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Exploring Peer Mentoring and Learning Among Experts and Novices in Online in-Game Interactions

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Abstract: Becoming a competent player of online games involves complex processes and networks of online and offline life where the player is socialized into social norms and expectations. An important aspect of what constitutes gamers learning trajectories is guidance from experienced players. Games are public spheres where learning is social and distributed and where players often are enabled to learn new and advanced competencies. However, there is little educational research on how these competencies are cultivated and employed within a competitive gaming scene. In the current paper, we analyze the mentor-apprentice relationship between an expert and a novice in the multiplayer FPS CS:GO within an eSports and educational context. By assuming a dialogic approach to meaning making, we will examine how novices and experts uphold and talk the relationship into being and how the peer teaching and learning manifests in the in-game interaction. The ethnographic data was collected in collaboration with a vocational school with an eSports program in Finland in 2017-2018. Students (aged 17-18, all male) playing CS:GO shared screen recordings of their matches and took part in interviews. The participants play in two different teams. Here, we focus on Martin (expert) and John (novice) from team one. Martin was the highest ranked team member, something his team members are aware of and make relevant in interviews and in-game interactions. This position seems to provide him authority and leadership within the team. In the interviews, Martin aligns with being the leader and repeatedly mentions that he coached John to become part of the team. This relationship is also evident in the in-game data where Martin, together with the rest of the team, often provides feedback and support for John. The learning appears to be how to become competent in the game, and there are strong indications of other aspects of learning that relate to sociality and leadership.

Keywords: multiplayer, esports, dialogic learning, ethnography

1. Introduction

The growing eSports scene brings a level of professionalism to gaming, and games have become professional and educational contexts. In these contexts, learning is actively, and contextually, (co)constructed in and through in-game interactions with both the game itself, as well as with co-players. Concurrently, there is an emphasis on discussing the implementation of games or game mechanical affordances in education and in research (Arnseth, Hanghøj and Silseth, 2018). Nevertheless, there is a need to better understand commercial games, from an educational perspective, since they have been shown to be a social learning platform that students find authentic and motivating, which may improve collaboration skills and other advanced competences (Barr, 2018; Gee, 2007; Steinkuehler, 2006). However, there is little educational research on how these competences are cultivated and employed within the competitive gaming scene (N. Taylor, 2016). Becoming a competent player of online games involves complex processes and networks of online and offline life where the player is socialized into social norms and expectations (Gilje and Silseth, 2019). In-and-through this socialization process, players have shown to rely on guidance from more experienced players (Rambusch, Jakobsson and Pargman, 2007; N. Taylor, 2016). In other words, an important aspect of what constitutes gamers' learning trajectories is guidance from experienced players. This connects to the value of communication and collaboration skills, which appears to be important for eSports gamers to learn. For example, the transformation of the FPS Counter-Strike (CS, Valve Corporation, 1999) from leisure to (semi)professional play led players to shift their focus towards teamplay (Rambusch, Jakobsson and Pargman, 2007). Players began to value communication and adaptability skills more explicitly when the game, as part of the eSports scene, became more competitive.

In the current paper, we analyze the mentor-apprentice relationship between an expert and a novice in the first-person shooter (FPS) Counter-Strike: Global Offensive (CS:GO, Valve Corporation and Hidden Path Entertainment, 2012) within an eSports and educational context. By assuming a dialogic approach to meaning

making and learning, we will examine how novices and experts uphold and talk the relationship into being. We will shed light on the following research question: *What characterizes peer mentoring and learning in in-game interactions between experts and novices?* Previous ethnographic research on online video games has primarily focused on massive multiplayer online role-playing games (Corneliussen, 2008) or massive online battle arenas (Ratan et al, 2015). Ethnographic research on FPSs, has been limited in an educational context, with a few exceptions (Nielsen and Hanghøj, 2019; Rusk and Ståhl, accepted). The ethnographic approach provides a perspective on the relationship between the game and the learning and teaching that peers are involved in as they interact in-and-through the in-game environments.

2. A dialogic approach to games and learning

From a dialogic perspective, meaning making and learning are situated in social practices (Wegerif, 2006). Within social practices, persons interact with others and cultural tools that are both structured by norms and regulations and flexible in the sense of being appropriated and given meaning by situated and contextual use for specific purposes. From this approach, digital games can be viewed as flexible tools that are not static and pre-given in advance of actual use and play (Arnseth, 2006). They have “meaning potentials” (Linell, 2009) that can be, and are, realized in different ways by participants involved in interacting with the game and with other players. In other words, in-game interaction is essential to understand how games can be used as part of learning processes that emphasize collaboration and dialogue. It is, however, important to underscore that collaborative learning and dialogic learning are not self-evident. The implementation of collaboration does not improve learning in and of itself. The collaboration needs to stimulate learners to explicate their knowledge (van der Meij, Albers and Leemkuil, 2011).

The eSports scene, with its focus on competition appears to provide a stimulation and motivation for apprentices (novices) and mentors (experts) to explicate their knowledge to each other. Interviews with players indicate that game competences and players’ meaning-making activities are closely interrelated (Rambusch, Jakobsson and Pargman, 2007). The learning appears to take place in a form of community of practice (Lave and Wenger, 1991), in which members assume different roles and learn from each other in ways that both maintain and reconfigure the norms and regulations for participation and engagement. This is even more apparent when players of FPS multiplayer games join teams. Novices are guided, instructed and taught to become more competent, so that the team can become better. The team provides the players with a community that provides stimulation, motivation and possibilities for learning in-and-through communities of practice.

Research on classroom interaction has shown the value of supporting student participation through the use of specific teacher moves in learning conversations (Howe et al, 2019), and positioning students as active contributors in learning dialogues (Castanheira et al, 2000). Instructors can by eliciting, elaborating, reformulating, revoicing, and supporting students’ participation when engaging in new learning activities. Through acknowledging students’ contributions in dialogues, and building on their prior knowledge, position and reposition students’ statuses in learning communities (Arnseth, Hanghøj and Silseth, 2018). It is of great interest to study how experts in gaming communities support novices by using “dialogic strategies”.

Playing for a team in a multiplayer game is a highly collaborative activity in which multiple resources for meaning making are in play and shed light on what might be characterized as mentor-apprentice interactions that contribute to their learning, both the mentor (expert) and the apprentice (novice). The expert is in a position to learn how to teach and lead the team, whereas the novice is in a position to learn game competences. In the current paper, we analyze the mentor-apprentice relationship between an expert and a novice in the multiplayer FPS CS:GO within an eSports and educational context. By assuming a dialogic approach to meaning-making, we will examine how novices and experts uphold and talk the relationship into being and how the peer teaching and learning manifests in the in-game interaction.

3. Data and methods

3.1 Setting and participants

The current study employs an ethnographic approach to shed light on the relationship between the game and the learning and teaching that peers are involved in (Nielsen and Hanghøj, 2019; Rusk and Ståhl, accepted). The ethnographic data was collected in collaboration with a vocational school in Finland that the participants (17-18 years old, all male) attended. The participants study eSports as a minor subject but do not play video games together during lessons. As school representatives, they are encouraged to play together as a team in their spare

time on a weekly basis. The program emphasizes collaboration and communication, as well as informing the students on the importance of physical exercise, nutrition and sleep for a professional eSports player. The program functioned as an access point to active players with a serious interest in video games while not focusing on the program as such. The matches recorded were played in competitive mode, however, not as part of organized events. The focus students volunteered to participate in the study through a teacher.

In a CS:GO match, two teams have 5 players each and the game is played for several rounds. The team that wins most rounds, wins the match. Rounds are approximately 2 minutes long and usually the matches are played for 20–45 minutes. You drop straight into the action and start as either a counterterrorist (CT) or a terrorist (T), and then switch. The game is played on different maps that have different goals for CT and T. Our data only included bomb detonating (T) or defusing (CT). Entire matches are played on a single map. Your team wins a round if you succeed in detonating/defusing the bomb or stopping the opposing team from achieving their goal. The latter can be done by killing every opposing player in the round or by hindering them from achieving their goal for the entire round. When you die, you have to wait until the round ends, then you start again. During this time, you function as a spectator. The game keeps statistics on different parameters and variables. Each player is ranked based on their performance in each match in competitive mode.

3.2 Methods, data and analysis

The data consisted of seven matches and four scheduled interviews. Initially there were six focus students, however, John became part of the team and the study in the last months of the data collection. The focus students recorded and shared their matches regularly with the researchers through a secure file sharing service. The design of the study is dependent on the students' engagement due to the physical distance between the researchers and participants. During regular meetings, held at their school, interviews of students were recorded and transcribed.

Through an interaction analysis inspired by ethnographic methodology, we analyze how peer teaching and learning manifests in the relationship between the team leader, Martin (mentor), and a novice to the game, John (apprentice), from team one. The other participants' points of views function as secondary data in situations where the primary screen recordings were unclear. The other participants are present in the focus students' points of view and all participants participated in at least two interviews, ensuring that their voices are also heard. With this selection in mind, a total of seven matches, with matches ranging from 27-44 minutes, were analyzed for this study. The team has submitted recordings from various maps. The all-male group of participants was not a choice made by the researchers, but supposedly a result of the predominantly male online game culture resulting in few female students in the eSports program.

4. Results

Martin is the highest ranked player on the team, which seems to provide him with an authority within the team. This position is emphasized in the interview data. In the third interview, when asked about him being a leader, Martin pointed out that he was the one to coach John, so that John could become part of the team.

Excerpt 1: T1. Interview 3, 2018.

Researcher: Have you learned something playing CS:GO?

Martin: Nothing specific comes to mind. I guess I have learned how these guys play. I have mainly focused on trying to teach them something.

Researcher: Would you say that you are something of a team leader?

Martin: That's what it has been like. I got John to join after all. We played together all summer break and then you (addressing John) joined (the team).

John: Yes.

Based upon him repeatedly mentioning coaching John, Martin considers mentoring this novice to be an important part of his team leader identity (Ståhl and Rusk, submitted). But how are game play competences, as well as learning and teaching strategies, cultivated and employed within a competitive eSports gaming scene? How do experts in gaming communities support novices by using specific "dialogic strategies"? In the following, we analyze the mentor-apprentice relationship between an expert (Martin) and a novice (John). We exemplify the processes through an interaction analysis of four specific sequences in the game play, itself.

4.1 Orienting towards previous learning

Excerpt 2 exemplifies how members of the team orient towards game play competences that they have practiced earlier. The team is starting a new round. They play as T and are running towards their offensive positions. Before running out into the open, they agree on throwing out smoke grenades (line 1-2). Martin says that he will smoke the “CT” area and John will smoke the “stairs” area. Martin checks with John, to see that he remembers how this is done, and John confirms (lines 3-5).

Excerpt 2:

01 Martin: men ja smokar CT John smokar stairs
but I'll smoke CT John smokes stairs
02 John: vi- vi duunar så jo
we- we do it like that yea
03 Martin: kommer du ihåg hu man smokar stairs
do you remember how you smoke stairs
04 John: nå tottakai
well of course
05 Martin: nå de e bra de
well that's good

This short exchange exemplifies some important aspects of the mentor-apprentice relationship between Martin and John. Firstly, it shows that they have been practicing specific strategies during earlier game play. This is indicated by Martin eliciting if John “remembers” how to do it. Secondly, they position themselves as expert and novice in that Martin (expert) checks with John if he remembers how he should do what is expected, and John (novice), with no hesitation, orients to this position and confirms a shared understanding of what is about to happen next. The fact that they have been explicitly practicing specific competences is interesting also from an eSports, competitive, perspective. It is not enough to play for fun, you need to practice becoming a more competent and independent part of the team (e.g., Rambusch, Jakobsson and Pargman, 2007).

4.2 Reminding the others of John's position as a novice

The next excerpt is another example of how Martin supports and mentors John. In this excerpt, John receives instructions, from Player1, regarding an event that already occurred, and which led to them losing the round. The team plays as T and has recently planted a bomb at bombsite B. Martin and John are at bombsite B (see purple and orange dots, Figure 1) when an opponent is seen to be closing in (see red square, Figure 1). Martin engages with the opponent as the sound of the bomb's beeps are becoming more rapid. This means that the bomb is closer to detonating (see red rings, Figure 1). John leaves the bombsite to take cover (see orange dot, Figure 1). Martin is killed shortly after, which means that it is only John and one other teammate left and the other teammate is on the other side of the map (see green triangle, Figure 1). One spectating teammate, Player1, reacts to John's choice to leave and says that if the opponent has a defusing kit, he can defuse the bomb faster. Martin says that they won't have time to defuse. However, as he said it, the opponent defuses the bomb. Martin exclaims disbelief and Player1 refers to what he said about the defusing kit.



Figure 1: Match 2, Mirage. Martin's perspective. Enlarged minimap from Figure 3

This event launches a discussion, in which John's decision is questioned and he becomes accountable for it (lines 13, 15). John expresses that he understood that the bomb would explode (line 14). Instead of simply being disappointed, Player1, then, takes this as an opportunity to elaborate on how long he can stay there without having to die in the explosion (lines 15–16). It is, however, clear that Player1 is frustrated and this is also indicated by teammates sighing deeply to show that John should have known this. Nevertheless, Player1 provides relevant information and explains what John can do differently. Martin breaks in and reminds the entire team that it is, in fact, John's first game in a while (line 17) and that he, therefore, can be considered as maybe not at his best.

Excerpt 3

```
13 Martin: ((sighs)) (.) John (.) vafö sprang du bort  
John why did you run away  
14 John: för den sku pama  
cause it would blow  
15 Player1: man klarar sig utan problem längre än va du va di du ska vaa där  
you can make it without issues longer than you were there you should be there  
16 tills fem minu- sekunders gränsen ha vari å så hinner du ändå bort  
until the five min- second limit has been and you still make it out  
17 Martin: de e Johns första game på en tid (.) ta de lugnt  
it is John's first game in a while take it easy
```

Excerpt 3 exemplifies how John takes an independent choice that, unfortunately, does not play out and how the team reacts to it. The team is frustrated that they lost the round that they were so close to win. However, they orient to John's position as novice when they take time to elaborate on a basic game-related competence to John (lines 15-16) and that Martin (line 17) indicates that it is a learning process and that John hasn't been playing for a while. Martin asserts, again, a role as leader and mentor to tell the others in the team, as well as John, that John is in the position of a novice and that they need to go easy on his contributions. From a dialogic perspective on how to become a better eSports team, and community, there is a fine line between correcting novice's mistakes and also promote agency and independence. In excerpt 3, we see Martin, as the leader and expert, attempting to walk that fine line as he needs to acknowledge John's contribution, but also elaborate and reformulate what John did.

4.3 (Re)positioning the novice as an important contributor

Next, in excerpt 4, Martin and others from the team are providing in situ instructions to support John. They are playing as T and John is the last survivor from his team against one last opponent. Everyone else on the team is spectating and seeing the in-game action from John's point of view (see Figure 2). John has planted the bomb (near the blue circle, Figure 2) and needs to secure that the bomb detonates, either by killing the opponent or stall to prevent the opponent from having time to defuse the bomb. John is hiding in an area close to the bombsite.

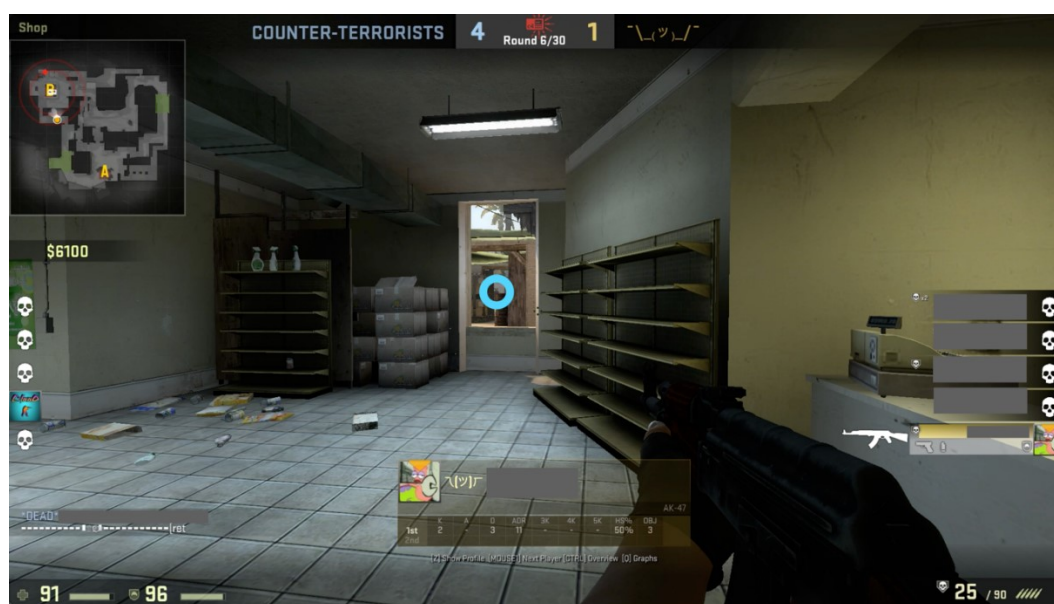


Figure 2: Match 2, Mirage. John's perspective.

Martin is telling John to stall and wait for the opponent to make a move (lines 1, 6-7 and 9). He also gives advice that the opponent (probably) is in an area called “van”, right now. Martin does this by repetition, to make sure that John hears the instructions. John adheres to this advice and stays hidden. Up until this point in the situation, Martin has been the one to give John instructions. Player2 expresses that he, from John's perspective, saw the opponent running across the bombsite (line 8, see the minimap in Figure 2 and the blue circle added to highlight the opponent).

Excerpt 4.1.

```

((John is hiding in an area close to the bombsite))
01 Martin: spela tid John
           stall John
((several lines of transcript omitted))
06 Martin: spela tid spela tid han e van
           stall      stall he is van
07 Martin: [han e van han e van han e van spela tid spela tid spela ]
           [he is van he is van he is van stall      stall stall  ]
08 Player2: [( ) så: honom (ja) så honom (.) han e bench (.) akta ]
            [ saw him (I) saw him      he is bench watch out ]
09 Martin: tid spela tid
           stall
    
```

Martin says that he now can hear that the opponent is at the bombsite (line 11). There is a silence for a couple of seconds and when they hear that the opponent is starting to defuse the bomb, they tell John to rush the site and kill the opponent (lines 13-15). John, starts to run towards the bombsite, which is full of smoke from a smoke grenade (see Figure 3). John cannot see the opponent and shoots at places where he thinks the opponent might be (line 16, see orange circle Figure 3), based on where he recently planted the bomb behind the crates (see blue star, Figure 3) However, this is oriented to as not that competent by some on the team (lines 17 and 19).



Figure 3. Match 2, Mirage. John’s perspective

During the time it took for John to start firing (line 16) from Martin stating that he is on site (and attempting to defuse the bomb, line 11), the opponent has had time to shift positions. John empties the magazine fairly quickly, without killing the opponent and he needs to reload (line 18). During the reload, the opponent kills him. Nevertheless, Martin displays leadership and assumes the role of mentor as he points out that it was well done and good enough (line 21), since John’s actions halted the opponent’s attempt to defuse the bomb. Player3 confirms it and points out that it was a win, after all (line 21), since the opponent did not have time to defuse the bomb and it detonates (line 22). Martin confirms what Player3 just said.

Excerpt 4.2:

```
11 Martin: han e sajt
           he is site
12         (2.5)
13 Martin: [( ) >far far fa fa fa<
           [           >go go go go go<
14 Player1: [( ) spring
           [           run
15 Player2: [( ) springer
           [           running
16         [((John moves towards the bombsite, while shooting aimlessly))
17 Player2: John va e dehä
           John what is this
18         ((John reloads, the opponent shoots at him and John dies))
19 Player2: ahahaha
20 Martin: bra (.) bra bra bra (.) good enough
           good good good good
21 Player3: nåjoo de- (.) de e vinn
           well yea i- it is a win
22         ((the bomb explodes and the team wins the round))
23 Martin: ja de e fine vi fick- (.) bomben ändå å smälla
           yea it is fine we got- the bomb to explode
```

Excerpt 4 exemplifies how John is oriented to as a novice, by the entire team, that needs tips, advice and instructions. The entire team supports him. However, Martin appears to orient towards a larger role as leader and mentor when he, for example, repeats very clear and easy to understand instructions (lines 1, 6-7, 9, 11 and 13) compared to Player2's advice (line 8) that is more abstract. To employ the information that Player2 provided, one needs to have a higher level of competence than to employ Martin's instructions. Martin also asserts his role as leader and mentor when he cuts off the teasing of John having rushed aimlessly into the bombsite and points out that it was good enough, because they got a win (lines 20 and 23). By orienting to the fact that the team wins, regardless of John getting shot by the opponent, and that the important objective was to detonate the bomb, something that was facilitated by John, Martin supports John's learning trajectory and repositions him as an important contributor to the team. This is also an orientation towards what the eSports context seems to have brought in; that is, the most important thing is how the team performs and each player should perform for the betterment of the team.

5. Discussion

Existing research has shown that becoming a competent player of online games involves complex social processes in which players are socialized into social norms and expectations, and that players rely on guidance from more experienced players (Rambusch, Jakobsson and Pargman, 2007; Taylor, 2016). However, there is also a need for more detailed knowledge about what characterizes peer mentoring and learning in in-game interactions between experts and novices. In this ethnographic study, the aim has been to provide a detailed account of this relationship. We argue that the analysis shows that not only the expert-novice relationship is talked into being, but also that experts use variations of "dialogic strategies" to mentor novices. It appears that the context, eSports competition and education, partly, provided Martin with a position as mentor and expert. This is also indicated by the fact that the others in the team orient to him as having this position. Excerpt 2 shows how he and John have been engaged in learning activities before, and by mobilizing John's prior knowledge he supports John's participation and orients him to proper ways of acting and engaging in the game environment. In excerpt 3, the team is disappointed that they lost a round, and a teammate criticizes John's moves. However, Martin reminds the team that John is still learning and that he may be a bit "rusty", since it is his first match in a while. Martin carefully balances between correcting the novice and acknowledging his independent move as a learner. Furthermore, Martin appears to employ "dialogic strategies" when he explicitly expresses the value of John's contributions, to the whole team, in excerpt 4. He positions John as an important, active, contributor when he acknowledges that John did good, since they won the round. Additionally, the acknowledgment also functions as a confirmation of that John followed the instructions, the teacher moves, that Martin employed to help John make the best out of the situation. In conclusion, our study indicates that communication and collaboration is an inherent part of functioning as a team and teaching others in the team. For the novices to become competent players they need the support of experts and mentors, who need to engage in learning conversations and use dialogic strategies to both teach the novices and position them as important contributors.

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