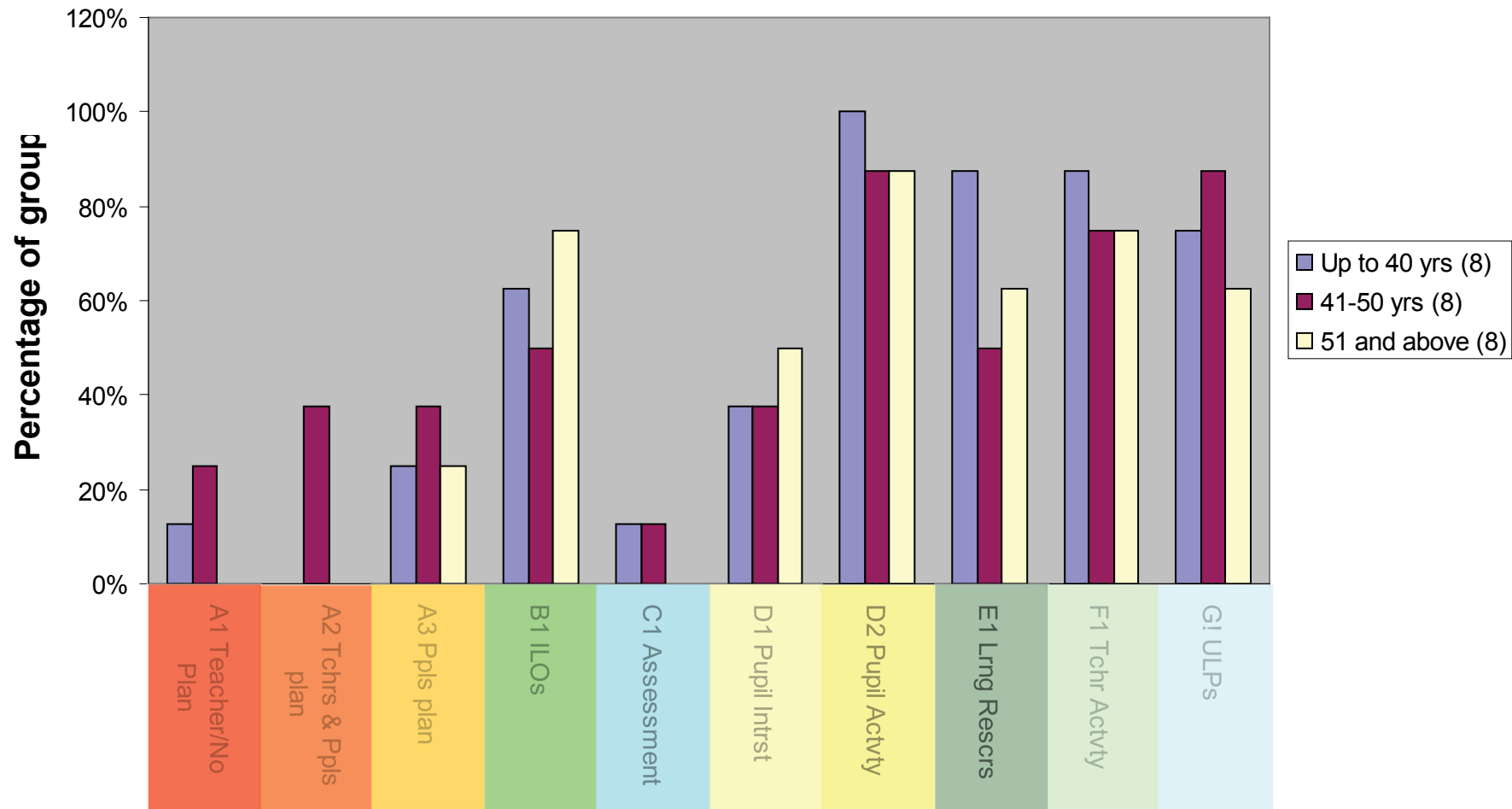
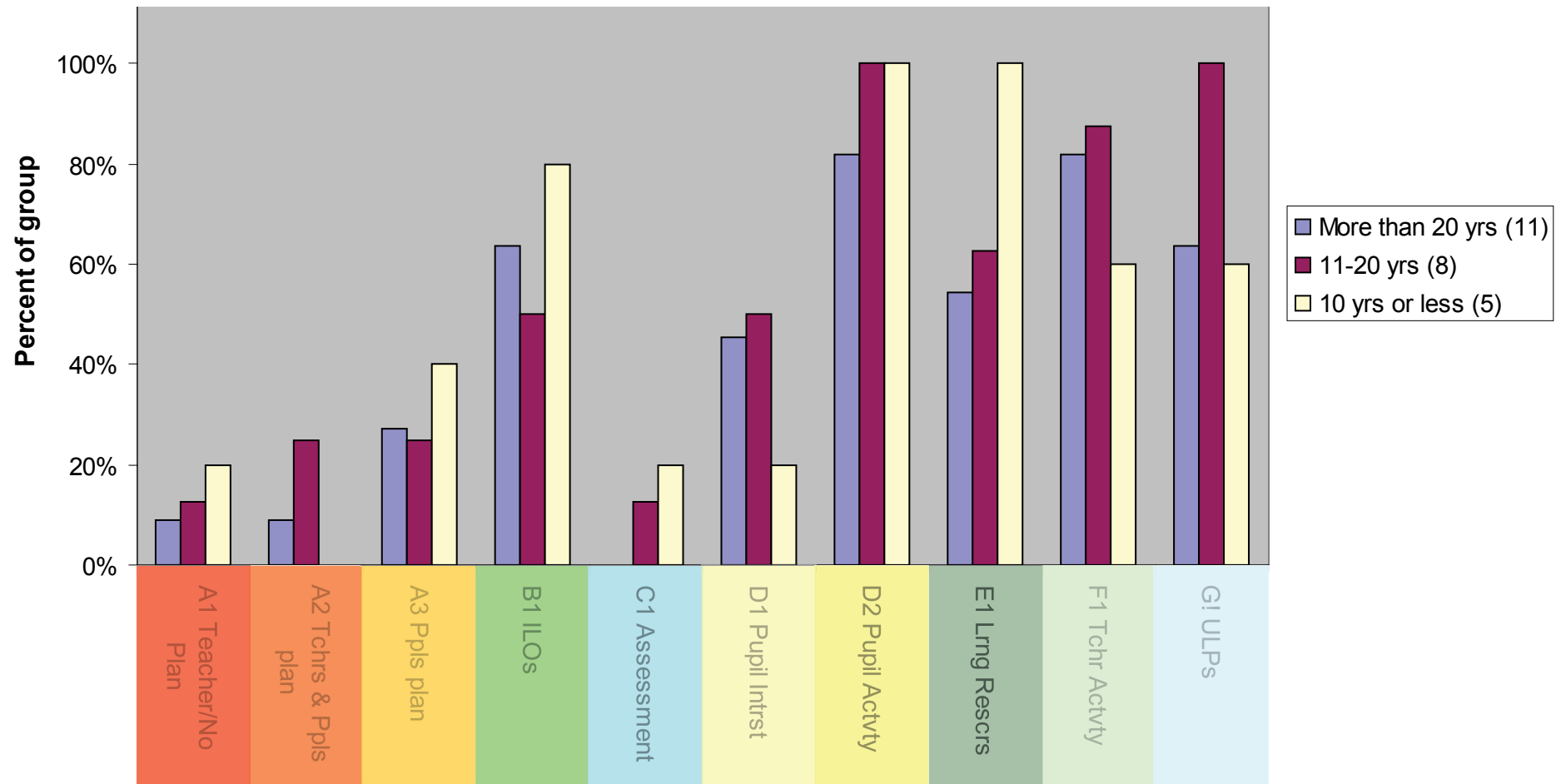


Figure 7 Percentages of teachers by experience level citing sub- facets spontaneously

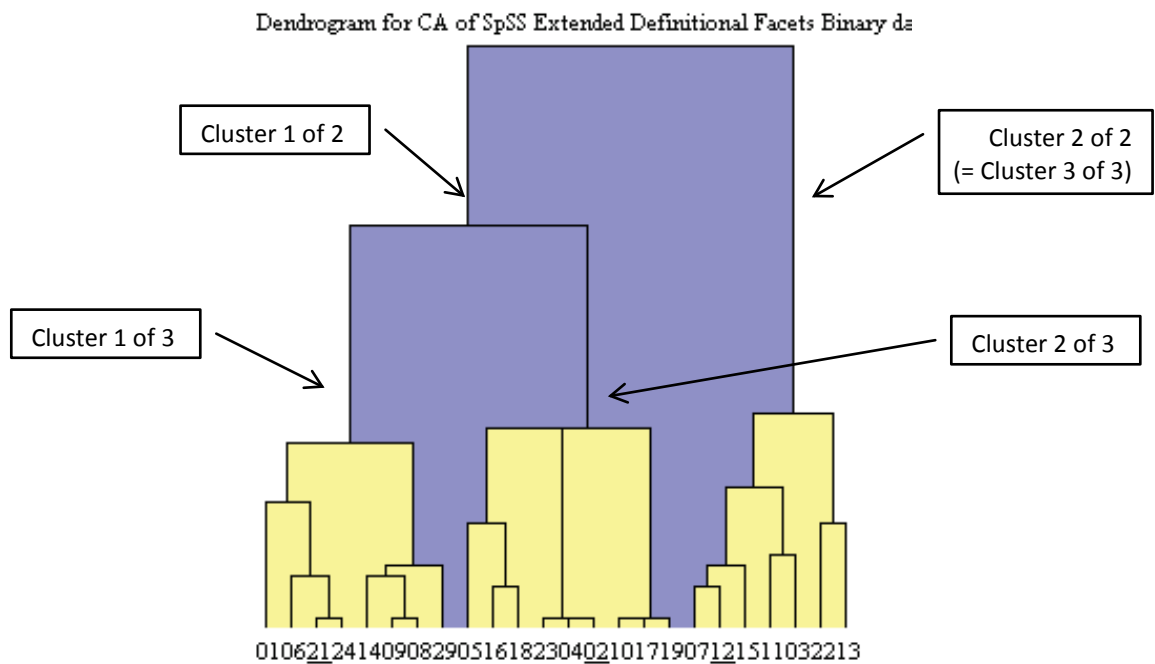


Cluster Analysis of Extended Definitional Sub-Facet References

As indicated above, the varying profile of sub-facet occurrences in whole sample shown earlier in Figure 2 may mask the existence of a number of respondent sub-groups with different profiles. To the extent that such profiles were clear-cut and contrasting, they and the typology of patterns they would suggest by way of conceptions of AL would form important features in the mapping of this domain amongst respondents. As outlined in Appendix 3, hierarchical cluster analysis offers a means of exploring the extent of such possible groupings. The binary data indicating presence/absence of at least one detailed aspect representing each of the teaching interaction facets were therefore subjected to cluster analysis using the ClustanGraphics computer package version 7.05 (Wishart 2006), using Ward's method on the raw data as explained in Appendix 3, and its outcome will now be reported. As the first report of cluster analysis application in this thesis, this introductory treatment will be framed in relative detail.

Figure 8 below presents the dendrogram yielded by this cluster analysis. The visual and analytical indications are that the yellow-highlighted 3-cluster solution is to be preferred (see introductory outline of cluster analysis in Appendix 3). Visually, proceeding from the top of the tree, we first find two relatively long branches leading to two clusters, one of which splits further into two sub-clusters to produce a total of three reasonably long branches, indicating a degree of contrast between the cluster profiles at their ends. However, when we go beyond these first three branches, we find continuous sub-branching and deciding at what level to cut the tree to generate a meaningful set of clusters looks arbitrary. Clusters also become very small, as a result of the small overall sample involved, making issues of within-cluster homogeneity meaningless.

Figure 8 Dendrogram from Cluster Analysis of Extended Definitional Sub-Facet References: 3-cluster solution highlighted



Thus analytically, although the *ClustanGraphics Best Cut* subroutine indicates a 6-cluster solution, this would mean one clusters with only two members and two clusters with three members. The alternative *Validate Tree* routine supports the visual pattern in indicating the 3-cluster solution. It should therefore be useful to trace the nature of the clusters and their profiles down to the 3-cluster level.

Whilst the dendrogram shows how the overall sample splits into two clusters, then three clusters and beyond. Figure 9 and Figure 10 on the following pages show how the profile patterns of these clusters change correspondingly. It follows from the nature of hierarchical agglomerative clustering procedures such as used here that as one goes from the clusters with high fusion points to those fusing lower in the tree, the clusters become more homogenous. In the case of binary/categorical data this means that the proportions of cluster members exhibiting particular categories tend to approach either the upper limit of unity (all members of the cluster) or the lower one of zero - though how far and at what levels this actually occurs depends eventually on the data itself.

Figure 9 Proportions of Clusters citing (Spss) extended definitional aspects of AL belonging to sub-facets of teaching Interaction – 2-Cluster solution

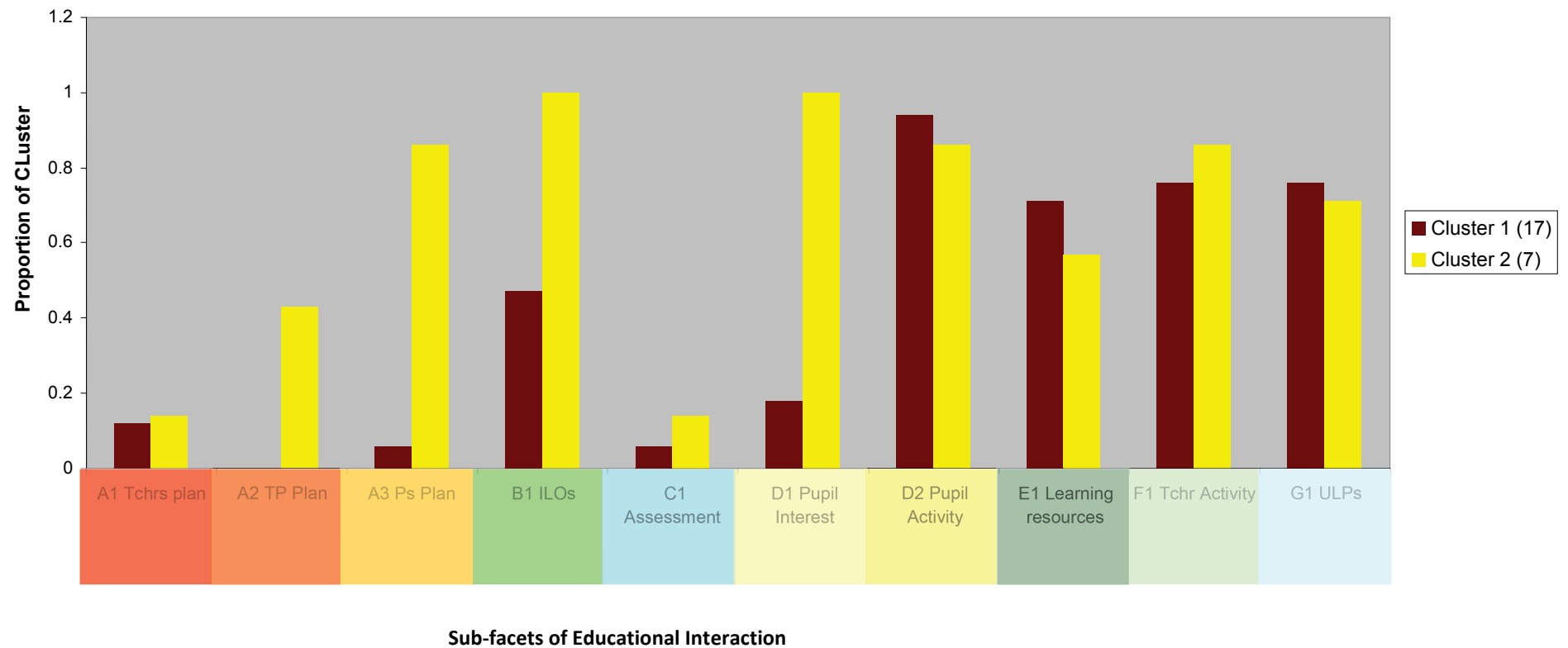
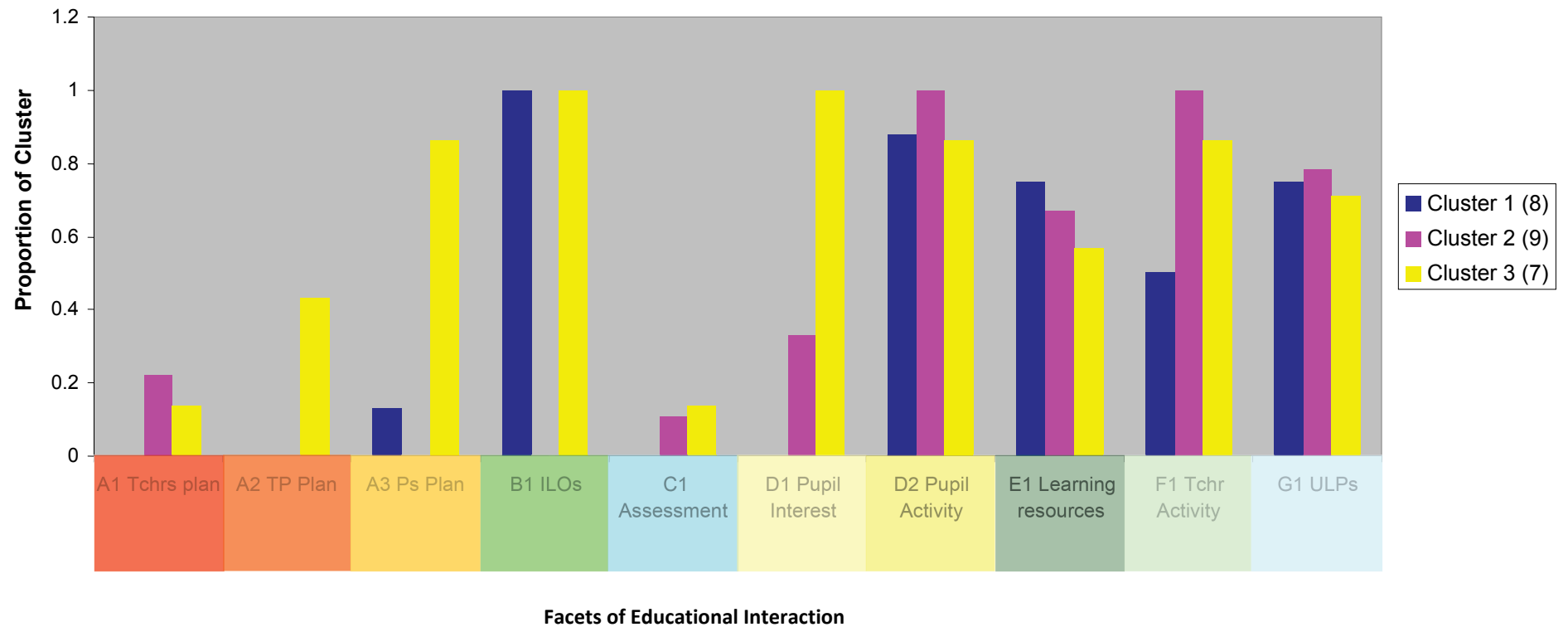


Figure 10 Proportions of Clusters citing (Spss) extended definitional aspects of AL belonging to sub-facets of teaching interaction – 3-Cluster solution



Some such developments can be seen between the overall sample (i.e. the 1-cluster) profile in Figure 2 and the 2-cluster profiles in Figure 9. The clearest cases are *D1 Pupil Interest*, where we go from a presence in 42% of the whole sample to 18% of Cluster 1 and 100% of Cluster 2 in the 2-cluster solution; *A3 Pupils Plan*, from the whole sample proportion of 29% to 6% of Cluster 1 and 86% of Cluster 2; and *B1 ILOs*, going from a whole sample proportion of 63% to 47% of Cluster 1 and 100% of Cluster 2. The change in the case of *A2 Teachers Plan* is less pronounced (from 29% of the whole sample to none of Cluster 1 and 43% of Cluster 2), but is as large as it could be, since the lower limit of zero has actually been reached in Cluster 2.

On the other hand, no such changes are seen in a number of the other sub-facet categories. The already quite extreme whole sample proportions for *C1 Assessment* (8%) and *D2 Pupil Activity* (92%) prevent much change at the next, 2-cluster level. Nevertheless, the contrast between the changes for *A1 Teachers Plan* and *A2 Teachers and Pupils Plan Jointly* reminds us that even quite extreme proportions at one level of clustering may give rise to notable contrasts between clusters at the next level. Both of these facets namely start from the same low whole sample proportion of being mentioned by 13% of the respondents, but whilst *A2 Teachers and Pupils Plan Jointly* shifts to zero in Cluster 1 and 43% in Cluster 2, *A1 Teachers Plan* shifts little, namely to 12% in Cluster 1 and 14% in Cluster 2.

The latter case exhibits a further possible trend as one proceeds down the dendrogram, namely that a lower clustering level may actually preserve the previous level of a variable in each of the clusters it splits into. It is notable that this is also the case with respect to the four sub-facets at the right of Figure 9: *D2 Pupil Activity*, *E1 Learning Resources*, *F1 Teacher Activity* and *G1 ULPs*.

Extending consideration to Figure 10, we see that Cluster 1 in the 2-cluster solution (the **maroon** profile in Figure 9) has split into two clusters in the three-cluster solution (the **dark blue** and **magenta** profiles in Figure 10), whilst Cluster 2 in the two-cluster solution is preserved as Cluster 3 in the 3-cluster solution, its profile being therefore displayed in the same **yellow** in both figures.

Generally speaking, the clarity of the clustering remains somewhat modest, though the profiles at the 3-cluster level have become in some respects more internally homogenous and more different from each other. Given that Cluster 3 is the same as Cluster 2 in the 2-cluster solution, our immediate attention is drawn to comparison between the new clusters 1 and 2. The most noticeable feature is the contrast in the presence of sub-facet *B1 ILOs*, which are indicated by all members of Cluster 1, but by no members of Cluster 2. Other contrasts between these two new clusters are more modest, in descending order: 50% versus 100% for *F1 Teacher Activity*, zero versus 33% for *D1 Pupil Interest*, zero versus 22% for *A1 Teachers Plan*, 13% and zero for *A3 Pupils plan*.

Table 8 Major Features of 3-Cluster Profiles of Spss extended definitional binary data

	Strong presence	Intermediate/ mixed presence	Absence/ minimal presence
Cluster 1	<i>ILOs</i> Pupil Activity Learning Resources ULPs	<i>Teacher Activity</i>	<i>Teachers plan</i> <i>Teachers with pupils plan</i> <i>Assessment</i> <i>Pupil Interest</i> Pupils plan
Cluster 2	<i>Pupil Activity</i> <i>Teacher Activity</i> ULPs	Learning Resources Pupil Interest	<i>Teachers with pupils plan</i> <i>Pupils plan</i> <i>ILOs</i> Assessment Teachers plan
Cluster 3	<i>ILOs</i> <i>Pupil Interest</i> Pupils plan Pupil Activity Teacher Activity	<i>ULPs</i> <i>Learning Resources</i> Teachers with pupils plan	Teachers plan Assessment

By way of an alternative approach to exploring the nature and significance of sub-grouping possibilities with regard to these facets of AL conceptions, Table 8 above offers a schematic summary corresponding to the visual depiction in Figure 10. Sub-facets have been labelled as being strongly present, having a mixed presence, or being minimally present in a cluster according to whether they are indicated respectively by the top quartile, the middle two quartiles, or the bottom quartile of

relevant cluster members. Bold italicised font is used in the *strongly present* column for those sub-facets indicated by all members of a cluster, in the *minimal/absence* column for sub-facets indicated by no one in the cluster, and in the *mixed* column to indicate those mentioned by more than half (but less than 75%) of the cluster. Entries in the strong and minimal columns are in order of 'extremeness'.

Once again, the impression here is of rather weak differentiation in which all clusters tend to share a number of features and differences are relatively specific. The following contrasts are perhaps worth noting:

- (a) The total absence of ILO elements from Cluster 2 versus their universal presence in both of the other two clusters;
- (b) The extreme rarity of reference to planning, whether by teachers, pupils or both together, in clusters 1 and 2, contrasting with the strong presence of pupil planning and modest presence of pupils and teachers planning jointly in Cluster 3.

Thus, whilst remembering that we are dealing in relatively general terms here, it is perhaps tempting to see Cluster 2 as having a familiarly traditional 'broad uplands' idea of active learning, in which the emphasis is on pupil and teacher activities consistent with certain underlying learning processes/principles and perhaps including an emphasis on pupil interest and freedom. This emphasis may exclude, implicitly at least, the 'technical' side of concrete educational provision, including ILO specification, any sort of planning, and any need for assessment.

The differences between clusters 1 and 3 seem to be mainly restricted to the general absence of any sort of planning mentions from Cluster 1 versus the strong presence of pupil planning and moderate presence of teacher and pupil joint planning in Cluster 3. One might possibly speculate here that under the recent influence of LK06 (see Chapter 2 above), members of clusters 1 and 2 may have taken on board the idea of intended learning outcomes as important in AL, with Cluster 3 further recognising that this is likely to require planning, but Cluster 1 members not making this further step.

Such comments on the clustering results are becoming rather speculative, however, and it is necessary to consider what these results suggest in combination with the general trend data. However, before doing so we briefly consider data relating to the *rates of mention* received by the educational sub-facets in question.

7.2.2 Rates of Mention of Extended Definitional Sub-Facet References

Another way of characterising respondents' spontaneous treatments of AL, which might provide revealing access to teachers' outlooks on the topic, relates not just to whether teachers at least include particular elements, but the extent to which they do so. As indicated in detail in Chapter 5, this has been operationalised in terms of the number of separate segments in the interview in which a respondent is coded as referring to an element. Such segments might be relatively long or short.

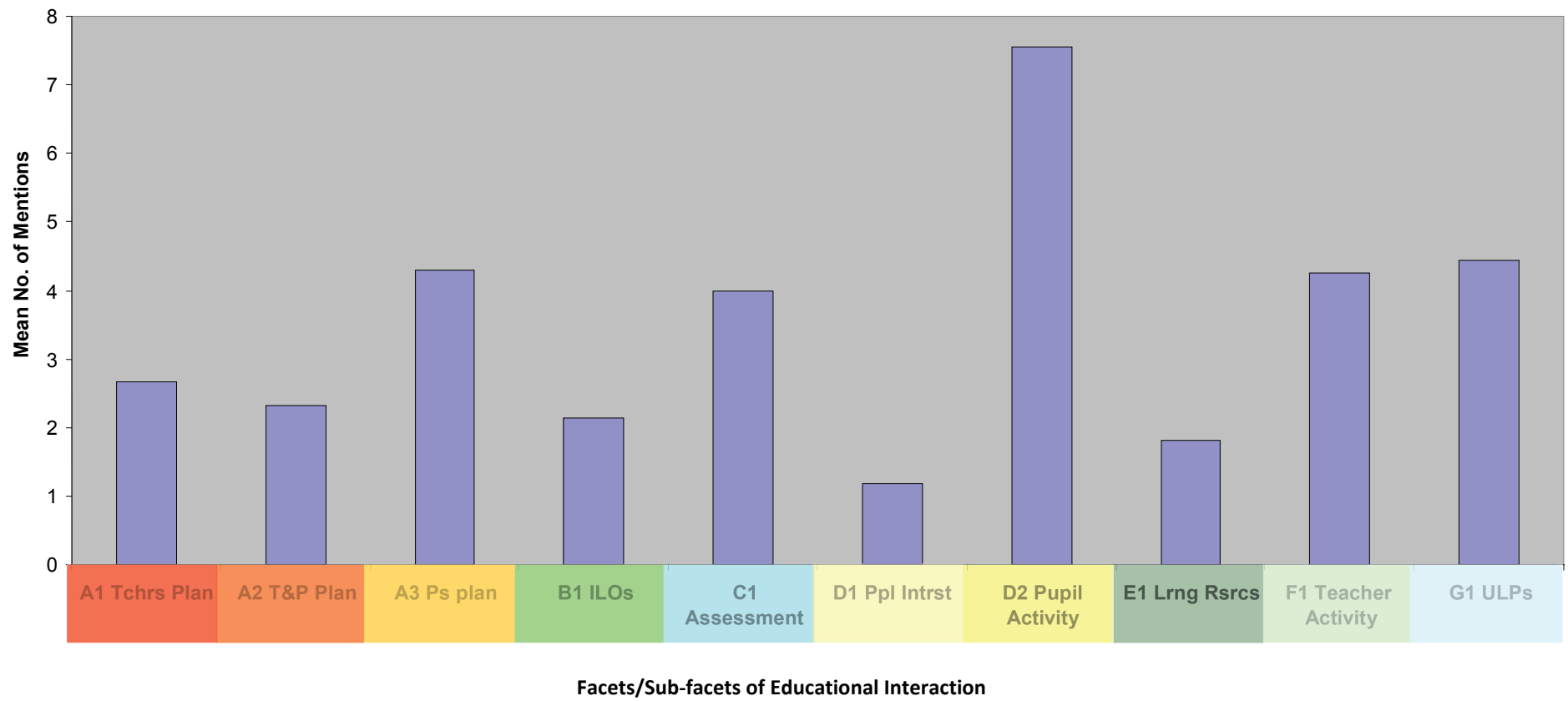
Simply providing the mean numbers of coded segments per sub-facet for the whole sample, including those who in fact did not mention particular elements at all, would add little information to Figure 2 and pose problems of interpretation. Arguably more useful, is the sort of data given in the profile presented in Figure 11, namely the mean number of mentions per sub-facet only for respondents who do mention that sub-facet at all.

A number of potentially worthwhile findings emerge on combining information from Figure 2 and Figure 11. Perhaps most striking is the confirmation of *D2 Pupil Activity* as a dominant educational sub-facet in respondents' outlooks on AL: not only is this area cited by 92% of the sample, but these respondents mentioned it on an average of around 8 (mean = 7.55) separate occasions. This is almost double the next highest rate, which is for *G1 ULPs* (mean = 4.44), whose combination of this nevertheless solid rate with a high proportion citing it (75%) further attests to its importance at this level, as does a similar combination for *F1 Teacher Activity* (79% and mean mentions 4.26).

In some contrast to this latter pair, *E1 Learning Resources*, *B1 ILOs* and *D1 Pupil Interest* are cited respectively by 67%, 63% and 42% of the sample, but are mentioned less frequently within their interviews (1.81, 2.13 and 1.18 mean mentions respectively).

Moving towards the less popular sub-facets, we find some that nonetheless have relatively frequent rates of mention by those who do cite them: *A3 Pupils Plan* is cited by only 29% of the sample, but with these making a mean of 4.29 mentions each, *C1 Assessment* is cited by the lowest proportion of the sample, 8%, but with these respondents making 4.00 mean mentions in this area. The remaining sub-facets, *A1 Teachers Plan* and *A2 Teachers and Pupils Plan Jointly* are cited by almost as few respondents (13% each), for whom the mean rates of mention are respectively 2.66 and 2.33.

Figure 11 Spontaneous Extended Definitional Sub-facets: Mean rates of mention for those citing



7.2.3 Summary: Spontaneous Definitional Facets of AL

Combining whole sample trends with cluster analysis results regarding educational interaction sub-facets spontaneously instanced at least once by individuals (i.e. binary data), whilst also taking account of the rates of mention findings just reported, appears in sum to warrant the following claims at this relatively broad level.

First, the educational analytical approach adopted in the present research has been corroborated by the fact that all the facets and sub-facets proposed within this approach have been represented in the ideas concerning the nature of active learning produced spontaneously by interviewees. There is, however, considerable variation in how many respondents make such mention and how often.

Thus, second, there do appear to be some strong common trends across the sample as a whole in terms of a number of such sub-facets, as well as some clustering into relatively homogenous groups that contrast in terms of other sub-facets. A 3-cluster solution was investigated for the binary data.

The overall trends, meaning those that were also evident even within clusters, included on the positive side: thinking of AL in terms of pupil activity, teacher activity, underlying learning processes/principles, and learning resources. Not only were the first three of these cited by most of the sample, they were also mentioned relatively frequently by such respondents. By way of negative trends, reference to assessment and planning, particularly teacher planning and to some extent joint teacher and pupil planning, tended to be generally absent or at most very rare.

Items relating to ILOs were surprisingly evident overall, with a mention by 63% of the sample, but cluster analysis showed this to be a major differentiator of groups at the 3-cluster level, ILO reference being universal in two out of three more or less equal sized clusters, but totally absent from the third. Likewise, pupil planning, whilst appearing relatively infrequently overall, was found in 86% of the membership of one these three groups.

Thus, in educational sub-facet terms, the clusters revealed by the analysis do not so much reveal radical and extensively contrasting conceptions of active learning, as alternative versions that tend to share much and to be differentiated only in partial respects. Some limited speculations were offered regarding the interpretation of clusters showing this differentiation, to which we shall return in later discussion.

7.3 SPONTANEOUS/SEMI-SPONTANEOUS AL EXTENDED DEFINITION: SPECIFIC CODED ASPECT LEVEL

Having introduced findings from the coding of interviews regarding respondents' spontaneous ideas of active learning in the relatively broad terms of general sub-facets of educational interaction, we now proceed to the more specific level of code-aspects offered within these areas. It is arguably important to do this, not only because as was indicated in Chapter 5, the coded aspects represent the most specific, differentiable categories found in writing about active learning, but because they are the closest we come to what our respondents actually said, which is of particular importance when we are dealing with what they provided spontaneously or semi-spontaneously. Presenting such detail might be seen just as further differentiation to the findings presented above, but the fact that the sub-facets contain between two and 17 specific aspects, with a mean of 5.9, means that the emerging picture is not particularly predictable.

The multiplicity of aspects at this level presents a further challenge to achieving detailed yet integrated presentation of findings. This purpose will be pursued by building on the visual presentation conventions established in the previous section, mainly by adding specific aspect codes within the colour-coded portions of the graphical figures used. Given that the necessarily truncated form and small size of their labels may reduce their legibility in the figures, they are reproduced in Appendix 4 in a larger font, colour-coded version that includes their fuller descriptions.

7.3.1 General Trends: Evidence of Concept (Binary Data)

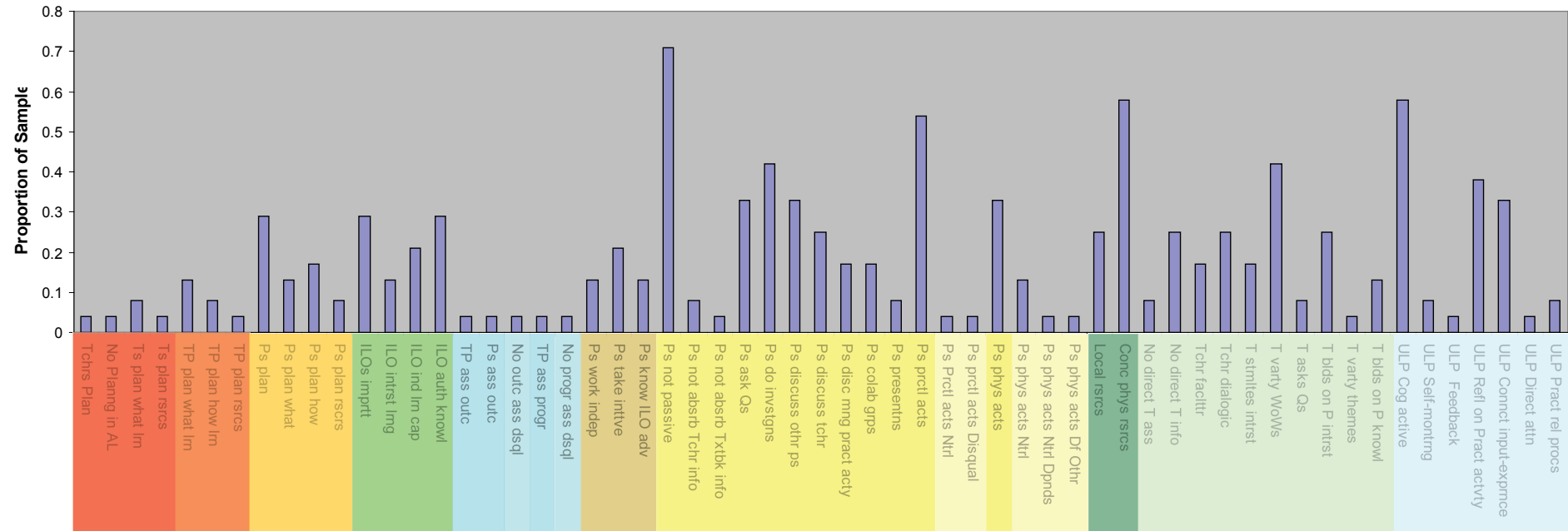
Given the increased detail and complexity of this sub-aspect data, in this section I shall deal with general trends in the sample, focussing first on overall features of the picture

and then considering the different specific aspects under the headings of the various facets of educational interaction.

Overall View

Figure 12 below presents the proportions of the whole sample spontaneously making at least one reference to each of the 59 specific extended definitional aspects of AL supplied spontaneously or semi--spontaneously by the respondents. Across the sample, members cite a mean of 10.67 different specific aspects, with a standard deviation of 4.80. Perhaps the first thing one notices about the specific aspects in Figure 12, in comparison to the sub-facet areas in Figure 2, is that, unsurprisingly, there appears to be less communality in the citing of specific defining aspects as such than when they are treated in terms of the broader sub-facets of educational interaction - at least in the sense that such citations are spread more thinly. In Figure 2, namely, sub-facets cited by at least 50% of the sample appeared in the following proportions of respondents: 92% (*D2 Pupil Activity*), 79% (*F1 Teacher activity*), 75% (*G1 ULPs*), 63% (*B1 ILOs*), whereas the corresponding proportions in Figure 12 for specific aspects are: 71% (*Pupils Not Passive*), 58% (*Use of Concrete Physical Resources*), 58% (*ULP Cognitively Active*), 54% (*Pupils Engage in Practical Activities*). Having said this, both of these sets of rates point to the partial, selective nature of the terms in which interviewees spontaneously respond to requests to characterise active learning, whether at the level of specific aspects or even at that of general sub-facets of educational interaction. Though equally, with means of 4.83 (s.d. 1.60) different sub-facets and 10.67 (s.d. 4.80) different specific aspects, at neither of these levels do they tend to reduce AL to a single feature.

Figure 12 Proportions of whole sample spontaneously citing specific extended definitional aspects of AL



On the whole, these figures again indicate overall variations that may involve sub-typing of approaches that may be revealed by cluster analysis, as we shall investigate further below. I now turn to a more detailed consideration and illustration of the specific aspects, which will be grouped under the sub-facet headings, in the order of their popularity as indicated by Figure 2.

General Trends: Pupil Activity Sub-Facet

We have already seen that at the level of sub-facets of educational interaction the area of pupil activity features most commonly, being cited by over 90% of respondents. Whilst this may partly reflect this being the area with the highest number of specific aspect codes, Figure 12 shows that it also corresponds to it possessing the two most popular specific aspects of all: *Pupils are not Passive* (71%) and *Pupils Engage in Practical Activities* (54%). Let us turn to these and the various specific aspects under this heading.

Examples of interview segments coded under *Pupils are not passive* include the following two:

Yes, I think that's what I think about it, because if I can define it in such a way, that the pupils should be active, that they should not only be recipients (Teacher 03, paragraph 12).

That the pupils don't just sit there passively, but that they take part to a greater extent (Teacher 20, paragraph 6).

The imprecise nature of such responses is hardly informative and their tendency to appear in response to very early questions in the interviews contributed to the researcher's impression, reported in Chapter 6, of teachers 'having to think on their feet' when it came to articulating the nature of active learning, with such a response possibly functioning as a verbally-based holding tactic. On the other hand and more substantively, its prevalence might also be seen as echoing the origins of active learning as a reaction with respect to the process aspect of long-standing pedagogical tradition.

The aspect category *Pupils Engage in Practical Activities* is cited by 13 of the 24 teachers (54%), as illustrated by the following two examples:

Some years ago we had some textbooks in science called Active Biology. I just remembered them, and those books supported practical work, getting out into nature, doing experiments, practising in such a way that they got a different perspective on the theory (Teacher 08, paragraph 6).

And active learning, I think of it when we plan practical learning, often practical activities that can be connected to theory, connected to something theoretical that they have heard in school in advance (Teacher 18, paragraph 10).

It is of interest that this is one of only two specific aspect focuses in the pupil activity facet/sub-facet and one of only three throughout the 59 in total in which there occur 'extended definitional' qualifications (indicated in the graphical figures by slightly lighter shading of the sub-facet colour on the horizontal axis). That is, instead of getting just positive indication of engagement in practical activities being a feature of AL, here we also get one respondent qualifying reference to the feature by saying that it is neutral with respect to AL status. This was Teacher 04, who was the subject of commentary in Chapter 6, Section 6.4.2, and who put his point by saying:

The subject I feel is most clearly connected to this thing about doing practical activities as part of active learning, is natural science, no doubt. This year we have done a lot of chemistry, and then it is important to do some things in relation to chemistry. There we have also had a tradition of... Or at least I think so, that it has often stopped after the activity has been completed, that the pupils have been satisfied and the teacher has been satisfied, but they haven't really gone into it with enough depth, analysed what actually happened. I think this last bit is actually the most important part of the process. That you manage to do follow-up work which is thorough enough to allow for the learning processes to happen (Teacher 04, paragraph 8).

The same teacher also said elsewhere in his interview that just engaging in practical activity actually disqualifies the arrangement from being a case of practical learning.

The worst way, I think, for many, is only to do the practical approach, because then it turns into what I call happenings. You have done something but you have no idea why you have done it, and then it will have absolutely no effect (Teacher 04, paragraph 18).

Moving on down the order of popularity within this sub-facet, we come to *Pupils Do Investigations*, cited at least once by 42 per cent of the sample. *Pupils Ask Questions*, *Pupils Discuss with Other Pupils* and *Pupils Engage in Physical Activities* were each cited by 33% of the respondents. The latter provides the other case within the pupil activity sub-facet of respondents going beyond the provision of a characteristic feature to say something more qualified or cautionary. We have firstly two respondents (teachers 06 and 16) indicating physical activity as a defining aspect of AL, but then adding the view that physical activity is neutral as regards AL status. Thus, for example, we find Teacher 06 offering a relatively positive stance:

That you make a movement which is in line with the learning objective. I don't know where... moving into, like with that fraction house, then you are actually inside the fraction house, it is a movement, an activity connected to what you are going to do. That's how I think about active learning, but there might be other ways... (Teacher 06, paragraph 8).

But also adding the qualification later in the interview:

Then this is what often happens... they seek to go to another place, not just sitting there quietly. If that's active learning, yes, it can be, but moving from one place to another needn't be active learning in itself (Teacher 06, paragraph 20).

We also have a respondent who offered only the view that physical activity is neutral with respect to AL status, namely:

Well, I know that some learn best by... We have these things about tactile learning, kinetic, auditory and visually inclined. And, of course if you learn best if you do it tactile or kinetic, that you DO something, then it might not be enough activity for a pupil who learns best that way. But if you have auditory inclined pupils, then it will work well for them, but the tactile pupils they need to go out and touch things, and the kinetic ones they need some more activity if it should turn into active learning for them, if you know what I mean (Teacher 24, paragraph 57)?

Then, once more we also have Teacher 04 offering second-order comments, this time to the effect firstly that it is neutral and 'it depends' as to whether physical activity constitutes active learning:

Active learning, it doesn't mean that pupils should walk around and be very active, physically, not necessarily at least (Teacher 04, paragraph 6).

...and then also pointing out that other people may nevertheless think that physical activity counts as active learning:

I think a lot has been damaged during the time when people thought that the pupils had to be so physically active. Very many have not managed to tackle this challenge of concentrating, to be able to focus on the important tasks, the effects of the learning (Teacher 04, paragraph 6).

Minorities of respondents offer *Pupils Discuss with Teacher* (25%), *Pupils Discuss Meaning of Practical Activity* (17%), *Pupils Collaborate in Groups* (17%), although it may be mentioned that if we collapsed the somewhat similar *Pupils Collaborate in Groups* and *Pupils Discuss with Other Pupils* into a single category, it would be counted as mentioned by 42% of the sample.

Finally in this sub-facet, we have very few, although we do literally have one or two people, spontaneously affirming the extreme concrete views that active learning means *Pupils Not Absorbing Information from the Teacher* or *Pupils Not Absorbing Information from the Text Book*.

From the viewpoint of comparing these teachers' spontaneous ideas on pupil activity aspects of active learning with the aspects of this area indicated by the earlier review (see Chapter 3, Table 3), we might then describe the overall picture as mixed. The traditional orientation towards active engagement/avoidance of passivity was well represented, but at 70% some way from universal. Whilst features such as investigative/experimental work, pupil collaboration and discussion corresponding to what was listed in Chapter 3 are present, they tend to feature only in substantial minorities.

General Trends: Underlying Learning Processes (ULP) Sub-Facet

The ULP Area contains the next most popular specific aspect, *Pupils Are Cognitively Active*, mentioned by 58% of the sample, as well as a mixture of other aspects that vary considerably in popularity. This is arguably the most difficult sub-area to code for, given that its categories relate, following the ideas of Oser and Baeriswyl (2001) as well as Tomlinson (2008), to cognitive functionality underlying overt activity. Illustrative instances are therefore particularly important here.

Two examples of responses coded as *Pupils Are Cognitively Active* are:

Yes, active mentally, that you don't give them the answers right away, that the children are allowed to think for a while, investigate a bit, think about what they have to do (Teacher 20, paragraph 12).

And learning happens with the pupil, and then the pupil has to be active in some sort of way. And I don't mean first and foremost physically active. I think that the pupil has an active consciousness in some way about what is happening when they are learning. And since it is active, then... It is quite simply about the pupils' thinking and consciousness in the learning process, and that they themselves are active in it, making some active choices... (Teacher 22, paragraph 7).

The next most popular aspect within this sub-facet is *Importance of Reflection on Practical Activity* (38%), illustrated by the following excerpt:

You see the things that happen, and that's OK, that you see what happens, but the most important questions come afterwards. Why? The bit you do with the class. Why did this happen? What did happen? What is this? How can we explain what happened? (Teacher 04, paragraph 12)

This is closely followed by *Importance of Connecting Input to Experience* (35%), illustrated by:

Yes, active learning for me that is quite simply that the pupils work through understanding. That you build on their body of experience, that you connect language, concepts, thought structures, you include all this which is necessary for understanding. And when you understand you can put it on the hard-disk. You know where it is, and you can bring it out again and use it, build on it (Teacher 12, paragraph 26):

Finally, it seems worth commenting here on the rarity of reference to certain underlying process-principles held to be important by sources historically associated with the idea of active learning (cf. summary in Chapter 3). At most two respondents were found spontaneously mentioning any of the following: *Importance of Self-Monitoring; Importance of Feedback; Importance of Directing Attention; Importance of Learners Practicing Relevant Processes*.

General Trends: Learning Resources

Use of concrete physical resources was mentioned by 58% of the sample and use of local, authentic resources by 25%. Thus once more we have here traditional elements being mentioned by solid proportions of the sample, though by no means universally.

General Trends: Teacher Activity

The sub-facet with the next most popular specific aspect is teacher activity, with *Teacher Uses a Variety of Ways of Working* cited by 42%, for example:

If we just vary the ways of working and the ways we do it, then I think of it as being a day of active learning, instead of them just sitting passively, writing in

their books and answer questions that I tell them to do (Teacher 5, paragraph 6).

I believe in making the learning process more varied, that you vary, that it doesn't get static, that it isn't the same thing that goes on all the time. That you try to vary the ways of working you use, it makes it more interesting... (Teacher 14, paragraph 22).

Although the traditional literature on active learning was found to involve a number of strands, this category did not appear to feature amongst them. This is perhaps not surprising, insofar as it appears to swing the emphasis away from the learner initiative and influence that has been central to many versions of AL, perhaps particularly those associated with Rogerian psychology. On the other hand, this aspect has possibly been generated by a concern to 'keep the pupils interested'.

At the next level of popularity (25%) within this sub facet we find *Teacher Does Not Give Direct Information*, *Teacher Fulfils a Dialogic Role* and *Teacher Builds on Pupil Interest*. By dialogic is meant, with Alexander (2004) that the teacher engages in two-way interactive dialogue with pupils in which he/she encourages and explores. The term *dialogic teaching* was not in fact used as such by any respondent, but instances coded in this way included:

And, of course, if you manage to create a really good conversation or debate during a lecture, because you open up for it, then I think of it as a form of activity. You can have discussion groups, and then come up with something that the pupils can present, then I think of it as, yes, as active learning (Teacher 09, paragraph 31).

And then I may intervene and ask what it is they are actually talking about. What they are doing now. And then they may tell me that they don't quite know how to proceed. And then I can join their conversation by asking some questions about how they are thinking. That way I help them in their further thinking (Teacher 12, paragraph 32).

Finally, at the relatively rare end in this sub-facet we have three people (13%) citing *Teacher builds on pupil knowledge*, and two (8%) citing *No Direct Teacher Assistance* and *Teacher Asks Questions*, the latter in some contrast to the 33% who mentioned *Pupils Ask Questions* in the pupil activity sub-facet.

General Trends: ILOs

We have already seen that some two thirds of the sample referred spontaneously in one way or another to intended learning outcomes (ILO) sub-facet of AL. At the level of specific aspects, this was made up of 29% of the sample mentioning that *ILOs Are Important in AL* and an equal proportion citing *Authentic Knowledge as an ILO of AL*, 21% citing *Independent Learning Capability as an ILO of AL*, citing *Interest in Learning as an ILO of AL*. I include some excerpts focussing on the importance of ILOs in active learning.

And I think that we, the teachers, have become much more aware about... There is much more focus on objectives, also on the pupils knowing the objectives. Where are we heading? And I think that's important for active learning, it promotes active learning (Teacher 13, paragraph 23).

By active learning I think that you want learning to happen by including an activity which is aimed at getting the best learning. This means that the activity and the learning objective must be connected. You shouldn't just go on an excursion just to have an excursion, but it is the learning which is the main objective. The activity should support the learning and create an enhanced, better learning. That's what I think of as active learning (Teacher 06, paragraph 6).

Against the background of active learning literature, perhaps particularly the Deweyan strand that had so much influence historically in the Norwegian context, it is noticeable that they were no spontaneous references at all to AL having democratic capabilities and/or tendencies as intended outcomes for which it is well-suited.

General Trends: Planning Facet

Looking at Figure 12, planning does not seem to be very much associated with Active Learning, certainly not with the three specific forms of teacher planning in just one or two people (sub-facet A1), nor very much more with the aspects involving teachers and pupils doing the planning jointly (sub-facet A2). In fact, one respondent actually volunteered the view that one does not have to have planning in active learning:

But I think that, active learning happens, it could happen in the corridor when the pupils are getting dressed to go out, because somebody needs help. Yes, it could come right there, in such a place, and then there is nobody there with learning resources or anything (Teacher 03, paragraph 147).

There was a slightly greater, though still a minority, tendency to refer to pupils doing planning, with 29% of the sample coming up with the relatively general *Pupils Plan*:

Yes, that's when it is a pupil-governed activity, instead of me governing it, giving them an issue to solve (Teacher 15, paragraph 15).

It is important to note that *Pupils plan* and sub-facets below were used when teachers indicated that AL meant that pupils did the decision-making, and the general *Pupils plan* was chosen when it was not clear what it was the pupils actually decided.

General Trends: Pupil Interest/Influence

Although its specific aspect components might have been counted as part of the pupil activity or possibly the pupil planning areas, I have treated the central emphasis in active learning on handing power to the student under a separate facet, labelled as in the sub-heading above. In the event, its specific aspects were mentioned spontaneously by only a rather small minority of respondents: 21% citing *Pupils Take Initiative*, 13% each citing *Pupils Work Independently* and *Pupils know ILOs in advance*.

General Trends: Assessment

Assessment is the facet of educational interaction that is noticeable for its absence from the ideas about active learning produced spontaneously by this sample. Only two

respondents came up with any specific aspects in this area: one offered the aspect *Pupils Assess the Outcomes of AL*, and the other supplied the remaining ones, namely that *Teachers and Pupils Jointly Assess Outcomes*, *Teachers and Pupils Jointly Assess Progress*, having *No Assessment of Progress Disqualifies an Approach* from being counted as AL, and having *No Assessment of Outcomes Disqualifies an Approach similarly from being AL*. I include an excerpt from a teacher talking about teachers and pupils assessing together and why it is important for active learning:

So they [the pupils] seemed engaged, simply, in assessing. And it was obvious when we [the teacher and pupils] assessed the written assignment they had done and had a test about the topic, it was clear that they had learnt a lot, and they were also able to reflect about what they had learnt (Teacher 13, paragraph 14).

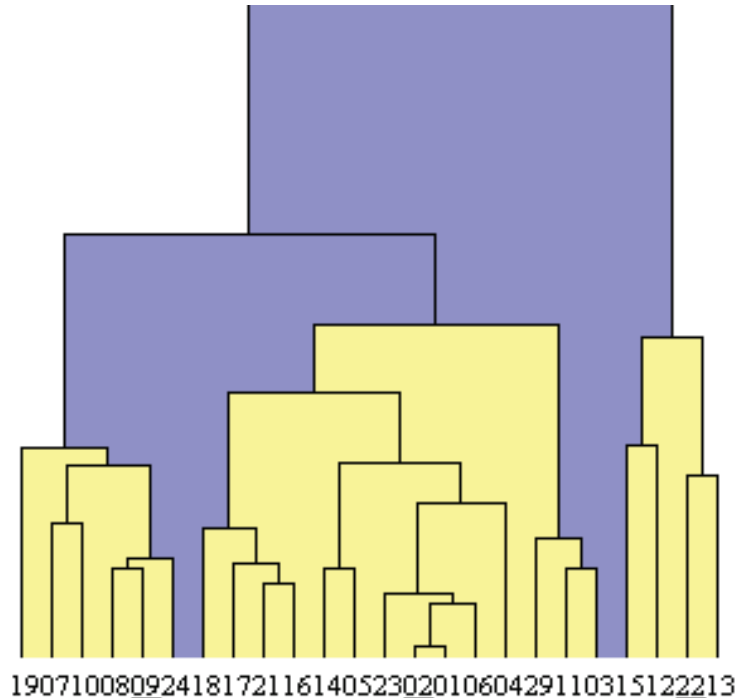
Although Dewey, for instance, thought that pupils and teachers should jointly assess learning outcomes, an absence of assessment, except by the pupils themselves, is perhaps more in keeping with the Rogerian student-centred approach in active learning. There would however appear to be a possibility that in so far as teachers see education as purposeful and outcome assessment as normal, they would not take seriously an approach which they saw as denying the need for such assessment. Such a possibility will be examined later in this study by means of the data on teachers' in principle and practical evaluations of active learning. Meanwhile, the intermediate proportions of the sample found spontaneously citing the various defining aspects leave open the possibility of particular subgroups with similar but contrasting profiles, which is worth exploring by means of cluster analysis.

7.3.2 Cluster Analysis of Extended Definitional Specific Aspect References

Although a dataset involving 59 variables across 24 cases generates the possibility of enormous variation in profiles, exploration of such variation does therefore make the use of computer-based taxonomic strategies such as cluster analysis all the more necessary. The spontaneous/semi-spontaneously presented extended definitional aspect binary data was therefore subjected to Ward's method hierarchical cluster

analysis using the ClustanGraphics package as described earlier, yielding the dendrogram shown below in Figure 13.

**Figure 13 Dendrogram from Cluster Analysis of Extended Definitional Specific Aspect binary data:
3-cluster solution highlighted**



In the face of the variation possibilities, the above dendrogram may suggest some degree of orderly grouping, into two main clusters, i.e. a main minority cluster on the right and on the left a majority cluster which subdivides into two main sub-clusters. Beyond this three-cluster level, deciding on an appropriate number of clusters looks increasingly arbitrary, as the sub-clustering occurs more or less continuously. Although the ClustanGraphics *Best Cut* and *Validate Tree* sub-programs both indicate a 6-cluster solution, this yields three clusters with three or less members, which makes the gauging of homogeneity problematic. It was therefore decided to examine the nature of the 3-cluster solution.

The cluster profiles for proportions citing each of the 59 specific extended definitional aspects are shown below in Figure 14. Given the intricacy of these profiles, it is worth adopting the characterisation strategy introduced in presenting the previous cluster analysis, namely to provide a schematic tabular summary derived from the graphical depiction. This is done in Table 9 further below, in which specific defining aspects have been labelled as being strongly present or having a mixed presence according to

whether they are cited respectively by the top quartile or the middle two quartiles of the cluster membership. Given the large number of aspects, those cited by only a bottom quartile of the cluster are omitted, though I will comment later on these absent aspects. Bold italicised font is used in the *strongly present* column for those sub-facets indicated by all members of a cluster and in the *mixed* column to indicate those mentioned by more than half (but less than 75%) of the cluster.

It must be admitted that the contents of Table 9 do not appear to suggest any readily interpretable patterns by way of homogenous groups with contrasting profiles, beyond noting that apart from the general absence of reference to assessment, Cluster 1's mixture of traditional concrete and cognitive AL elements lacks mention of planning, whereas the somewhat more purposive-looking Cluster 3 is quite strong on advance planning and explicit awareness of ILOs. Cluster 2 is the largest cluster and might therefore contain more variability, and in fact it is much more heterogeneous, with the modal category (*Pupils Are Not Passive*) cited by only 64% and the runner-up (*Pupils Do Physical Activities*) by only 50%. It is perhaps notable, however, that there is no real mention of planning in Cluster 2.

It may also be mentioned that no clearer picture emerged on examining the two sub-clusters formed by the splitting of Cluster 2 of the 3-cluster solution into clusters 2 and 3 in the 4-cluster solution.

It therefore seems that in spite of the initial impression offered by the dendrogram in Figure 13, when it comes to spontaneously/semi-spontaneously provided specific defining aspects of active learning, there is little evidence of contrasting but homogenous sub-groups in terms of their profiles across the 59 specific aspects offered. We are thus left with the general trend data for detailed aspects and the general trend and cluster analysis for the same data considered at the level of educational interactions sub-facets.

Figure 14 Proportions of clusters spontaneously citing extended definitional aspects of AL – 3-cluster solution

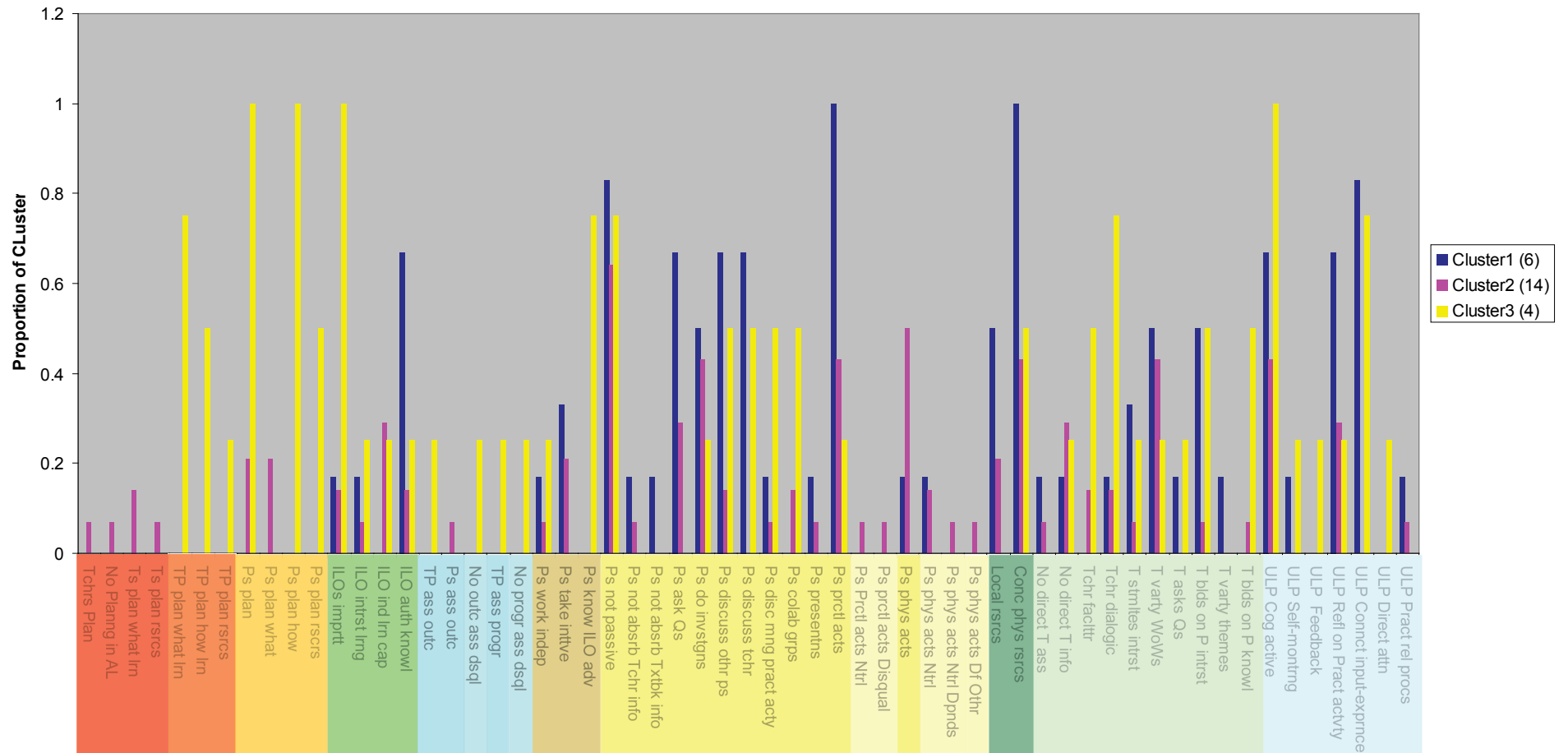


Table 9 Major Features of 3-Cluster Profiles of Spss extended definitional aspect binary data

	Strong presence	Intermediate/mixed presence
Cluster 1 (n=6)	<p><i>Pupils engage in practical activities 100%</i> <i>Uses concrete physical resources 100%</i> <i>Pupils not passive 83%</i> <i>ULP connect input to experience 83%</i></p>	<p><i>Authentic knowledge an ILO of AL 67%</i> <i>Pupils ask Questions 67%</i> <i>Pupils discuss with other pupils 67%</i> <i>Pupils discuss with teacher 67%</i> <i>ULP cognitively active 67%</i> <i>ULP reflect on practical activity 67%</i> <i>Pupils do investigations 50%</i> <i>Uses practical resources 50%</i> <i>Teacher uses variety of WoWs 50%</i> Pupils take initiative 33% Teacher stimulate interest 33%</p>
Cluster 2 (n=14)		<p><i>Pupils not passive 64%</i> <i>Pupils do physical activities 50%</i> Pupils do investigations 43% Pupils do practical activities 43% Use of concrete physical resources 43% Teacher uses variety of WoWs 43% ULP cognitively active 43% Independent learning capability an ILO 29% Pupils ask questions 29% No direct teacher information 29% ULP reflect on practical activity 29%</p>
Cluster 3 (n=4)	<p><i>Pupils plan 100%</i> <i>Pupils plan how to learn 100%</i> <i>ILOs are important in AL 100%</i> <i>ULP Cognitively Active 100%</i></p> <p>T&Ps jointly plan what is to be learnt 75% Pupils know ILOs in advance 75% Pupils not passive 75% Teacher has dialogic role 75% ULP connect input to experience 75%</p>	<p><i>Pupils discuss with other pupils 50%</i> <i>Pupils discuss with the teacher 50%</i> <i>Pupils discuss meaning of practical activity 50%</i> <i>Pupils collaborate in groups 50%</i> <i>Use of concrete physical resources 50%</i> <i>Teacher as facilitator 50%</i> <i>Teacher builds on pupil interest 50%</i> <i>Teacher builds on pupil knowledge 50%</i> T&Ps jointly plan resources 25% interest in learning is an ILO of AL 25% Independent learning capability is an ILO 25% Authentic knowledge is an ILO of al 25% T&Ps jointly assess outcomes 25% No outcome assessment disqualifies as AL 25% T&Ps jointly assess progress 25% No progress assessment disqualifies as AL 25% Pupils work independently 25% Pupils do investigations 25% Pupils engage in practical activities 25% No direct teacher information 25% Teacher stimulate interest 25% Teacher uses variety of WoWs 25% Teacher asks questions 25% ULP self-monitoring 25% ULP feedback provision need 25% ULP reflect on practical activity 25% ULP direct attention 25%</p>

7.4 TRIANGULATION WITH RESEARCHER'S INITIAL IMPRESSIONS

Although the design of the present study does not enable any strong form of methodological triangulation, it does allow the possibility of comparing the researcher's impressions prior to transcription and coding, reported in Chapter 6, with indications resulting from analysis of the coded data.

In terms of the content of respondents' views currently under consideration, one of my first, positive impressions had been of a prevalence of reference to certain ideas, in particular: pupil non-passivity and cognitive activeness, practical activity, use of concrete resources and an absence of reference to assessment. Looking back at Figure 12, the general trends for numbers of respondents mentioning specific aspects do indeed show noticeable peaks in all of these areas, though they also suggest that I rather missed the popularity of pupils doing investigations, teachers using a variety of ways of working, and reflection on practical activity.

A second impression was of an absence of identifiable contrasts amongst the sets of ideas being presented by the respondents. The above results of cluster analyses appear consistent with this impression.

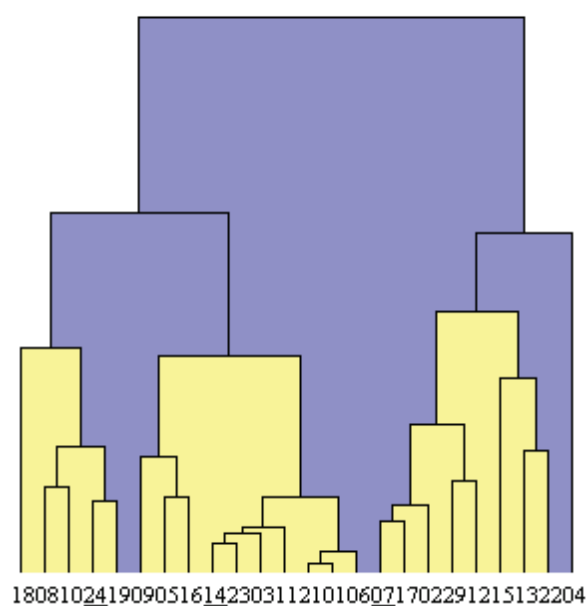
A third, strong impression, again relating to content, was of there being one respondent (Teacher 04) who stood out from the rest through his reflective/second order stance, which combined emphasis on the importance of achieving pupil insight through reflection with criticism of the tendency amongst some teachers to identify active learning with practical activity, which he himself seemed to feel was useful only as a basis for thought and reflection. This was such a clear impression that it was quite vividly recalled when I came to code Teacher 04's transcript - which it was therefore impossible not to recognise. It would thus be claiming little to be able to point to consistency between the prior impression and the data coding. Cluster analysis could namely provide the sort of indication that might or might not conform with the above impression, by way of indicating such an individual as an outlier 'forming their own

cluster' at some level. What is perhaps surprising is that this has nevertheless not been indicated by the cluster analyses so far.

However, these have been analyses of the binary data, so it is worth applying the technique to the rates of mention data. When this is done using the Ward's method approach adopted above, the resulting dendrogram is as shown in Figure 15. Here we see that even at the four-cluster level, Teacher 04 does form his own cluster on the far right of the tree, the relatively long branch indicating relative contrast with the other sub-cluster of the main right-hand branch of the first, 2-cluster level. Conversely, we can also notice that there is another relatively isolated individual at the left-hand end of the tree, namely Teacher 18, who emerges as a separate cluster at the 5-cluster level. The dendrogram does suggest that this profile is rather less exceptional than that of Teacher 04, the relevant profiles may help further explain why I did not notice this teacher as exceptional.

Figure 16 below shows the profiles of specific aspect mentions by these two individuals, along with the profile of overall sample mean rates of mention.

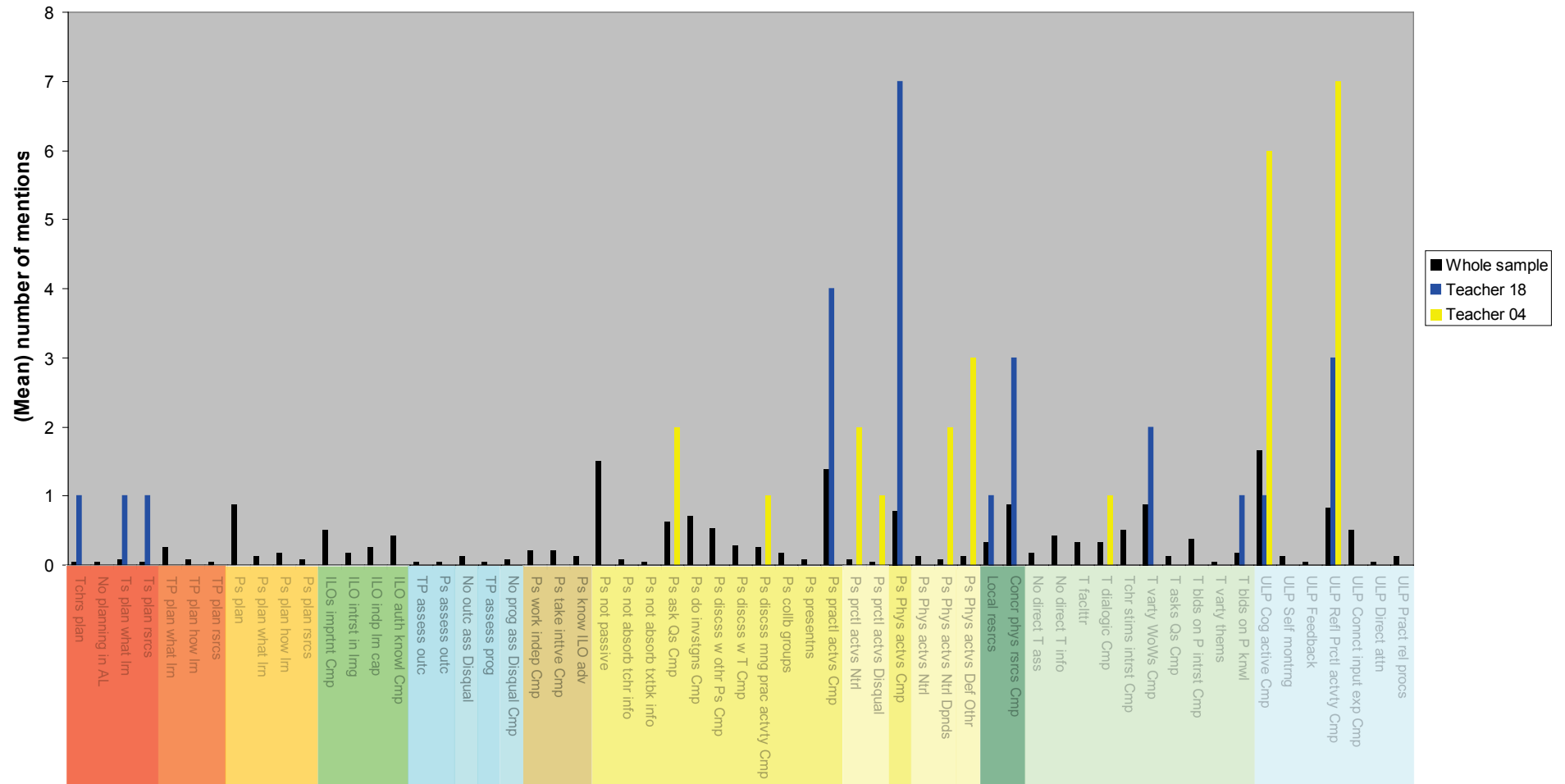
Figure 15 Dendrogram for rates of mention of Spss extended definitional aspects of AL



Teacher 04's most mentioned aspects are *ULP Reflection on Practical Activity* and *ULP Cognitively Active*, both of which occur at several times the mean rate, but whilst they are mentioned less often than these in absolute terms, most of the other aspects Teacher 04 mentions at all, he mentions at an even greater multiple of the mean. This is the case for *Other people define al as pupils doing physical activities*, *Pupils Doing Physical Activities Is Neutral/It Depends In Relation To AL*, *Pupils Doing Practical Activities Disqualifies It From Being AL*, and *Pupils Doing Practical Activities is Neutral As Regards AL*. Of equal note, however, is the other side of Teacher 04's exceptional status, namely the virtually total absence amongst other respondents of aspects he cites, in particular the second order references colour-coded in the lighter shades in the figure.

Teacher 18 has a very high rate of mention of *Pupils Do Physical Activities* and *Pupils Do Practical Activities*, and *Use of Concrete Physical Resources*, which are all relatively common to an extent that had left this impression of a general trend towards physicality and concreteness even before coding. This seems to have wiped from my mind the notable rate of mentions for *Reflection on Practical Activity* by this teacher.

Figure 16 Spontaneous extended definitional aspects: Rates of mentions for whole sample and teachers 04 and 18



8. WAYS OF WORKING INSTANCING ACTIVE LEARNING

8.1 INTRODUCTION

As previously discussed (cf. Section 4.2.2) there are different facets to the holding of concepts, i.e. the meaning of terms, such as for instance active learning. One may think of a concept in the form of features or *aspects* that define the term in question, and/or one may think of it in terms of *instances*, i.e. the actual entities that one views as being ‘members’ of the concept. A relatively developed, or formal, level of concept usage would involve the integration of both of these facets (cf. Klausmaier *et al.* 1974).

As indicated in Chapter 6, my immediate impressions regarding the teachers’ conceptions of active learning were that their spontaneous responses comprised both aspects and instances, and that they varied both with regard to whether they started with an aspect or an instance, and the degrees to which aspects and instances featured in their conceptions.

In the previous chapter I investigated the teachers’ spontaneous responses regarding their conceptions of active learning *aspects*. The current chapter will deal first with their spontaneous responses regarding active learning *instances*, and then with their responses regarding supplied instances of active learning.

In line with the previous chapter, we are interested mainly in whether there is evidence at all of particular instances being part of an individual’s conception of AL. This is operationalised as whether they talk in such terms on at least one occasion, which means dealing with the relevant data in *binary* terms (cf. Section 7.1 above).

8.2 SPONTANEOUSLY OFFERED INSTANCES OF ACTIVE LEARNING

8.2.1 Introduction

As outlined in Section 5.6.3 above, aspects and instances were coded in different MAXQDA projects. Utilising the binary data from MAXQDA project 2 (Spontaneous instances), the mean number of instances cited at least once by members of the sample was 2.25 with a standard deviation of 1.45. The corresponding figure for citation of aspects was 4.83, with a standard deviation of 1.60, which suggests that

aspects feature to a larger degree in teachers' conceptions of active learning. Even if instances may feature less often, most teachers (88%) do talk about active learning in the context of instances, but as mentioned in my review of my immediate impressions, the extent to which they do seems to vary considerably.

8.2.2 General trends

Figure 17 below provides an overview of which instances teachers spontaneously cite as being part of their conceptions of active learning, either definitely (*Df*) or potentially (*PotI*). We find a total of 14 different instances that teachers mention spontaneously when asked about what they take active learning to mean.

The instance, or way of working, which is most often included in teachers' conceptions of active learning, is practical investigation in science. 42%, or 10 teachers, mention *Practical science* as an instance of active learning, and the ones who do often speak about it for quite a while; the average number of codings for practical investigation in science is six. It is also interesting to see that none of the teachers who mention practical science delimits it in any way by saying that it can *potentially* be active learning – all who mention it claim that it definitely is AL.

Another interesting finding is that Teacher 04, whom we have already established is exceptional in some respects (cf. Section 6.4.2 and Section 7.4 above) only mentions one instance of active learning, and that is practical science. When he does, however, his main focus is the summing up session after the actual experiments which allows for the *Reflection on practical activity* which I have already established was a central focus when he talked in the form of AL aspects.

Outdoor education is the second most mentioned instance of active learning and is part of 25% of the teachers' conceptions of active learning. Two of these, teachers 06 and 21, base very much of their understanding of active learning in outdoor education. With Teacher 21, it is the first thing she mentions to my open-ended question about what she takes active learning to mean:

Yes, first and foremost when I think about active learning, I think of being outside, making use of the outdoor area (Teacher 21, paragraph 6).

Teacher 06 talks about outdoor education and place-based education. Nature, pupils' physical movement and making use of authentic resources are central aspects of outdoor education to him:

We use place-based education, outdoors, using an arena which is accustomed to what you are going to learn. It is simply going into the forest or to a field, or the outdoor museum, or anywhere, and you can even use the schoolyard. You've got a fantastic blackboard, using the sand on the beach, and in winter we have the snow. We have made very many things outside, and what we see when we test it afterwards, is that it is very efficient regarding learning. For example when we walk a map, when we are going to learn about a country or a continent, then we travel to Norway out in the snow, start in one place, and then we walk or go by boat, or whichever way we do it, not by plane, because that only turns into thin lines. We can go by plane back again, of course, but when you are going there it should take enough time for you to experience that you get all the borders of the country, and then we stop and look around and say: Over there is Norway. It is about perspectives, and we also do dramatisations as we travel, things that are typical for the places we go to... It is about connecting a movement to the learning objective (Teacher 06, paragraph 6).

The third most mentioned instance of active learning is *Station work*¹⁷ which features in 21% of the teachers' conceptions. Teacher 03 described why she thinks station work is active learning:

We do station work where the pupils get tasks to work with different themes, for example in Norwegian where they work with..., yes, for instance single and

¹⁷ Station work is the term used to describe an educational approach where the teacher sets up different 'stations' or work areas. These stations contain different tasks for pupils. The pupils work individually or in groups with the task(s) at one station, then move on to the next station etc. until all stations have been visited.

double consonants, and they have to read the words, that is read... there are no adults there reading the words for them, so they have to look at both words 'hyle' and 'hulle', and they actually have to read it, and then one of their peers has to walk the word on the mat, and then I think they are active (Teacher 03, paragraph 12).

Teacher 06, who focuses on outdoor education, also includes station work in his conception of active learning, even if it has its limitations depending on how it is conducted:

And then you can extend the concept and say that active learning is..., you may call it station work, as a form of active learning, the way you move around, but then it may be on the border of what I understand by it, because you get a movement from group to group, but the movement as such doesn't have anything to do with the learning objective. You could just have stayed where you were, and then somebody could have brought you new tasks, new objectives (Teacher 06, paragraph 6).

Developing pupils' learning strategies is a central focus in the current Norwegian national curriculum, LK06, and five of the teachers (21%) think of this instance as active learning. Teacher 09 describes how she uses one learning strategy, concept mapping, and why she thinks this is active learning:

When I use concept mapping, then I suppose it is simply one way to remember... a different way of learning, a different way of visualising the theoretical content in the form of a drawing or words connected to a content which is fairly well-known, repeating before a test... and it, well I think that this activates the pupil because he reconstructs some hooks that he has before a theoretical test, for instance, and that you can also help fill in that concept map, that this becomes a kind of activity, either together with the teacher, or a group of pupils (Teacher 09, paragraph 23).

Whilst echoing a major strand in the active learning literature, particularly in the Norwegian tradition, it is perhaps worth noting, and surprising in view of the recency of the L97 national curriculum plan and its strong emphasis on project and theme work, that only six of the respondents actually made specific spontaneous reference to *Project work*, four of them (17%) defining it as active learning, and two saying that, potentially, it could be active learning. The same is the case for *Theme work*, which was also strongly advocated in L97; four teachers define it as active learning, while one teacher thinks that it potentially could be AL.

Another, perhaps surprising finding, is that four teachers mention *Teacher lecturing* as definitely (3 teachers) or potentially (1 teacher) an instance of active learning. However, the lecture has to have certain qualities to be defined as active learning:

And you can have active learning in the form of a lecture, too, if you introduce discussion-based themes in the lecture, but then you've perhaps started deviating from the lecture and gone over to a discussion (Teacher 07, paragraph 16).

The remaining seven instances are only mentioned by one or two teachers as either definitional of active learning or potentially an instance of active learning. These are *Group work*, *Discussions*, the use of *ICT* and *Practical work* (2 teachers each), *Storyline* (1 definitional, 1 potential), *Drama* and *Learning styles* (1 each).

Quite often teachers talk about the active learning instances in a rather personal way, recollecting things that have happened recently. I include an example of this, with Teacher 23 talking about her work in science lately:

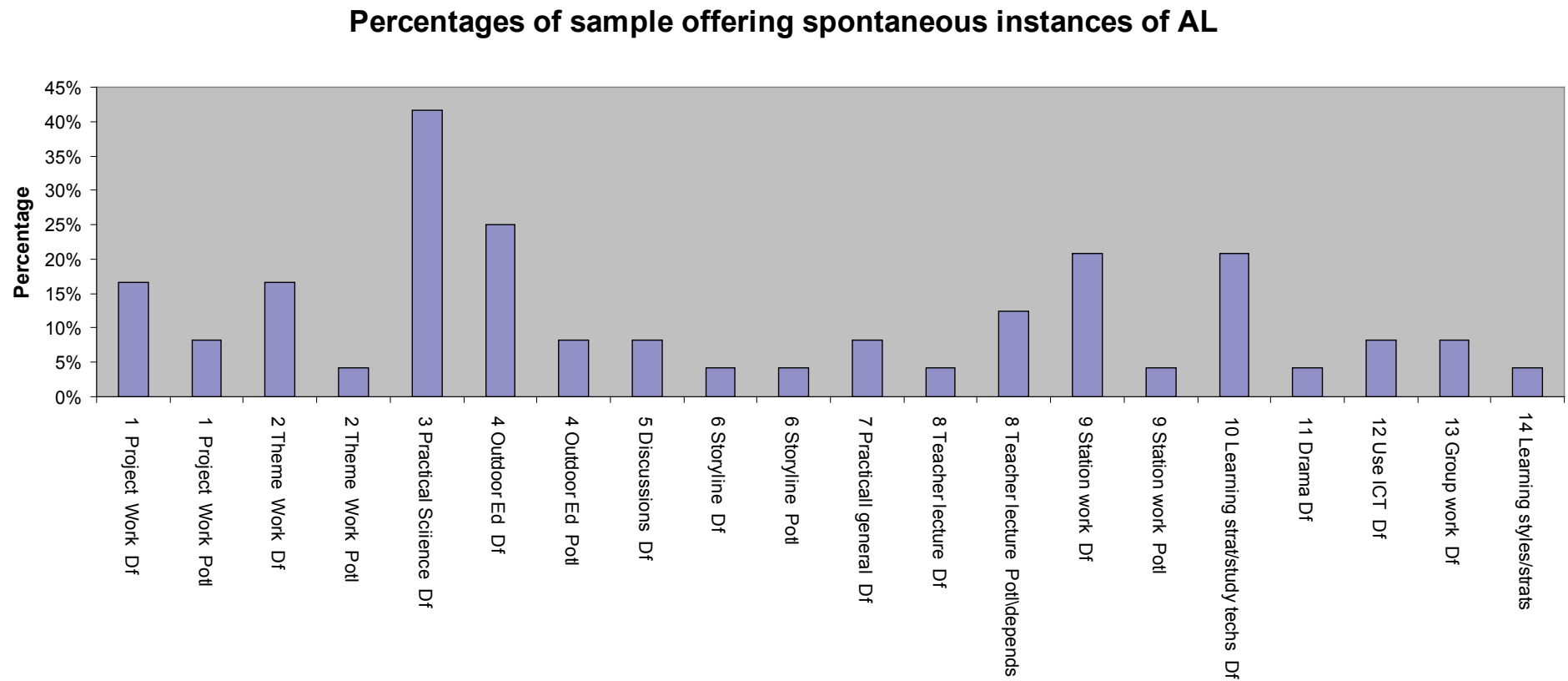
Like today, in science, I took the pupils out botanising. We walked this trail, and they have walked through it quite a number of times, just observing. I have given them a new task every time they have walked through the trail, and today they picked bouquets of flowers, and then we went inside and they used the flora - we have practised using it before – so today they were quite quick at finding the name of the flower species, and they found the family the flower

belonged to, and they managed to use the reference pages in the flora to find some information about the flower, information that they had to write down. So then they have learnt about cataloguing and they have learnt to use the flora as a handbook. There's a lot of learning in practical tasks like that (Teacher 23, paragraph 8).

As previously mentioned, my immediate impressions were that teachers varied considerably with regard to how important aspects versus instances were in their conception of active learning. An investigation into the number of instances mentioned shows that amongst the ones who include instances when talking spontaneously about their understanding of active learning, the number of different instances mentioned vary from only one to six. Teacher 02 comes up with six different instances: project work, theme work, practical work, teacher lecturing, storyline and discussions. His very first response includes a number of references to instances:

Yes, well, I think the concept is a bit tricky, because in many ways I would think that all learning is active. Passive learning is, it... if I understand it [AL] as a learning situation where the pupil is actively taking part, if I understand it like that, and if I think methodically, then I think of theme and project work method where the pupils have a lot of responsibility themselves and are active in a different way as compared to a lecture situation. But also class discussions, group discussions and discussions in pairs. If I understand it as pupil activity, some homework even, tasks at home (Teacher 02, paragraph 7).

Figure 17 Percentages of sample citing AL instances spontaneously



8.2.3 Trends as a function of teacher attribute variables

The figures on the following pages show the profiles of trends in instance citation as a function of variation in educational level of pupils taught (Figure 18) and teacher gender (Figure 19). I also did analysis based on subject taught, teacher experience and teacher age. These analyses did not render contrasts which justified a separate presentation as figures but will instead be commented on in the text. It must be remembered that the variables overlap with each other to some extent, which, added to the small numbers involved, means that attempts at interpretation must be done very carefully.

When doing analysis of instance citation based on teacher attribute variables few strong contrasts appeared. One contrast which seemed fairly strong, however, was between teachers teaching at different pupil educational levels (Figure 18). One interesting finding was that while outdoor education was mentioned by five of the eight teachers working in lower primary, none of the teachers in lower secondary (of which there are 11 in total) came up with outdoor education as an instance of active learning. Practical investigation in science, however, is mentioned spontaneously by more than half (55% - 6 teachers) of the lower secondary teachers. One may claim this is no surprise since teachers in lower secondary tend to be subject specialists and therefore perhaps more likely to come up with instances which are subject specific such as doing practical science. Among the eleven lower secondary teachers in the sample three taught science only while two teachers taught both science and social studies.

None of the teachers in lower primary mention theme work as either a definitive or potential instance of AL, which may be seen as surprising, since theme work was very central in the lower primary stage in L97. However, outdoor education, which features quite a lot in lower primary teachers' conceptions of AL, shares some of the characteristics of theme work, in particular that it tends to be cross-curricular which was how theme work was defined in L97.

Figure 18 Percentages of teachers by pupil educational level citing spontaneous instances of AL

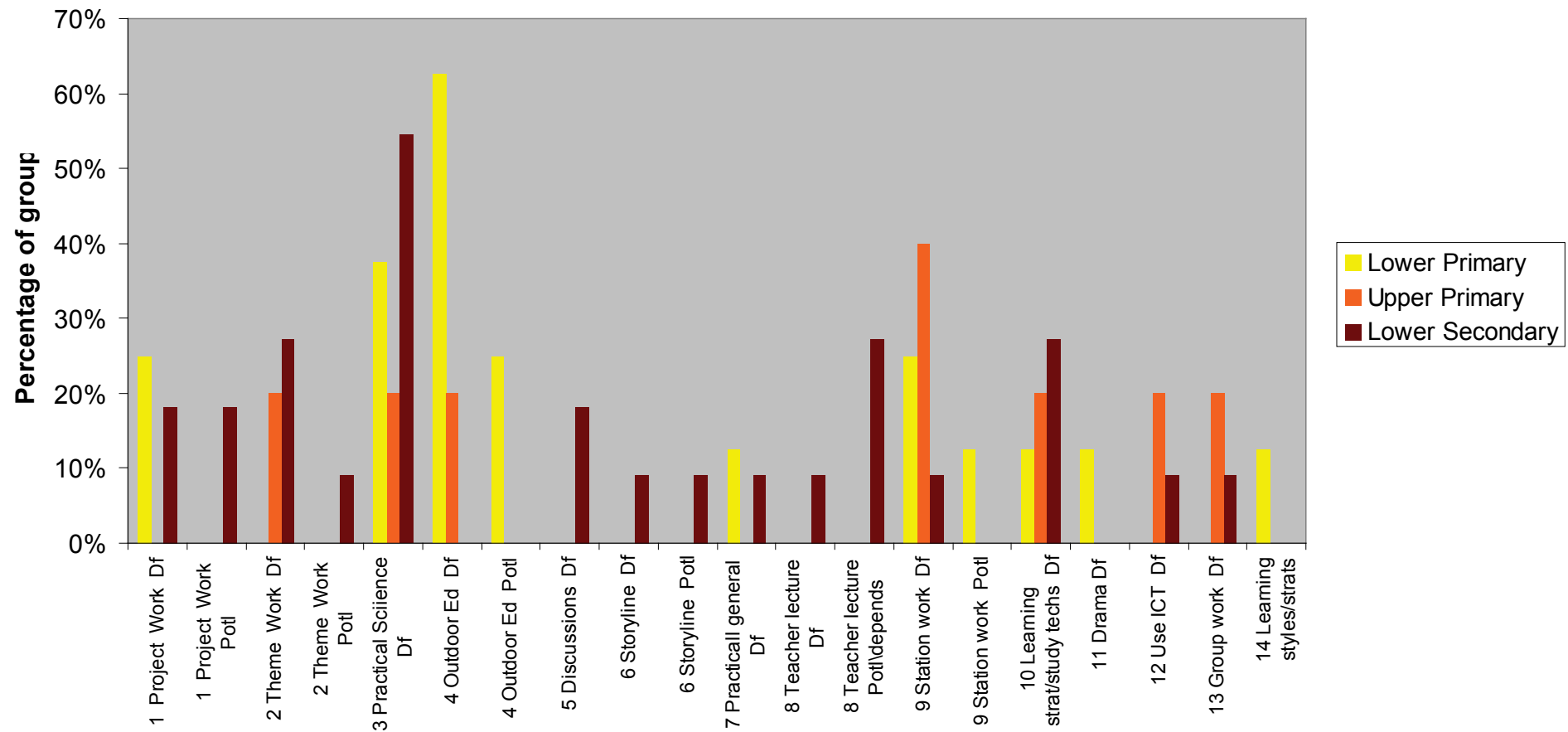
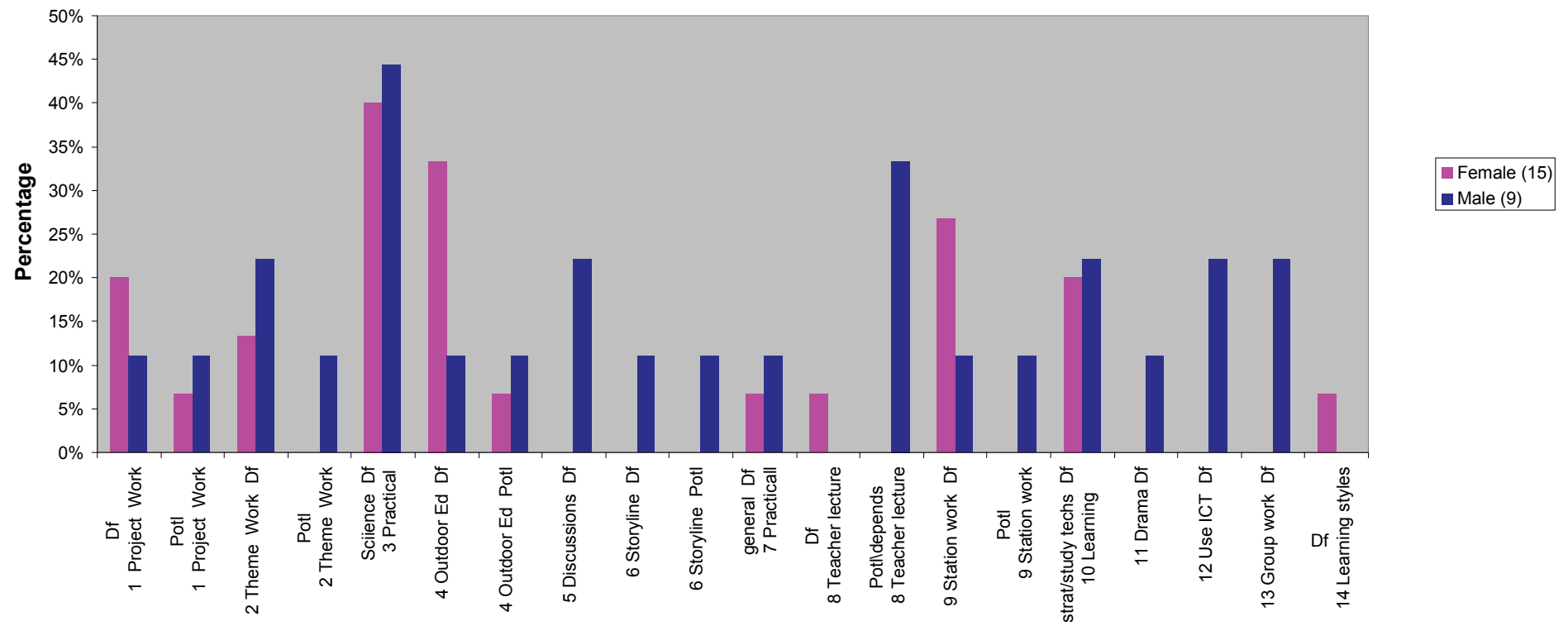


Figure 19 Percentages of teachers by gender citing spontaneous instances of AL



With regard to potential difference regarding gender, no surprising contrasts appeared as is shown in Figure 19. It might seem interesting that only male teachers mentioned some instances such as for instance the use of ICT, but the numbers are so small that it is not possible to draw any conclusions. Only two teachers mentioned the use of ICT as an instance of active learning, and these two teachers were male.

Analyses based on the other available attributes – subject taught, teacher experience and teacher age – did not result in any important findings. One finding, however, deserves mentioning. With regard to subject taught only social studies teachers mentioned theme work, which one may claim is in line with findings from L97 research (Rønning 2003; 2004) that social studies lent itself to theme work.

8.3 SUPPLIED INSTANCES OF ACTIVE LEARNING

8.3.1 Introduction

Following the principles of hierarchical focussed interviewing, the agenda for the interview provided for the supplying of potential instances and non-instances of AL derived from the review of historical and background trends in the area, so as to make sure of accessing respondents' thinking on these instances if they did not raise them themselves. Whilst there are arguments for considering what people say spontaneously, without or with minimal framing by their interviewer, it is arguably also important to discover their views in relation to issues and in this case ideas that are associated with the topic under investigation, not least because such possibilities are likely to arise in such contexts and because they may anyway have simply forgotten to mention these when focussing on developing what they have provided spontaneously. Unless and to the extent that they may have covered them spontaneously themselves, interviewees were thus supplied with the following items: project work, whole class teaching, practical investigation in science and outdoor education, and were pursued with questions 3.1 (a)-(d), cf. Interview agenda in Appendix 1 .

Given this, presenting the findings with respect only to those potential instances of AL that were actually offered as supplied instances would be potentially misleading. Instead, the findings in this section bring together all that respondents said about potential instances of AL, whether only when supplied to them or spontaneously, the

latter category including those instances they themselves provided, but which were not amongst the ways of working the agenda planned to supply if necessary. These data thus extend the spontaneous instances findings presented above in Section 8.2 and are arguably of particular importance by way of giving an overall picture of both their spontaneous and elicited thinking regarding the instancing of AL.

In Figure 20 and comparable figures, the term *Supp* within the category labels on the horizontal axis indicates that the relevant response to that particular way of working was forthcoming only in the context of that way of working having been supplied as a potential instance of AL by the interviewer. Conversely, category labels containing the term *Spont* indicates that the idea in question was mentioned by the respondent in relation to an instance of AL they themselves had proposed spontaneously. Finally, *SpSu* indicates categories relating to instances supplied by the interviewer, though not in cases where the respondent had already raised it themselves, i.e. the item was indicated either spontaneously or in response to a supplied instance.

8.3.2 General trends

Figure 20 below gives an overview of which instances teachers think of as active learning, either spontaneously or when they have been asked directly whether they think the instance in question is an example of active learning. As we can see from the figure, the instance which gathers most support is practical investigations in science. We have already seen (Section 8.2 above) that 42% of the teachers mentioned this instance spontaneously, and when we combine results of spontaneous and supplied responses we find that 83% of the teachers say that practical investigations in science is *definitely* an AL instance, while the remainder say that it potentially can be an AL instance provided that some conditions are fulfilled. I include one statement from each of these – one who says that it definitely is AL, and another one who qualifies it by including conditions, both as responses to practical science as a supplied instance:

Yes, that's concrete enough for me to say that it is AL. They get to see what happens, what it is, with their bare eyes (Teacher 01, paragraph 20).

It might be AL, but again, it is really the same thing as what I mentioned regarding maths, that if they are interested in solving the problem, then I think it can be AL. But in science, when they do practical investigations, they often work in twos or in groups of three or four pupils, and then it's a question as to whether they all do an equal amount of work, or if it's only one or two of them who does everything, and the others are just watching. Then it might be AL for the ones in charge, and perhaps not as much AL for the ones who just observe or only do what they are told. So I don't think it's AL just because it's a practical task any more, but I did when I first heard the term (Teacher 17, paragraph 48).

Interestingly, in particular when one takes into account the prominence of project work in L97, the number of teachers who include project work as an AL instance increases considerably when the instance is supplied to them. While only 17% mentioned project work spontaneously, the figure for combined spontaneous and supplied citation of project as a definite AL instance is 67%. But, similar to practical investigations in science, quite a number of teachers (38%) also qualify their view by stating conditions, either initially or as they are reflecting more about it. The following two statements can serve as examples of these two views:

Yes, that's definitely active... And that [project work] is definitely AL, because they do it themselves, they look up the knowledge themselves and they... But, there are both pros and cons there, but that it's AL, there's no question about that (Teacher 05, paragraph 26).

Yes, it is AL, for some. For some I would almost say that it's just time off or it becomes... For the able ones, I think they can profit a lot from project work, and also perhaps the middle range ones. They can work well, and they can use different sources and gather knowledge from them. But it doesn't work for all, definitely not (Teacher 17, paragraph 30).

I have already mentioned Teacher 04 (cf. Section 6.4.2 above) who in the spontaneous part of the interview talked about what others understand as AL, but that he disagreed with, or at least had to qualify in a particular way if should be included in his

conception of AL. He responds in this way to project work as a supplied instance of AL, by saying that some people think it is AL, but for him it is only potentially an AL instance provided that important conditions are met:

It might be active learning, but it doesn't have to be. It can be AL if it is done well, but nothing is as bad as a bad project work.

Clearly defined tasks, limited amount of time available, small groups, four pupils is normally too much. If you have four pupils what happens is that one falls out a bit; three is OK. These are the most important factors for it to work well. Enough supervision, so that you are able to follow them up properly and monitor what is going on (Teacher 04, paragraphs 26 and 64).

Whole class teaching did not feature in the spontaneous instances even if one may claim that teacher lecturing which was mentioned spontaneously by some (cf. Figure 17 above) can be viewed as a more limited example of whole class teaching. Only one teacher says that whole class teaching definitely is AL, while the others who include it in their understanding of AL all qualify it in some way or other. The conditions mentioned are very much connected to the teacher being able to engage the pupils in various ways. Teacher 05 can serve as an example of the conditions teachers come up with regarding whole class teaching as an AL instance:

Well, it depends what you are doing. The times when you... When I stand up there, talking to them, to give them a basis before we move on, then it can work well if they are interested and have made preparations so that they know what I am talking about. Totally new things which are maybe a bit difficult to understand, then it's not very active, at least not for the pupils. Then it's mostly me who is in focus and I talk for three quarters of an hour and my voice is hoarse and dry when I finish. But if the pupils are prepared and engaged and participate and perhaps even take over, then it's AL. And the times when that happens, I can just sit down and watch it getting a whole life all on its own, and the pupils are left with lots of great ideas (Teacher 05, paragraph 28).

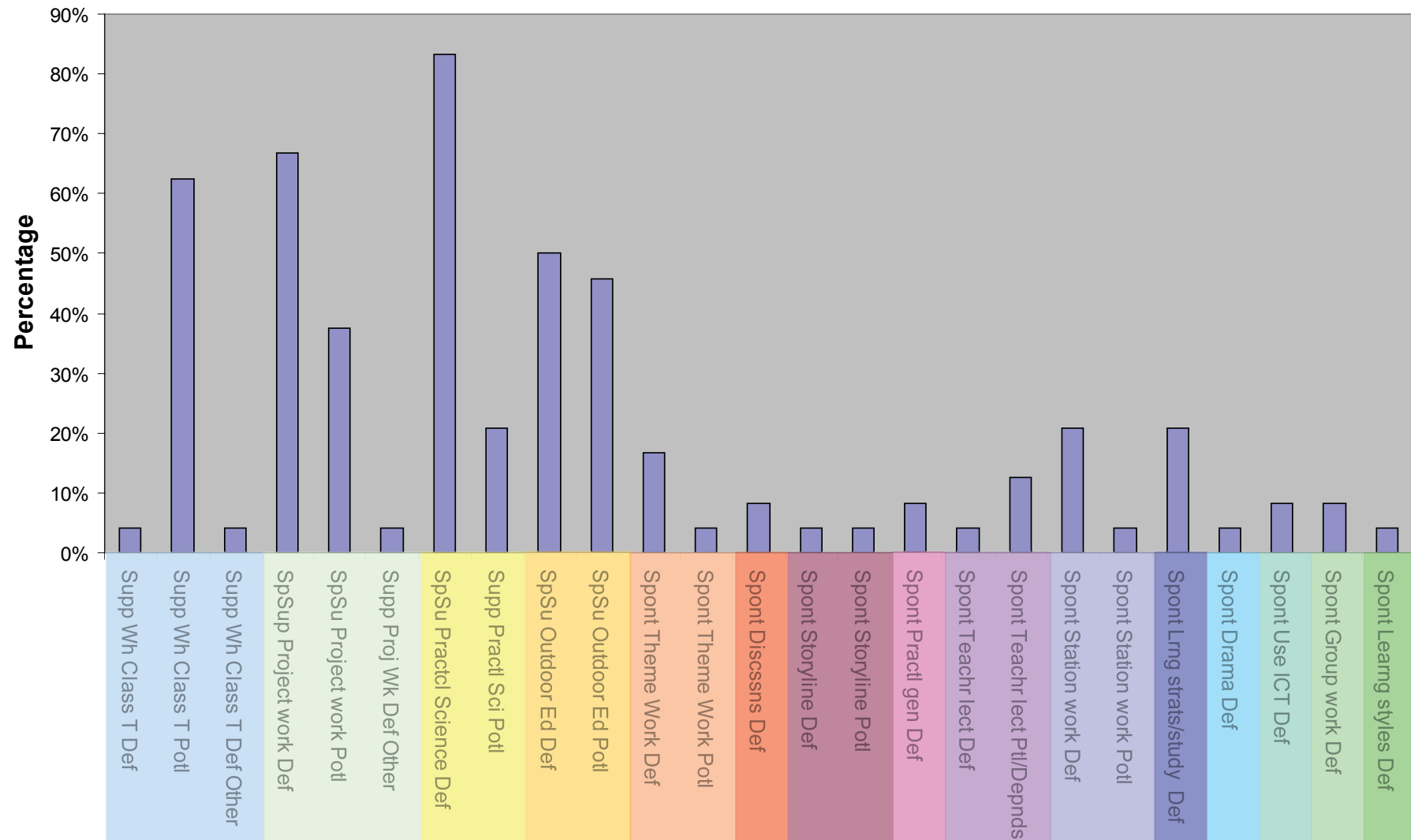
The fourth supplied instance, outdoor education, was the second most spontaneously mentioned instance (25%), and, in line with practical investigations in science and project work, the amount of teachers who definitely think of outdoor education as AL increases when it is supplied to them. 50% of the teachers say that it is AL, while 46% say that it potentially can be AL. Statements from both groups are included below:

Outdoor education, for me it is when you take the subject outside and do something about it outside. And in science we have for example made square meters out in the field, and we registered what we found within that square meter, and that's AL, where you learn both about square meters and... if you're looking for insects, then you can classify and make statistics... (Teacher 22, paragraph 46).

But you can have outdoor education and still have passive learning. I think that's perfectly possible. It's not just about space. I think what it is about is methods and didactics (Teacher 07, paragraph 38).

Figure 20

Percentages of sample indicating AL status of supplied or spontaneous instances



8.3.3 Trends as a function of teacher attribute variables

The figures on the following pages show the profiles of trends in instance citation as a function of variation in educational level of pupils taught (Figure 21) and gender (Figure 22). In line with the section on citation of spontaneous instances (cf. Section 8.2.3), I have chosen not to include figures for subject taught, teacher experience level and teacher age since the analyses based on these attribute variables did not render important contrasts. Once again I refer to the fact that the variables overlap with each other to some extent and that the number of teachers in each group gets very small when the data is broken down on attribute variables, so interpretation must be done carefully and not unconditionally. I will, however, comment briefly on the results from these analyses.

Figure 21 below shows some, but not any striking contrasts depending on at what education level the teacher is teaching. Instead, it is the similarities that are striking. It is interesting to see that there is no difference in how the teachers in lower primary and lower secondary view practical investigations in science, project work and whole class teaching – it is only when it comes to outdoor education that teachers in lower primary are more likely to view this as AL (75%) as compared to teachers in lower secondary (27%). Generally speaking, teachers in upper primary also come out with very similar results compared to the other two educational levels, and though it may look as if this group differs a bit regarding project work, it must be remembered that there are only five teachers in the upper primary group so that only one teacher more or less causes great changes in percentages.

With Figure 22 it is again the similarities that come out as striking. There are very few contrasts depending on teacher gender - the only contrast which deserves mentioning is that female teachers seem to a bit more positive as to whether outdoor education is active learning (60%) as compared to the male teachers (33%). Analysis of teacher responses depending on subject taught did not render any differences which need comment. The last two analyses – teacher inclusion of instances in their AL conceptions depending on teacher experience and teacher age are, by nature, very similar, since age and experience are closely connected for most teachers, the exception being teachers who train to become teachers later in life. This assumption

was confirmed by the patterns that came out from these analyses. The only striking contrast was that all teachers who have ten years or less experience include project work as an instance of AL, while the corresponding analysis for very experienced teachers (21 years or more experience) is only 46%. This could be due to the fact that teachers with ten years experience or less trained during the L97 era when project work was an important part of the national curriculum and therefore also a major element in teacher training courses. However, it must again be remembered that the groups are small – there are only five teachers with 10 years or less experience in my sample.

Respondents' profiles in these supplied and spontaneous instances were subjected to cluster analysis, but with no interpretable cluster profile contrasts emerging in large enough clusters to be able to evidence internal homogeneity.

Figure 21 Percentages by educational level taught of supplied and/or spontaneous instances of AL

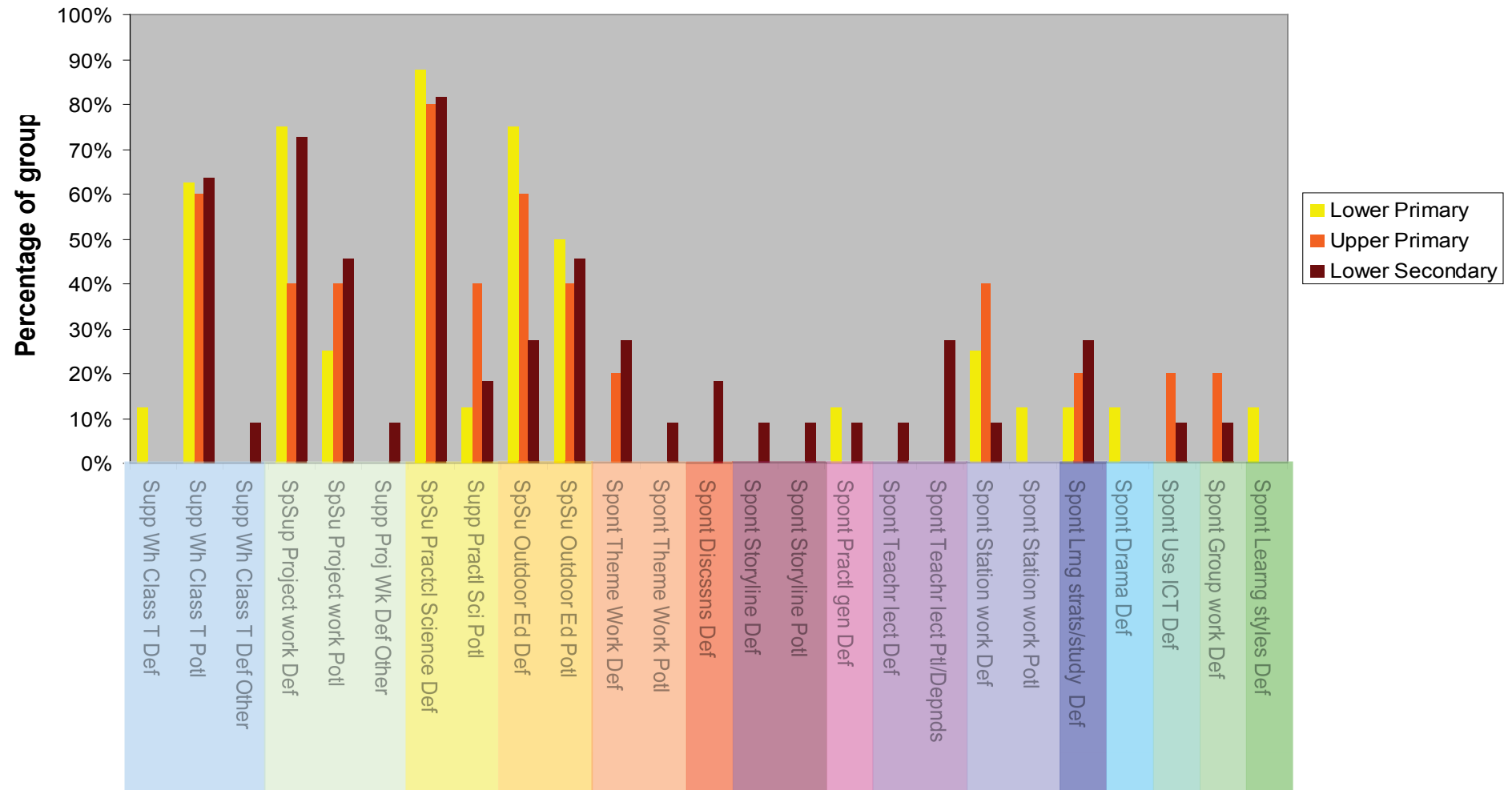
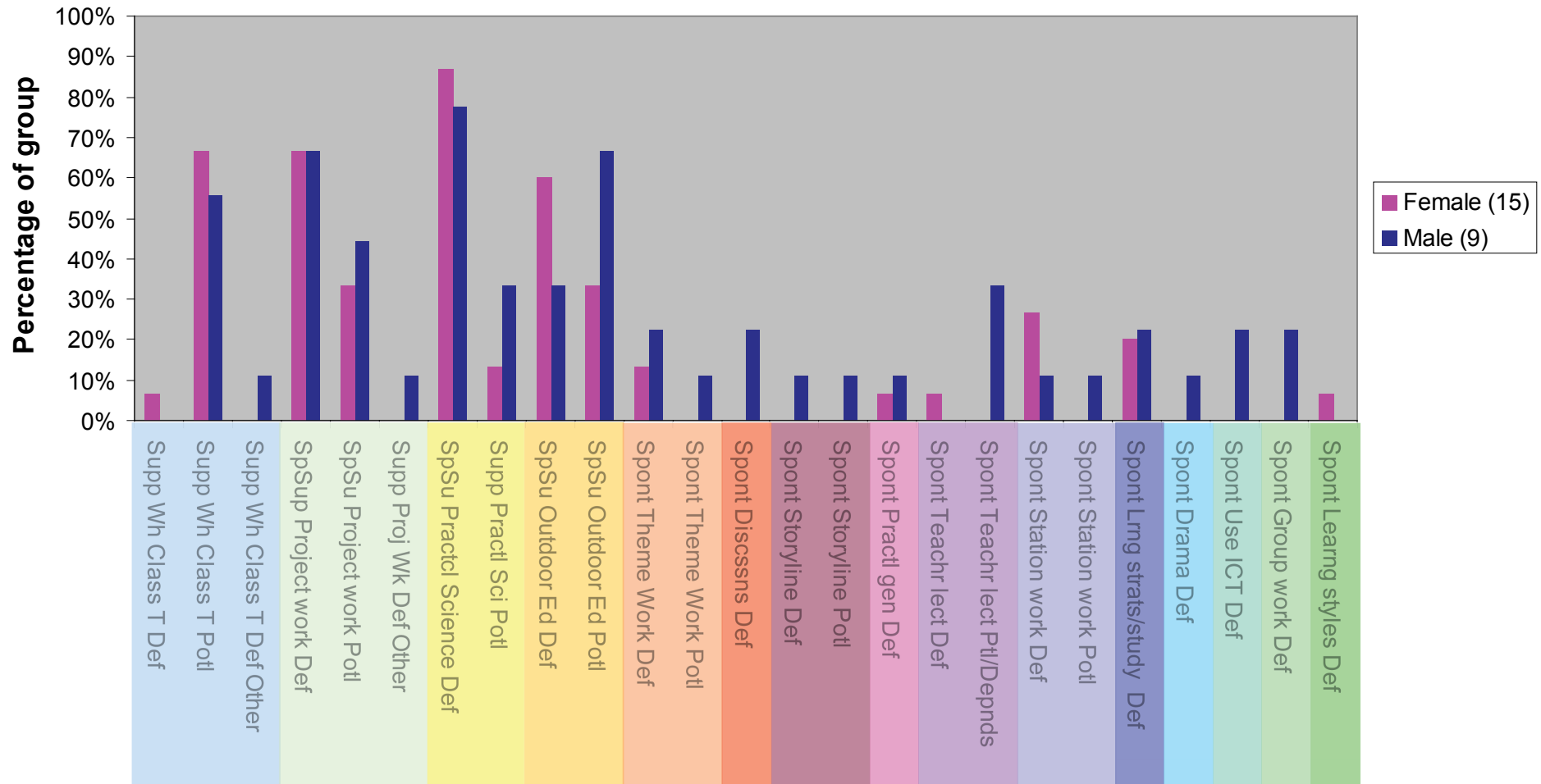


Figure 22 Percentages by teacher gender of supplied and/or spontaneous instances of AL



9. SITUATED ASPECTS OF ACTIVE LEARNING

9.1 INTRODUCTION

The previous two chapters have dealt first with *aspects* that feature spontaneously or semi-spontaneously in teachers' conceptions of active learning (Chapter 7) and then with *instances* that teachers consider as being active learning (Chapter 8), either spontaneously or when supplied to them. When talking about active learning instances, teachers do not only talk about these approaches or ways of working in isolation, but also refer to aspects that are linked with or describe the instances. Aspects that feature as an integral part of instance citation have been termed *situated aspects*. The first section in the current chapter will investigate the degree to which situated aspects feature in teachers' conceptions of active learning, both regarding spontaneous and supplied instances, and the occurrence of these as compared to spontaneous and semi-spontaneous aspects. The last section of the chapter will investigate amalgamation of data across spontaneous/semi-spontaneous and situated aspects.

9.2 SITUATED AND SPONTANEOUS/SEMI-SPONTANEOUS ASPECTS

Presentation of findings regarding situated and spontaneous/semi-spontaneous aspects has been split into two figures because of space/legibility requirements. Figure 23 presents findings for the following teaching facets: *Planning*, *ILOs*, *Assessment* and *Learning resources*. In addition, *Pupil independence/influence* aspects are included in the figure. Figure 24 contains findings for *Pupil activity*, *Teacher activity* and *Underlying Learning Processes (ULPs)* aspects.

The general impression regarding Figure 23 is that there is little occurrence of situated aspects in discussion of spontaneous instances (yellow data points). The only major exception in this picture is the aspect *Concrete Physical Resources* within *Learning Resources*, where 33% of the teachers have made reference to this aspect when talking spontaneously about active learning in terms of instances. These situated aspects feature in three different kinds of instances; practical investigations in science, outdoor education and station work. However, the station work instance referred to also takes

place outside and is as such a form of outdoor education, as do some of the instances regarding practical investigations in science. Teacher 24 describes a science investigation and why she thinks making use of concrete resources outdoors makes it into active learning.

They can take the ant up into their box, or that they do part of it which makes them find out why things are as they are, and how things are. Because I believe that when they do something, and when they have been up there and remember which ant hill they found and studied, then they might remember something, and then they have connected it to what they are going to learn (Teacher 24, paragraph 17).

Another finding in Figure 23 is that situated aspects feature to a larger degree in supplied instances discussion (red data points) as compared to spontaneous instances. Some situated aspects within supplied instances feature almost as frequently as they do spontaneously or semi-spontaneously. This applies for instance to *ILOs important in AL* where 29% of the teachers have cited this spontaneously or semi-spontaneously (blue data points), while the corresponding figure for situated aspects within supplied instances is 25% (red data points). This situated aspect features in teachers' descriptions of project work, outdoor education and practical investigations in science. As previously mentioned (cf. Chapter 8) some teachers worry about the time spent on projects and outdoor education, and say that because of that it is particularly important to have clear boundaries regarding time and focus, and to define the learning objectives. I include two quotes, the first referring to project work and the second to outdoor education.

We have to agree about a number of different things about what this [project] is going to be, and not least why. Why are we spending time on this? And we have to agree how much time we are going to use on it. How long time do we think we can spend, that it is important enough to spend a week, two weeks, five weeks. And when all this has been decided we have to make clear what it is we want to find out about, and then we have to work according to it (Teacher 12, paragraph 38).

It is very important when we are talking about outdoor education that it is carefully planned, what you want to get out of it, and that we dwell on whether there is a purpose to going out (Teacher 18, paragraph 42).

Another finding in Figure 23 that deserves comment is that there are almost no situated aspects within *Assessment*, which is in line with what I found in spontaneous and semi-spontaneous aspects, and which might seem to suggest that teachers do not tend think of active learning in terms of assessment. There are also very few situated aspects within the *Planning* facet. The next figure (Figure 24) contains, as described above, three facets – *Pupil activity*, *Teacher activity* and *ULPs*. The immediate impression when studying Figure 24 is that there are more situated aspects, or at least more people citing some situated aspects, as compared to the previous figure, in particular for some of the *Pupil Activity* aspects, but also within the other two facets. That there are more situated aspects regarding *Pupil* and *Teacher activity* is perhaps to be expected since these are talked about within instances, or ways of working, where teachers' and pupils' actions are central components. However, we also find that some of the ULPs feature as situated aspects.

Within the facet *Pupil Activity* it is interesting that there is less reference within situated aspects to the rather general *Pupils not passive*, as compared to what I found within spontaneous and semi-spontaneous aspects. This finding might suggest that the teachers tend to talk in more specific terms when relating their conception of active learning to concrete instances. Some situated aspects are mentioned almost at the same rate as compared to the spontaneous/semi-spontaneous. *Pupils do practical activities* feature as situated aspects in 50% of the teachers' conceptions of active learning when talking about supplied instances, while the corresponding figures for situated aspects within spontaneous instances and as spontaneous/semi-spontaneous aspects are 25% and 54%, respectively. This aspect is found in three out of the four supplied instances; the only instance where it does not come up is in *Whole-class teaching*. In spontaneous instances it features in *Station work*, *Outdoor education* and *Practical science*. Teacher 07 comes up with an example when being supplied with the instance *Practical science*:

For instance producing detonating gas; it's no fun just reading about it in a book. And I believe that you remember it better if you burn it off than if you don't. It's an extreme example, of course, but there are some principles that I try to follow in science, and that is that it should contain practical activities. Everything from going out to study nature, to having chemistry experiments, and experiments in physics (Teacher 07, paragraph 36).

Pupils do investigations is found as situated aspects within supplied (29%) and spontaneous instances (25%), referred within the following kinds of instances: *Practical science*, *Project work*, *Outdoor education* and *Station work* (only spontaneous instances). Teacher 14 refers to her own experiences and experiences from her son's education when being supplied with the instance *Practical science*.

Yes, when they are allowed to try out. We did that, some experiments that I remember from my childhood when we put things into the microscope, and that's fun and it leads to learning. My son did fieldwork at upper secondary school, in biology and such, and these were the kinds of things he talked about when he came home (Teacher 14, paragraph 40).

Pupils ask questions features as situated aspect within supplied instances in 25% of the teachers' conceptions, while the corresponding figure for spontaneous/semi-spontaneous aspects is 33%. This aspect is referred to in connection with all four supplied instances. Teacher 06 explains why he thinks asking questions is of central importance in project work.

So for the kids to be active in this [project work] I would like them to ask questions. Not on their own, normally, but in groups, questions regarding some topics, and they themselves will have to try and find the answers to them. Either within resources they have been provided or found, or by using the teacher, or in some other way, they will have to try and find the answers (Teacher 06, paragraph 20).

Pupils are physically active featured as spontaneous/semi-spontaneous aspects in 33% of the teachers' conceptions of active learning, while the corresponding figures for situated aspects are 21% regarding supplied instances and 13% within spontaneous instances. Teacher 21 talks spontaneously about outdoor education and being physically active as an aspect of active learning, and when being supplied with the instance *Whole-class teaching* she says that if you allow for physical activity, this instance can also become active learning.

Yes, because then [in outdoor education] they are able to use their body in a totally different way as compared to when they are inside. I believe that development of language and understanding of numbers and motor functions are closely connected. That's why I think outdoor education is very important for learning... Yes, it's that connection, that you get both theoretical things at the same time as you get to use your body. They learn things more easily and in a different way than if they just sit at their desks and get it written down on the blackboard (Teacher 21, paragraph 8 and 10).

If, for instance, you ask them questions [in whole-class teaching] that you don't just wait for a hand up in the air, but you might say that the ones who agree can stand up and walk over there and that they get to... Being in activity, they get more active in the learning process than if I just do my things (Teacher 21, paragraph 56).

In the *Teacher activity* facet, there are four situated aspects that have been mentioned by more than one or two teachers, and those are *Teacher dialogic role* (13% - supplied instances), *Teacher stimulates interest* (13% - supplied instances), *Teacher uses a variety of wows* (13% - spontaneous instances) and *Teacher asks questions* (13% - supplied instances).

The last facet, underlying learning processes, *ULPs*, provides some interesting findings. First, it is interesting to note that there is far less reference to the more general *Pupils are cognitively active* in situated aspects as compared to spontaneous/semi-

spontaneous aspects. Instead we find references to the slightly more specific *Reflect on practical activity* with 21% of the teachers having referred to this within spontaneous instances and 17% in supplied instances, and to *Connect input to experience* which features in 17% of the teachers conceptions of active learning when talking spontaneously about instances, and in 13% of their conceptions when being supplied with instances. The corresponding figures for spontaneous/semi-spontaneous aspects are 38% and 33%, respectively. Both situated aspects feature in Teacher 15's conception of active learning, and it is when she talks, spontaneously, about *Practical investigations in science* that they occur.

Because active learning is about pupils first experiencing something, and then we are going to relate it back to the theory that exists, so that they get the concepts to go with what they are doing, because... Today, for instance, we are going to do an experiment which I think of as active learning, and that is that they get a balloon, and then they get a Berner flask, and then they are going to try to blow up the balloon within the Berner flask, and then they will get a lot of experiences. But they may not know what they have actually found out, so then it is my task, as the teacher, to put it into words, what is it we have found out here, and why is it like that? Together with them (Teacher 15, paragraph 9).

But there might be other things when I know they have experiences that I can build on. I did an experiment once, which was also in that book I talked about, and then I gave them an egg, a piece of paper and a roll of tape. They worked in groups, and they were going to make a device where... The egg was on the table, and then they were going to push it down without it being broken. And they worked at it for two hours, and they had to use what they knew. Some suggested boiling the egg first, and others had other ideas. But we ended by talking about why it was that the egg stayed within the paper, what we had to do. They learnt a lot from it (Teacher 15, paragraph 30).

Figure 23 Percentages of sample indicating AL Aspects Spontaneously, Semi-spontaneously or Situated - Part 1

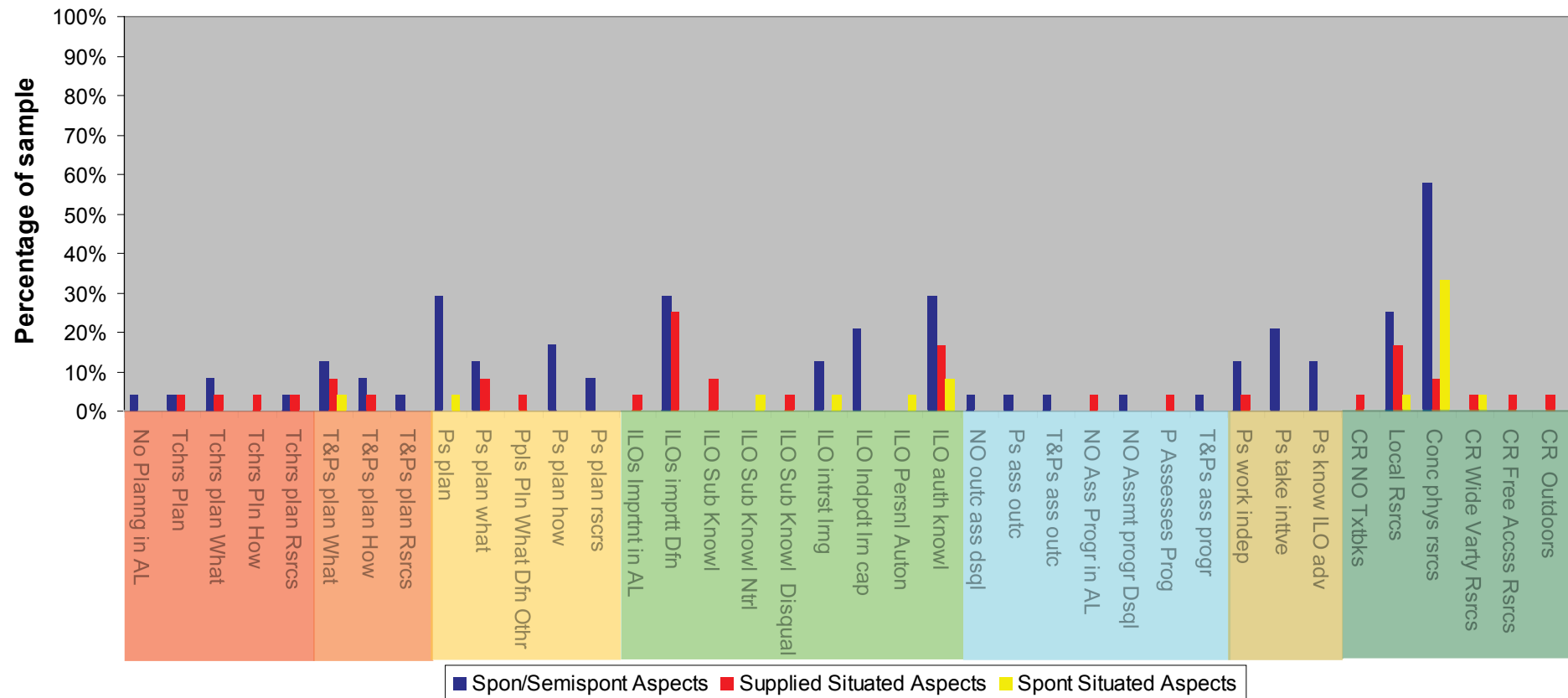


Figure 24 Percentages of sample indicating AL Aspects Spontaneously, Semi-spontaneously or Situated – Part 2

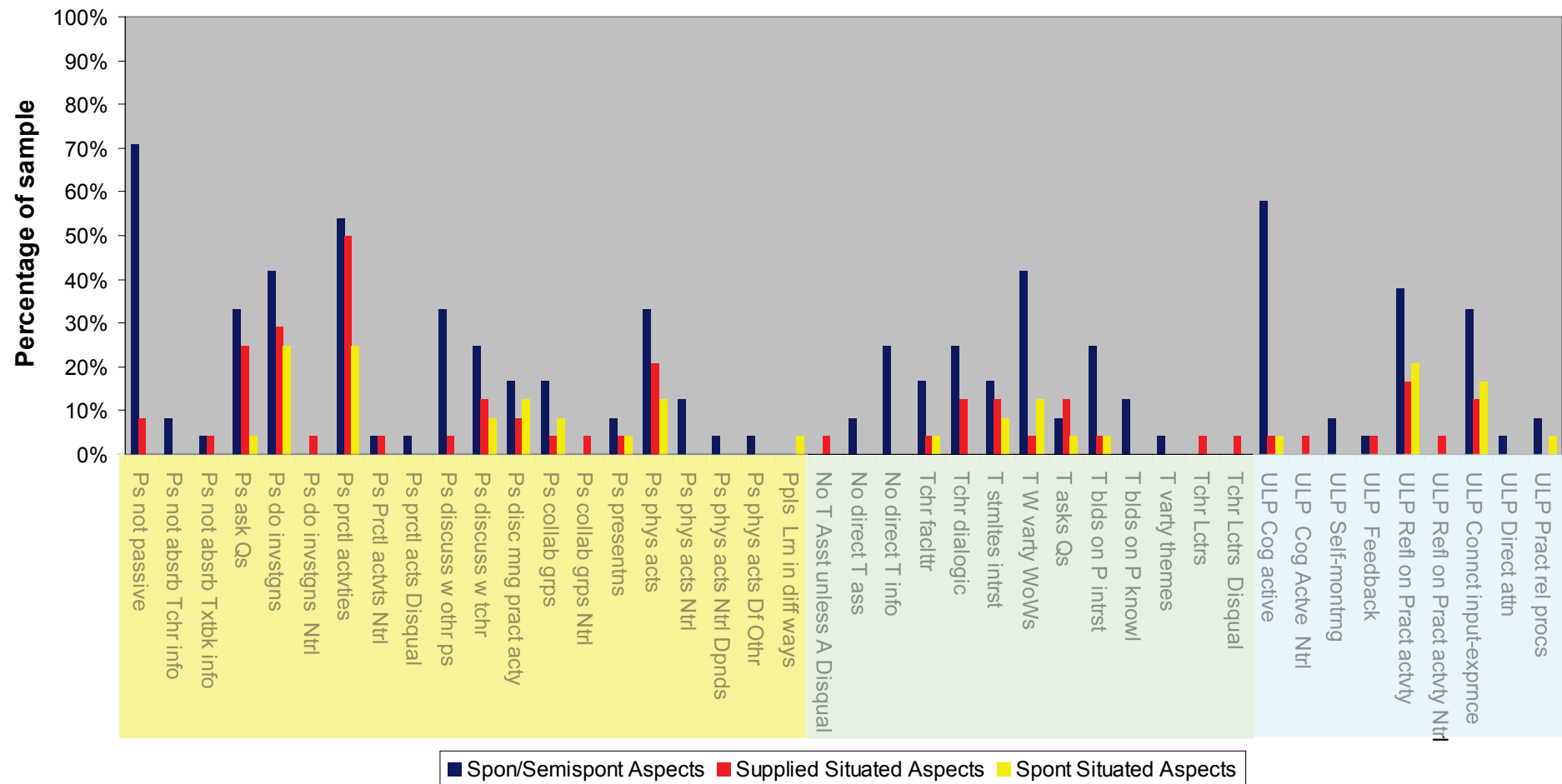


Figure 25

Percentages of sample indicating AL Aspects Spontaneously Semi-spontaneously or Situated – Part 1

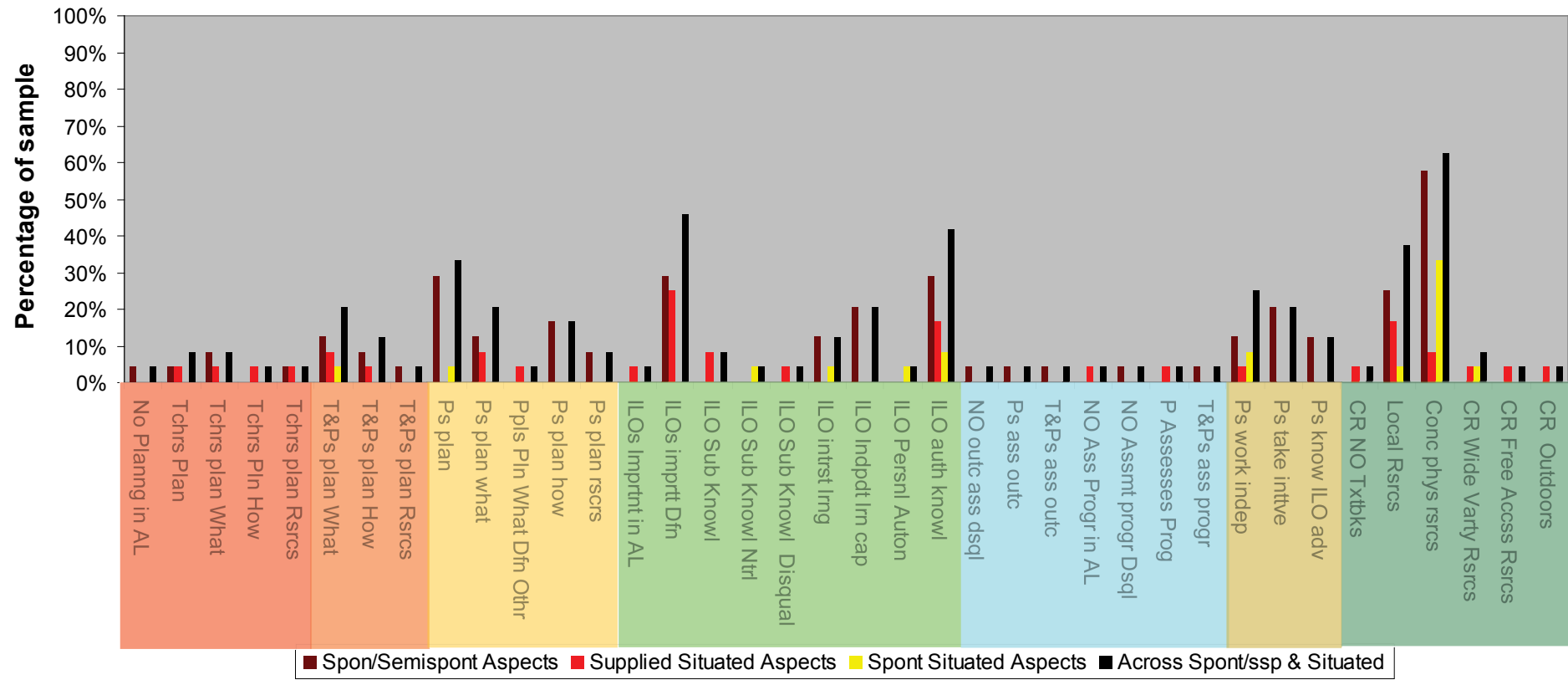
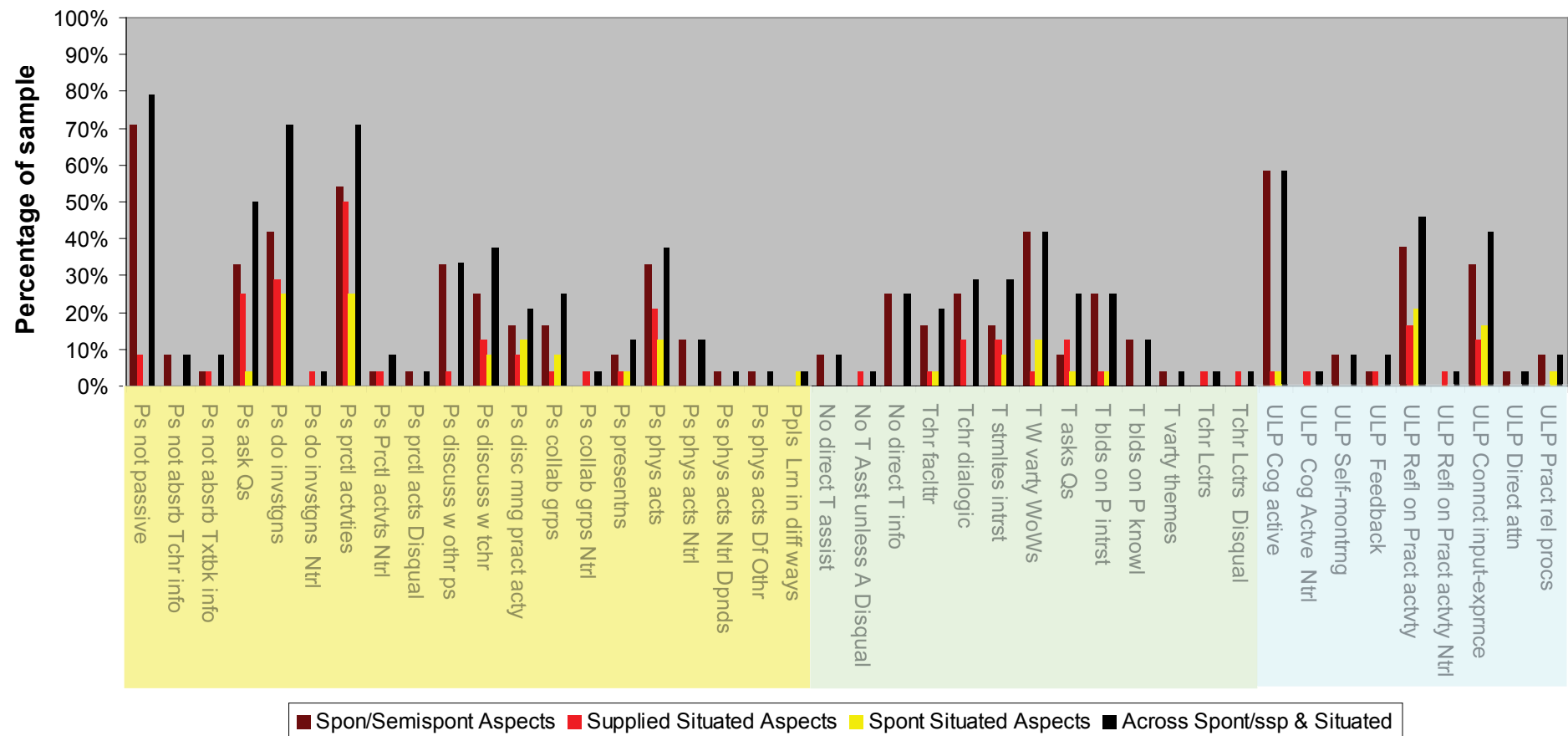


Figure 26 Percentages of sample indicating AL Aspects Spontaneously Semi-spontaneously or Situated – Part 2



9.3 ASPECTS – FINDINGS ACROSS SPONTANEOUS, SEMI-SPONTANEOUS AND SITUATED ASPECTS

Figure 25 and Figure 26 above present the amalgamated figures (black bars) for aspects across spontaneous/semi-spontaneous and situated aspects. The black data series collate information from across the spontaneous/semi-spontaneous aspects (maroon bars), situated aspects within spontaneous instances (yellow bars), and situated aspects within supplied instances (red bars), such that if a respondent has a code within any of these (maroon, yellow or red), he/she is counted, but only once. This means that in some cases the maroon and black bars are equal – all the teachers who come up with a situated specific aspect have already mentioned this aspect spontaneously/semi-spontaneously.

The amalgamation of data presents an integrated picture of aspect citing across the different aspect types and allows us to see, to some extent at least, where the aspect citing is coming from. The general picture does not offer any strong support for claiming that teachers have a very situated approach to active learning. Firstly, there is only one code (*Teacher asks questions*) which is cited more in a situated context (13%) than in the spontaneous/semi-spontaneous aspect context (8%). The second argument for this claim is that, as mentioned above, in some cases the maroon and black bars are of equal height, which means that inclusion of the situated aspects has not changed the results – all teachers have already mentioned the aspect spontaneously/semi-spontaneously. This is for instance the case with *ILO interest learning* in Figure 25, and with *ULP Cognitively active* and *Teacher uses variety of wows* in Figure 26.

However, in some cases we find that amalgamation of data across aspect types actually changes the picture. The aspect which undergoes the largest change is *Pupils do investigations* (Figure 26) where the amalgamated figure (black bar) is 71%, while the percentage of teachers having cited this aspect spontaneously/semi-spontaneously is 42%, which means that 29% of the teachers have only cited this as a situated aspect. Other aspects that gain teacher citation from combining data across aspect types are *ILOs important* in Figure 25 and *Pupils ask questions*, *Pupils do practical activities* and

Teacher asks questions in Figure 26, which all have a rise of 17% (four teachers) when spontaneous/semi-spontaneous and situated aspects are combined. For five other aspects the rise is 13% and these are *ILO authentic knowledge*, *Pupils work independently* and *Local resources* in Figure 25 and *Pupils discuss with teacher* and *Teacher stimulates interest* in Figure 26.

10. SUPPLIED ASPECTS OF ACTIVE LEARNING

10.1 INTRODUCTION

The current chapter will focus on supplied aspects of active learning. As described in Section 5.4 above, the supplied aspect part of the interview consisted of a number of pre-defined statements regarding active learning that the interviewees were asked to respond to. These statements dealt with the teaching facets formerly discussed in Section 3.3; *Planning*, *Intended Learning Outcomes (ILOs)*, *Pupil activity*, *Teacher activity*, *Assessment* and *Learning resources*. To support the respondents' reflection regarding the statements, they were provided with printed cards with the statements on (cf. Section 5.5 above).

The statements dealt with aspect combinations, i.e. that each aspect included one or more sub-aspects. An example of this is the following combination: *Pupils decide or help decide what they're going to learn, based on their own interests*, where sub-aspects would include *Pupils plan...*, *Teacher and pupils plan...* For each aspect, three options were coded for – that teachers said that this was definitely AL (*Def*), that they qualified it in some way saying that it could be, but in other cases it was not (*Ntrl/It depends*) and, finally, that they said that it was not AL (*Neg*).

When presenting the findings I first deal with the supplied aspect combinations (Section 10.2), and then investigate in more detail the sub-aspects within the aspect combinations (Section 10.3). More in-depth information about teachers' responses by way of citations will be reserved for the presentation of details in Section 10.3 below.

10.2 SUPPLIED ASPECT COMBINATIONS

10.2.1 General trends

Figure 28 gives an overview of teachers' responses to the supplied aspect combinations. The figure is organised in such a way that it deals with the different teaching facets mentioned above, starting with *Planning* (orange¹⁸) to the far left of the figure, and ending with *Teacher activity* (light blue) at the very right of the figure. I

¹⁸ This refers to the colour used in the box with aspect names at the bottom of the figure.

will deal with the different facets in the same order as the figure is organised, starting with *Planning*. The Planning facet contained two statements, presented in the following way to the teachers:

Some people emphasise pupil decision-making as an important aspect of active learning, in particular that:

- *(1 321) Pupils decide or help decide what they're going to learn, based on their own interests.*
- *(2 322) Pupils decide or help decide how they're going to learn, who they're going to learning with and which resources they're going to use.*

Regarding the first statement, we find that 42% of the teachers are negative with regard to whether AL involves pupils planning or taking part in planning what they are going to learn, while 38% say that pupil decision-making about learning content is definitely AL. Teachers' responses to the second statement – that AL means that pupils plan or take part in planning how, with whom and with what they are going to learn – is received more positively by the teachers. 50% say that it is AL, 21% are neutral, while 17% are negative. Details regarding these statements will be presented in 10.3 below.

The second facet, *ILOs* (bright green), included two sub-aspects that were juxtaposed in the following way:

- *(13 354) The most important thing about active learning is developing pupils' democratic values and their independent reasoning capability, not to develop specific curricular knowledge or concrete skills.*

Here we find that no teachers agree that this is definite of active learning; instead a large majority (79%) have been coded as neutral. In this case the code *Ntrl* has been used to signal that the teachers are unwilling to accept that the ILOs – *Democratic values/independent reasoning* capability and *Curricular knowledge/concrete skills* - are put in opposition. Instead, they claim that the two depend on each other and cannot be juxtaposed in the way that it is done in the statement. Teacher 05 can serve as an example of this kind of response:

I often say to my pupils that knowledge is power, and that you don't get anywhere by being ignorant. And to function well you need knowledge about things, to be able to talk about them. And we know that people who are ignorant, when they talk about things they very soon make mistakes and come out as being narrow-minded. So this [points to the statement about specific knowledge and concrete skills on the card] must be a fundament to be able to reflect in an independent way. They need some basic skills to be able to do that. So I don't want to juxtapose them, but rather insist that they have to go hand-in-hand if we are going to get the pupils we want. That's what I think (Teacher 05, paragraph 92).

The third facet, *Assessment* (bright blue), included two statements:

Some people emphasise issues of monitoring and assessment as an important aspect of active learning, in particular that:

- *(8 341) Pupils assess their own learning, with or without teacher assistance.*
- *(9 342) There is no assessment of learning outcomes in active learning.*

With regard to the first statement – that pupils assess their own work – there is considerable support (75%) that this is definitive of active learning. Only two teachers are negative (8%), while the rest (17%) says that it might be, but that it depends on certain conditions. The other statement is rejected by 95% of the teachers, i.e. all but one, and this is the aspect where there is most unity in teacher responses, but unity in rejecting the proposal.

Pupil activity (yellow) refers to five different proposals of active learning:

Some people emphasise aspects of learning activities as an important feature of active learning, in particular that:

- *(3 331) Learning activities are to be active and exploratory, and not passive, for instance receiving information from the teacher or a textbook.*

- (4 332) *Teacher should facilitate so that pupils can ask questions and discuss issues with teacher and fellow pupils.*
- (5 333) *Pupils cooperate and investigate their own questions, for instance through project work.*
- (10 351) *Active learning focuses on enquiry about real life issues arising at school or in their local community.*
- (11 352) *In active learning pupils work with cross-curricular issues and topics.*

We remember that pupils not being passive was prominent in teachers' spontaneous responses regarding aspects of active learning (cf. Figure 12 above). 71% of the teachers mentioned this spontaneously. In line with this finding we see that a majority of teachers (54%) agree that *Activities have to be active and exploratory* for it to be defined as active learning. The qualification concerning *not* receiving information from teacher or textbook may have reduced the support, and this is something we will have a closer look at when we study the details of the combinations in Section 10.3.5 below. Three teachers (13%) disagree that activities have to be active and exploratory, while the rest say it is neutral.

There is considerable support for the statement about *Pupils' discussing* and *Pupils collaborating* as an aspect of active learning. In both cases 79% say that this is definitive of active learning, and no teachers reject the contentions. These are the only two statements where no teachers disagree with the statements. Figure 12 shows that these aspects also featured in teachers' spontaneous conceptions of active learning, but not to such an extent as when they respond to the corresponding supplied aspects.

The statement that active learning is about pupils' investigation of real-life issues gained support from 58% of the teachers while 21% say that it is not. A similar aspect, that active learning is about authentic knowledge, featured in more than a third of teachers' spontaneous responses (Figure 12). There is less support for the contention that active learning involves cross-curricularity. A quarter of the teachers say this is definitive of active learning, while another quarter say that it is not, and the rest qualify it by saying that it can be, but it doesn't have to be (*Ntrl*).

The fifth facet, *Learning resources* (dark green), refers to findings from teachers' responses to one statement, that:

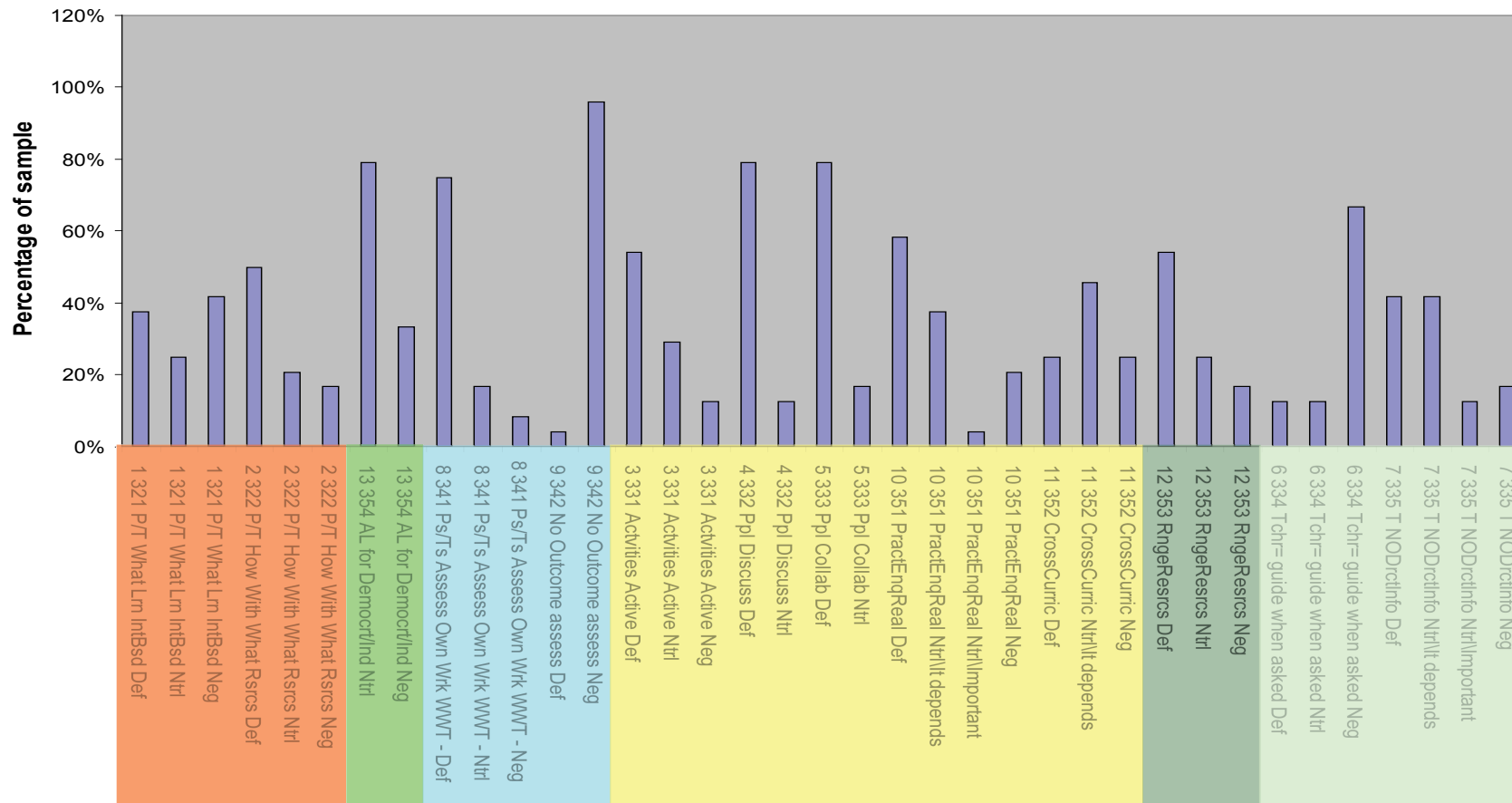
- (12 353) *Active learning presupposes that you have a wide variety of concrete resources and information sources about the real world.*

A majority of the teachers (54%) agrees that this is definitive of active learning, while 17% (4 teachers) disagrees. The last facet, *Teacher activity* (light blue), deals with the teacher role in active learning and the interview agenda contained two statements regarding this facet:

- (6 334) *In active learning teacher acts as a facilitator/guide [Norwegian: veileder] and only intervenes when pupils ask for assistance.*
- (7 335) *In active learning the teacher never gives the right answer when asked by a pupil, but instead encourages the pupil to find the answer himself/herself.*

The first statement contains a term much used during the L97 era – facilitator, in Norwegian *veileder* – a role which was closely linked with project work and pupils' self-management and which, according to research into the implementation of L97, resulted in teachers interpreting this role in a problematic way (cf. Section 2.3.4 above). The fact that only 13% (3 teachers) see this aspect as definitive of active learning must be viewed against the background of teachers' fairly recent experiences with implementation of L97 and the critique that followed. The very last statement, that in active learning the teacher never gives the right answer but requests the pupils to find it by themselves, get somewhat more support. 42% say that it is definitive of active learning, but a majority (54%) says that it is neutral and states conditions for when it can be part of their conception of active learning.

Figure 27 Percentage of sample responding to Supplied Aspect Combinations



10.2.2 Trends as a function of teacher attribute variables

In the Chapters above about inclusion of aspects (Chapter 7) and instances (Chapter 8) I provided analyses of trends based on different teacher attribute variables. However, due to small numbers when using grouping based on the various attributes, and the fact that few of the analyses rendered strong contrasts, I limited myself to presenting analyses based on *Educational level taught* and *Gender* only when studying inclusion of instances. The same limitations have been chosen regarding *Supplied aspect combinations* since the different analyses provides rather messy pictures with no strong contrasts.

Figure 29 below shows the results from analysis of supplied aspect combination findings, distributed by *Educational level taught* (lower primary in yellow, upper primary in orange, lower secondary in brown). As was the case with spontaneous and supplied instances (cf. Figure 21), the similarities are more striking than the contrasts when teachers are grouped according to which educational level they teach. The only contrast which seems interesting is that between teachers in lower and upper primary regarding *Planning*, where teachers in lower primary seem to be more supportive of pupil participation in deciding about content as a definitive (1 321 Def) aspect of active learning (63%), while most teachers in upper primary (80%) respond negatively (1 321 Neg) to the contention. However, as remarked previously, it must be remembered that the groups are very small – only five upper primary teachers in the sample, which means that each teacher counts as 20%. Another contrast that deserves comment is that between lower primary and lower secondary regarding *Teacher Activity* and the aspect concerning teacher not giving direct information/answers to the pupils when asked about such. Here we find that while only 27% (three out of eleven lower secondary teachers) think this is definitive of active learning (7 335 Def), the corresponding figure for lower primary is 63% (five out of eight teachers).

Figure 30 presents the pattern which emerges when distributing the answers based on *Gender*. In line with what we found above regarding *Educational level taught*, few, if any strong contrasts can be found. The only contrasts worth comment are connected to *Pupil activity* where we find that there seems to be a difference between male and female teachers regarding how they view pupil collaboration and cross-curricularity.

93% of the female teachers consider pupil collaboration as a definitive aspect of active learning, while the corresponding figure for male teachers is 56%. With regard to whether cross-curricularity is an aspect of active learning, 56% of male teachers reply positively to this being AL and none say explicitly that it is not AL (*Neg*), while the corresponding figure for female teachers is only 7% (one teacher) who definitely say that it is AL, while 40% say that it is not (*Neg*). However, as previously mentioned, such results must be interpreted with caution since the numbers are small – nine men and fifteen women make up the sample.

In line with analyses regarding spontaneous aspects and supplied and spontaneous instances, respondents' profiles in supplied aspects were also subjected to cluster analysis. However, no interpretable cluster profile contrasts emerged in large enough clusters to be able to evidence internal homogeneity.

Figure 29 Percentages of teachers by Educational Level Taught responding to Supplied Aspect combinations

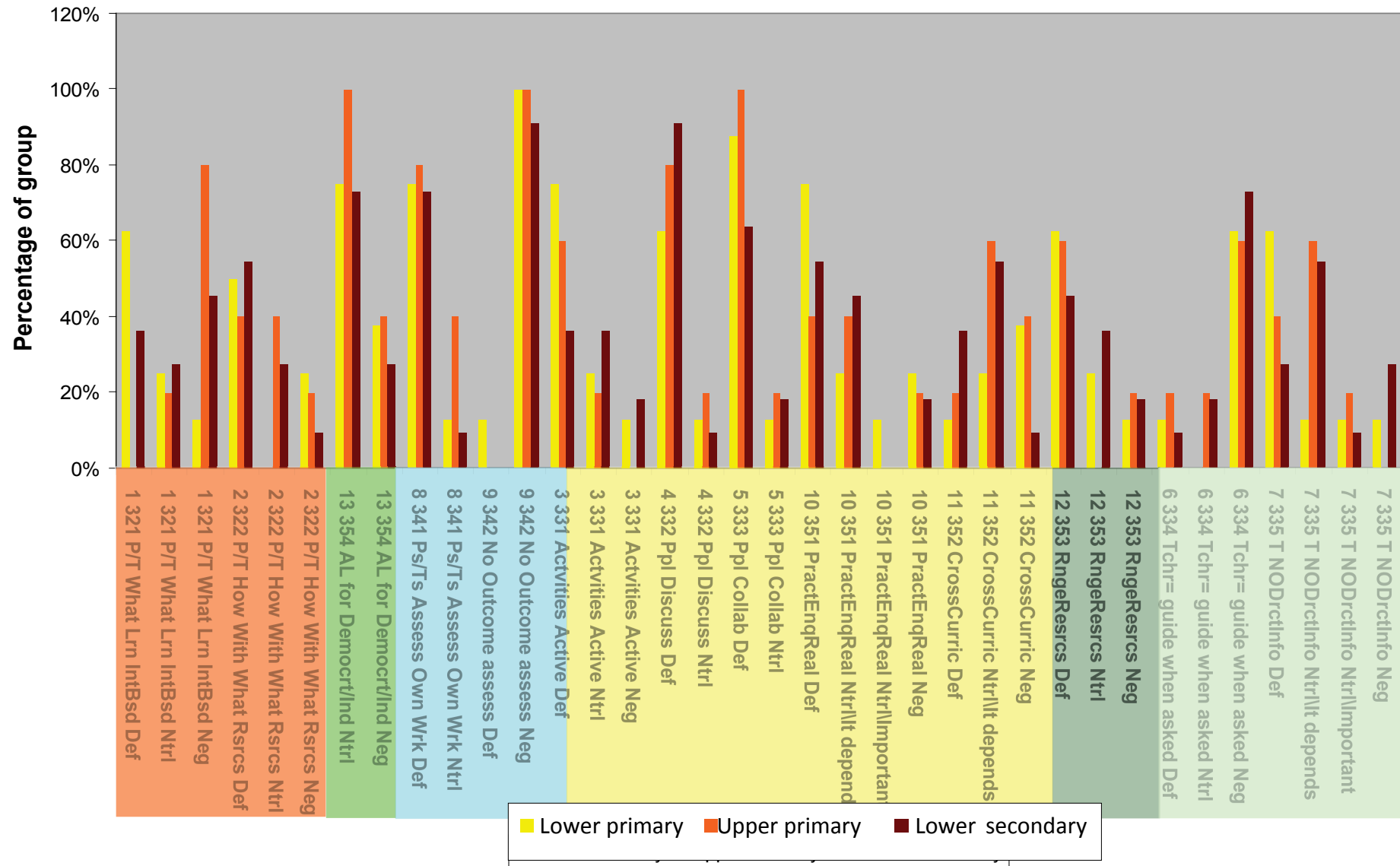
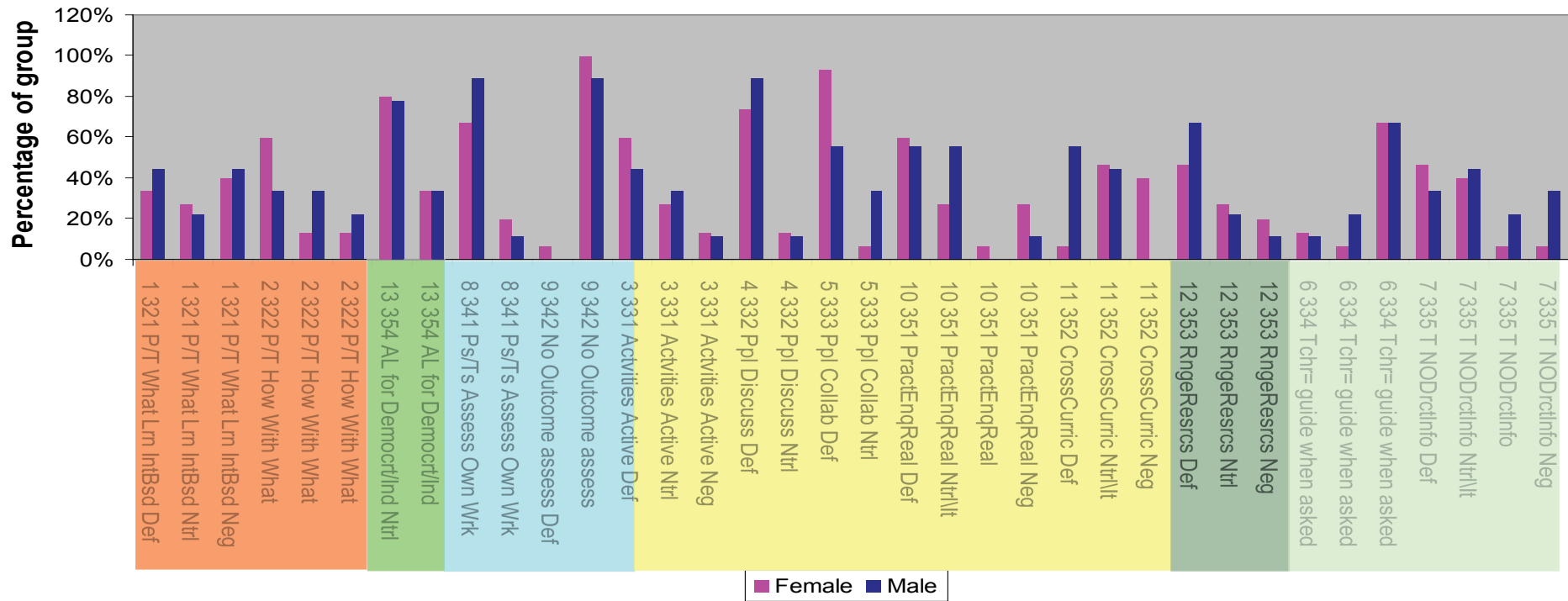


Figure 30 Percentages of teachers by gender responding to Supplied Aspect combinations



10.3 SUPPLIED ASPECT DETAILS

10.3.1 Introduction

The analyses presented in the following sections go beyond the responses directly to the *Supplied Aspect Combinations* and include the further *Aspect Details* coded within the response to each combination. Since it is not possible to show all Combination and Detail responses in one figure, they have instead been broken down by educational interaction sub-facet, and one figure is included for each of the six educational sub-facets; *Planning*, *ILOs*, *Assessment*, *Pupil activity*, *Learning resources* and *Teacher activity*.

No breakdowns by teacher attribute will be presented since these analyses did not render any strong contrasts. The presentation will follow the same order as in the previous section, starting with *Planning* (orange) and ending with *Teacher activity* (light blue). The same colours are used to separate the different facets, and the figures contain both the *Aspect combinations* findings, presented in slightly darker hues and the *Details*, in lighter hues.

It is important to note that not all teachers provided details with regard to the aspects in question. Some teachers talked in such a way that it was only possible to code at a higher level, i.e. for *Aspect combinations*. Regarding *Planning*, for instance, it was sometimes only possible to code that the teacher included pupil participation in planning as AL (*Def*), without being able to code whether this meant that he/she thought of pupils and teacher planning together as AL or whether it was pupils planning on their own which was AL. The fact that not all teachers were prompted regarding *Details* may be subject to critique, but was due to the fact that piloting of the interview agenda had shown that too much prompting regarding details was felt as pestering and to some extent intimidating for the interviewees. Another important reason was that the interviews turned to be very long, some more than 80 minutes, so continuous and systematic prompting for all details would have been impossible without extending the time used considerably.

10.3.2 Planning

The *Planning* education facet was represented by two statements in the supplied aspects part of the interview, these being that active learning includes pupils planning or take part in planning *what* to learn and that pupils plan, or take part in planning, *how* they are going to learn, *who* they are going to learn with and *what resources* to use (cf. Section 10.2.1 above). Figure 31 below presents both *Aspect combinations* and *Details* regarding *Planning* for the whole sample.

Inspection of *Details* regarding pupil participation in planning what to learn show that 21% of the teachers specify that it is when pupils and teacher plan together that they consider it to be definitive of active learning, while only 8% (two teachers) think that pupils should plan on their own for it to be AL. 13% (three teachers) say explicitly that pupils planning on their own is not AL (*Neg*). Further inspection of what teachers actually say when they state that pupils and teachers plan together in AL shows that for some teachers this implies defining a framework within which the pupils get some degree of self-determination:

Something will have to be decided in advance, but within that they [the pupils] can be allowed to decide for themselves (Teacher 20, paragraph 64)

Teacher 12 qualifies this further and states that:

There are things that we are obliged to cover and this may be areas that the pupils haven't even heard about, so letting the pupils choose freely is not possible. But being in dialogue with them about what they are interested in, their everyday life, and connecting their everyday life to what we are doing in school is a very good starting point (Teacher 12, paragraph 71).

Teachers who are negative to pupil participation in planning refer to the fact that there is a national curriculum that defines the objectives for the pupils' education, and that pupils cannot be allowed to influence in such a way as to deviate from these objectives:

No, pupils are not able to define their own objectives, and in school we have objectives that have to be met, and these objectives are what we have to work towards and then the activity must be tailored to meet those objectives (Teacher 22, paragraph 109).

Responses to the second statement, that in active learning pupils plan or take part in planning *how* they are going to learn, *with whom* and with *which resources*, show that it is teacher and pupil cooperation about planning that is considered to be AL for most teachers, while pupils planning on their own receives less support regarding inclusion in their conception of AL. 25% of the teachers say that pupil participation with teachers when choosing ways of working - *how* to learn - is AL, while 21% of the teachers include pupil participation with teachers in planning *with whom* and *with what* they are going to learn in their understanding of AL. Teacher 18 describes how she thinks about teacher and pupils planning how to work and what resources to use:

But sometimes they are allowed to take part in deciding how to learn, for instance multiplication, they can take part in deciding whether to use games to train, or small boards, or just writing by hand, or to use dices. I often think that it is enough to offer them some such small choices (Teacher 18, paragraph 44).

One of the teachers connects pupils' participation in planning to project work and says the following:

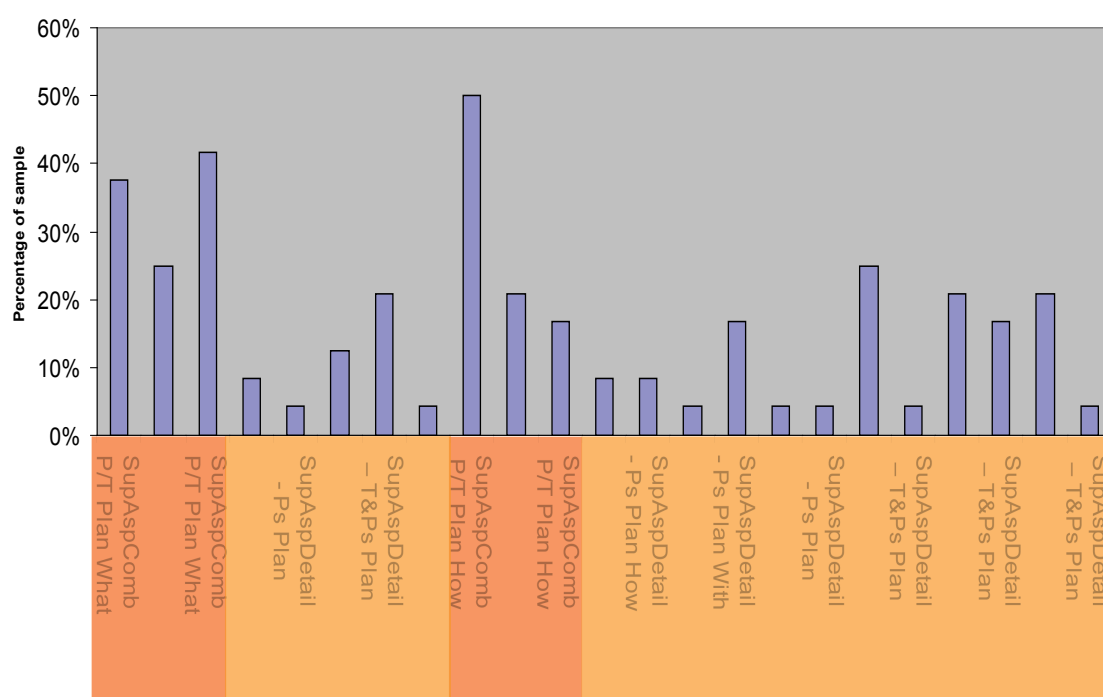
Yes, I think that's active learning, but I think that... When I see this – how, who and which resources – then I think about project work. That they are allowed to... They don't have to sit in the classroom, they are allowed to go out to investigate, form groups themselves, resources which they can... Use Internet, use books, interview people... So I think of that as active learning, yes (Teacher 20, paragraph 68).

Only very few teachers (one or two teachers for each included sub-aspect) support and specify details regarding pupils planning on their own as aspects of active learning, while 17% specifically say that they do not think AL includes pupils choosing who to

work with. Concern about the pupils not being chosen is one of the reasons why these teachers are reserved about letting pupils choose work partners:

Who they are going to work with, choosing that, it has its disadvantages, since there needs to social responsibility for absolutely all pupils. It must be governed to some degree, or you might find that there are some pupils who never have anybody to work with (teacher 07, paragraph 44).

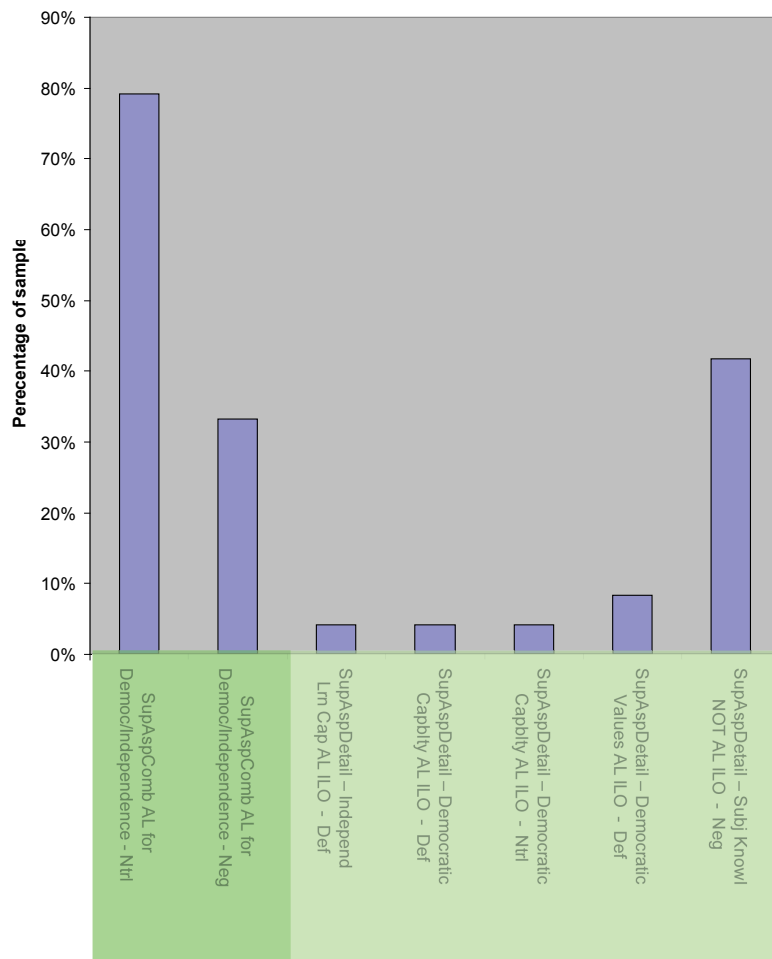
Figure 31 Percentages of Sample responding to Supplied Definitional Aspect combinations and Details - Planning



10.3.3 Intended Learning Outcomes – ILOs

Analysis of ILO *Details*, presented in Figure 32 below, does not add much to the findings already presented in the *Aspect combinations* section (Section 10.2.1) above since few teachers have provided statements that could be coded at the further detail level. As mentioned above, teachers reacted negatively to the fact that the statement regarding ILOs juxtaposed knowledge/concrete skills and democratic values/independent reasoning capabilities, claiming that knowledge and skills were less important than the other ILOs. Instead the teachers claimed that these go hand-in-hand and are both important in active learning.

Figure 32 Percentages of Sample responding to Supplied Definitional Aspect combinations and Details - ILOs



The only finding that deserves comment is that 42% of the teachers make specifically negative comments regarding the allegation that subject knowledge is not important in active learning. These comments are variations of the claim referred to above, that

the two sets of ILOs are not mutually exclusive, but actually depend on each other. I include two more quotes as examples of teachers' negative reactions to the statement that knowledge is not important in active learning.

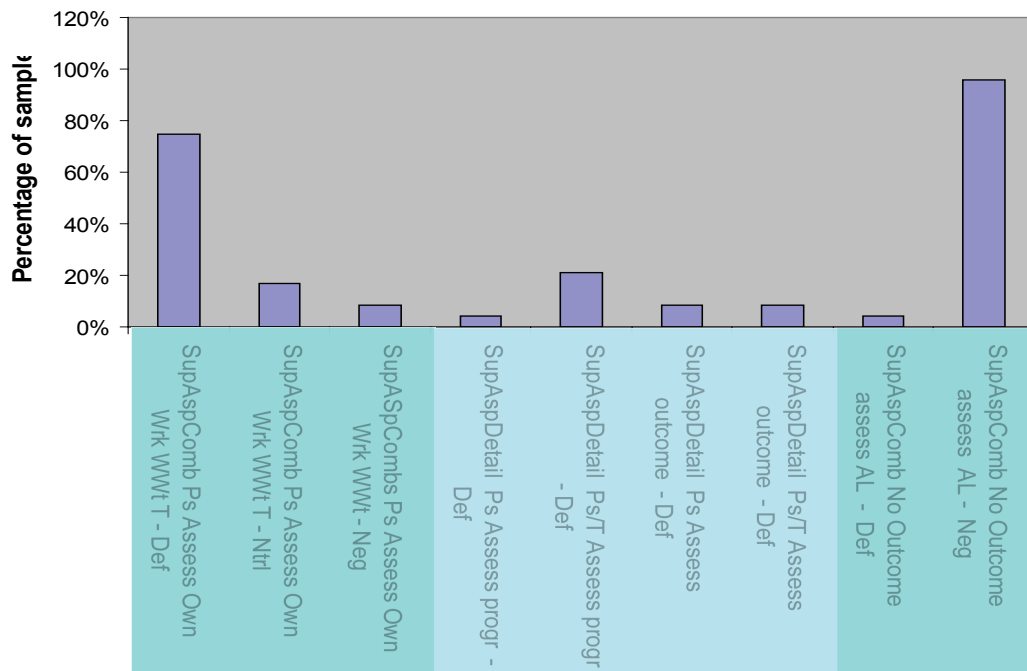
But I think that you can't develop pupils' democratic values and independent reasoning capability without providing them with subject knowledge and concrete skills. Those two are not in conflict or mutually exclusive. Democratic values and independent reasoning capability are something which happens through a process. You learn it through a process and not as a separate subject. And then I think that you are completely dependent on having subject knowledge to be able to enter that process. You have to know, for instance, what a democracy is, what it means, what happens if you don't have a democracy (teacher 07, paragraph 96).

No, I don't see it as a conflict, because I think that it's very important to develop good subject knowledge. It's important, and the pupils think so, too, they are preoccupied with getting knowledge. They are active in that process, developing knowledge (Teacher 14, paragraph 120).

10.3.4 Assessment

In line with the findings from analysis of *ILOs* the analysis of *Details* regarding *Assessment* aspects also renders very little additional information to what has already been presented in the analysis of *Aspect combinations*. Few teachers have provided responses that enabled coding for details with regard to the first statement about pupil participation in assessment, and the second statement about no assessment of outcomes in active learning was not coded for details since it was a fairly straightforward statement without sub-aspects. The first statement is coded for Details regarding whether pupils assess on their own (*Ps Assess*) or together with the teacher (*Ps/T assess*), and whether it is *Progress* or *Outcome* which is being assessed.

Figure 33 Percentages of Sample responding to Supplied Definitional Aspect combinations and details - Assessment



In spite of the fact that little extra comes out of the analysis of *Details*, one finding presented in the figure above requires comment. The investigation of *Aspect combinations* regarding assessment revealed 75% of the teachers said that pupils assessing their own work, on their own or together with their teacher, was definitive of active learning. Investigation of *Details* regarding this statement shows that 21% of the teachers state that for *Assessment of progress* to be definitive of active learning pupils have to do this together with the teacher. Teacher 11 explains why she thinks this is important:

Well, I think it is very important that they [the pupils] are allowed to take part in assessing what went well and what didn't work well and what they might have done differently, because if there is someone just telling them this, from the outside, I think they will lose interest, and they will lose that important bit of the learning before the next project. Because it is when you are able to see that you should have done it like this or like that, and then it would have been better, so

they get an extra bit of learning regarding this thing about the work process and their progress (Teacher 11, paragraph 73).

The corresponding figure for pupils assessing progress on their own is 4%, i.e. only one teacher. Only four teachers have provided any detail regarding the assessment of *Outcome*, and two of them say that for it to be active learning, pupils do it on their own while the other two say that it is when pupils and teachers assess outcome together that it becomes AL. The second statement, that outcome is not assessed in active learning, met considerable opposition (cf. Section 10.2.1); 96% of the teachers were negative, and I include some quotes that describe what it is that they react against.

Yes, I think there has to be assessment of outcome. Because if not they may just waste their time... I think they need help in this. Because they may so easily waste time, and then they just get bored and discouraged and I am not interested in that happening (Teacher 05, paragraph 76).

Learning outcome, active learning... If you have learning, then there must be a learning outcome. And this is a statement that there shouldn't be assessment of outcome in active learning, and I don't agree with that. Assessment... I think that we assess all the time, but there are different ways of doing it, of course (Teacher 20, paragraph 94).

There is almost unanimous agreement that assessment of outcome is central to active learning, as it is to learning in general, and some also refer to the importance of making pupils aware of the objectives they are working towards to enable them to engage in assessing their own work. That latter echoes the focus in the current national curriculum, LK06, as was discussed in Section 2.3.5 above.

10.3.5 Pupil activity

The facet *Pupil activity* comprised four different statements presented and discussed at *Aspect combinations* level in Section 10.2.1 above. Figure 34 below presents *Aspect combinations* and *Details* for all these four statements. The first statement contained five different sub-aspects or details; in active learning *Pupils are not passive*, they do *Not only receive information from the teacher* or from a *textbook*, they *Investigate* and they engage in *Practical activities*. 25% of the teachers state that for it to be active learning pupils must not be passive, something which is in line what we found in teachers' spontaneous responses regarding active learning where similar statements featured in the majority of the teachers' conceptions of AL. However, some teachers also take a negative stance to this, saying that it is not required that pupils are active for it to be AL, and for one of them this represents a change to what she was thinking previously:

You know, when I see it like that, I am beginning to think... I don't think they actually have to be in activity (Teacher 19, paragraph 88).

Another teacher qualifies a similar understanding by saying the following:

You know, I think that even if the pupils are passive, even if a pupil sits there, asking, and is passive together with me, asking me about something, so that I can adapt my explanation to fit with this, then I think that he [the pupil] is active in his learning. He is active, because he takes part in governing his learning (Teacher 03, paragraph 85).

In both cases it seems as if what the teachers are actually saying, implicitly, is that pupils do not have to *physically* active for it to be active learning; cognitive activity is also an aspect of active learning. Teacher 04, whom I have previously presented as having a very clear understanding of active learning as being cognitively active, makes use of this opportunity to once more clarify his position:

Learning activities MUST [pointing to the card, emphasising the word 'must'] be active and exploratory... They can be, but they don't have to be. Being active is something you can be in a situation with others, in a whole-class setting, of course you can be active then, and then active learning takes place. I have always thought of active learning that there is no need for you to be physically active (Teacher 04, paragraph 53).

21% of the teachers are negative to the statement that active learning requires not receiving information from the teacher or from the textbook, while 8% say that these sub-aspects are definitive of active learning. Teacher 03, who reacted against the statement that pupils had to be active, also has reservations regarding whether active learning implies not receiving information from a textbook:

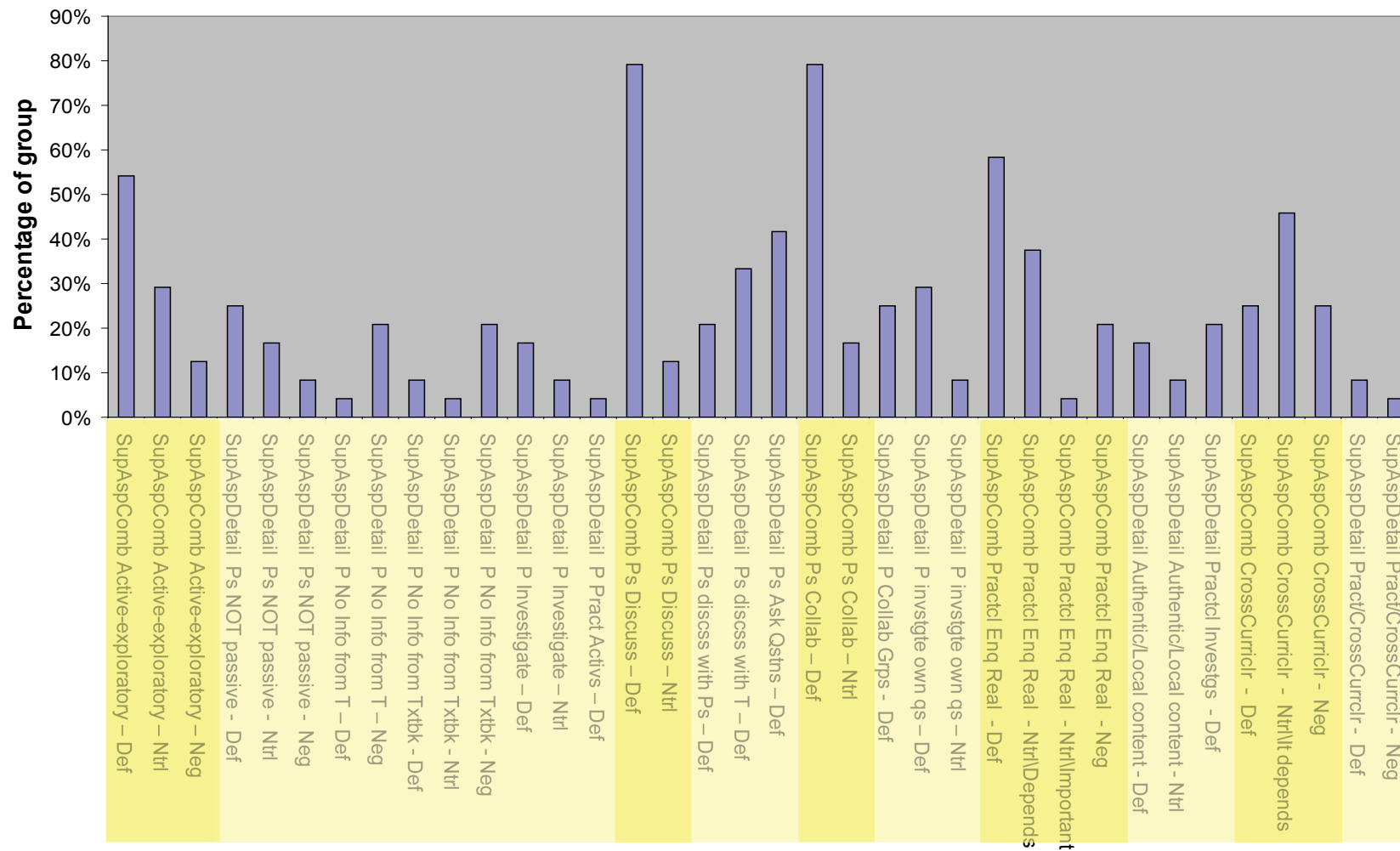
And it's the same then [as with pupils having to be active] about getting information from a textbook. One thing is when I say: 'Read that page!' But another thing is when they say: 'I wonder about how the ice bears are getting on...' And I say: 'Well, read that page, and then you might find out about it' (Teacher 03, paragraph 85).

Details of Pupil activity that teachers do define as being part of what they conceive of as active learning are that *Pupils ask questions* (42%), *Pupils investigate* (17%), that they *Investigate their own questions* (29%), that *Pupils collaborate in groups* (25%), that *Pupils discuss with teacher* (33%) and with their fellow pupils (21%), and that *Pupils engage with practical investigations* (21%). Many of these sub-aspects share features which suggest that teachers' conception of active learning is connected to qualities in the learning activities that enable pupils to be active both physically and mentally, to investigate and explore and to discuss and exchange views with others. Teacher 24 describes this, connected to why she thinks that pupils asking questions is active learning:

Yes, I think it is [active learning] because then the pupils have to think, so whether you are inside or outside, or whatever you are doing, there is some kind of activity inside the pupils' head, and they can... You know,

the thing about raising hypotheses, asking questions, and then starting to find out about it (Teacher 24, paragraph 85).

Figure 34 Percentages of Sample responding to Supplied Definitional Aspect Combinations and Details – Pupil Activity



Investigation of *Aspect combinations* brought results that a majority of teachers (58%) supported that active learning was about practical investigations of real-life issues. Further investigation of *Details* regarding the real-life issues sub-aspect reveals that 17% of the teachers think that enquiry into authentic, real-life content is definitive of active learning. Teacher 07 is one of these teachers, and he takes the issue up to date by relating it to an issue which is currently on the educational agenda in Norway.

Yes, that's active learning. And, of course, if you live in the Lofoten islands, then it is more... It has been a problem with these PISA tests that the questions have to be so general that the same test is used in Iran and in the USA, for example. Then you can't ask questions about Christianity, you can't ask about religion, you can't ask about food, you can't... If you ask somebody in Africa about 'sjark' [a small Norwegian fishing boat], or cod and fish and fishing nets, he won't know much about that (Teacher 07, paragraph 82).

Another teacher reflects about a real-life issue which is not concrete, but instead very abstract, and how, through practical investigations, it can be made more concrete and understandable for the children.

You know, it's incredibly theoretical, understanding how atoms are composed, and the small particles we consist of. And there are lots of things here, in this empty room, and gases and all these things. Just standing there, telling about it, and then think that the pupils have learnt something so abstract... I did it once, many years ago. We dramatised the different phases of water [interviewee is laughing]. The children jumped up on desks and onto the window sills when they were simulating gas, and when they turned into ice they stood close together and hugged each other. So we made it into drama. But otherwise, understanding such things... Another example when you can understand this if you have a pan with water and boil the water, keeping the lid on the pan. And you see the condensation outside the pan when the water starts getting hot, you can see drops forming underneath the lid, and you hold up the lid and the drops start to fall down. The gas coming up as steam and down as rain, almost like the water's circulation. And then you have sort of made concrete what

happens. And then I think it is more active learning and that you achieve a greater understanding of what actually happens than if you just draw it on the blackboard (Teacher 23, paragraph 97 and 99).

With regard to the contention that active learning requires cross-curricularity, the teachers are more reluctant as to whether this is definitive of active learning. Instead 46% say that it can be, but it is not a requirement.

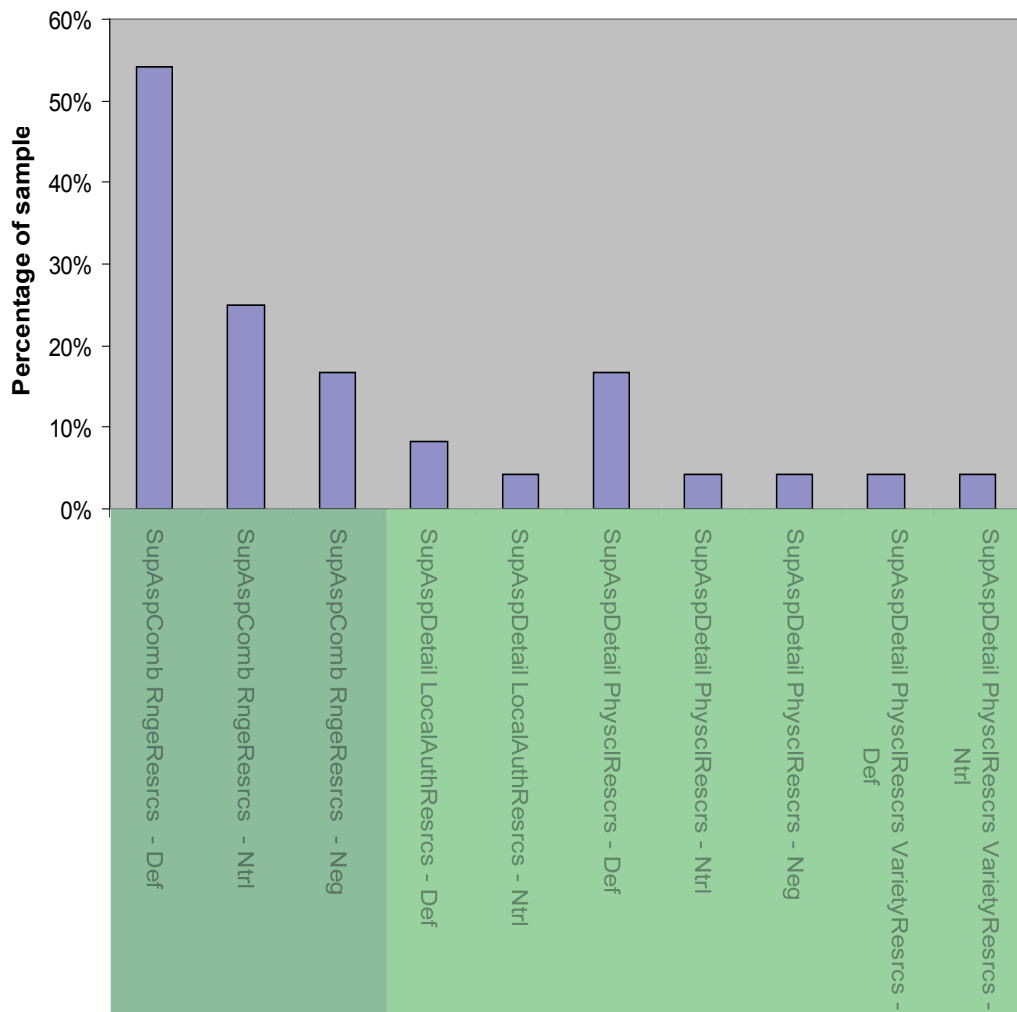
No, you know I think I can do practical investigations in science, about carbohydrates, for instance, and there is almost no degree of cross-curricularity, it's about organic chemistry and that's it. ...Working with chemical reactions, at the lab, it is certainly experiential learning and an active form of learning, but not cross-curricular (Teacher 09, paragraph 90).

10.3.6 Learning resources

Figure 35 below presents results from investigation of Details regarding Learning resources. However, the Details do not offer much in addition to what the Aspect combinations level rendered, since few teachers differentiate their views depending on the sub-aspects. 17% say that the use of concrete *Physical resources* is definitive of active learning, while the other sub-aspects have only been coded for one or two teachers. At Aspect combination level, a majority of teachers support the statement that active learning requires a variety of real-life, concrete resources.

Yes, that makes active learning much more manageable. I mean, you have to use something, you have to go out and do something, or use something, and that makes into concretisation, and not just in the form of pictures. Pictures, too, of course, if you manage to get the pupils to reflect about it, then it can be active learning, but I think concrete resources and information sources from real-life is very important (Teacher 24, paragraph 133).

Figure 35 Percentages of Sample responding to Supplied Definitional Aspect combinations and Details – Learning resources



Teacher 04 supports the idea of having a wide range of resources, but is again very clear that it is not the resources that make it into active learning, but instead the way the teacher makes use of them.

It's not a stupid thing to have, of course, but it's not a must either. Wide variety... You have to have something, but I don't think that's where the limitations are. The limitations lie within the individual teacher's ability to make use of these things. We have the worst imaginable natural science room, but even so there is something there. Of course, we would have wanted much better resources in a number of different areas, but I am not sure that even if we did have better resources, there is still the question of whether the individual

teacher would be able to make use of the resources and the equipment which is available, the teaching resources which are there, concrete tools. There is so much available, so there is no problem getting hold of lots of things, but the problem is utilizing them to achieve better learning (Teacher 04, paragraph 94 and 06).

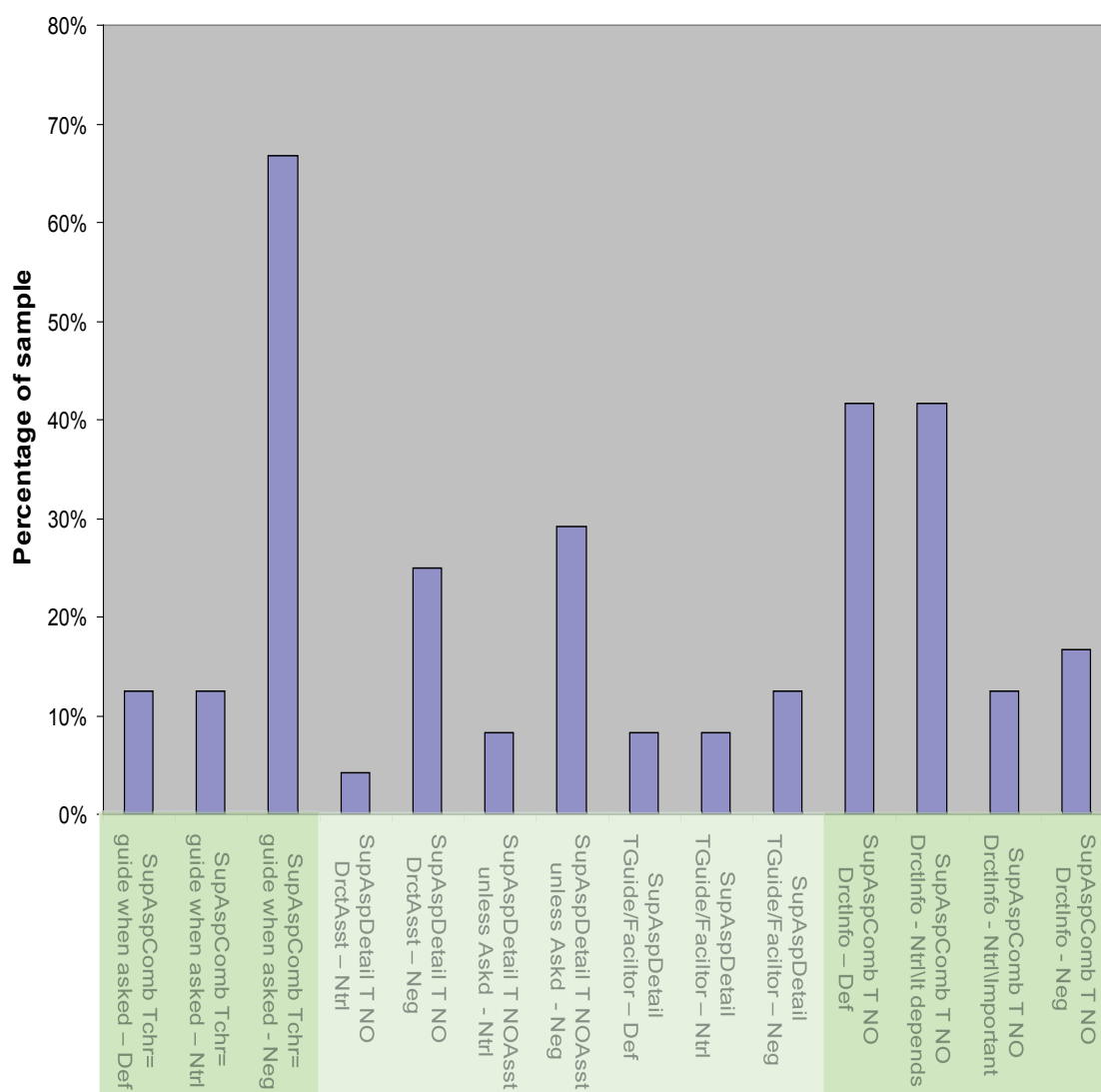
10.3.7 Teacher activity

Teacher 04's comment about the teacher's importance for achieving active learning leads us into the last facet which has been investigated for *Aspect combinations* and *Details*, namely *Teacher activity*. Figure 36 below presents findings from teacher responses to the two supplied Aspect combinations that were offered; that active learning requires the teacher to act as a guide or facilitator (Norwegian: veileder) who only intervenes when requested by the pupils, and that the teacher should not provide the right answer when asked by pupils, but instead encourage the pupils to find the answer themselves. It is only the first statement which has codings at *Details* level, and the most striking thing there is that it is the negations that dominate, in line with what we found when investigating at *Aspect combination* level. The teachers are reluctant to accept the interpretation of the guide/facilitator role in active learning as the passive, expectant teacher. 25% reject (*Neg*) the idea that the teacher should not give direct assistance in active learning, and 29% disagree that the teacher should not provide assistance unless asked. Teacher 04 is very clear about what he thinks about this role which he associated with the previous curriculum.

This sexless guide or facilitator who was only expected to scuffle around and ask: What do you think? And what do you think? I think that turned out to be a meaningless person, instead of the teacher being... The teacher is a resource. The teacher knows these things. The teacher should know the direction, he shouldn't say explicitly how things should be, but the teacher should know the direction. This sexless guide/facilitator irritated me hugely! [laughter] When they started saying that the teacher should only be a facilitator, a guide. We should just walk around and guide the pupils! I have no belief in it at all! You have to be clear, distinct, as a professional. You know your subject, you know

this, you have to know a lot, and you should be able to help them in the right direction. Not just when they ask for it (Teacher 04, paragraph 66).

Figure 36 Percentages of Sample responding to Supplied Definitional Aspect combinations and Details – Teacher Activity



The second contention, that active learning requires teachers not to give direct information or answer pupils' direct questions, gathers support from 42% of the teachers, while 42% qualify it by saying that sometimes it is like that, but at other times you cannot follow this as a rule, and that you *never* should give the right answer is too definite. Teacher 03, however, supports the idea, since:

Yes, the road you follow to the learning is the aim, in one sense, you know the road is really the most important part, so I think that sounds very right to me (Teacher 03, paragraph 107).

Another teacher thinks this is not something which cannot be followed, not as a rule anyway:

No, it's too bombastic to phrase it like that. The pupils should try to find the answer themselves, of course, but if they come up with the wrong answer I think that it is the teacher's duty to direct them, not by wagging your finger at them, but by helping them find it, that's how I view being a guide. You don't do your job if you don't guide them on the right track if they have come up with the wrong answer (Teacher 06, paragraph 62).

As the previous sections have revealed, investigation of *Details* did not generally bring much extra information regarding sub-aspects of teachers' conceptions of active learning, since they have tended to react to the *Supplied Aspect combinations*, positively, neutrally or negatively, and only to a minor degree have commented upon the sub-aspects which were integrated in the aspect combinations. However, some interesting findings have been commented upon. For some teachers being supplied with aspect combinations made them adjust previous understandings, while for others, the supplied aspects offered opportunities for clarification and further establishment of aspects already touched upon in the spontaneous section. Teacher 04 can serve as a good example of the latter, while Teacher 19 starts developing her understanding of active learning as being connected only to physical activity as she is being supplied with an aspect which she interprets to be saying exactly that.

11. STANCES TOWARDS ACTIVE LEARNING

11.1 INTRODUCTION

So far I have focussed on teachers' inclusion of aspects and instances in their conceptions of active learning, whether these were mentioned spontaneously by the teachers or as responses to the supplied aspects and instances part of the interview. The current chapter will focus on their stances, i.e. their evaluations of the aspects and instances with regard to educational value, both in principle and in practice. In the supplied part teachers were specifically asked what they thought about the aspects and instances that were provided. The spontaneous part included prompts with regard to their in principle and in practice stances to what they themselves provided as active learning instances and aspects, but, as the next section (11.2.1) will show, there are not many evaluative comments regarding spontaneous and semi-spontaneous aspects, and the evaluations regarding spontaneous instances (cf. Section 11.3.1 below) are also sparse. In line with my previous comment (cf. Section 10.3.1) regarding lack of supplied aspect details, it would have been felt as intimidating and perhaps pestering to prompt to get details regarding evaluations for every aspect that the teachers raised. Balancing the quest for detail against letting the teachers talk as freely and uninterrupted as possible was very important, in particular in the spontaneous part of the interview, since quite a few of the teachers were developing their ideas as they were talking and too many interruptions to secure details would have made them insecure and would, as previously mentioned, have made the interviews very long.

In this chapter I will first present teachers' evaluations of aspects, both spontaneous and supplied ones, before turning to the instances. Due to scarcity of evaluations regarding spontaneous/semi-spontaneous aspects and spontaneous instances, no figures will be presented. Instead, results will be presented and commented on in the text only.

11.2 STANCES REGARDING ASPECTS OF ACTIVE LEARNING

11.2.1 Spontaneous and Semi-spontaneous Aspects

As mentioned above, not many teachers provided explicit evaluations of aspects they themselves provided with regard to the open-ended question about what they take active learning to mean and what they think of it in principle and in practice. A total of 30 spontaneously and semi-spontaneously mentioned aspects have been given evaluations, and the aspect with the highest rate of teachers' evaluating it is *Wide variety of wows* (ways of working) which seven teachers (29%) have said they think is positive in principle. No neutral or negative in principle positions exist, and no evaluations with regard to the practical implementation of this principle. Teacher 16 explains why she thinks variation with regard to educational approaches used in the classroom is a good thing:

Very often with young children I have experienced that it's incredible how concentrated they can be if they get variation every 10 minutes or 15 minutes, depending. We can actually work for two hours, you know, the same kind of pupils who they claim are not able to concentrate. And that's really an eye-opener, that when we allow for that variation in various ways, that they are allowed to use their body, use all their senses, working in different ways. But also allow, of course, for in-depth for the ones who like it (Teacher 16, paragraph 16).

Pupils Not Passive, the rather general aspect which featured in many teachers' conceptions of active learning (cf. Section Figure 12), is also mentioned by 29% of the teachers, five of them giving positive evaluations of this principle while one of the remaining two is neutral, in principle, and the last teacher sees some practical problems with this principle. Teacher 03 thinks that pupil activity is positive and particularly important for young children:

I want the pupils to be active in the classroom and outside, because not all of them are able to take in what I say, because most of them don't listen, since their auditory sense hasn't been developed yet (Teacher 03, paragraph 26).

Teacher 09 agrees that it is important that pupils are active, but she thinks that practical problems are involved:

Well, when I think about the active pupil, and my continuous bad conscience because I have too little time for that kind of teaching, because it demands preparations, planning, and space, and these kinds of frames round active learning lead to too little active learning in everyday life (Teacher 09, paragraph 19).

6 teachers (25%) have given their stances regarding the aspect *Pupils Do Practical Activities*, four of them being positive to this aspect in principle and one in practice. Teacher 04, whose views I have previously commented on, provides, in addition to being positive, also a negative evaluation, and again it is the claimed tendency to focus only on the activity and less on pupils' reflection which he targets (cf. Section 7.3.1). Teacher 09, who above stated practical difficulties regarding the application of the principle that pupils should be allowed to be active in the classroom, is one of the teachers who thinks, in principle, that arranging for pupils to engage in practical tasks has educational value.

And it is very interesting to see that the pupils who we thought would be inactive, who perhaps are weak in Maths, who become active when they get a measuring tape between their hands, something happens, they want to climb up on that chair and see how high this really is, and then they can actually contribute to the group in a different way than they themselves imagined (Teacher 09, paragraph 42)..

The aspect *Pupils are Physically Active* was evaluated by four teachers (17%), three of them are positive in principle, while one, and again it is Teacher 04 who has a deviating view on pupil activity, is negative in principle. Teacher 18 thinks pupils' physical is important and a positive principle for active learning:

So, as I have said, every single day must be varied enough for the pupils to be allowed to use their bodies, not just their heads, not just their hands, but their whole bodies (Teacher 18, paragraph 6).

Another aspect which has been evaluated by four teachers (17%) is *Teacher Stimulates Interest*, which also contains sub-aspects related to teacher competence. Three teachers (13%) mention explicitly that teacher interest and competence regarding his/her subject is central to be able to engage the pupils and stimulate their interest in the topic in question. Teacher 04 tells his story about one such teacher which influenced his own career considerably:

I remember myself, when I went to school, that there was one teacher in particular who was very good as history teacher, and he managed to create such an interest for this in me that I later went on to do history at University. I had a few teachers who were very good at their subjects, and that created an interest in me (Teacher 04, paragraph 22).

Four different aspects have been given evaluative comments by three teachers (13%) each, all positive both in principle and in practice. These are *Pupils Discuss with Other Pupils*, *Pupils are Cognitively Active*, *Pupils Reflect on Practical Activities* and using *Local Resources*. Teacher 24 thinks reflecting on practical activities has educational value, and she explains why through an example from Maths. I include the whole passage of questions by the interviewer and answers from the teacher since I think this is a very illustrative example of how a teacher develops her thinking about active learning whilst talking about it, and also a good example regarding how, by way of a concrete example, the teacher manages to express views that it is more difficult to express at a more general, meta-cognitive level.

I've got Maths and if you just sit there with a figure in a book, and then you are going to... If, for instance, you have a dice, you can count edges, corners and surfaces. So to be able to hold a dice, they can count, and then they understand in a better way what they are going to do. You know, it's not such that, and

then necessarily... You know not everybody understands those lines in the book, that it is a dice, even if... (Teacher 24, paragraph 25)

You mean they can't see it... (Interviewer)

In reality, that they can't quite, that actually being able to hold it and show it, and they can talk about it themselves, to the teacher or to other pupils, where are the edges, where are the surfaces, where are the corners, where are... And, how many are there, and then they get a closer connection with what a dice is, if I have explained this correctly. Same about the numerical line, talk about the numerical line, it's great if they use their fingers to count. It varies what each individual pupil feels the need for, but understanding the connection between numbers, seeing that you've got plus and minus, what happens in practice. For some this helps at least (Teacher 24, paragraph 27).

You mentioned talking about it, too, is that also important (Interviewer)?

Yes, in a sense. They can, of course, some are able to understand that dice in the book and read the task and do it just like that, in the book, and that's OK because they are able to. But for the others, who can't really do that bit, and wonder what this is, what does this mean, what is an edge? For them I think they can sit and count, and I can tell them, but if they can work with it a bit. And then, later, I use it to ask them what an edge is, and then they can show it to me, that it is like this, and then I think that it sticks in a better way, that they remember (Teacher 24, paragraph 29).

The remaining 21 aspects have only been evaluated by one or two teachers and are therefore not presented in the text.

11.2.2 Supplied Aspects

I now turn to the teachers' stances regarding the supplied aspects (cf. Chapter 10 above). In line with what was done in the previous chapter, I will first present *Supplied*

Aspect Combinations, before turning to *Details* within each aspect. In-depth analysis of what teachers actually say will be confined to the presentation of *Details*.

Teachers' stances – Supplied Aspect Combinations

Figure 37 and Figure 38 below present findings regarding evaluations of *Supplied Aspect Combinations*. Because of space requirements the presentation has been split into two figures, where the first one (Part 1) contains findings from the following teaching facets: *Planning*, *ILOs*, *Assessment* and *Learning Resources*, while the second figure (Part 2) contains findings from *Pupil Activity* and *Teacher Activity*. As previously mentioned the teachers were asked to give both their *In Principle* and *In Practice* evaluations. In the figures these evaluations are distinguished from each other in the variable names presented on the vertical axis in that the in principle evaluations variables contain the abbreviation *Prin* as part of the variable name, while the in practice evaluations contain the abbreviation *Prac*.

With regard to the *Planning* facet the most striking results are that 38% of the teachers are negative in principle towards pupil participation in choosing what to learn, while 29% have reservations regarding putting this principle into practice. 29% are neutral, saying that it depends (*Prin Ntrl/Dpnds*) or that if they should be allowed to do it, some preconditions are important (*Prin/Ntrl/Imprtnt*). The second combination, about pupil participation in planning how to learn, who to learn with and which resources to use, has less striking results. 25% are positive to pupil participation in principle, while none have expressed positive views about putting this principle into practice. Instead, 21% of the teachers have come up with reservations regarding employment of the principle.

ILOs only contains one aspect combination, where, as previously discussed (cf. Section 10.3.3 above) two views are juxtaposed, stating that in active learning the development of democratic values and independent reasoning capability is more important than the development of subject knowledge and concrete skills. 25% of the teachers come up with neutral evaluations regarding this claim, and as presented in the previous chapter, this is due to the fact that they react to the contradiction that

they experience the statement to contain and instead say that these two sets of ILOs are equally important and actually depend on each other.

The third facet, *Pupil Activity*, has two aspect combinations: in active learning pupils assess or take part in assessing their own work, and in active learning outcome is not assessed. We find that there is a majority (71%) of positive evaluations regarding pupils participation in assessing their own work, in principle, while there are reservations (33%) about putting this principle into practice. The second combination, that outcome is not assessed in active learning is not received positively. 50% of the teachers respond negatively to this in principle, while 8% (two teachers) have reservations regarding practice. Only one teacher has a positive stance regarding this principle.

The last facet presented in Part 1 (Figure 37) is *Learning Resources*, and here we find that 46% of the teachers respond positively regarding the educational value in principle of having access to a wide range of resources in active learning, in principle, while 17% have reservations regarding it in practice.

Figure 38 contains results regarding teachers' evaluations of the two last facets, *Pupil Activity* and *Teacher Activity*. The aspect combinations regarding pupil activity generally get positive evaluations. 46% of the teachers come up with positive stances regarding the in principle educational value of pupils posing questions and discussing (*Ps Qstn & Discss*), 33% are positive in principle to pupils collaborating and working with their own projects (*Ps Collab own Projs*) and to pupils conducting practical enquiries into real-life issues (*Practl Enq Real*), while 42% give positive evaluations in principle that active learning should involve working in a cross-curricular way. Evaluative responses regarding the employment of these principles in practice are scarcer, but it can be noted that 21% of the teachers have reservations regarding the employment of pupils collaborating through their own projects.

The results that stand out in the *Teacher Activity* facet are that 42% of the teachers react negatively in principle to the claim that teachers should act as guides and only intervene when asked (*Tchr Guide when asked*), and that 38% come up with positive

evaluations to the principle that teacher should not provide the right answer when asked by pupils, but instead encourage the pupils to find the answers by themselves (*Tchr No Direct Info*). Both aspect combinations have resulted in teachers making evaluative comments where they qualify their statements by saying that it can have educational value both in principle and in practice, but within certain boundaries or depending on certain preconditions (*Ntrl/Dpnds* or *Ntrl/Imprtnt*).

Teachers' evaluations regarding Supplied Aspect Combinations were investigated both with regard to breakdowns by teacher attribute and for possible clustering regarding respondents' profiles. The attribute breakdown analyses did not render any strong contrasts and are therefore not presented in figures, but instead only commented on briefly in the text. No interpretable cluster profile contrasts emerged from the cluster analysis in large enough clusters to be able to evidence internal homogeneity. These results are due to the fact that my sample is relatively small, and that not all teachers provided evaluations regarding supplied aspects, which makes breakdown and cluster analysis less feasible.

The only analysis by teacher attribute that rendered results that require comment was the one based on *Educational Level Taught* where there is an interesting contrast with regard to the teachers' evaluations regarding pupil participation in deciding what to learn. 60% of teachers teaching at upper primary level come up with negative evaluations in principle, while the corresponding figure for lower primary is only 13%. Another finding was that while 100% of teachers at upper primary level are positive to pupils assessing or taking part in assessing their own work, the corresponding figure for lower secondary is only 46%. This is interesting since one might expect pupils at lower secondary level to be more equipped for such participation as compared to pupils at upper primary level. However, what might be causing this difference is the fact that assessment practices, and possibly cultures, at these two educational stages are different due to the fact that pupils in lower secondary are given grades, while in primary education pupils are only assessed by way of oral and written evaluations.

Figure 37 In Principle and Practical Evaluations in response to Supplied Aspect Combinations – Part 1

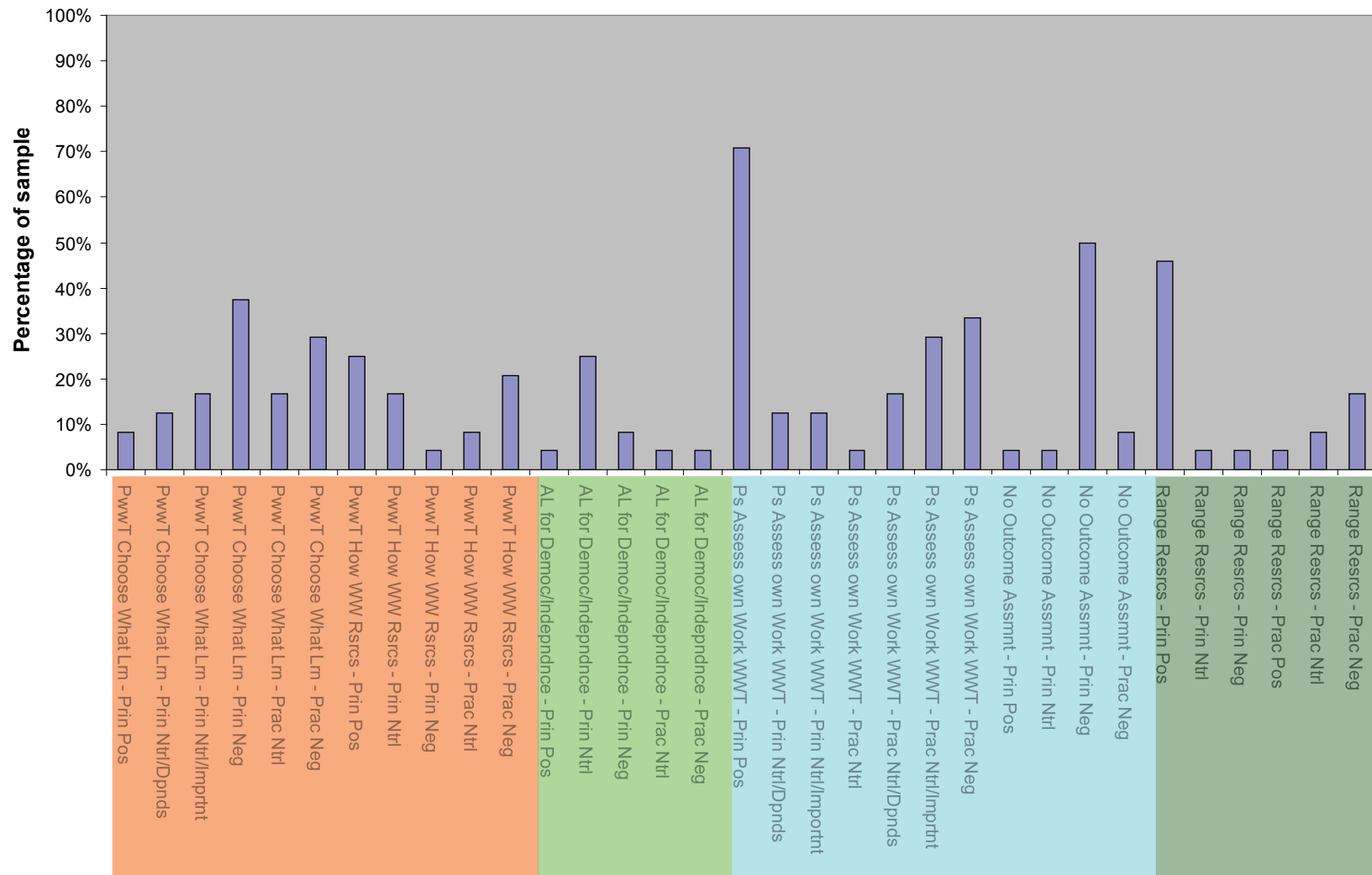
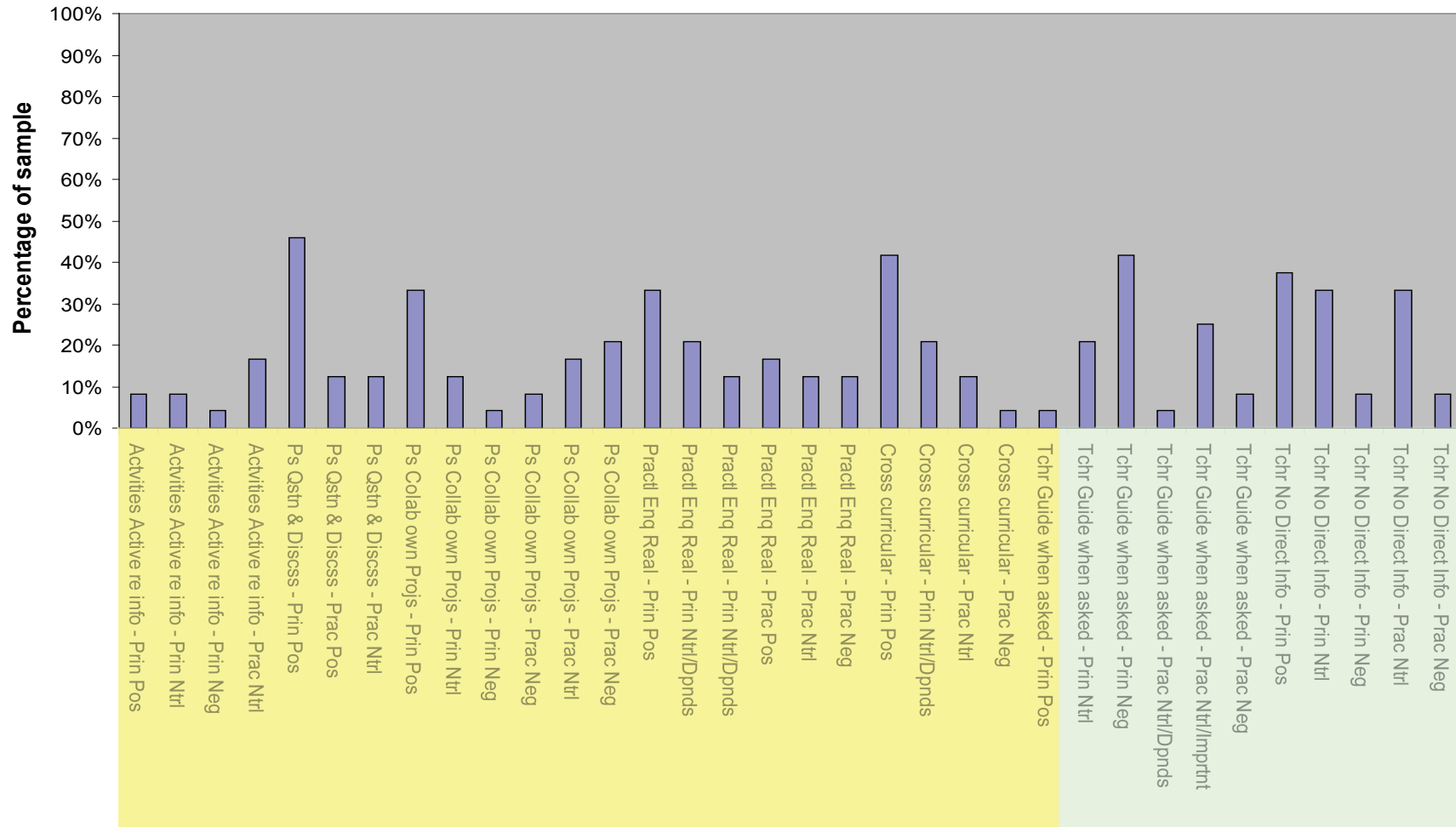


Figure 38 In Principle and Practical Evaluations in response to Supplied Aspects Combinations – Part 2



Teachers' stances – Supplied Aspect Details

I now turn to the investigation of *Details* within *Supplied Aspect Combinations*. The figures that follow contain both *Supplied Aspect Combinations* findings, presented in slightly darker hues, and *Details*, in lighter hues. Since some teachers, when presented with the statements, also provided information as to whether they themselves made use of the active learning aspects that were supplied, teacher usage or non-usage was also coded for when such information was provided by the teacher. These results are marked by the following abbreviations in the variable names on the vertical axis: *T Use* and *T Non-use*.

Planning

Investigation of aspect combinations regarding *Planning* provided results that suggested that quite a number (38%) of the teachers were negative towards the principle of pupil participation in deciding about what to learn. Results at *Details* level (Figure 39) shows that 13% (three teachers) supply responses that specify that they are negative towards pupils doing such planning on their own (*Ps Plan What Prn Eval – Neg*). Teacher 04 is one of these and is very clear in his evaluation of the principle of pupil decision-making regarding content, talking about this with great passion:

That is also a kind of misunderstanding in relation to... Pupil decision making has been very popular for a while, but seems to be toned down a bit now, fortunately [Interviewee laughing]. Fortunately! Because I think the whole idea is completely meaningless, the idea that pupils are the ones who should decide what they are going to learn! How on earth would they have the necessary requirements to be able to know what they need to learn. The idea is completely without meaning, at least if you are going to follow it all the way. I want to learn this, and I want to learn that... The point is that you need to acquire a certain competence which makes you able to manage as an individual in your own life, both for your own part and for the society. What kind of competence we are talking about is governed by the curriculum, first and foremost, and not by what the pupils might want to learn at any point in time (Teacher 04, paragraph 46.

While Teacher 04 writes it off as a meaningless principle, three teachers are neutral, saying that it could be a good principle, but only under certain conditions. Teacher 01 is one of these three and she thinks it can be a good principle of active learning, but within some boundaries (*Prin Ntrl/Imprtnt*):

It think that it is important that they are allowed to take part in deciding, but it has to be within some boundaries (Teacher 01, paragraph 24)

The reason why she thinks it has to be limited, is because she has experienced problems when employing this principle and is therefore negative towards it *In Practice (Prac Neg)* :

The problem is that they often only choose what they are interested in. They choose topics that they know a lot about already. Even if they know a lot they don't choose anything different. It became very stereotypical. Some boys, for instance, only chose to work with football topics (Teacher 01, paragraph 24).

We notice here that she is talking in the past tense, about some experiences she has had from trying this out in practice. She may be referring back to the L97 period when the curriculum's requirements regarding theme and project work was interpreted to include pupils choosing what to learn, how, with whom and which resources to use (cf. Section 2.3.4). While some teachers say specifically that they are negative to pupils planning what to learn on their own, 17% are positive to pupils and teachers doing such planning together. Teacher 18 explains why she thinks pupil participation is important:

I think that it is important to do that [letting the pupils take part in deciding about what to learn] so that they get ownership of their own learning, and it's also important to make them take responsibility, and of course because of motivation. It is easier for them to make an effort if they feel that they have taken part in decision-making, and it is easier for them to make an effort and do more if they have worked with it in a practical way, too (Teacher 18, paragraph 46).

As mentioned above, some teachers responded to the supplied aspects by commenting whether they themselves made use of the approaches or aspects presented to them. With regard to *Planning* 38% said that they let the pupils take part in planning what to learn, while 17% said that they did not make use of this principle. Teacher 06, who teaches in lower primary, states that he lets the pupils take part:

Yes, I like that principle, and I use it, but within some boundaries. Because I have found that if the kids don't have those frames, then one uses too much time to find out where you are going, both being effective and to come up with the learning objective as quickly as possible. In Class one the frames are fairly strict and there is very little space, but then I extend it, expand the area where they can participate (Teacher 06, paragraph 44).

Details regarding the second aspect, that in active learning pupils take part in deciding about how to learn, who to learn with and which resources to use, show that 29% of the teachers are positive in principle towards pupils deciding on their own how to learn and which resources to use, while deciding who to learn with has only been given positive evaluations by two teachers (8%). Teacher 05 is positive about pupils deciding on their own how to work and what resources to use:

And I think that it is fine that they find out by themselves how to work, how are we going to do this, what sources will we use, what kind of resources to use, and how are we going to do this (Teacher 05, paragraph 42)?

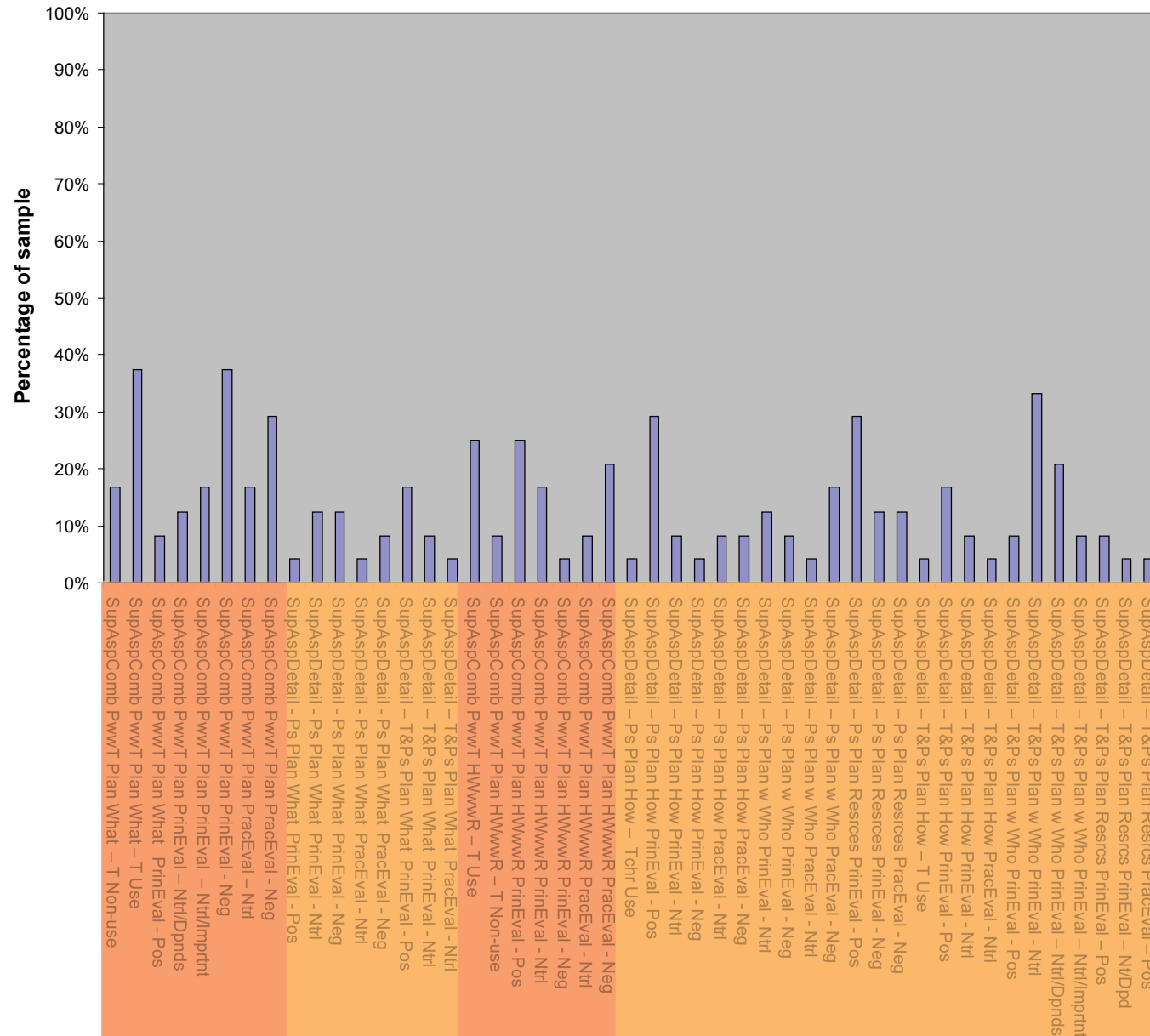
33% are neutral with regard to pupils participating in deciding who to learn with, while 17 are negative towards this, in principle. As previously discussed (cf. Section 10.3.2) this was due to concern for pupils who were not chosen for collaboration. Teacher 01 is neutral, in principle, and is very clear that the principle of pupil participation in deciding who to work with must be exercised within a clear framework:

Because of this [concern for other pupils] the choice of who to work with must nuanced, and must be governed by the adults. But they can come up with

wishes, and then I as the teacher decide, I have the last word. I am responsible for making sure everybody is included (Teacher 01, paragraph 26).

With regard to teacher usage of pupil participation in planning how, with whom and what to learn with, 25% comment that they make use of this principle, while 8% specifically say they don't use it.

Figure 39 In Principle and Practical Evaluations in response to Supplied Aspects Combinations and Details – Planning



Pupil Activity

Figure 40 shows that there are few evaluative responses regarding the first aspect that in active learning activities have to be active and exploratory either at *Combinations* or *Details* level. The second statement, that in active learning pupils should be allowed to ask questions and discuss, have stimulated a much higher degree of evaluations. 46% are positive to the educational value of this in principle and at *Combinations* level, and at *Details* level we find that this includes 25% of the teachers being positive, in principle, to pupils asking questions. Teacher 01 is positive, in principle, towards pupils discussing, while Teacher 11 states why she is positive to pupils asking questions and engaging in discussions:

I think that for a lot of the content you can have good discussions, for instance in Religious Studies, which is a subject with lots of discussion going on. The pupils love to discuss, so it often turns into good lessons if I manage to get many of them to take part in the discussion. Pupils who are normally unstructured manage to take part in the oral activity. I think that class discussions is a very good way of working (Teacher 01, paragraph 30).

Yes, absolutely, yes, absolutely yes, because I totally agree that this is a great form of active learning, because then they have taken responsibility. That is, if you don't want to learn, or can't, then you never ask questions, while if you have some knowledge and would like to know more, then you should definitely ask questions and discuss (Teacher 11, paragraph 57).

The third claim, that in active learning pupils collaborate and investigate their own questions, for instance through working with projects, is embraced, in principle, by 33% of the teachers. Findings at *Details* level reveal that 13% of the teachers are positive in principle to pupils collaborating, while 29% are positive in principle towards pupils investigating their own questions. However, some teachers have reservations, both in principle and in practice; 13% of the teachers are neutral (i.e. stating conditions for this to be of educational value) both in principle and in practice to pupils investigating their own questions, while 13% are negative to pupils investigating their

own questions, in practice. Teacher 08 is positive, in principle, to pupils investigating their own questions through projects (first quotation), but he has reservations with regard to putting this active learning principle into practice (second quotation).

Yes, I think project work can be of great value regarding sharing work and collaborating. They meet different problem formulations that they will have to try and solve, and sometimes, of course, they don't find the answers. ...It is a kind of research you are doing, you pose questions that you don't know the answer to, that you have to try and find the answer to, and I think that it is very useful that the pupils sometimes experience that they didn't find a very good answer, but at least we tried (Teacher 08, paragraph 56).

It [investigating own questions through projects] simply takes too much time. You know with projects, I think it is needed that you spend quite a lot of hours on it, it takes time to investigate, and you have to find answers and you have to conclude. And you can spend three weeks, four weeks doing this, and then you can't do it very often, perhaps only once a year (Teacher 08, paragraph 57).

He also mentions another reservation which is that pupils who need a clear structure and a safe framework often fail in projects, because the task of planning and investigating their own questions through projects becomes too unstructured. 33% of the teachers are positive, in principle, to the educational value of working with practical, real-life issues. At *Details* level we find that 21% specify that it is the real-life, authentic issues they think, in principle, that have an educational value, while only one teacher sets conditions (*Ntrl*), in principle, and one teacher is negative (*Neg*) to the practical implications of focussing on real-life issues. Teacher 13 thinks this is a good idea, in principle:

Yes, I think that to the extent that you are able to use the local environment, I think that it's important that they see that the school is part of a larger community, and that they see that the things we are working with, the topics we cover, are actually something that will be of use to them. So in that way I think it is important to adapt topics and what we are working with to fit their

reality as closely as possible, their reality outside school, too (Teacher 13, paragraph 89).

Teacher 15, however, thinks that there are limitations to this principle of building on authentic, real-life issues.

Yes, we should do that, too, but not only that. All kinds of things that are not around them must also be allowed to happen, to be covered. It cannot only be about things that they have experience from, since the whole point is that they should gather new experiences. And it is fine, this idea that they should get experiences from what is around them, close, but it isn't given that a fourteen year old sees very far from her own world, to express it like that (Teacher 15, paragraph 106).

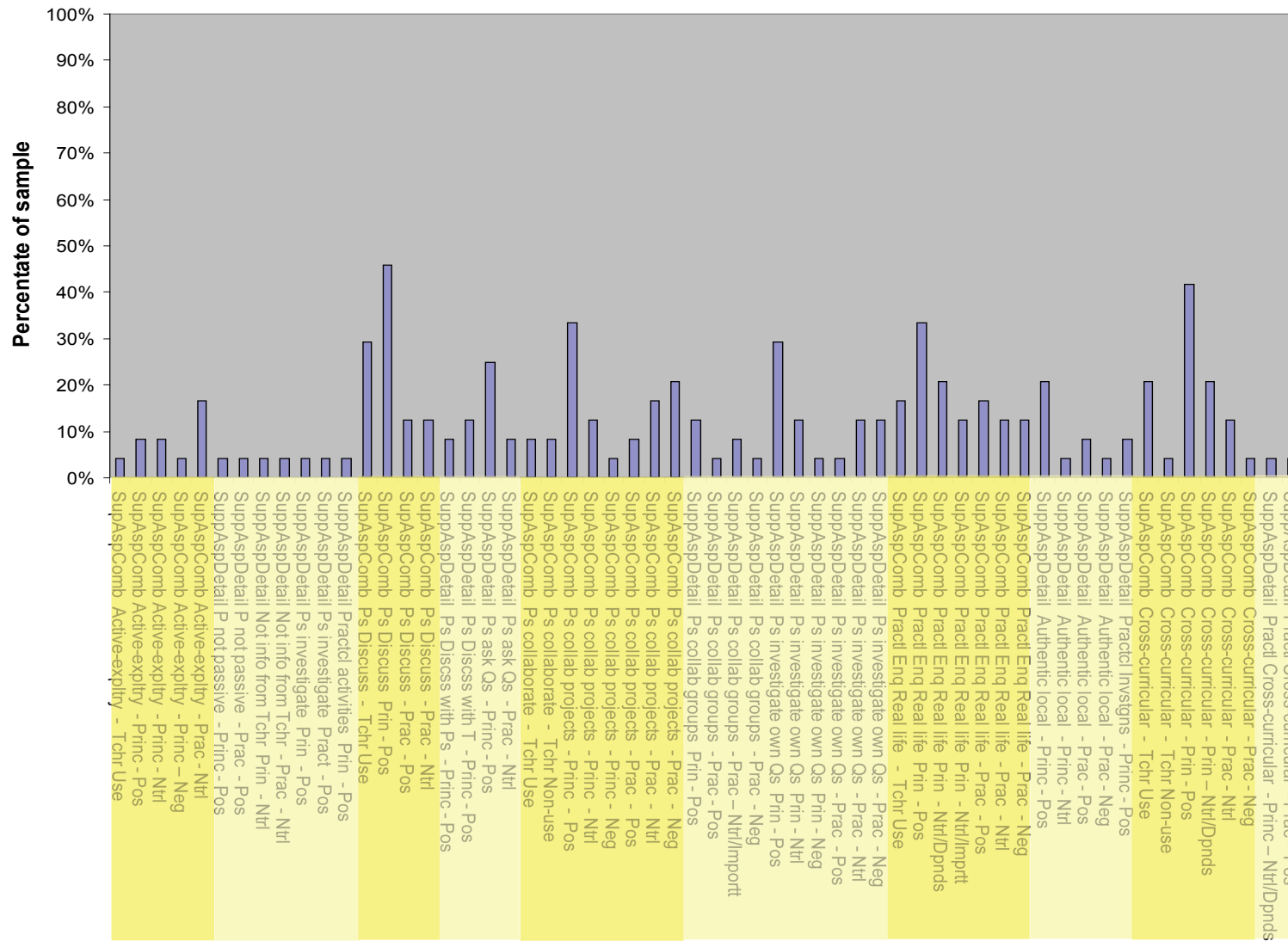
The last *Supplied Aspect Combination* regarding active learning and cross-curricularity is received positively, in principle, by 42% of the teachers, while 21% of the teachers qualify their view (*Ntrl*) in some way, and the same percentage of teachers, 21% say that this is something they try to do, to integrate topics from different subjects through working with cross-curricular content. Very few teachers have provided any *Details* regarding this aspect. I include two excerpts to describe why some teachers are positive, in principle, and why some have reservations (*Ntrl*).

Where it is relevant, I think it should be done, of course. When we are working with a country in the world in geography we can also add for instance Maths, language, literature etc. I believe in it – that you connect what belongs together, and draw on current issues, from the news and suchlike (Teacher 01, paragraph 44).

No. It doesn't have to be like that. In my way of thinking that's not necessary. Where it is natural, yes, where cross-curricularity is natural. But we also have some examples from project work where all imaginable and unimaginable subjects should be mixed in a glorious mess. You searched for the subject and justified what you were doing saying things like: They do learn maths by doing

so and so, when actually they didn't learn much. A lot has been written about maths in cross-curricular projects when often it only ended up with some sort of diagram. OK, that's one way of learning diagrams, but there are loads of things you don't learn, and that you can learn much better through other ways of working (Teacher 04, paragraph 90).

Figure 40 In Principle and Practical Evaluations in response to Supplied Aspects Combinations and Details – Pupil Activity



Teacher activity

Figure 41 below contains findings on teachers' stances regarding the two *Teacher Activity Supplied Aspect Combinations* and *Details* for one of them. We find that at *Combinations* level teachers are sceptical towards the claim that in active learning teacher is a guide and only intervenes when asked by pupils. 42% are negative, in principle, and 29% say specifically (*Tchr Non-use*) that this is not a principle they follow. At *Details* level we find that 13% are negative, in principle, to teachers giving no direct assistance, while 21% are negative, in principle, to teachers not assisting unless asked and finally, that 13% are negative regarding practical implications of teacher acting as a guide or facilitator. The picture that emerges from these findings is that the teachers seem to be negative to the educational value of the teacher taking on a rather passive, non-interventionist role. Teacher 04, whom has previously been found to be negative to a passive teacher role (cf. Section 10.3.7) takes the opportunity once again to state his view and relate it to his own experiences of being a student:

Just a small remark with regard to the guide issue. It was very nice, when I came to the university, as a thirty year old person, when I did my first degree and then in-depth studies in history, and through that I had to write quite a few assignments. You write an assignment and you meet your supervisor to get supervision. You're not interested in a person who just sits there and asks: What do you think? What do you think yourself? You want to know if you're on the right track or not, and what, if anything, you can do to get on the right track if you are in a blind alley. You want a person who is clear and distinct and a person who knows things. I experienced this when I was thirty years old, and then you have people who expect that thirteen year olds, fourteen year olds DON'T need a high degree of clarity (Teacher 04, paragraph 70).

With regard to teacher non-usage of this principle, Teacher 09 describes why and how she instead actually intervenes when she sees the need for it:

You know, for instance if I see that there is no progression, that they're not doing anything. Or that I intervene to control, to do formative assessment,

right? How are you doing, have they understood anything, that you intervene almost as a controller. I do it like this, even if I think that I have active learning in my lessons, I often intervene even if I haven't been asked by the pupils (Teacher 09, paragraph 66).

There are no findings at *Details* level for the second *Supplied Aspect Combination*. 38% of the teachers are positive, in principle, to teachers not giving the right answer when asked, but instead encouraging the pupils so that they find it for themselves, while 33% are neutral, both in principle and in practice. Teacher 12 distinguishes between what kind of questions pupils ask, but supports the claim in principle.

I totally agree. Well, if the pupil asks about what the Norwegian flag looks like, then maybe OK. But if we have a problem solving task, a nut to crack, then I totally agree that you never give them the answer, because then you will have destroyed the task. A task has been destroyed the minute the child doesn't have to think about it any longer. And we are good at that, generally, giving the kids the answers. So what could have been a good task can be destroyed immediately by us giving them an explanation of how they have to think (Teacher 12, paragraph 105).

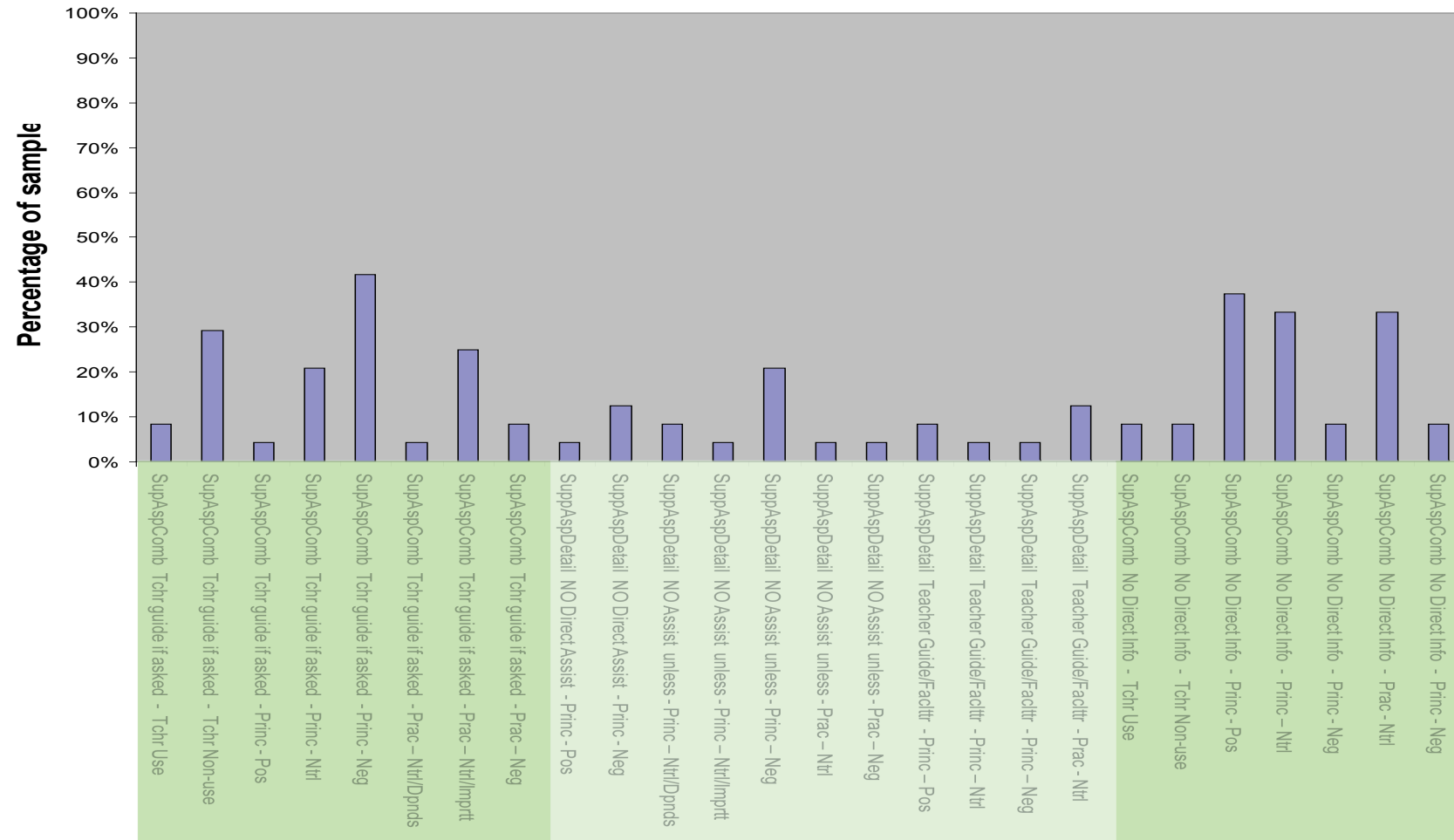
Teacher 13 is neutral in principle, while Teacher 03 sees practical implications that make her qualify her view.

I suppose it depends on what you are working with. We have to teach them ways of seeking information, and being in a learning process is part of active learning... But I don't think it is a principle to be followed fully. It all depends on what it is. But it is important, of course, to show the pupils, take part in helping them find ways to find the answer (Teacher 13, paragraph 71 and 73).

I think it sounds great, that we should challenge the pupils to find the answers by themselves, but I know that in practice, during our hectic everyday life, then we can often say that the answer is this. But we try to ask a bit, that is trying to

get them to find it for themselves. So I think it is great, but I know that we sometimes just give them the answer (Teacher 03, paragraph 107).

Figure 41 In Principle and Practical Evaluations in response to Supplied Aspects Combinations and Details – Teacher Activity



ILOs

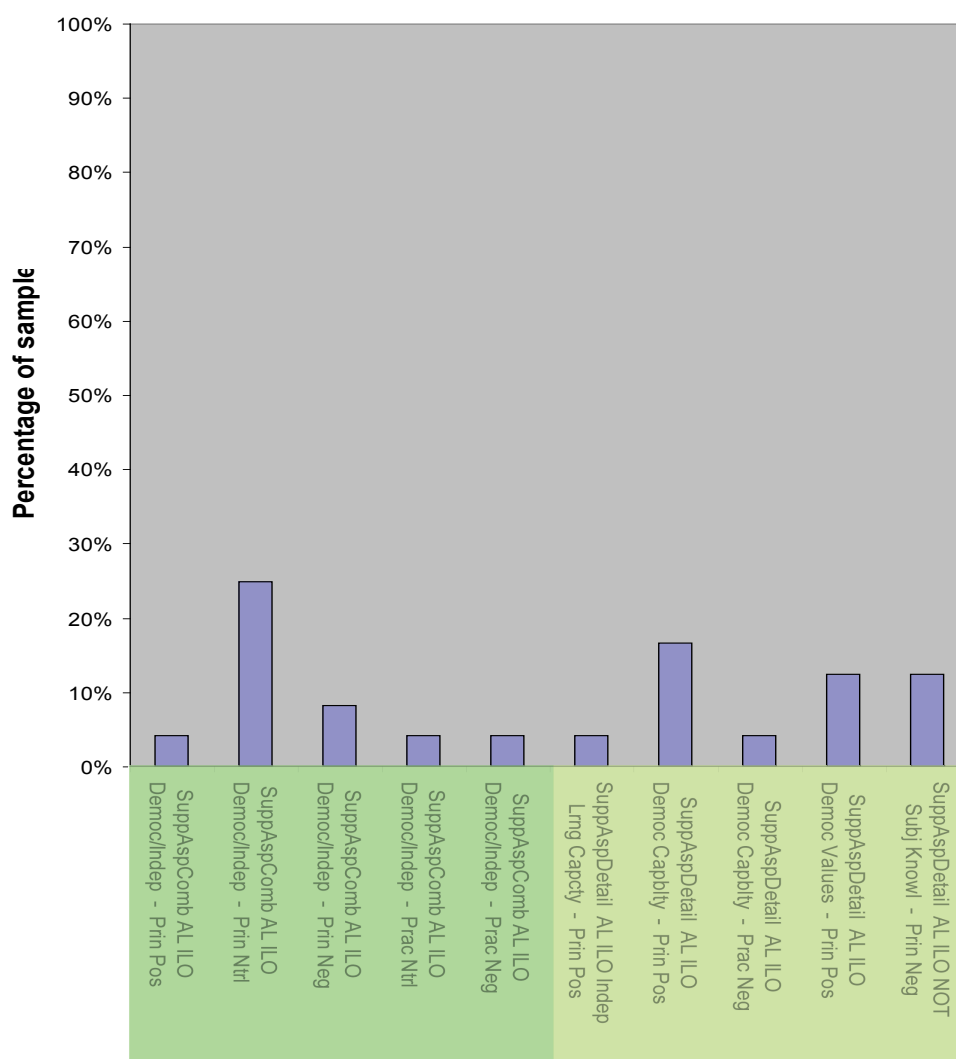
Figure 42 below presents findings from *Supplied Aspects Combinations* and *Details* regarding active learning Intended Learning Outcomes, *ILOs*. 25% of the teachers give neutral evaluations at *Combinations* level, which, as previously mentioned, is explained by the fact that they think that both developing democratic values and independent reasoning capability *and* subject knowledge and concrete skills are important. They are not willing to prioritise one over the other, but insist that these ILOs depend on each other (cf. Section 10.3.3). At *Details* level we find that not many teachers have given detailed evaluative comments regarding ILOs. However, the ones who have are positive, in principle, to the educational value of focussing on the development of democratic capabilities (17%) and democratic values (13%), but negative to *not* focussing on the development of subject knowledge (13%). Teacher 17 explains why he thinks that the two sets of ILOs cannot be juxtaposed, but instead go together:

Subject knowledge is a condition for being able to have democratic values. If you have democratic values, then you have knowledge about something. If you have... You can't reflect on, or you may be able to reflect on very simple matters without subject knowledge, but if you are going to reflect on something more complex, I think you need skills and subject knowledge. So I would say that subject knowledge and skills are conditions for the other ones, if I interpret this correctly (Teacher 17, paragraph 131)?

Teacher 18 thinks that the statement presented to her regarding ILOs in active learning was difficult to interpret, but says that she agrees that the development of the pupils' democratic capabilities is of importance:

I think that this is very, sort of, quite vaguely formulated. It's difficult to get it down to a concrete level, but of course I think it is good if we are able to develop democratic pupils and strengthen their democratic values and independent reasoning capabilities (Teacher 18, paragraph 98).

Figure 42 In Principle and Practical Evaluations in response to Supplied Aspects Combinations and Details – ILOs



As mentioned above the teachers' were negative to *not* prioritising subject knowledge in active learning. Teacher 04 is very clear regarding this issue, and he connects it to the current educational debate in Norway regarding our results at international tests.

We need to sharpen up our focus on subject knowledge; we definitely need to sharpen it up. And we now see a tendency of, or at least a wish to, focus more on subjects in Norwegian schools. Of course we may risk ending up in the other ditch... You can see this very clearly in the debates following the PISA and TIMMS results, so we definitely have a way to go regarding subject knowledge. For some time it was almost unimportant that pupils should learn anything at

all, because all could be found in a reference book, or on the Internet (Teacher 04, paragraph 104).

At the end of the quote he is again most likely referring back to the period of L97 which he has previously described as embracing a passive teacher role, focus on process instead of product, and pupils being given too much responsibility for their own learning.

Assessment

The supplied aspects regarding assessment contained two statements; that in active learning pupils should assess or take part in assessing their own work, and that in active learning there is no assessment of outcome. Figure 43 below provides findings regarding evaluative responses at *Combinations* level for both statements and at *Details* level for the first statement. At *Combinations* level 71% of the teachers are positive, in principle, towards pupils participating in assessing their own work, and 46% say that this is something they do (*Tchr Use*). When it comes to putting this principle into practice, 46% are neutral, stating conditions regarding how this principle should be implemented for it to have educational value, and 33% of them specify that some of these conditions are important (*Ntrl/Imptt*) to meet. 33% are negative towards the practical implementation of pupil participation in assessment work. At *Details* level we find that few teachers have specified details regarding pupils assessing on their own, but 29% of the teachers have said specifically that they support, in principle, that pupils assess their own *progress* together with the teacher (*P&T Assess progr Prin – Pos*), while 13% have specified that they are positive about pupils and teachers assessing *outcome* together. Teacher 12 specifies why he thinks pupils and teachers assessing progress together is a good thing in education:

It doesn't help for me to say that the pupil should learn like this or like that. It must be in relationship to where the pupil is. And if we agree about that, then we have at least agreed that this is an important objective for the pupils to work toward. And then I have to, as a good coach, to make sure that the pupil is moving towards that objective. But the pupil must all the time assess himself

whether we are on the right track. So we assess together. I totally agree with that (Teacher 12, paragraph 112).

Teacher 13, however, sees major challenges regarding pupil participation in assessment and says that this is something that it is quite hard to be able to put into practice. In the quote that follows it is important to note that when she says *you*, she is actually talking about the pupil

So I think of assessment as a huge challenge, getting confirmation of strategies, some call it learning strategies, you know the way you work and what you can manage to do, and your capacity, being able to say that you have the opportunity to do this. We have to know the pupils. ... I think this is one of the greatest challenges and which is connected with active learning, that you gain insight into yourself, where you are, and not least the opportunities you have in the future, positive confirmation, success (Teacher 16, paragraph 78).

50% of the teachers are negative, in principle, to outcome not being assessed, and 21% specifically say that this is not a principle they follow in their own practice. Teacher 12 is negative, in principle, to outcome not being assessed:

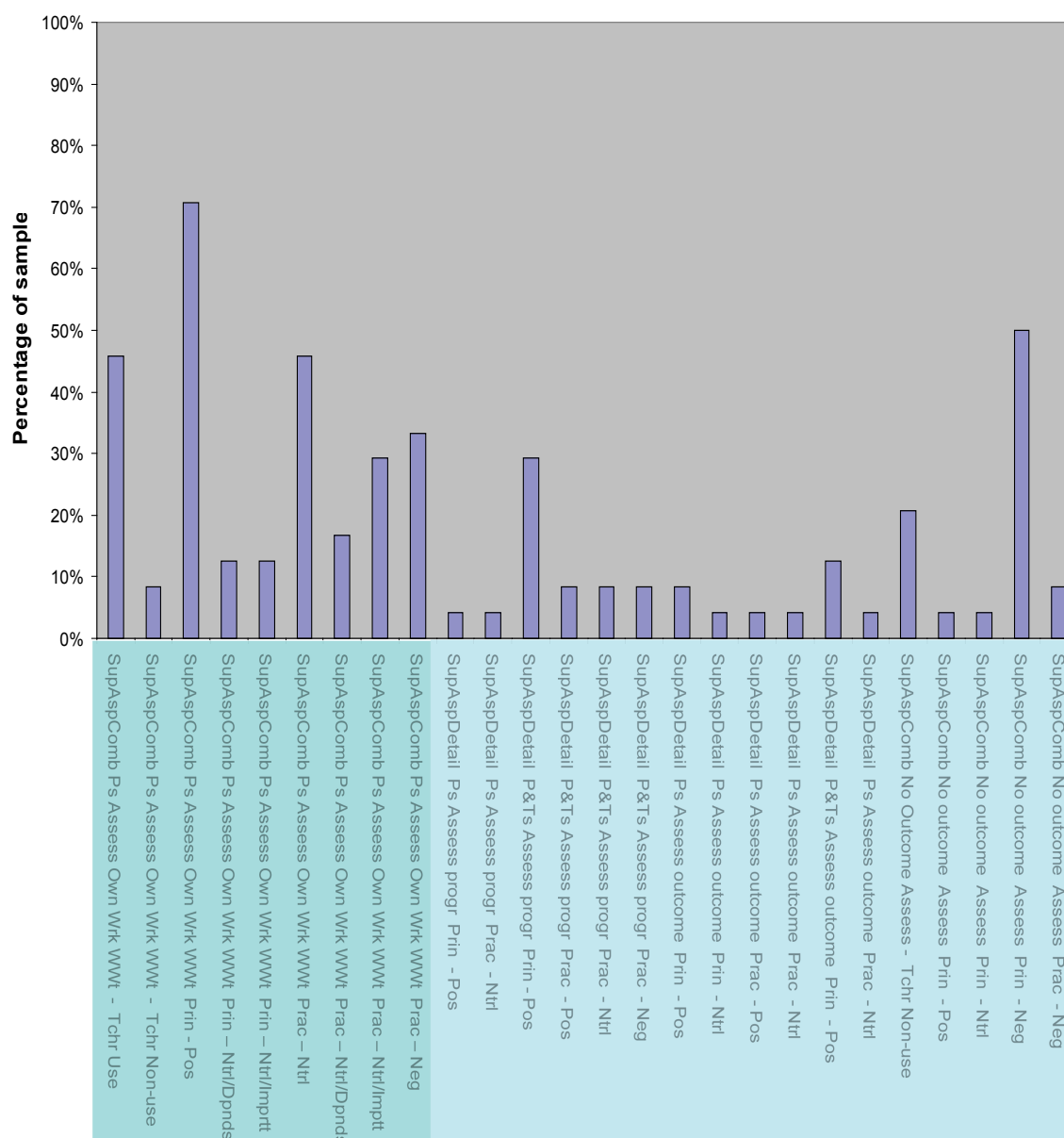
It is of no use that we have had a nice time if nothing comes out of it. So learning outcome is the most important thing, it really is. A process without a learning outcome has no meaning. It will almost be like: 'Have we achieved our learning objective? Yes, we think so. And, incidentally, we had a nice time.' That's totally meaningless. I think that the kids are so valuable that we have to consider all the time what we are spending time doing (Teacher 12, paragraph 115).

Again Teacher 04 deviates from the rest; he is the only one who qualifies his view by saying that sometimes you assess, but sometimes not (*Ntrl*):

I think that this is yes and no. You don't have to assess all the time, but shouldn't never do it either. Assess sometimes. Because you have to find out

whether this is a way of working that actually works, or if it doesn't work, and to find out such things you have to assess the pupils. But again, I am terrified of this thing about doing the same thing all the time. It's the wear and tear bit... Sometimes, and sometimes not (Teacher 04, paragraph 86).

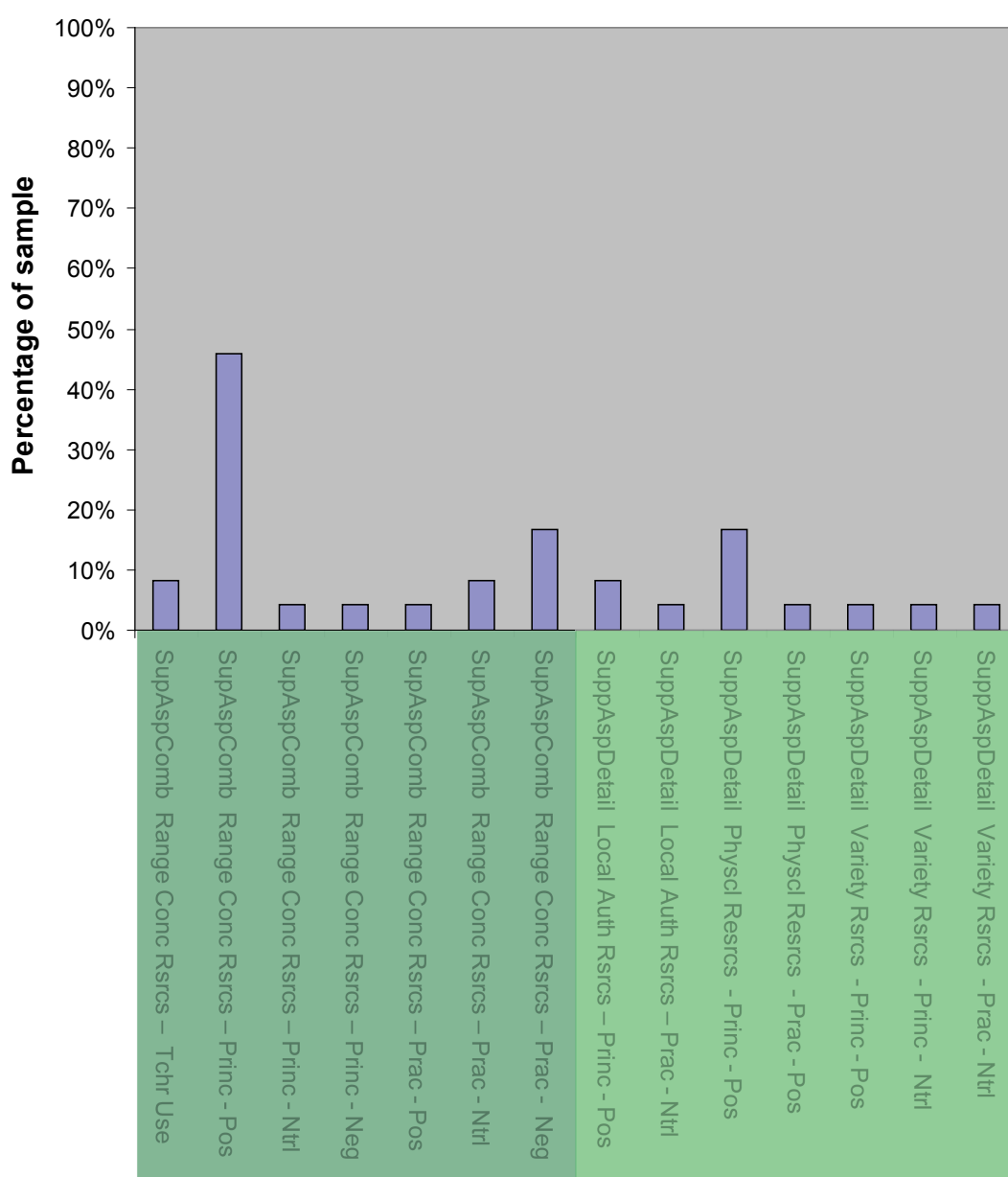
Figure 43 In Principle and Practical Evaluations in response to Supplied Aspects Combinations and Details – Assessment



Learning resources

Evaluations regarding the last facet, *Learning resources*, are presented in Figure 44 below. There is only one *Supplied Aspect Combination*, stating that active learning requires a wide range of concrete resources and information sources about the real world, and the teachers have provided very few evaluative responses which enabled coding at *Details* level.

Figure 44 In Principle and Practical Evaluations in response to Supplied Aspects Combinations and Details – Learning Resources



At *Combinations* level we find that 46% are positive, in principle, about the idea of using a wide range of concrete resources and information sources, while 17% have reservations regarding the practical implementation of this principle. The latter is related to a *de facto* lack of a wide variety of resources and the means of acquiring new learning resources at school level, as Teacher 08 explains:

This is something we are still struggling with in compulsory education, since the financial means we have don't meet our needs for learning resources. We have been lucky because we have had money for new textbooks, and that's great, but in my subject, science, it isn't easy to do experiments when we lack so much equipment, and it sort of feels like we have to go down on our knees, begging our management for money (Teacher 08, paragraph 92).

At *Details* level findings reveal that 17% of the teachers focus on access to concrete, physical resources when they state that they, in principle are positive towards having a wide range of resources in active learning. Teacher 16 is one of these, and she claims that money does not have to be a problem:

Yes, I agree that active learning presupposes concrete resources, but you don't need to buy them from some business. You can just use things around you, and I think one should actually do that, even in lower secondary education, where the very theoretical approach kills the interest in many children (Teacher 16, paragraph 90).

After having investigated teachers' evaluations of spontaneous and supplied aspects, we will now turn to their evaluations of active learning instances, both supplied and spontaneous.

11.3 STANCES REGARDING INSTANCES OF ACTIVE LEARNING

11.3.1 Spontaneous Instances

In Section 8.2 I presented findings regarding to what extent instances featured in teachers' spontaneous active learning conceptions. Very few have given evaluative comments regarding the instances they mentioned spontaneously; only three codes

have been used for more than one or two teachers, and these are that 13% of the teachers have given positive evaluations, in principle, of *Theme work*, *Practical tasks* and *Learning strategies*.

11.3.2 Supplied Instances

The Supplied Instances contained four different educational approaches, or ways of working; *Theme work*, *Whole class teaching*, *Practical investigations in science*, and *Outdoor Education*. Figure 45 below presents teachers' evaluations regarding the educational value of these instances. 50% of the teachers are positive towards project work, in principle, but 58% state conditions regarding the practical implementation of this way of working, and as much as 42% are negative regarding the educational value of putting project work into practice. The latter is particularly interesting considering the importance this approach had under the previous national curriculum, L97. Teacher 03 is positive to project work, in principle, but says that she has very little experience from working in this way.

I have actually worked very little with projects over the years I have been a teacher, but I see the use of it, and I totally agree that it is a good way of working, and I think the pupils benefit from... I think it is a way of working that the pupils benefit from learning, both with regard to cooperation and regarding that they are allowed to work with something they want to find out more about, finding their own angle (Teacher 03, paragraph 49).

Teacher 04 mentions important conditions for project work to be of educational value (*PracEval/Ntrl*); small projects with clearly defined tasks, small groups and clear limitations regarding time. Teacher 05 is negative regarding the practical implementation of project work because getting *all* the pupils to make an effort is hard when working with projects, and real pupil collaboration is not easy to accomplish. He exemplifies the challenges by citing a previous experience:

And you know, in class 8 we did a project, a small one, but I didn't think they were ready for it then, quite frankly. It got very chaotic. And I tackled that, but the pupils didn't. They sat in different places all over the school building and

worked with different things. And their way of working was that they took the tasks and spilt them into four, and they did their own bit, individually, and presented individually, and nobody knew anything about what the other ones had done (Teacher 05, paragraph 26).

The second supplied instance, whole-class teaching, receives positive evaluations, in principle, from 25% of the teachers, and the same amount (25%) state conditions (*Ntrl*) for this way of working to be of educational value when it is being implemented, while 21% state specific conditions that it is important to meet (*Prac – Ntrl/Imptnt*). 17% are negative to the implementation of whole-class teaching. Teacher 02 explains why he thinks whole-class settings are good ways of achieving active learning:

I believe in the class as a framework, if not totally closed, I believe very many processes that go on in the class are important (Teacher 02, paragraph 37).

However, when it comes to whole-class teaching, in practice, he thinks there are conditions that need to be met:

You need to get hold of the invisible ones. I don't know to what degree we have such pupils any longer – I think the teacher has become much better at involving all, and in such a setting, where the pupils are paying attention, a lot of good active learning can take place. I think very much depends on what kind of teacher you've got. The teacher is very important, and I think the teacher who teaches, and who is competent in his subject and who facilitates discussion and can offer them something (Teacher 02, paragraph 37).

He also describes the conditions under which whole-class teaching will fail, in practice (*Neg*):

But you can also have a lot of learning which isn't active if the pupils aren't paying attention. If they're thinking about something else, if they're chatting on the Internet, something I have heard they do in upper-secondary school. If such

things happen, they can just as well stay at home, because no learning will take place (Teacher 02, paragraph 37).

Practical investigations in science were considered instances of active learning (cf. Section 8.3.2 above) by a large majority of the teachers, but not many teachers have provided evaluative comments regarding this instance. Those who have are positive in principle (30%), while three teachers have reservations regarding conditions that must be met (*Ntrl*) for this to work in practice, and these conditions are connected to the lack of resources for doing science experiments, as described above, in the section on *Learning Resources*. Teacher 18 teaches science and is positive, in principle, to the educational value of practical science tasks:

I think that such work is very positive, and I think that it's something which catches the pupils' attention, and doesn't have to be a big experience for that to happen. And I think it is good for all pupils, that's what I do regarding active learning. I don't just think that individual pupils need it, to be able to learn at all, but I think that they all need it, they all profit from it, because it gives variation (Teacher 18, paragraph 40).

The last supplied instance, outdoor education, is received positively, in principle, by 29% of the teachers, while 21% are neutral regarding the implementation of this approach, stating conditions for outdoor education to be of value educationally. One third (33%) of the teachers are negative about the educational value of outdoor education in practice. Teacher 01 is generally positive towards outdoor education, but thinks there are specific conditions that must be met for it to be of educational value.

It depends on what they are going to learn. It is important that they don't spend so much time outside that they are left with no subject knowledge. It is important to set demands regarding content in outdoor education, that there is subject knowledge that should be covered while they are outside, that it should be about something (Teacher 01, paragraph 22).

The last two figures in this chapter show the profiles of trends in instance evaluations as a function of variation in educational level of pupils taught (Figure 46) and subject taught (Figure 47). The pictures that form are rather messy, but some contrasts can be pointed out. However, it must be remembered that the sample is small and distribution of responses based on teacher attribute analysis must be interpreted with caution.

While teachers at different educational levels - Figure 46 - are fairly similar regarding positive evaluation of project work in principle, they differ with regard to implementation of project work in practice. 73% of the teachers in lower secondary have provided negative evaluations, while the corresponding figures for upper primary and lower primary are 20% and 13%, respectively. This is interesting, since the group of teachers most likely to have experience of teaching through project work are teachers in secondary education, since project work was required there by L97, but not in primary education.

Another, similar, contrast is found regarding evaluations of outdoor education, where 46% of the teachers in lower secondary are positive in principle, while the corresponding figures for upper primary and lower primary are 0% and 25%, respectively. This is also interesting since outdoor education is more likely to take place in primary education as compared to secondary education. When it comes to the practical usage of outdoor education, however, teachers in lower secondary see more problems with outdoor education. 55% of teachers in lower secondary are negative about the practice of outdoor education, while the corresponding figures for upper primary and lower primary are 20% and 13%, respectively.

Figure 47 presents teachers' stances findings distributed by which subject the teacher teaches. This is somewhat more difficult to interpret since some teachers teach both subjects and they constitute a different category than the subject specialists, since they often teach in lower or upper primary where teachers tend to be class teachers who teach all or most subjects. This means that educational level taught and subject taught overlap to some degree. This overlap shows in that subject specialists, who tend to be teachers in lower secondary, are more negative towards practical

implementation of project work. 63% of social studies teachers and 50% of science teachers voice negative stances, while the corresponding figure for teachers who teach both subjects is only 20%. This is in line with what we found above, that teachers in lower secondary were more negative to project work as compared to teachers in primary education. 67% of science teachers say they use (*Tchr Use*) practical investigations in science, while no social studies teachers claim usage, something which is to be expected.

A slightly larger percentage (50%) of teachers who teach science and thereby use science investigations are positive in principle, as compared to teachers who either teach both subjects (40%) or who only teach social studies (13%). Another finding that deserves comment is that while 50% of social studies teachers claim to use outdoor education, the corresponding figure for science teachers is 0%. This may seem strange since one might expect science to lend itself to outdoor work, but the underlying explanation may be that science specialists tend to be teaching in lower secondary and may to a lesser degree make use of outdoor education. It may also be the case that science specialists tend to call outdoor education practical science. However, as mentioned above, the results must be interpreted with caution because of the small sample involved.

Figure 45 In Principle and Practical Evaluations in response to Supplied AL Instances – Sample Percentages

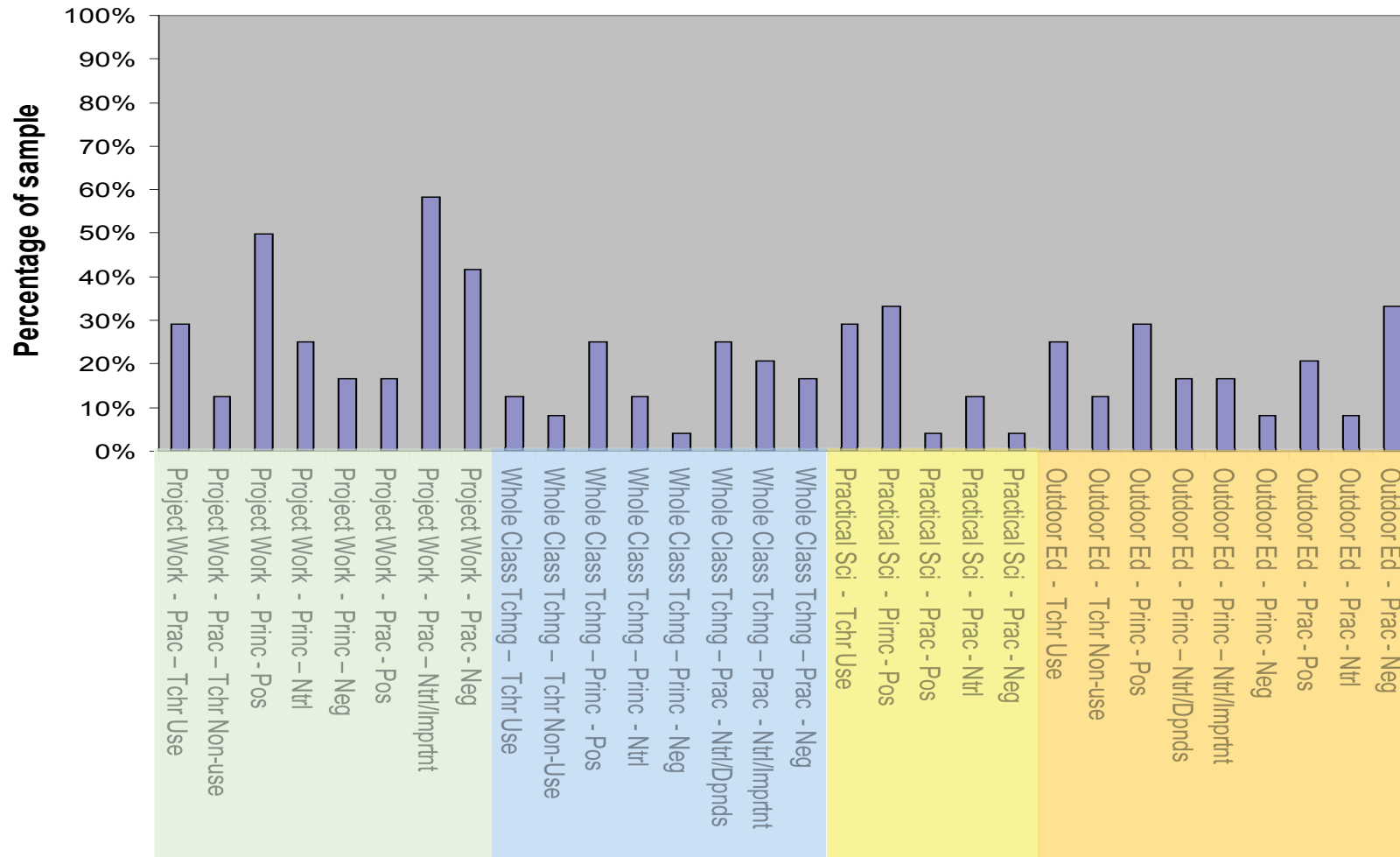


Figure 46 In Principle and Practical Evaluations in response to Supplied AL Instances by Educational Level Taught

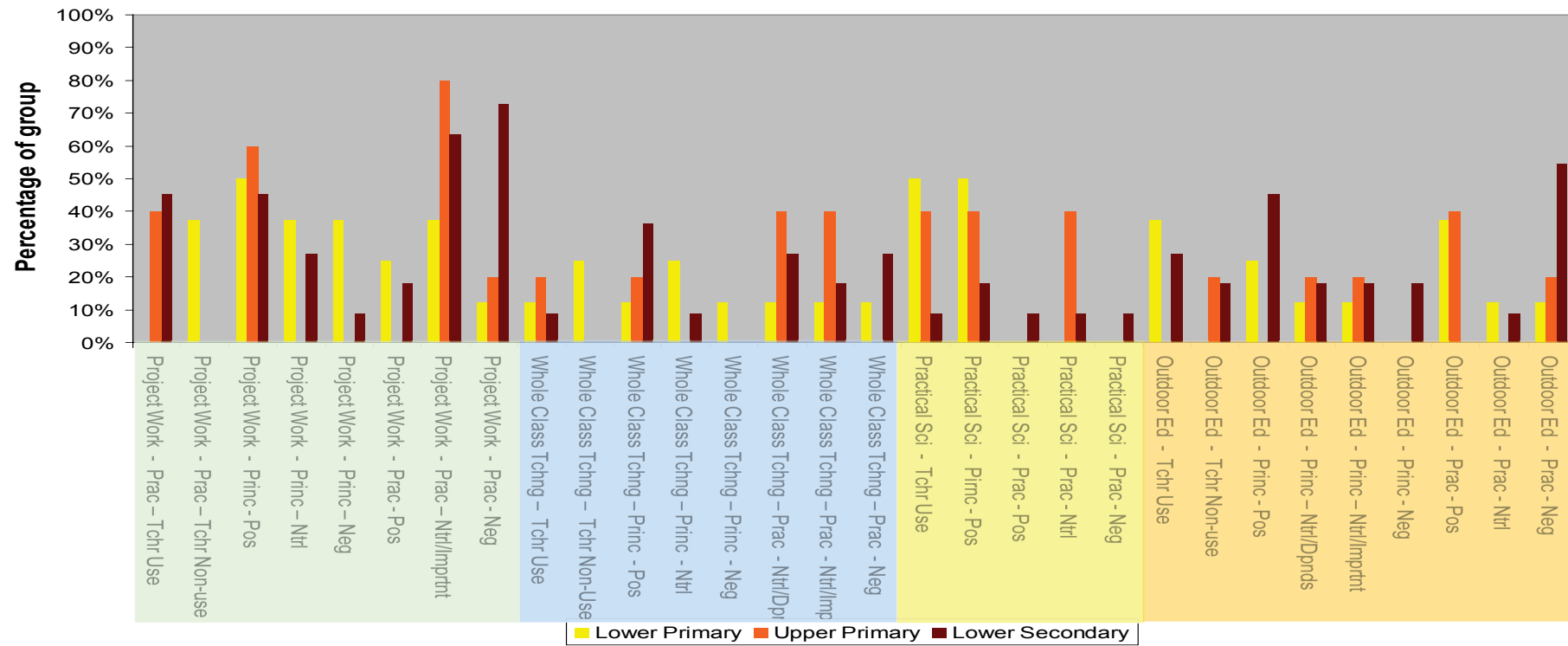
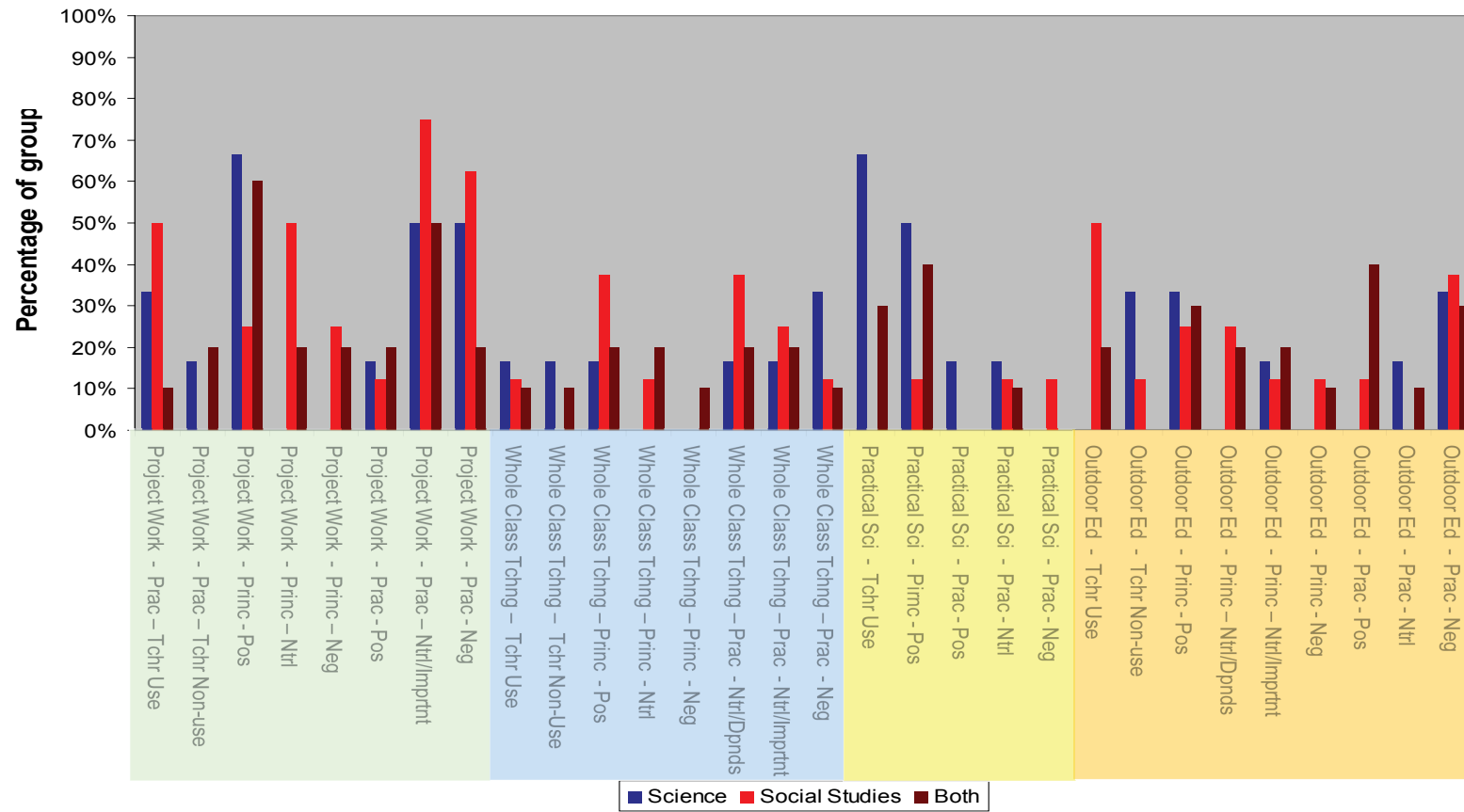


Figure 47 In principle and Practical Evaluations in response to Supplied AL Instances by Subject taught



11.4 LINKING AL CONCEPTIONS AND EVALUATIONS

It seems important at the end of this chapter to investigate the opportunities for and possible findings from attempts at linking teachers' conceptions of active learning with their stances. As previously mentioned (cf. Section 11.2.1 and Section 11.3.1), teachers did not offer very many evaluations regarding aspects and instances that they raised spontaneously. When they did, however, their stances tended to be positive. In the supplied part more evaluations were offered, but because of limitations previously reported (cf. Section 10.3.1), the number of aspect codings and evaluations at *Details* level was limited and patchy, something which prevents any very detailed and systematic analysis of the relationship between teachers' conceptions and stances. However, in some cases it made sense to do further investigations, and I will present some findings here in prose since the findings are too limited for visual representation in figures or tables.

I investigated supplied aspects and did cross-tabulations of teachers' active learning aspect definitions and their in principle evaluations of the same aspects insofar as this was feasible based on the number of evaluations available. What comes out is clearly consistent with the impression that was reported earlier - that active learning aspects are viewed as good, in principle, from a pedagogical point of view. Or, conversely, that if the feature is evaluated negatively, in principle, it is not part of what the teachers define as active learning. The latter pattern, at least, comes out very clearly in the *Assessment* part where 23 out of the 24 teachers in the sample reject the statement (*Re AL Neg*) that not assessing outcome is part of active learning, and 12 of the same teachers also offer evaluations saying that they disapprove of non-assessment of outcome as pedagogical principle (*Prin Neg*). Conversely, the only teacher who did say that this was part of active learning was positive in her in-principle evaluation.

This pattern of linking positive definitions with positive evaluations and negative definitions with negative evaluations was found in all but one respondent; the exception was a teacher who said that *Pupils assess outcome* was definitional of active learning, but who was only neutral, i.e. stating conditions when evaluating this in principle. Other examples of the general are from Teacher Activity where seven teachers said that *Tchr No assistance unless asked* was not part of active learning (*Re*

AL Neg), and six of these gave negative evaluations of this aspect in principle (*Prin Neg*). Two were neutral as to whether this aspect is part of active learning (*Re AL Ntrl*), and the same two teachers were neutral in their in-principle evaluation (*Prin Ntrl*), i.e. they stated conditions. Six teachers rejected as AL that the teacher should not give assistance unless asked, and three of the same teachers also offered evaluations saying they were negative towards this in principle.

Thus these findings repeatedly indicate a pattern of correlation between inclusion of aspects under AL and their in-principle pedagogical evaluation. Such a pattern is consistent with the intuitively gained impression first reported in Section 6.5, that teachers seem to be running together what they like pedagogically and how they conceive of active learning, on the basis of a quasi-axiom that AL is pedagogically desirable. However, it must be made clear that the data pattern is no more than consistent with this possibility which, like any correlational pattern, may occur for a number of reasons, amongst which is chance. In that connection, it must also be pointed out that whilst consistent as far as it goes, the data involved were limited by the relatively low rate at which respondents actually did deal in terms of specific aspects and did offer evaluations, and by the fact that they relate only to supplied aspects.

PART IV: DISCUSSION

INTRODUCTION TO PART IV

In this final part I summarise and discuss the main findings of the study, but their status needs to be informed by critical reflection on its possible strengths and weaknesses. Chapter 12 will therefore provide such reflections, in the light of which chapter 13 will indicate and discuss the main findings and consider the study's broader implications and the possibilities it may suggest for further research in this area

12. REFLECTIONS ON THE STUDY: STRENGTHS, DIFFICULTIES AND WEAKNESSES

12.1 STRENGTHS OF THE STUDY

12.1.1 Significance of the study

It can be argued that at least in principle, this was an important study to attempt, given a combination of two considerations:

- On one hand, the long-term historical centrality of the active learning orientation in the Norwegian educational context and beyond. Chapter 2 showed that concerns to improve educational provision through the introduction of ideas referred to under the banner of active learning have a very long standing place in official Norwegian concerns which persists to some extent, even despite the considerable recent shifts in national educational policy represented by the latest national curriculum plan, LK06.
- (b) On the other hand, the therefore surprising complete absence of research focussing on Norwegian teachers' conceptions and stances in this specific area, as well as the rarity of such research in the international context.

12.1.2 Advantages of the chosen methodology

Whilst also bringing some challenges (see below), hierarchical focussing proved a useful methodology in that its open-ended parts did elicit spontaneous responding, perhaps particularly in the case of definitional aspects and by way of enabling broader insights, e.g. suggesting the rarity of the topic in their normal thinking. On the other hand, the deliberate supplying of ideas and issues was clearly required with respect to other areas, often relatively specific, such as respondents' views concerning the place of assessment in relation to active learning. Respondents seem generally to have found the interview a meaningful and even interesting experience, as some of them commented explicitly, which may be argued to be supportive of the authenticity and validity of their responding. This form of data collection permitted different levels of approach to its interpretation, namely the more intuitive, integrated kinds of impression that were reported in Chapter 6 and the coding system-based analyses which also enabled relatively precise consideration of trends across individual respondents.

12.2 DIFFICULTIES AND WEAKNESSES

12.2.1 Sampling limitations

Whilst setting out to conduct a study that sought to cater for both traditional quantitative as well as qualitative concerns, I was aware that a conflict of priorities between the depth and detail of information-gathering emphasised by qualitativists and the availability of adequate cases traditionally emphasised by quantitativists is inevitable when resources are limited, and even more so when the scope of the study is effectively subject to limitations, not least those implied by doctoral thesis regulations. Thus opting for hierarchical focussing and the detailed coding of the data it yielded implied a relatively small sample. It is therefore perhaps not surprising to have to admit that this and the potential un-representativeness of the sample limited the possibilities particularly by way of (a) comparing the effects of variation in teacher attributes and (b) using cluster analysis to investigate the possibility that a relatively limited number of AL viewpoint profiles might exist in the Norwegian teacher population. In these cases respectively, the small size of subgroups or sub-clusters limits the scope of such quantitative analyses.

12.2.2 Problems Achieving the Agenda Coverage Aspirations of Hierarchical Focussing

Hierarchical focussing aspires, as Tomlinson (1989) put it, 'to have it both ways', meaning to gain access to respondents' construals with minimal influence of other people's framing, but also to ensure that one gets at their construals with respect to everything in the investigator's research agenda. The interviewer does the latter at the expense of the former, by raising such items themselves if the interviewee does not do so (relatively) spontaneously.

In the present case this involved the supplying of potentially definitional *aspects* as well as ways of working constituting potential *exemplars* instantiating AL. I realised that supplying large numbers of such instances and aspects might be problematic and therefore thought it necessary to economise their presentation. In the case of the supplied instances/ways of working, this was done by offering only a small sample of four potential cases (see interview agenda in Appendix 1, questions 3.1.1 to 3.1.4). In

the case of the potential aspects it was done by offering combinations, sometimes of positive/defining and negative/disqualifying aspects features.

Although the interviewees showed high rates of responding to the aspect combinations (cf. Figure 28), they showed far lower rates with respect to the separate aspects within these combinations. During the interviewing I had encountered this and had consciously decided that various considerations, not least lack of time, meant that I could not insist on separately pursuing each aspect that had not been dealt with as such by the respondent.

It may be argued that the responses I did succeed in gathering were highly informative, and it seems plausible to contend that, given that relatively small and graspable sets of aspects were being presented, and not just orally, since they were written on cards presented to interviewees, then if particular aspects 'had mattered' to them in terms of definition or evaluation, they would have made such mention.

Nevertheless, this does raise an issue about the feasibility of pursuing the hierarchical focusing aspiration of completeness as the researcher's agenda becomes more complex and differentiated. This may in turn be seen as a broader quandary for educational research that seeks to explore people's perspectives on complex topics.

12.3 STATUS OF THE PRESENT FINDINGS

Given the points raised above regarding the strengths and weaknesses/difficulties, where does this leave us regarding the findings of the present study? The selection of the sample limits opportunities for generalisations, but there is nothing to indicate that the schools and teachers represented are exceptional in any way. The size of the sample limits the opportunities to investigate systematic variation through cluster analysis, and the way the hierarchical focussing approach was used also limits to some extent what I can say about the sample that I have, since not all aspects were followed up in every detail because of considerations regarding time and possible alienation of teachers. However, the study comprised 24 teachers who were not only willing to participate in the study but also seemed to enjoy this and shared their thoughts in a

very frank and open-minded way through interviews that lasted a mean of nearly one hour and which provided me with rich texts for analysis. Also, the approach chosen allowed some degree of triangulation of methods in that the interview comprised both of an open-ended part and a supplied part, and this design allowed for interesting findings which other approaches would not have enabled in the same way. With this background I think it is fair to say that the study not only contains useful findings at several levels regarding Norwegian teachers' conceptions of and stances towards active learning, but that it also reveals interesting questions regarding methodology and research on teacher thinking more generally.

13. DISCUSSION OF FINDINGS

13.1 INTRODUCTION

The current chapter will provide an integrated summary and discussion of findings from the chapters in Part III in the light of the historical and theoretical background presented and discussed in Part I. The decision to integrate summary and discussion here is based on the need, given the range of detailed findings, to organise the content around some major themes emerging collectively and singly from various chapters.

13.2 MAIN FINDINGS

My summary of historical and theoretical background in Chapter 3, through the pedagogical framework presented in Section 3.3, concludes that active learning is clearly an educational issue. It is about teaching, about systematic efforts to promote learning. This is confirmed in the present study as teachers talked about active learning in terms of the educational facets included in the previously mentioned framework; all of the teaching interaction sub-facets included in the coding system were cited spontaneously or semi-spontaneously by some member of my sample (cf. Chapter 7), and all teachers mentioned more than one teaching facet when talking spontaneously about what they took active learning to mean.

13.2.1 AL status in teachers' pedagogical thinking

Something that comes through quite clearly both through my immediate impressions of teachers' reactions and readiness to talk about active learning (cf. Chapter 6) and through the systematic investigation of their coded responses (cf. Chapter 7) is the impromptu nature of the teachers' responses. Virtually without exception (though there was one noticeable case in this respect), they did not appear to hold already worked-out positions regarding active learning and some teachers openly expressed their uncertainty regarding the term. It would thus seem reasonable to infer that talking about active learning was not part of their everyday or regular discourse with colleagues. The systematic investigation of their responses revealed that teachers tended to start with a very general response that carried little meaning, that in active learning *Pupils are not passive*. In all but one case this was the very first code that the

teachers were coded with, which seems to imply that they were ‘thinking on their feet’ and needed time to talk themselves into becoming more specific regarding their understanding of the term. Another finding which strengthens this is that some teachers not only started off on a very insecure note, but some even developed and substantially changed their view of what they took active learning to mean as they were exploring the term throughout the interview (Cf. Section 6.4.3). The latter is in line with claims made by Hoy *et al.* (2006) that teachers may change their beliefs as they are made explicit, as they begin to doubt their beliefs, and as they are exposed to powerful alternative conceptions, something which the research approach adopted in the current study facilitated. It is also consistent with broader findings regarding the paucity of teacher thinking and reflection (Brown & McIntyre 1993; Calderhead 1996; Oser & Baeriswyl 2001).

That the aspect *Pupils are not passive* features in a majority of the teachers’ conceptions of active learning can also be seen as echoing the origins of active learning, where the ideas and approaches associated with it were developed as a reaction to the long-standing educational tradition of teacher as playing the active part in the process, while pupils were correspondingly passive listeners and recipients.

Given the centrality of active learning in Norwegian educational history and also recent educational policy (cf. Chapter 2) one would have expected a higher degree of readiness and confidence in teachers’ spontaneous responses. Trying to suggest reasons why this is not so would be highly speculative, and since no similar studies have been found it is also not possible to determine whether the situation was different previously, during times when one may claim active learning approaches were at the front of the national curricula to a larger degree, as for instance was the case with L97 (cf. Section 2.3.4).

13.2.2 Variability in AL conception

Active learning is an expression consisting of two words, but the current study has evidenced that it might carry a number of different meanings. This is claimed based on one of the most striking findings, that teachers’ conceptions of active learning vary considerably across the sample (cf. Chapter 7). Not only do conceptions differ from

one teacher to the next, but the variations do not overlap in such a way that it was possible to find indications of distinct sub-groups within the sample sharing particular versions of active learning, something which was shown through the inability to detect homogenous clusters through cluster analysis (cf. Section 7.3.2). What this showed was that there was variability in a lot of features, but not in a systematic way, something which implies a large degree of individuality in thinking, and results in a very messy overall picture.

The expectation of some shared features, given the centrality of active learning in the Norwegian educational history, is denied by the finding that when counting the major indications of aspects apart from those supplied by the interviewer (cf. Figures 25 and 26), most were mentioned only by intermediate/low proportions of the sample and their highest rates of mention (excluding *Pupils are not passive* because of its problematic status) reached only about 70%. Also, the small overall sample prevents anything but small numbers of clusters (i.e. up to 3 or 4) being indicated, given that as numbers of clusters become larger, their memberships become so small as to make issues regarding their homogeneity immeasurable or meaningless.

Even if unsystematic variability was one of the major findings in the study, individual teachers stood out as exceptional. One teacher who has been mentioned a number of times during the study, and whom I also experienced as exceptional more immediately (cf. Section 6.4.2), was Teacher 04, who was very confident and consistent in his view of active learning. Cluster analysis showed that when analysing specific facets he stood out as a cluster on his own in that he had a very strong focus on Underlying Learning Processes/Principles (ULPs). He was also the only one who tended to define his own view by referring to other people's misunderstandings of what active learning is.

13.2.3 AL and the Nature of Teachers' Theoretical reasoning

A welcome finding in the study was that as many as 73% of the teachers mentioned Underlying Learning Processes/Principles (ULPs) spontaneously/semi-spontaneously (cf. Chapter 7), and that these kinds of aspects were mentioned on average more than 4 times. The ULP aspects that were particularly being focussed were that pupils need to be cognitively active for it to be active learning, and that reflecting on practical

activities also was an important feature of active learning. However, some ULPs were very rarely mentioned, and for some of these this links with the relative lack of focus on assessment (cf. Section 13.2.7). There was very little mention of the importance of pupils self-monitoring and pupils getting feedback, aspects that have been associated with active learning (cf. Chapter 1).

When teachers are being challenged to outline their understanding of active learning this seems to stimulate their reflection about more general pedagogical issues and theory that they do not normally talk about. This was for instance mentioned by some teachers (cf. Chapter 6) who refer back to their student teacher time when they were training to become teachers, learning about Dewey and his principle of 'learning by doing'.

We now move from considering broader features of the way these teachers hold their conceptions of active learning to more specific areas of the content of their conceptions and evaluative stances.

13.2.4 AL involves Questions and Discussion

Although not as prominent as aspects related to pupils engaging in practical activities, doing investigations etc. (cf. next section), *Pupils ask questions* is cited spontaneously by one third of the teachers, as is *Teacher asks questions*, *Pupils Discuss with Other pupils*, and *Teacher fulfils dialogic role* (cf. Section 7.3.1). Findings from the supplied aspect combinations also suggest that raising questions, discussing, having a dialogue are aspects included in teachers' conceptions of active learning. Both the statement regarding pupils raising questions and discussing with fellow pupils or with the teacher, and the one regarding pupils collaborating and investigating their own questions, gain support from nearly 80% of the teachers when asked whether these aspects are part of their conception of active learning (cf. Section 10.2). In a comparable study of teachers' conceptions of active learning in the UK, Powell (2005) found that cooperative group activities were instances that the teachers thought of as an active learning approach.

One may claim that these findings relate to those discussed above regarding ULPs featuring in teachers' conceptions of active learning in that central to pupils asking questions is cognitive activity, but also interest and motivation (cf. Section 13.2.6 below). Discussion and raising questions may also, depending on the quality of the question and the discussion, be related to the more specific ULP aspect of *Pupils reflecting*. With regard to the teacher activity side of questioning and discussing, this is also linked with ULP aspects in that it may be a way of stimulating cognitive activity on the part of the pupils, but as with the pupil side of this, it very much depends on the quality of the questioning and the dialogue. Recent research into issues regarding pupil – teacher discourse has led to the development and promotion of approaches in education focussing on dialogue, what Robin Alexander terms *Dialogic Teaching* (Alexander 2004, 2006; Scott *et al.* 2006).

13.2.5 AL Relating to Physicality, Practicality and Concreteness

Teachers' conceptions of active learning seem to be strongly associated with practicality, pupils engaging in various kinds of practical activities, for instance doing practical investigations in science, seeing for themselves what happens in a particular process instead of reading about it in a book and studying abstract representations of the same processes (cf. Chapter 8). The use of concrete, often authentic, resources features often in teachers' understanding of active learning, and for some this also involves pupils being physically active, making use of the outdoors in various ways. For some teachers pupils being able to move, be active physically, is thought to enhance learning – they claim that the physical activity, which is part of their understanding of active learning, makes learning more robust, more lasting. For these teachers, who have very strong versions of active learning through outdoor education, the ideal is working outside, and there are hardly any limitations as to what kind of learning activities can take place outside.

13.2.6 AL and Pupil Interest and Motivation

Pupils' interest and motivation are central to learning and the enhancement of these have been of major concern during the development of active learning ideas and approaches (cf. Chapter 1), in particular since active learning ideas originated and developed as a reaction to traditional educational approaches which were conceived of as not allowing pupils' interest to flourish. Findings in the current project suggest

that aspects of pupils' interest and motivation are also present in Norwegian teachers' conceptions of active learning in that more than 40% cite such aspects spontaneously/semi-spontaneously. At the more detailed level we find that this is linked with pupils taking initiative, working independently, and, interestingly, viewed in the context of LK06 (cf. Section 13.2.9 below), that teachers focus on the importance of pupils knowing the intended learning objectives (ILOs) in advance. Findings regarding pupil independence link with the findings in Powell's (2005) study of British teachers' conceptions in that he found that learner autonomy and empowerment were aspects that featured in teachers' understandings of the concept.

13.2.7 Relative Lack of Assessment and Planning in Teachers' AL conceptions

One of the things that come out very clearly in the present study is that teachers' conceptions of active learning are very closely connected to educational *interaction*, with what pupils and teachers do, and with what they are using as resources in this interaction, and to some extent also with underlying learning processes and intended learning outcomes (cf. Chapter 7). What is almost totally absent, however, are the remaining two educational facets in my pedagogical framework (cf. Section 3.3), namely planning and monitoring/assessment. Assessment is hardly mentioned at all until the idea is supplied by the interviewer (cf. Chapter 10), when teachers for the most part include pupil participation in assessment as part of their conception of active learning, and for the most part reject the idea that active learning does not involve assessment of outcomes (cf. Section 10.3.4).

The relative lack of assessment references in their spontaneous responses and their reactions to the supplied aspects suggest that teachers do not see active learning as involving assessment. Why this is so is not clear, but the fact that their focus mainly seems to be on the educational interaction could suggest that they see assessment as being separate to this interaction, as something more formal which takes place outside the more immediate pupil – teacher contact, instead of as an integral part of the teaching and learning process. This interpretation may further be strengthened by the finding that with regard to ULPs teachers seldom mention the aspects involving teachers giving feedback and pupils engaging in self-monitoring (cf. Section 7.3).

Another, but perhaps less likely interpretation, could be that teachers do not think that active learning, traditionally, has included assessment, and that this is part of the reason why they have not implemented it to the degree that one might expect given the centrality that it has had in Norwegian national curricula. The reason why this may be an unlikely interpretation, however, is the fact that the teachers do not seem to be relating their conception of active learning to a firm idea of what this has included historically, but instead relate it to the here and now context, with some references to more recent experiences (cf. Section 13.2.9 below).

A third interpretation could be that, in line with what Dewey states (cf. Section 1.1), the development of active learning ideas took place as a reaction to more traditional educational ideas, and since teachers may see assessment as being part of more traditional education, they do not include assessment aspects in their conceptions of active learning. However, given that they do not think that active learning should not involve non-assessment of outcomes (cf. Section 10.3.4), this interpretation has less strength.

Scarcity of planning references could be due to the same reason that is suggested above regarding assessment; that teachers mainly focus on the immediate teacher – pupil interaction and processes that they may see as taking place either before, as with planning, or afterwards, as with assessment, do therefore not feature in their conceptions of active learning.

13.2.8 Situated versus Conceptual Thinking

As outlined in Chapter 4 above and followed up through the systematic investigation of the data in Part III, the study builds on philosophical analysis positing that people understand concepts and the terms labelling them, such as active learning, in terms of *aspects* or features that define the term, and/or in terms of *instances*, i.e. actual entities that possess the necessary features to be considered an example of the term. The latter is linked with recent ideas of ‘situated cognition’ (cf. Section 4.2.2) where researchers have contended that people tend to think more in terms of concrete representations instead of mental abstractions, and that these concrete representations may be closely connected to particular action.

Although the present study may give some support to the contention that people tend to think in a situated way (cf. Chapter 8), there is also considerable support for the alternative view – that people are actually able to talk in terms of aspects or features, and that they do so to a larger extent than in terms of instances and situated aspects. This claim is based on the finding that in all but one case, the percentage of teachers mentioning an aspect spontaneously or semi-spontaneously was higher than the percentage citing the corresponding aspect in a *situated* context, i.e. as an integral part of talking about an instance. However, in some cases, perhaps most clearly evidenced in Teacher 06 talking about outdoor education reported in Section 8.2.2, we find a teacher who talks in terms of concrete instances, examples from his own practice, which take the form of mental images of pupils travelling in the snow. This is in line with Clark and Peterson's (1986) contention that teachers tend to think and talk in the form of mental images from their own practice.

Another interesting finding regarding situated versus conceptual thinking, was that when teachers talked in a situated way there was no mention of very general aspects such as *Pupils are not passive* or *Pupils are cognitively active*; instead the situated aspects tended to be more specific.

Taken together, this pattern of findings seem to indicate that although people are capable of both general and situated discourse and thinking, they do not easily integrate the different features of these two modes. Findings may also suggest that which mode predominates may be elicited by the communicative demands of a context: where the teachers were asked a general open question as to the nature of AL, they tended to respond in terms of relatively abstract characteristic aspects; when they were asked to talk about particular kinds of potential AL instances, they stayed more with concrete, interaction-related specifics.

13.2.9 AL in the Context of LK06

The historical roots of active learning in the Norwegian context presented and discussed in Chapter 2 suggested a possible turn regarding active learning influence in the previous curriculum, L97, to the current curriculum, LK06, with the latter being

more focussed on aspects not traditionally connected with active learning, such as clear intended learning outcomes, but at the same time focussing more on other aspects related to active learning such as pupil participation in all facets of the educational process. When interpreting the findings it is important to take into account that the data collection was conducted in spring 2008, at a time when the new curriculum had been in operation for less than two academic years, something which implies that the teachers were in the process of implementing LK06 at the same time as one might expect that they still had L97 relatively fresh in mind.

The overall impression regarding influence of L97 and LK06 on teachers' conceptions of active learning is that teachers do not seem to be talking as if they still are under the influence of L97. Theme and project work, which were highly recommended (at one time even imposed) approaches in L97 (cf. Section 2.3.4), and which one may claim share many features with what have traditionally been conceived of as active learning approaches (cf. for instance Section 1.5), are not very commonly referred to spontaneously (cf. Section 8.2). However, the number of teachers who do think of it as active learning increases when these instances are supplied to them (cf. Section 8.3.2), but often with qualifications as to which conditions need to be fulfilled for it to be active learning. The finding that theme and project work do not tend to come up spontaneously to any major degree suggests that these approaches seem to somehow have lost their importance with the transfer to LK06. Instead, teachers are now referring to the importance of being clear about Intended Learning Outcomes (ILOs) as an aspect of active learning (cf. Chapter 7), a feature which is very prominent in the current curriculum (cf. Section 2.3.5). Another possible influence from LK06 is that as part of active learning some teachers mention working with learning strategies (cf. Section 8.2.2), an approach which is a central focus in LK06.

In some cases, perhaps most evident with Teacher 04, teachers actually seem to be defining their view of active learning in opposition to L97 (cf. Chapter 11). In Teacher 04's case this amounts almost to 'a discussion with L97', or a discussion with how teachers tended to interpret L97, which leads him to distance himself from these interpretations which he links with other people's conceptions of active learning. In other teachers' cases this tendency is not so evident, but traces of rejection of L97 may

be found in that they refer back to negative experiences with instances and aspects which were prevalent in L97, focussing in particular on problems associated with the employment of the project work method (cf. Section 11.3.2).

The various findings may seem to suggest that teachers' conceptions of active learning change according to contextual changes, something which is in line with psychological constructivism which contends that people make sense of the world by fitting incoming sense data to their existing experiences and ideas (cf. Section 4.2.1), but that this varies from person to person as a function of the context in which the understandings originate. However, psychological constructivism also contends that once established it may be very difficult to change people's concepts or ways of thinking. This knowledge may suggest that teachers' conceptions of active learning in the present study had not been well established, since they seem to be subject to change. However, whether teachers' conceptions of active learning have actually changed over the last years, and the nature of the possible change, is not possible to establish since no comparable studies from that era have been found.

13.2.10 AL and Teachers' Stances

As mentioned when describing my immediate impressions regarding the teachers' conceptions regarding active learning (cf. Chapter 6), this term seemed, almost unanimously, to be viewed as something positive, with one exception – Teacher 04 – who was negative, not regarding his own understanding of active learning, but to what he thought other people took active learning to mean. This general impression of positivity was further substantiated in the investigation of spontaneous/semi-spontaneous aspects featuring in the teachers' conceptions in that amongst the evaluations given there were hardly any negative ones (cf. Section 11.2.1).

Investigations of teachers' evaluations of supplied aspects and instances further strengthened these impressions and findings, at least to some extent, in that teachers, instead of saying that specific aspects or instances were active learning but they did not approve of them, tended either to qualify their view by saying that for it to be active learning it must fulfil some conditions, or, as in other cases, saying that it was not active learning and giving it negative evaluations (cf. Section 11.4). In saying this, it

should not be forgotten that what teachers did associate with active learning varied considerably, especially what they said more spontaneously. It must also be remembered that since teachers' stances were relatively scarce in general and, where found, were bitty and patchy, analyses regarding relationship between teachers' conceptions and their stances must be interpreted with care.

13.3 CONCLUDING COMMENTS: IMPLICATIONS AND FURTHER RESEARCH SUGGESTIONS

Through the present study I have evidenced that active learning is an educational issue, concerning systematic efforts to promote learning through the various facets of teaching. Active learning ideas and approaches came up first as a theme in the birth of systematic educational systems at the beginning of the previous century, as a reaction against a highly didactic, teacher-centred tradition in education, a tradition which was criticised because of its inability to allow pupils to fulfil their potential. More recent developments in active learning can also be viewed as *reactive* in that they aim at changing a tradition which is felt not to be in line with current understandings of high quality educational provision, for instance as evidenced in my discussion of the development of the previous curriculum, L97 (cf. Section 2.3.4 above). During the last decades this and similar reactions against mainstream traditionalist pedagogy have been found in Norway, at the same time as both nationally and internationally one has had a growing focus on value for money, evidenced through a strengthened interest in management, accountability, assessment and outcome issues. Whilst this has been a global development, it is found in the Norwegian education system in the current national curriculum's focus on intended learning outcomes and, associated with that, a focus on assessment for learning.

However, linked with this one may claim that in education the development has been from a focus on value for money and concern for accountability to beginning to think systematically about the teaching process, although some of the thinking related to this development may be viewed as simplistic and driven by a concern for effectiveness through a 'what works' approach. In the UK this development included the prescription and implementation of a national curriculum, and later prescription of concrete methods to be used to facilitate achievement of the specified objectives.

Norwegian education has undergone similar developments, first with the prescription of rather detailed content and approaches to be used with L97, and later with the introduction of learning objectives, assessment criteria and focus on assessment for learning in LK06. What this study evidences is that these kinds of changes may have impacted at the level of practice with LK06, in that teachers include a focus on ILOs in their conceptions of active learning and that, when supplied, they are also relatively clear that assessment has a place within active learning. The accountability focus may seem to be seeping through, since such aspects seem to be included in teachers' conceptions of active learning and, possibly also, in their practice, since current research (OECD 2009) has evidenced that there is a clear relationship between teachers' beliefs and ideas and their practices. The latter is in line with previous research into teacher thinking (Calderhead 1996).

The turning of ideas into practices, for instance going from a more general accountability focus to a focus on methods and on monitoring and assessment may be viewed as a operationalisation of ideas currently connected with active learning. Viewed in such a context findings in the current study may not as much suggest that traditional ideas related to active learning are lost, but rather that they are resurfacing in the form of specific practices or ideas, for instance evidenced in this study that *Pupils need to know ILOs*, something which combines the traditional focus in active learning of pupil participation and empowerment with the current focus in education on ILOs. However, the relative lack of teachers mixing the pupil participation perspective with a focus on planning and assessment when talking spontaneously, may suggest either that these new focuses have not seeped through completely, or, as previously suggested, that they simply do not think in terms of planning and assessment when asked about active learning, but instead focus on the more immediate educational interaction between teacher and pupil.

The findings regarding assessment are particularly interesting since teachers do not really seem to associate active learning with assessment, when asked about their understanding of the term, but when supplied they are almost unanimous (23 out of 24) in rejecting that in active learning outcome is not assessed. This is interesting not only because it raises the question of possible change in active learning conceptions

because of contextual changes, but also because it vindicates my pedagogical framework and the methodology I chose to use. If I had not chosen the mixed methodology, with an open-ended part first which allowed for teachers' spontaneous conceptions to be documented, combined with a supplied part where teachers were challenged to react to specific active learning principles, the findings regarding assessment would not have been forthcoming.

The study provides evidence that teachers are able to talk generally and in abstract terms about active learning, and not, as some writers seem to suggest, that all or most of teacher thinking is concretely situated. The teachers come up with a range of spontaneous aspects and the appearance of underlying learning processes/principles amongst these seems to suggest that they have pedagogical principles internalised that they are able to express orally when challenged. However, when they do talk in a situated way, through instances, they do not go to generalities in the same way as when talking in more abstract terms, through aspects. This may suggest that the issue of situatedness of teacher thinking may not be as much about their competences, but instead about the circumstances in which they talk, and that when they talk in terms of concrete instances this prompts a higher degree of specificity.

The comments above regarding teachers' nature of thinking and how the methodology has brought forward results that, with a different approach, would not have been found, suggests that this study is not only about teachers' conceptions of and stances towards active learning in the Norwegian context, but also raises issues regarding teacher thinking and methodological approaches.

As mentioned above it was an encouraging finding that teachers do talk in terms of underlying pedagogical principles and this is a finding which deserves further research, possibly with a more situated approach, for instance through the use of video-stimulated recall in the way conducted by Powell (2005). The fact that the present study is based on getting at their thinking solely through talking, through their verbal responses, may limit its access to situated aspects of the teachers' outlooks. However, the study aimed at getting at their conceptions in an open-ended way, at the same time as investigating their views of aspects and instances historically related to active

learning. This fairly broad objective was chosen since there were no previous studies which could have provided the kind of findings I now have and which open up opportunities for further research investigating more in-depth particularly interesting areas through more situated approaches.

The present study of active learning, a concept of historical importance in Norwegian education, has reminded us of the importance of tapping into the individual teacher's ideas to get access to their conceptual understanding as well as the degree to which they base their understanding in their own situated practices. Such an investigation seemed important, especially since research into the implementation of particular forms of active learning promoted through the various curricula in operation since WW2 has shown that Norwegian teachers only to a very limited degree have taken onboard the principles and practices proposed by these curricula. Through investigating teachers' ideas I have shown not only that their conceptions vary considerably, but there is also evidence suggesting that conceptions change depending on the current educational context. The particular methodological approach used allowed for getting at their current understandings, as well as investigating the degree to which active learning principles and approaches that have been of importance historically featured in the teachers' conceptions. Another finding was that teachers may develop and even change their conceptions as they are given the opportunity to talk them through, which reminds us of the importance of providing opportunities for teachers to reflect on and talk about central concepts and approaches in education to become aware of what their ideas and understandings regarding these elements are.

One important implication from the study is that it is important not to take for granted that people share the same understanding of educational concepts that are being focussed on as educational reforms are being developed and implemented. The fact that no previous Norwegian studies of teachers' conceptions of active learning or related terms have been found, may suggest that this has been overlooked or underestimated during the process of curriculum implementation. Taking into account the prominent position of active learning elements in Norwegian education it seems appropriate to suggest some priorities regarding how this situation might be changed, as well as suggesting opportunities for further research, since this study is limited both

in sample and scope, and first and foremost represents an attempt at investigating teachers' conceptions and not their practices.

With regard to teacher education it seems important to take into account the strength that student teachers' existing conceptions have (Tomlinson *et al.* 2010), and to make use of approaches in teacher training that allow for the students' conceptions to be elicited, investigated and developed. The latter demands systematic constructivist strategies within teacher training. With regard to the promotion of new and particular principles and approaches in educational reform initiatives, such as the active learning focus in previous and current curricula, it is also important to take into account that not only new teachers but also experienced teachers' existing understandings will influence the way they conceive of and try to implement the innovations suggested. Consequently, policy, in-service training and development work initiatives need to adopt conceptual change strategies to tap into and lay the ground for changing teachers' existing understandings and practices (cf. Scott *et al.* 1991; Korthagen *et al.* 2001). The fact that conceptions vary considerably, even for concepts that have been of long-standing interest, also reminds us that the change strategies need to be used flexibly to allow for adaptation to the individual teacher's understandings and established practices. Finally, taking into account the prominent role that textbooks and other centrally developed learning resources have in Norwegian education (Rønning *et al.* 2008), it is also important to promote the development of teaching resources that support and do not work against the principles and approaches that the curriculum in question is promoting.

Even though there is research suggesting that teachers' ideas may mirror their practices (OECD 2009; Calderhead 1996), there is also evidence that even if teachers may be talking *active learning* talk, the kinds of approaches promoted as part of active learning may not be part of their everyday practice, in particular at times when new and challenging approaches are being encouraged as part of educational reform initiatives. The latter was for instance evidenced in a sociologically oriented UK classroom observation study by Sharp and Green (1975), where they found that even if teachers were talking progressive education talk, they were not necessarily engaging in what the researchers conceived of as progressive practices. This finding further

strengthens the need mentioned above to conduct research which combines investigation of teachers' conceptions and their practices.

The present study is the first that has tried to investigate Norwegian teachers' conceptions of active learning. If active learning elements retain their prominent role in future Norwegian curricula, it will also be important to conduct follow-up research to investigate to what degree and how teachers' conceptions change as the educational context changes. The fact that the present study is limited with regard to the sample involved, would also justify suggesting further research using representative samples that would allow for investigating what Norwegian teachers' conceive of as active learning more generally. The in-depth knowledge base that the present limited study has made available could form an important starting point for more large-scale studies into the area of active learning in the Norwegian context. Finally, in line with what was suggested above regarding learning resources, it is also important to facilitate research that investigates how and to what degree nationally developed textbooks and other resources support implementation of such new principles and practices, as well as how teachers make use of these resources.

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APPENDICES

APPENDIX 1 – INTERVIEW AGENDA

Introduction: Okay, I need to start by explaining what we're trying to do in this research. Essentially, we're trying to find out what teachers think of 'active learning'. But we have a difficulty, because different people seem to have different ideas of what active learning is. So we've decided that what we have to do is start by seeing what individual teachers actually take active learning to mean, so that we can then explore their attitudes towards it - that is, what they see as the pros and cons of active learning as they view it.

So I'd like to start by asking what 'active learning' means to you. Can I emphasise that I'm anxious not to influence your reply in any way - I'm interested in whatever ideas *you* have about active learning, even if you think they're not very clear, or if you want to refer to examples you've encountered, or whatever. And I hope you won't mind if I follow up what you say so as to get as full a picture as possible of your thoughts and make notes to keep track of things. Also, since it's important to get an accurate record of what you've said, I hope you'll be happy for me to tape-record our conversation, with the assurance that your identity will remain absolutely confidential and known only by me. In addition, at the end of the session I will remind you that we have been recording the conversation, and if for any reason there is anything you would like to remove from the record, we can do that. You can also get in touch with me later to ask me to remove parts or all of the interview. I would also like to remind you that participation in this project is entirely at your own free will and you can withdraw now or at any time during the interview. Are you happy with this arrangement?

Okay, well, let's get going...

1 I'd like to start by asking you:

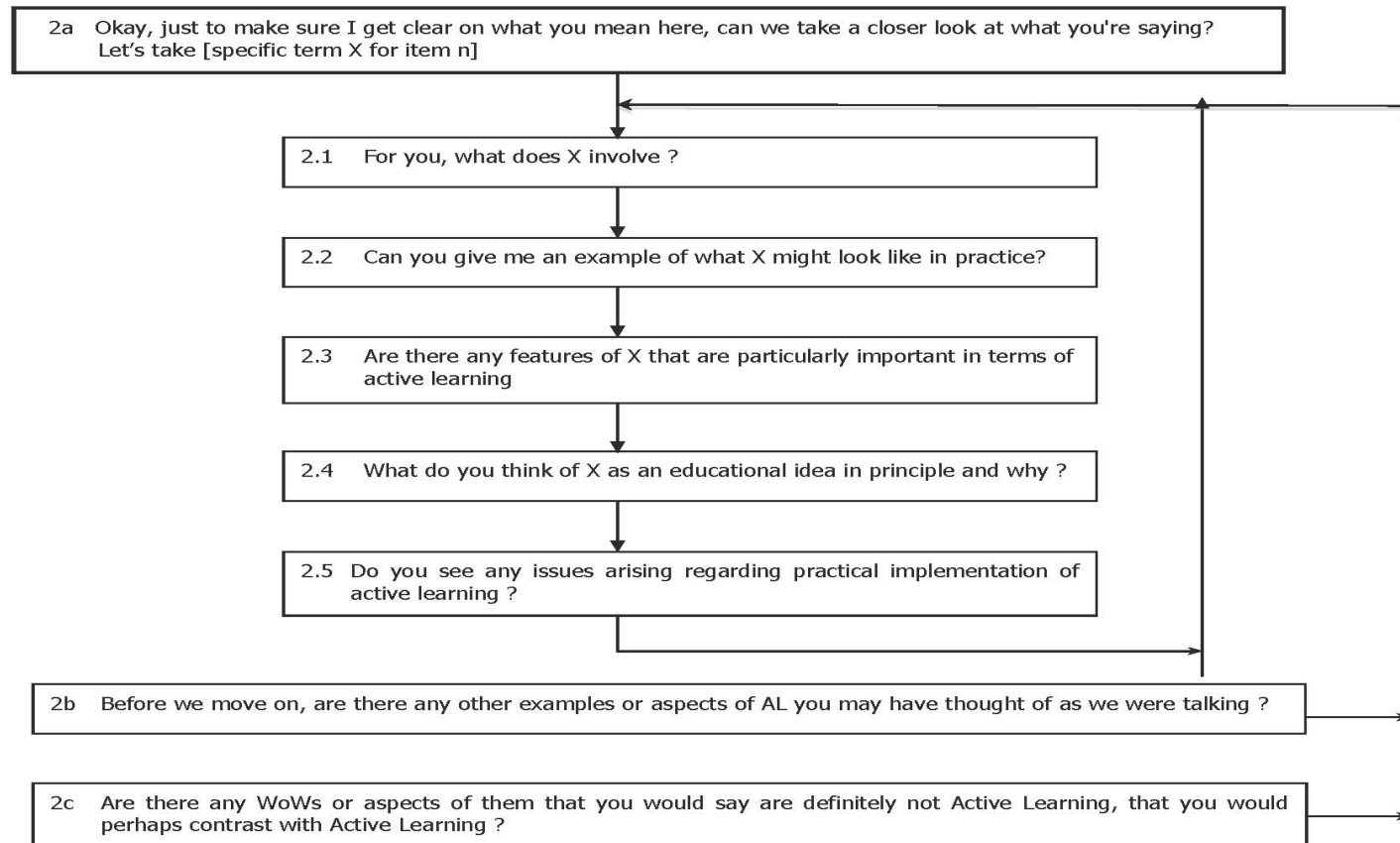
What do you take active learning to mean?

What do you *think* in principle of active learning and why ?

Do you see any issues arising regarding practical implementation of active learning ?

Can you start by saying what you take Active Learning to mean - and perhaps give me a couple of examples of active learning ways of working?





3 Okay, well, I mentioned earlier that different people in the educational world seem to have differing ideas about what constitutes active learning. For the last part of this interview I'd now like to check how you see some of those ideas in relation to your view of active learning and what you think anyway of these ideas.

You might for instance consider some of them as essentially the same as what you're saying, just expressed differently, or perhaps you would consider them part of what you're saying. Or you might realise that this was something that you had meant to say but actually forgot. Or again, you might see some of these ideas as something different and not part of what you consider active learning to involve.

Okay, so I'm going to present some ideas and for each of them I'm going to ask how they relate to your view of active learning and in particular whether they would be included in it. Then, quite separately from that, I'm going to ask about your stance towards these ideas, both in principle and in terms of how far they should or could be implemented in practice.

Intro to q.3 Version for respondents who came up with NO features on a conceptions of AL in responses to q.1 above:

Okay, well, I mentioned earlier that different people in the educational world seem to have differing ideas about what constitutes active learning. For the last part of this interview I'd now like to check how you see some of those ideas in relation to active learning and what you think anyway of these ideas.

You might for instance consider one or more of these ideas as something that you had meant to say earlier, but somehow didn't. Or again, you might see some of these ideas as something different and not part of what you consider active learning to involve. And so on.

Okay, so I'm going to present some ideas and for each of them I'm going to ask how they relate to your view of active learning and in particular whether they would be included in it. Then, quite separately from that, I'm going to ask about your stance towards these ideas, both in principle and in terms of how far they should or could be implemented in practice.

3.1 Some people emphasise particular **ways of working** as examples of active learning, such as...

3.1.1 Project work

3.1.2 Theme work

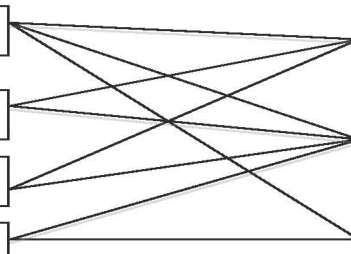
3.1.3 Practical work in science

3.1.4 Outdoor education

(a) Would **you** see this as part of active learning? Why/why not ?

(b) What do you **think** of this WoW, in principle, from an educational/teaching point of view?

(c) How far do you think this WoW is **feasible** in practice?



3.2 Some people emphasise **pupil decision-making** as an important aspect of active learning, in particular that...

3.2.1 Pupils decide or help decide **what they're going to learn about**, based on their own interests

3.2.2 Pupils decide or help decide **how** they're going to learn, **who** they are going to learn with and **what resources** they're going to use

(a) How far would **you** see this as part of active learning?

(b) What do you think in principle of this idea, from an educational/teaching point of view?

(c) How far do you think this idea is feasible in practice?

3.3 Some people emphasise **aspects of learning activities** as an important feature of active learning, in particular that...

3.3.1 Learning activities are to be **active** and not **passive** for instance receiving information from the teacher or a text book

3.3.2 Teacher should facilitate so that pupils can **ask questions and discuss issues** with teacher and fellow pupils

3.3.3 Pupils **cooperate** and **investigate their own questions**, for instance through **project work**

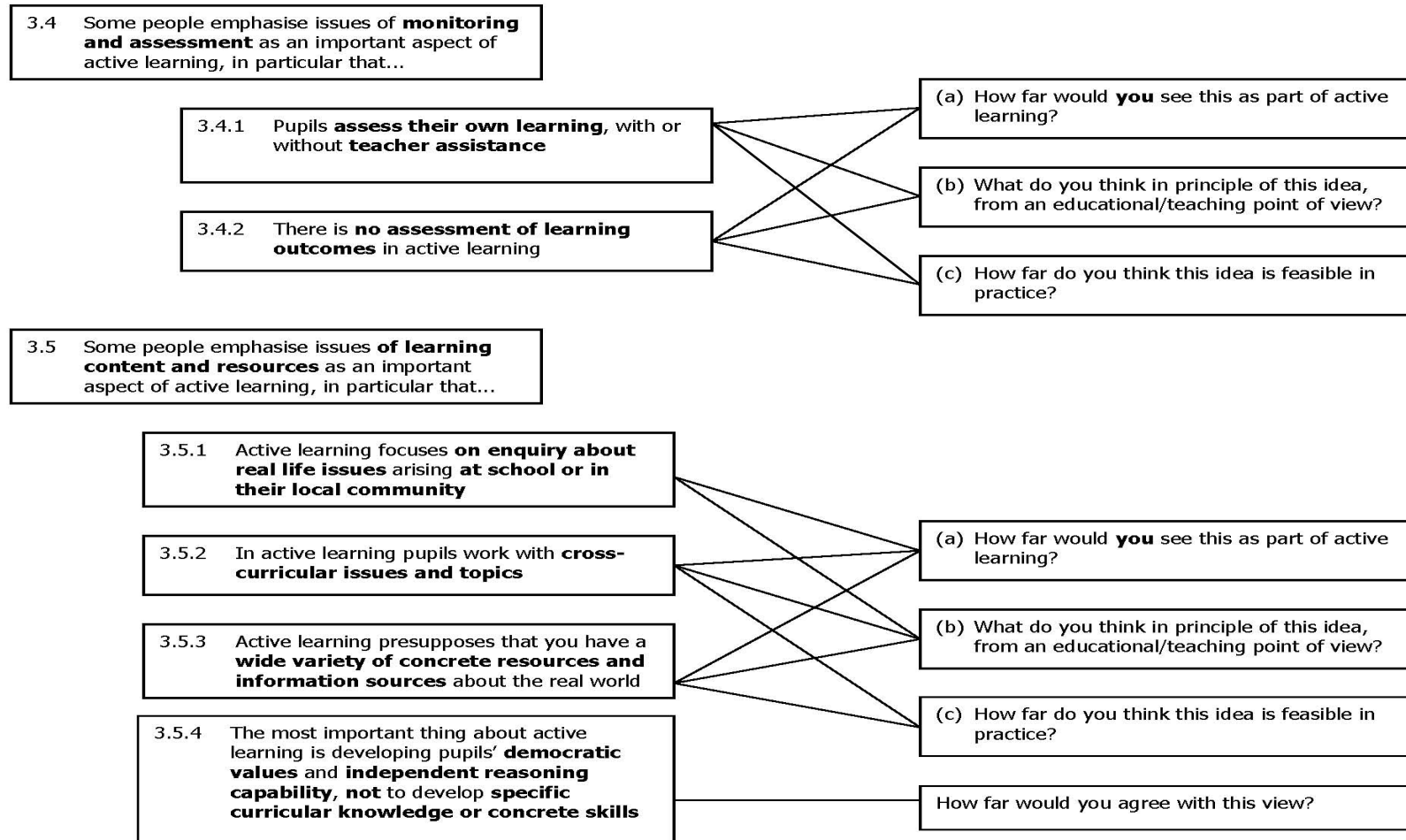
3.3.4 In active learning **teacher acts as a facilitator** and only **intervenes when pupils ask** for assistance

3.3.5 In active learning the **teacher never gives the right answer** when asked by a pupil, but instead **encourages the pupil to find the answer**

(a) How far would **you** see this as part of active learning?

(b) What do you think in principle of this idea, from an educational/teaching point of view?

(c) How far do you think this idea is feasible in practice?



APPENDIX 2 – ASPECT CODE SYSTEM

- 1 Plng
 - 1 NoPlng
 - 2 Tchrs Pln
 - 1 What lrn
 - 1 re AL
 - 1 Dfn
 - 2 Ntrl
 - 1 Important
 - 2 Depends
 - 3 Dsql
 - 4 Dfn Othr
 - 5 Ntrl Othr
 - 6 Dsql Othr
 - 2 PrnEval
 - 1 Pos
 - 2 Ntrl
 - 3 Neg
 - 3 PracEval
 - 1 Pos
 - 2 Ntrl
 - 3 Neg
 - 2 How lrn
 - 3 Who with
 - 4 What Rsrcs
 - 3 T&P Tgthr
 - 1 What lrn
 - 2 How lrn
 - 3 Who with
 - 4 What Rsrcs
 - 4 Ppls Pln
 - 1 What lrn
 - 2 How lrn
 - 3 Who with
 - 4 What Rsrcs
- 2 AL ILO
 - 0 ILOs important in AL
 - 1 Sub Knowl
 - 2 NOT Sub Knowl
 - 3 Intrst Lrng
 - 4 Indpdt Lrng Cap
 - 5 Democ Caps
 - 6 Democ Vals
 - 7 Persnl Auton
 - 8 Auth Knowl
- 3 Asses Progr Outc
 - 1 NO Ass Progr
 - 2 Prog Ass Lrn
 - 3 Prog Ass T&P
 - 4 Prog Ass Tchr
 - 5 NO outc Ass
 - 6 Outc Ass Lrn
 - 7 Outc Ass T&P
 - 8 Outc Ass Tchr
- 4 L-T Intrctn
 - 1 Tchr

- 1 No Assist unless asked
- 2 No direct Assist
- 3 No Direct Info
- 4 Facilitator
- 5 Not monitor/facilitator
- 6 Teacher Dialogic role
- 7 Teacher stimulates interest
- 8 Wide variety of questions
- 9 Teacher asks questions
- 10 Build upon interest
- 11 Wide variety of themes
- 12 Build up existing knowledge

2 Ppls

- 1 Not Passive
- 2 Not Info Absorb Teacher
- 3 Not Info absorb Textbooks
- 4 Ask Questions
- 5 Do Investigations
- 6 Do Practical Activities
- 7 Discuss Other People
- 8 Discuss Teacher
- 9 Discuss Managing Practical Activity/Experiment
- 10 Collaborate Groups
- 11 Physically Active
- 12 Work independently
- 13 Take initiative
- 14 Prep-read in advance
- 15 Know ILO
- 16 Present

5 ULPs

- 1 Cognitive Active
- 2 Self Monitor
- 3 Use Feedback
- 4 Reflect Practical Experiment/Activity
- 5 Connect Input-Existing Knowledge
- 6 Direct Attention
- 7 Practical Related Processes

6 Context Resources

- 1 NO Textbooks
- 2 Local Resources
- 3 Concrete/Physical Resources
- 4 Wide Variety Resources
- 5 Free Access Resources

APPENDIX 3 – CLUSTER ANALYSIS

Cluster analysis (Aldenderfer and Blashfield 1984; Everitt, Landau & Leese 2001) refers to a family of taxonomic procedures designed to investigate the possibility of subgroupings within a sample of individuals in terms their profiles on a set of variables. The particular form of the technique used in the present study was the widely recommended Ward's method.

Ward's method is an example of a hierarchical agglomerative approach, meaning that it consists in building up groups or clusters of relatively similar individual profiles. The first step is to take the profile of each individual in the sample (size N), compare it with each of the other individual profiles, then combine the two most similar individuals into a group or cluster. A new profile is formed for that cluster by combining the profiles of its two members, e.g. by averaging each corresponding pair of variable values in their profiles.

This leaves at most $(N-1)$ profiles, one of which is the new profile of the first combined pair or cluster. Next, the same process of comparing each profile with all other profiles is conducted again, with the combination of the most similar pair of profiles. This might be those of a new pair of individuals or, possibly, of an existing individual with the first cluster profile, leaving at most $(N-2)$ profiles.

This comparison-and-agglomeration step is then implemented repeatedly until all individuals and clusters have been combined into a single hierarchy consisting of clusters of individuals and clusters of their clusters. This can be represented graphically in the form of a tree diagram, or dendrogram, as illustrated below.

Comparison metrics and Combination Rules

The progressive formation of clusters of individual profiles just described has two central requirements: (a) a comparison metric or way of measuring similarity between two profiles, and (b) a combination rule or basis for deciding which clusters/individuals to combine at any particular fusion stage.

(a) Comparison metrics may be similarity measures or dissimilarity measures. In the case of binary/categorical variables, such association measures may be based on simple matching coefficients, i.e. the number of agreements across the corresponding yes-no variables in the to-be-compared profiles.

By contrast, dissimilarity or distance measures involve calculation of differences between corresponding variables in two case profiles. Here similarity is in effect being calculated by taking the inverse of dissimilarity: e.g. two identical profiles have zero dissimilarity. Dissimilarity measures have enjoyed popularity and may take a variety of forms. At its simplest, for example, dissimilarity could be measured simply by calculating the mean of the absolute differences between each pair of variables in the profiles. The form of comparison metric used by Ward's method is the distance/dissimilarity measure known as squared Euclidian distance, defined as:

$$d_{ij}^2 = \sum_{k=1}^p (x_{ik} - x_{jk})^2$$

where d_{ij} is the distance/dissimilarity between individual cases i and j on a profile of p variables, x_{ik} is the value of the k^{th} variable for the i^{th} case and x_{jk} is the value of the k^{th} variable for the j^{th} case. Whilst Ward's method has a number of important advantages, one of its relative disadvantages is the non-intuitive nature of its squared distance measure.

(b) Combination Rule - Having chosen a comparison metric for quantifying the similarity/dissimilarity between values on corresponding variables in a pair of profiles, there is the need for a criterion for choosing which cases/profiles to combine at any point in the repeated combination of profiles into clusters, clusters of clusters, and so on.

A variety of potential criteria exist for deciding with which cluster to combine a profile with (whether individual or cluster) and such combination rules can have considerable effect on the groupings suggested by cluster analytic methods. A major reason for

choosing Ward's method is that it tends to generate discrete and homogeneous clusters as a result of its combination rule taking account of all the profiles in a cluster and maximising within-cluster homogeneity. Specifically, it uses the least increase in error sum of squares criterion, i.e. it joins to a cluster that profile that adds least to the variation amongst the profiles in the cluster, calculated as the total sum of squared deviations of individual profile variable values from the profile variable means of the cluster.

Dendrograms - The results of the clustering procedure outlined above can be visually represented in graphical form by way of a tree diagram or *dendrogram*. As illustrated in Figure 1 below, in such a diagram the individuals whose profiles are being compared are represented as points on the horizontal axis at the bottom of the figure and the vertical axis represents degree of dissimilarity. The combining of two individuals into a cluster is represented by drawing a line vertically up from each individual point and then joining these with a horizontal line at the level of their fusion point indicating the degree of dissimilarity of the two profiles in terms of the comparison metric utilised. Thus the lower the fusion point, the less dissimilar, i.e. more similar the two profiles. Conversely, the higher the fusion point, the more dissimilar the entities being fused, i.e. the less similar their profiles.

Thus a dendrogram is useful in that it indicates not only the way that individuals and clusters are progressively combined, but also their degrees of relative similarity and difference. Looking across the bottom of Figure 1, for example, there are a number of cases where individuals are joined with other individuals at a low level of dissimilarity, i.e. indicating that they have relatively similar profiles. However, even at this low level it can be seen that (e.g. at the far left) individuals are being joined with existing small clusters because of their relative similarity to the cluster and not to other individuals. Moving up the figure, we tend to see clusters being joined to clusters, then to clusters of clusters and so forth, until at the last overall fusion, all individuals within all clusters have been linked/clustered.

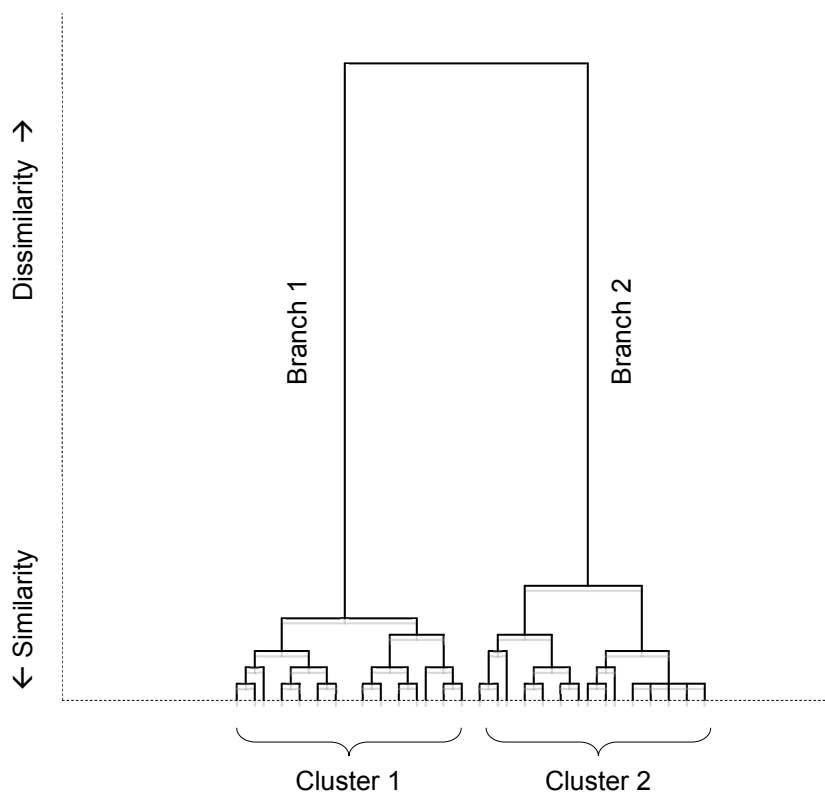


Figure 1 - A dendrogram suggesting a 2-cluster solution

Number and nature of clusters - The underlying issue behind the use of cluster analysis can be expressed as: how many groupings/clusters is it useful to distinguish and what are their contrasting characteristics in terms of the profile of variables involved?

Although cluster analysis has seen considerable developments in terms of available software, particularly in the form of Wishart's (2006) *ClustanGraphics* package I used here, Aldenderfer and Blashfield's (1984) views still appear to hold: that there are a number of heuristic approaches enjoying valid rationales and worth using in combination, but as yet no single definitive way of deciding amongst alternative possible solutions.

(a) Dendrogram Structure: The central purpose of cluster analysis is to see whether a sample of individual cases shows groupings that are relatively homogeneous within

groups but heterogeneous across groups, with respect to a profile of variables. A first approach is therefore to consider the similarities and contrasts amongst the various levels of grouping generated by the clustering process. This is conveniently and directly echoed in the visible structure of a dendrogram, most specifically by the *relative lengths of the vertical branches*.

In Figure 1 it can be seen that the first 14 individuals from the left have been clustered and re-clustered until they are all collected in one cluster whose fusion point is at the bottom end of Branch 1: they are labelled as members of cluster 1. The relatively low height of the cluster 1 fusion point indicates that the individual profiles within it are relatively similar, i.e. that this is a relatively homogeneous cluster in terms of the profile of variables in question. Similarly, the remaining 15 individuals on the right cluster into another relatively homogeneous group (cluster 2), in that their fusion point is only very slightly higher than that of cluster 1.

Since these are now the only unlinked clusters available, the next step in the agglomerative procedure can only join these two clusters. However, the fusion level for connecting these two clusters, i.e. the horizontal line joining them, depends on their actual degree of similarity/dissimilarity, which is calculated using the chosen comparison metric applied to the two profiles of variable means exhibited respectively by clusters 1 and 2. In the example illustrated, this dissimilarity measure has turned out to be rather high, i.e. clusters one and two appear to have relatively contrasting profiles. They can be joined into a single final cluster, but when we do so, we see that the height of the fusion level *between* them indicates that the profiles of clusters 1 and 2 are relatively dissimilar, compared to the considerable similarity *within* each of them, indicated by the low dissimilarity level of their constituents' fusion points.

All in all, the structure of Figure 1 therefore suggests that in terms of the set of variables under consideration, this group of 29 individuals divides importantly into *two* sets, each showing relative homogeneity within the set on the profile variables, whilst showing relative contrast with the other set: a *2-cluster solution* is indicated.

In contrast, Figure 2 below shows the kind of dendrogram that might have resulted with a different set of cases where individuals fell into the same groups, but where these groups show different relationships. In Figure 1, clusters 1 and 2 each had within them two further sub-clusters, which were ignored as groupings because they were so similar, as indicated by the low dissimilarity of their fusion points. However, if the dendrogram had been as shown in Figure 2, the high fusion points for the sub-groupings would indicate that these sub-groupings were about as different from each other as clusters 1 and 2 had been in Figure 1. In other words, the four long branches (branches 1 – 4) in the Figure 2 structure strongly suggest the importance of a 4-cluster solution, i.e. that there are four more or less equally contrasting groups each having considerable homogeneity within them.

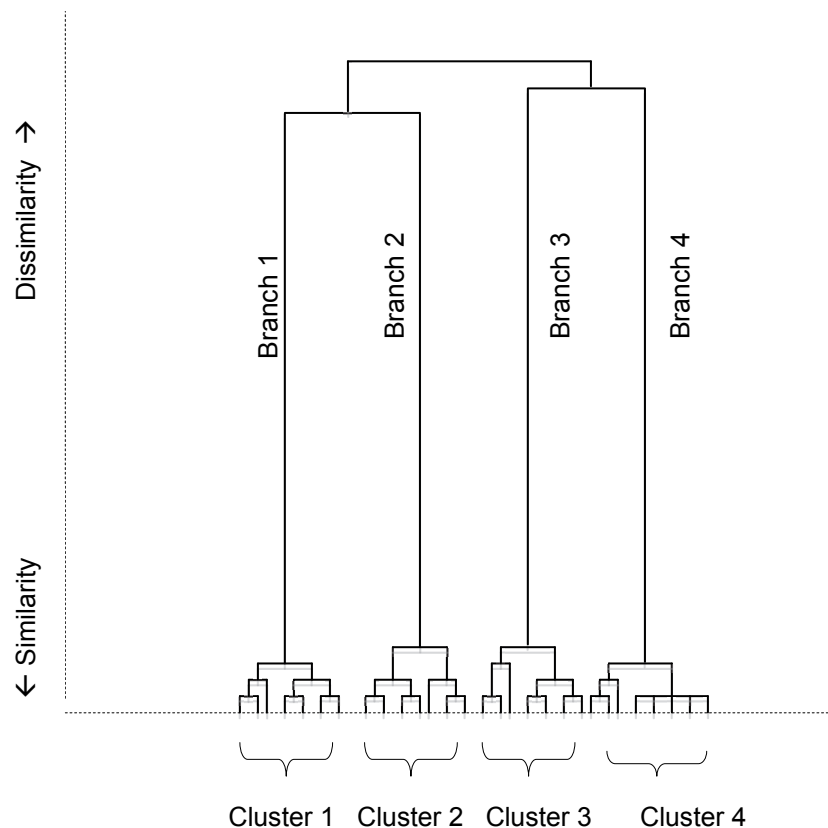


Figure 2 - A dendrogram suggesting a 4-cluster solution

However, not least because the dissimilarity metric is a squared measure and dependent on the scaling of the variables involved, examination of the dendrogram

structure is not sufficient on its own to justify concluding that a sample of individuals should be seen as clustering into a particular pattern, however visually obvious from the diagram. A number of other considerations have been put forward.

(b) Comparison of Cluster Profiles: An important approach is to examine the actual profiles of particular clusters within a given cluster level solution. The dendrogram may for example suggest four clusters. This should be investigated by comparing the clusters' profiles of means on the variables in question, to see whether the contrast in their actual properties turn out sufficiently substantial. The issue here is essentially one of effect size and statistical significance of cluster differences. Aldenderfer and Blashfield (1984) point out, however, that assumptions required for multivariate significance testing are unlikely to be fulfilled in many real-life investigations.

(c) Other Statistical Indicators: Another approach, provided by the *ClustanGraphics* package utilised in this study, is to base one's choice of the appropriate cluster solution/ number or 'best cut' of the dendrogram, upon significance tests applied to the series of fusion values in the clustering tree. Unfortunately, on its own, this approach can indicate large numbers of small clusters that turn out to have relatively small profile differences.

A further statistical significance-based approach, also provided by *ClustanGraphics* in its 'Tree Validation' section, is to test for the randomness of a cluster tree by comparing the tree obtained from the clustering procedure for a given dataset with the family of trees generated by random permutation of the same data.

When conducting hierarchical agglomerative cluster analysis, therefore, it is important to combine application of all the above approaches to the interpretation of the analysis output, as Aldenderfer and Blashfield (1984) pointed out. Given this proviso, cluster analysis using the *ClustanGraphics* package appeared worth applying to the sorts of data likely to be generated by the present study, though the relatively small

size of the eventual overall sample (24 teachers) meant that such analysis would only be able to pick up major contrasts amongst a small number of main clusters, since issues of homogeneity within clusters become problematic with very small clusters.

**APPENDIX 4 – SPECIFIC ASPECT CODES OFFERED
SPONTANEOUSLY/SEMI-SPONTANEOUSLY IN EXTENDED
DEFINITION OF ACTIVE LEARNING**

Specific Defining Aspect Code Label	Specific Defining Aspect Code Name	Sub-facet area Label	Sub-facet area Name
Tchrs Plan	Teachers do the planning	A1 Tchrs plan	Teachers do the planning
No Planng in AL	No planning in AL		
Ts plan what lrn	Teachers plan what to learn		
Ts plan rsrcs	Teachers plan resources		
TP plan what lrn	Teachers & pupils plan what to learn	A2 T&P PLAN	Teachers and pupils plan jointly
TP plan how lrn	Teachers & pupils plan how to learn		
TP plan rsrcs	Teachers & pupils plan resources		
Ps plan	Pupils plan	A3 Ps PLAN	Pupils do the planning
Ps plan what	Pupils plan what to learn		
Ps plan how	Pupils plan how to learn		
Ps plan rsrcs	Pupils plan resources		
ILOs imprtt	ILOs are important	B1 ILOs	ILO aspects
ILO intrst lrng	Interest in learning is an ILO		
ILO ind lrn cap	Independent learning capability is an ILO		
ILO auth knowl	Authentic knowledge is an ILO		

TP ass outc	Teachers & pupils assess outcomes	C1 ASSESSMENT	Assessment aspects
Ps ass outc	Pupils assess outcomes		
No outc ass dsql	Having no outcome assessment disqualifies as AL		
TP ass progr	Teachers & pupils assess progress		
No progr ass dsql	Having no progress assessment disqualifies as AL		
Ps work indep	Pupils work independently	D1 PUPIL INTRST	Pupil interest/pupil-centredness
Ps take inttve	Pupils take initiative		
Ps know ILO adv	Pupils know ILO in advance		
Ps not passive	Pupils are not passive	D2 PUPIL ACTIVITY	Pupil roles in learner-teacher interaction
Ps not absrb Tchr info	Pupils do not absorb information from teacher		
Ps not absrb Txtbk info	Pupils do not absorb information from textbook		
Ps ask Qs	Pupils ask questions		
Ps do invstgns	Pupils do investigations		
Ps discuss othr ps	Pupils discuss with other pupils		
Ps discuss tchr	Pupils discuss with the teacher		
Ps disc mng	Pupils discuss the meaning of practical		

pract acty	activity		
Ps colab grps	Pupils collaborate in groups		
Ps presentns	Pupils make presentations		
Ps prctl acts	Pupils do practical activities		
Ps Prctl acts Ntrl	Pupils doing practical activities is neutral as regards AL		
Ps prctl acts Disqual	Pupils doing practical activities disqualifies as AL		
Ps phys acts	Pupils do physical activities		
Ps phys acts Ntrl	Pupils doing physical activities is neutral as regards AL		
Ps phys acts Ntrl Dpnds	Pupils doing physical activities is neutral/it depends regarding AL		
Ps phys acts Df Othr	Others see AL as pupils doing physical activities		
Local rsrcs	Local resources are used	E1 LRNG RESRCS	Learning resources
Conc phys rsrcs	Concrete physical resources		
No direct T ass	No direct teacher assistance	F1 TCHR ACTVTY	Teacher roles in learner - teacher interaction
No direct T info	No direct information provision by teacher		
Tchr facilttr	Teacher is a facilitator		

Tchr dialogic	Teacher has dialogic role		
T stmltes intrst	Teacher stimulates interest		
T varty WoWs	Teacher uses variety of ways of working		
T asks Qs	Teacher asks questions		
T blds on P intrst	Teacher builds on pupil interest		
T varty themes	Teacher uses variety of themes		
T blds on P knowl	Teacher builds on pupil knowledge		
ULP Cog active	ULP: Pupils cognitively active	G1 ULPs	Underlying learning processes/principles
ULP Self-montrng	ULP: Pupils self-monitor		
ULP Feedback	ULP: Feedback important		
ULP Refl on Pract actvty	ULP: Reflection on practical activity		
ULP Connct input-exprnce	ULP: Connecting input to experience		
LP Direct attn	ULP: Directing of attention important		
ULP Pract rel procs	ULP: Practical relevance of process important		

**APPENDIX 5 – LETTER OF APPROVAL FROM NORWEGIAN SOCIAL
SCIENCE DATA SERVICES – THE OMBUDSMANN FOR RESEARCH**

