# Teaching esports to young students with autism

## Exploring pedagogical possibilities and challenges

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## ABSTRACT

Esports is on the rise as a leisure activity and also as a pedagogical activity. In this paper, we explore how Danish teachers within special needs education experience the pedagogical possibilities and challenges related to the educational use of esports activities. More specifically, we interviewed teachers from four different public institutions and a teacher from a commercial esports provider that offers specially organized education aimed at young people (16-25 years old) diagnosed with autism spectrum disorder. The results indicate that teachers generally have positive experiences with esports activities using Counter-Strike: Global Offensive (CS:GO) in relation to increasing students' well-being and social relations. However, there are also clear differences in the teachers' game literacy, as well as how they facilitate game activities through their own teaching or by visits to an external esports provider. The findings suggest that esports activities can be used as a valuable teaching resource, but that this requires expertise, ownership, and awareness among teachers of the educational possibilities and challenges.

## CCS CONCEPTS

• **Social and professional topics** → User characteristics; People with disabilities; User characteristics; People with disabilities; • **Applied computing** → Law, social and behavioral sciences; Psychology; • **Human-centered computing** → Collaborative and social computing; Empirical studies in collaborative and social computing.

## KEYWORDS

Esports, Autism, Self-Determination Theory, Structured Gaming

## 1 INTRODUCTION

Esports has become immensely popular in Denmark and globally, not just as passive consumer entertainment, career path, or active pastime, but also as an integrated part of education [1]. In the present paper, we explore how teachers at special needs schools for young people with autism spectrum disorder (ASD) use esports as a tool or medium for increased learning, motivation, and well-being.

### 1.1 What is esports?

Esports is first and foremost a label used colloquially to describe the type of competitive sports that spring from digital games. Whereas people have competed with each other in digital games for as long as these games have existed, it is not until fairly recently that esports has grown into a professionalized sport complete with coaches, esports psychologists, professional broadcasters and so on (for more on the nature and emergence of esports, see [2, 3]). The growing popularity and impact of esports has also turned esports into a vehicle driving the sales of games and other commodities. Games are now being developed with an eye to the economic benefit of the potential that the game will become a popular esport. Esports are also arguably legitimizing and de-stigmatizing the playing of video games in the eyes of society at large.

Here, we investigate the esports phenomenon in a completely different context—namely, esports as a pedagogical tool used by teachers in special education working with young people diagnosed with autism. In this paper we do not concern ourselves with the use of games designed specifically to help people diagnosed with autism spectrum disorders (ASD) (for a review of such games see e.g., Zakari et al. [4]). Instead, we look at the use of *Counter-Strike: Global Offensive* (CS:GO) [5], a commercially developed game with a large esports presence, especially in a Danish context, which can be partly explained by the relatively large number of successful Danish CS:GO players. However, it might also be argued that this paper is not about esports in a more restrictive sense of the word, but instead about structured interactions with multiplayer games within the context of special needs education.

### 1.2 Gaming and autism

Autism, or ASD, is currently understood as a neurological developmental disorder (DSM-5) [6]. The diagnosis is given on the basis of the presence of a range of symptoms including impairments in social interaction and communication, both verbal and non-verbal; repetitive behavior; and restricted repertoire of activities and interests [7]. Unsurprisingly, ASD can be associated with feelings

of social isolation and problems across a range of settings, such as family life, education, employment, and so forth. Young people with ASD, however, do not differ from so-called neurotypical young people when it comes to their affinity for digital games. Most young people and children, with and without ASD, play video games [7].

Several studies have explored the links between leisure gaming and people diagnosed with autism. Sundberg [8] found that persons with ASD who play games online have more friends than those who do not. Additionally, Sundberg found that low to moderate use of online games was linked with less loneliness experienced among participants with ASD. Similarly, an observational study by Stone [9] conducted with three 9–10-year-old students diagnosed with ASD, found that online multiplayer games provide platforms for students to use speech to engage in a wide range of communicative practices such as reciprocal conversation, sharing information, making requests, giving commands, and directing others. In this way, targeting the gaming interests of students with ASD suggests valuable opportunities to support their capacity to initiate and sustain social interactions in inclusive educational settings.

## 1.3 Motivation and well-being

In this paper we consider the role that digital games play in the lives of young people through the lens of Self-Determination Theory (SDT) [10]. We adopt the perspective of SDT, as it provides a rigorously studied framework that spans human motivation, basic needs, and flourishing. SDT consists of six mini-theories, from which we are primarily interested in basic psychological needs theory (BPNT) [11]. According to BPNT, all humans share a set of basic needs that, if met, result in well-being or flourishing. Those needs are: autonomy—the need to be able to make choices in accordance with one's own values and desires, independent of undue outside influence; competence—the need to feel skillful, or a sense of mastery and ability to attain goals and overcome challenges; and relatedness—the need to feel a sense of having meaningful relationships and belonging with other people, as well as the feeling that other people care for you and that you care for them. These needs are the building blocks that are essential for maintaining continued psychological integrity, growth, and well-being [12]. Previous research using the SDT-framework describes both the motivational pull of video games and the positive effects they can have on well-being [13]. The SDT-framework has more recently been used to understand and explore the intersection of esports, education, and well-being [1].

Similarly, two recent reviews have documented how the SDT-framework has also been thoroughly applied and studied within the context of general education [14] and, more specifically, in relation to ASD students [15]. Ryan and Deci's review concluded that both teachers and students might benefit from autonomy support in their teaching and learning [14]. Similarly, Morán et al. [15] found that the self-determination of students with ASD could be promoted through instructional methods, and there were personal and environmental factors that were important to consider when supporting the self-determination of students with ASD.

The SDT-framework divides motivation into several types and sub-types. The first division is between intrinsic and extrinsic motivation and the mini-theory that deals with this distinction is

called organismic integration theory (OIT) [11]. Intrinsic motivation is present when we engage in a given behavior because it is inherently pleasurable or otherwise provides satisfaction in and of itself—absent of external rewards, spurs, or pressures [16].

Extrinsic motivation, on the other hand, is when we are moved to act by external forces. However, extrinsic motivation is by no means monolithic. In the view of SDT, extrinsic motivation can be subdivided into four categories that move on a continuum from external to increasingly internal [16]. At the external end of the spectrum, the individual is doing an activity solely because of external rewards and is therefore solely focused on those and not able readily to find satisfaction in the activity. At the internal end of the spectrum, the individual is still moved to act based on external rewards, but the person values the activity because they have integrated, internalized, and assimilated the values and the reasons behind the external imperative to act. In other words, your personal goals and values are aligned with the external forces that are moving you to act. At this end of the spectrum, the line between internal and external motivation begins to blur.

SDT provides a general theory for understanding motivation and well-being. For the purpose of this paper, our aim is to explore the teachers' subjective experiences of their own motivation and the impact they observe esports having on their students' well-being.

## 1.4 Teaching with games

There is a growing body of research on how teachers use games in the classroom, which shows how teachers engage in relevant pedagogical activities in relation to the games being taught [17]. This involves planning game-based teaching units, orienting students toward games, facilitating game sessions, and expanding upon game experiences after gameplay. Survey studies have stressed the importance of teachers being familiar with or being able to master the games they teach in order to make links to pedagogical and curricular activities [18, 19]. Moreover, a systematic review and meta-analysis has shown that the educational value and learning outcomes of teaching with games cannot be reduced to designed affordances of specific games [20]. In this way, it is crucial that teachers be able to facilitate dialogue in and around game activities, which means that games do not represent instrumental tools for learning but should rather be seen as dialogic tools or resources for engaging students in learning activities [21].

To understand how the teachers in our study experienced esports activities with the young ASD students, we use the notion of teacher's game literacy. Building on Bourgonjon's [22] work on video game literacy, Hanghøj and Møller [23] have argued that teachers' game literacy involves three dimensions—operational, cultural, and critical—that should be linked to the teachers' curricular and pedagogical aims. The operational dimension refers to how teachers are able to play, understand, and master specific game aspects such as game mechanics or game narratives to teach with a game. The cultural dimension concerns the teachers' understanding of the practices and modes of communication in relation to specific game cultures, including how players use specialized language during gameplay, engage in specific forms of collaboration or how players engage in all sorts of meta-gaming activities outside gameplay [9]. Finally, the critical dimension refers to teachers'

understanding of the different values and perspectives afforded by games and their ability to promote dialogue, discussion, and reflection among students in relation to their game experiences, as well as their own roles as teachers when using games for educational purposes.

## 2 RESEARCH QUESTION

Drawing on the theoretical perspectives of SDT and teachers' game literacy, as outlined above, we will be exploring the following two research questions:

- How do special education teachers become motivated by teaching esports with ASD students?
- What pedagogical possibilities as well as challenges do teachers experience when facilitating educational esports activities?

## 3 METHODS

The present study is qualitative and explorative in nature. We explore the abovementioned research questions through data gathered from five interviews—four interviews with special needs teachers and one interview with an esports coach from a commercial esports provider, who works with special needs students. The case and the interviews are described in further detail in the next section. We used thematic analysis (TA) [24, 25] in our coding of the interview data. TA offers clear procedures and systematic guidelines for coding qualitative data that can be linked to broader theoretical and conceptual issues [24], which makes it a fitting method for our purposes. The research methodology of the present study is more inductive than deductive in its approach, as it focuses on the experiences of its research subjects and assumes a knowable world; it also attempts to give voice to the people that experience and try to make meaning of that world. This, of course, in contrast to a radical constructivist approach, which holds that the world is entirely unknowable because it is socially constructed. Our approach can be said to be one of critical realism [26], because we assume that truth can be gleaned from the world, but that accounts and experiences are socially and culturally mediated. As mentioned, our approach is primarily inductive but also deductive: inductive because we mainly code bottom up from the data on the basis of the experiences of our research subjects, as we respect, and are careful not to override their stories; and deductive, because we draw on theoretical constructs such as SDT [11] and video game literacy [22].

## 4 CASE DESCRIPTION

Our interviewees are all teachers working at Danish special needs schools called STUs (Specialized Youth Education[1]), which are a specialized form of youth education. STUs were introduced in Denmark in 2007 and involve a three-year educational program for young people between 16 and 25 years of age with physical or psychological disabilities and/or special needs, who are unable to complete other types of youth education. Students taking part in the educational program often come with a range of different diagnoses, including severe mobility impairments, multiple disabilities,

autism, ADHD, mental disorders, and/or brain damage [27]. The content of the educational STU program is organized through a clarification course of 12 weeks, where the student, in collaboration with a supervisor from the municipality, prepares a three-year educational plan, which aims to follow the student's wishes and opportunities for future education and employment.

Within the last few years, a number of Danish STUs have taken a keen interest in offering esports activities to their students, which build on their interest in playing online multiplayer games—especially CS:GO—either as a pedagogical activity organized by the teachers within the classroom or through visits to external providers of esports activities. In the current interview study, two of the authors of this paper (university students with considerable game experience) contacted teachers from four different STUs in the greater Copenhagen area to learn about the teachers' experiences with education and esports. Based on the information from the four STU websites and interviews with the teachers in our study, we were able to conclude that nearly all of the teachers' students were diagnosed with ASD.

There are important differences between the four STUs in our study in terms of how they organize esports activities. Two of the STUs (#1 and #4) offer esports activities as a part of their regular classes facilitated by their own teaching staff. The two other STUs (#2 and #3) facilitate esports activities through school visits to a commercial esports provider that offers esports activities specifically aimed at STUs. Consequently, we decided to interview one of the coaches affiliated with the commercial esports provider in addition to the teachers from the STUs. Table 1 below provides an overview of all of the interviewees and their affiliation, profile (profession), game experience, and organization of esports as a pedagogical activity (external or internal).

As the overview suggests, there were considerable differences in the teachers' game experience (i.e., their familiarity with playing CS:GO or similar games). Moreover, the table also shows that we identified three different approaches to esports activities for the STU students: local teaching, local teaching with co-teacher, and external visits to an esports provider.

## 5 THEMATIC ANALYSIS OF INTERVIEW DATA

We carried out our qualitative data analysis following the procedure of thematic analysis [24, 25] described above. Our analysis resulted in two overall themes that mainly represent a teacher perspective on the ASD students and a teacher perspective on their own experience with facilitating esports activities. We have chosen to label the two themes "students' well-being" and "the role of the teacher." The following sections will describe each of these themes, and their sub-themes, in turn.

### 5.1 Theme 1: Students' well-being

*5.1.1 Special interests.* According to the teachers, a common feature in the lives of young people with ASD is that they have strong interests that are sometimes perceived by others to be somewhat unique. A recurring theme in the data is that CS:GO fits very nicely into the unique interests of some students, but far from all of them.

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[1]Our translation of "Særlig Tilrettelagt Ungdomsuddannelse."

**Table 1: Overview of interviews**

| Interview | Affiliation | Profile | Experience level | Organization of esports activity |
|---|---|---|---|---|
| 1 | STU 1 | Teacher | Moderate game experience. Has taken a course in teaching esports. | Internal activity without a co-teacher<br>Esports is taught on a regular basis to match students' interests |
| 2 | STU 2 | Teacher | No game experience | External activity<br>Visits to esports provider |
| 3 | STU 3 | Teacher | No game experience | External activity<br>Visits to esports provider |
| 4 | STU 4 | Teacher and co-teacher | The teacher has limited game experience<br>The co-teacher is a highly skilled player | Internal activity with a co-teacher<br>Esports is an integrated part of the curriculum |
| 5 | Esports provider | Esports player and self-taught coach | Highly skilled player | External activity<br>Esports is taught to visiting students during school hours |

In other words, some students were immediately and strongly motivated to play CS:GO, whereas others (for various reasons) did not want to play the game. In the words of one teacher:

> Those that have the diagnosis [ASD] typically have *Counter-Strike* as a special interest. It's what they are passionate about, if they have gone all in on computer games, then that's just what they do, to a degree where you are just like: 'Whoa, Nellie'[2] (Teacher, STU 1)

There was a general consensus among the teachers that some students were already very interested in CS:GO and a very few could be nudged towards developing an interest, whereas it would be impossible to make others interested. According to the teachers, this presented a unique opportunity to reverse the usual roles of teacher and student, as the highly interested students were able to take on the role of the expert helping the teacher and the other students.

> It's pretty cool to have a subject where it is the young people that are the experts on the curriculum. That makes the dialogue more reciprocal—that is, where we can make them the experts, where we can give them some responsibility. Because they have know-how and expertise that we don't necessarily have as teachers, so it becomes a more equal dialogue in some respects. (Teacher, STU 4)

As can be seen in the quote above, the playing field is leveled, so to speak, and teachers and students engage on a more equal footing. In this situation, the expert students naturally assume a certain amount of responsibility.

According to the esports coach from the private esports provider, esports practice is a really effective tool to move students with ASD along a positive developmental trajectory. It is, however, impossible to achieve this effect if the students are not interested in the specific games that are used in practice (in this case CS:GO and Fortnite).

> Well, I feel it has a tremendous effect [esports], I've been told so as well by many of the [STU] schools,

but there have been others where there has been no effect. But that has primarily been because they didn't find it to be interesting. If the students didn't like to play *Fortnite* or *Counter-Strike*, then there wasn't really anything you could do. So, nine out of ten times it's about whether the students have an interest in it. Most of them are interested because you can control basically everything in it. We typically play closed off maps where we control when the rounds start and end, how much ammunition you have and so on. That induces equanimity for some of them because they are able to help control the tempo at all times. (Coach, esports provider)

The esports coach speculated about why it might be that a game like CS:GO is so appealing. According to him, CS:GO represents a world that is completely closed off to outside influence and is completely controllable. Variables such as how long the rounds last are predetermined and controllable. In other words, unpredictability is all but removed from the game world. In the words of one teacher, esports is kind of like McDonald's[3]:

> They know what to expect, just like ordering a Big Mac. You kind of know what you are getting, you don't get too disappointed, you don't get too surprised. It feels nice. (Teacher, STU 3)

*5.1.2 Defining success.* Determining what constitutes wins and losses when using esports as a tool to foster positive development is not straightforward. ASD students are far from a homogenous group, so in-depth understanding of them as people is necessary to determine whether a training session was a positive or negative experience. One example of this was a training session in which the students on the team spent two whole hours basically just shooting at the walls of the map they were playing. From the perspective of the esports coach, who did not have intimate knowledge of the

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[2]All direct quotations have been translated by the authors.

[3]Reviewer number one for this paper asked why CS:GO, as a fully controllable space, does not appeal to all students. To answer that question we would venture to speculate that CS:GO, like MacDonald's, however predictable the experiences may be, does not appeal instinctively to everyone.

students, this session was one long frustrating failure. Conversely, the teacher experienced the session as a massive success, because the students showed sustained attention and engagement with a shared activity. For the teacher, it was amazing that—for a period of two hours—the students did not run around the room toppling over furniture.

*5.1.3   Esports as a carrot.* The students who participate in esports at the different schools are not randomly assigned to the esports classes. They choose it as an elective themselves based on what is often a special interest in the game. Therefore, this study cannot not speak to how esports as a compulsory class might work, as we are describing a group of students who have self-selected to participate in esports practice. In other words, there is a significant selection bias at play. According to the teacher from STU 2, the students see esports practice as the highlight of the week, and they often remark that they would not attend school at all if it were not for the esports class. The teacher does not know if it is true that they would not show up were it not for the esports class, but he stresses that it is something that the students at least assert often and strongly.

The esports coach from the esports provider was very conscious about involving, and communicating with, the teachers to ensure that the students understand that esports practice is a privilege that is earned. The coach takes pride in regularly consulting with the teachers to figure out if a balance has been struck between the more serious and structured parts of practice and the more free and fun parts. According to the coach, the teachers use esports as a carrot in a multitude of different ways, which requires him to align his approach to theirs.

*5.1.4   It's not the game, it's the shared activity.* The coach from the esports provider described how esports, for one teacher he worked with, was a gateway to being able to reach a student suffering from anxiety. CS:GO became the shared interest that allowed them to start talking and to build the rapport necessary for them to talk about other things, including anxiety. For another student, esports was described as a shared interest that led to socializing outside of the school context. This student did not have much experience making friends until he started playing CS:GO and socializing with his classmates. This shared interest was experienced as pivotal in that process. These types of experiences have led the coach to believe that the positive outcomes associated with esports practice is not about the game itself, but about shared interests that can serve as a foundation for a host of other things. According to the teacher from STU 1, many of their students with autism are introverted and some have led very isolated lives, which makes esports an interesting tool to use, from a pedagogical perspective.

*5.1.5   Realizing the pedagogical potentials of computer games.* One of the teachers described how he always saw digital games as something valuable, but perhaps only in a recreational sense. Working with games as an educational tool has opened his eyes to what he calls "their potential to drive positive development" (Teacher, STU 4). The teacher ascribed this potential to the demands that esports places on communication, teamwork, and coordinated movements. The range of activities that constitutes esports practice in our dataset is very broad: from tactical instructions in a classroom setting coupled with exercises designed to hone mechanical skills or teamwork (Teacher, STU 4) to playing hide and seek in different CS:GO maps (Teacher, STU 1).

*5.1.6   Challenges.* Some of our respondents described rather challenging situations. One teacher described bringing the esports students to a net cafe only to realize that he did not know how to set up a game for the students on the network. Another teacher was not comfortable coaching the students because his own knowledge of the game was more casual. Finally, one teacher was only proficient in one game and was not able to instruct students in other games.

## 5.2   Theme 2: The role of the teacher

The second analytical theme concerns the teachers' experience of their roles as teachers when facilitating esports activities with their STU students.

*5.2.1   Differences in game expertise.* There were clear differences in the teachers' familiarity with CS:GO. Not surprisingly, the teachers' level of expertise with the game heavily influenced their ability and interest in facilitating esports activities, as well as their choice of pedagogical game set-up (local classroom versus visit to esports provider). The teachers from STU 2 and 3, who had limited knowledge of the game, clearly felt like outsiders when observing how the students participated in game activities at the external esports provider:

> I was completely at a loss. I might just as well have been at a horse paddock and said: "Let's try to ride these wild horses. We may never have tried it before, but it will probably be fine!" (laughs) I mean, it does require some kind of expertise—I realize that—in order for it to be a good course. (Teacher, STU 3)

As this quotation shows, the teachers who visited the esports provider with their students assumed a relatively passive teacher role, where they mainly took responsibility for bringing the students safely to and from the training, as well as solving potential conflicts between the students. For them, one of the key goals of the esports training was teaching the students how to attend activities outside the school, such as being able to take a bus, which could contribute to developing their life skills. In this sense, they focused less on the pedagogical aspects involved in the esports activities and mainly described it in overall terms as a motivating activity.

*5.2.2   Using the game as a dialogic resource.* In contrast, the teachers at STU 1 and 4 chose a more active pedagogical approach to incorporating CS:GO into their own teaching by creating a local game set-up. The teacher at STU 1 was familiar with the game, although she was by no means an expert player:

> I have played Counter-Strike on and off for periods of time since 2001 where I started playing. So there have been long periods where I have not played. (Teacher, STU 1)

However, when she learned that her students had a strong interest in the game, she decided to build her teaching upon the students' affinity with the game in the hope of creating a "common third"

(det fælles tredje) [28]⁴ for mutual communication in her classroom. For her, the main purpose for using the game was to create strong social relations both among the students and between her and the students. To achieve this aim, she decided to team up with one of her students:

> So, I grabbed hold of one of my students, who is really good at Counter-Strike and asked him if he wanted to be my "co-driver"— he is far better than I am—so I didn't end up saying all sorts of silly things. He was quite pleased to do it. (Teacher, STU 1)

This example shows how the teacher had sufficient game expertise to envision and pursue her own pedagogical aims using CS:GO in the classroom. At the same time, the teacher was quite aware of her limitations as a player, but addressed this challenge by drawing on the local expertise of one of her students. Her pedagogical approach to teaching with the game was primarily based on what she could accomplish together with her students to further social relations in the classroom. For her, learning CS:GO was not the key aim of the teaching, as this was just one game among others. In fact, she was willing to try out and learn to teach with other games, if that should become relevant:

> I am well aware that I would be limited as a teacher by competencies, [which] in the long run would be too limited if we were to play other games. In that case, I would need to rely on support from some of the students. This, of course, would be an awesome learning experience for me and the students, as they kind of also get to take responsibility too. So, it's actually not a bad thing. (Teacher, STU 1)

*5.2.3 Developing students' skills as players.* At STU 4, the teachers also had positive a experience with letting more skilled players assume the role of expert or mentor and providing scaffolding for them to practice being a leader and articulating their expert insights. However, the teacher at this school also reported a more skills-oriented pedagogical approach to teaching CS:GO in their classroom. The teacher was an experienced CS:GO player, as well as an experienced teacher. Based on the response from his students, who were sometimes not so interested in being co-teachers, but were more interested in becoming better players of the game, his school had recently hired an esports coach, who was an expert in the game and could offer specific strategies for increasing the game skills of even the best players in the class. In the words of the teacher, the coach had:

> [...] knowledge and an overview, which adds some motivational aspects for the group of players, who are really good. They get to have an experience of learning something new, whereas they may have been used to being left with a sense of having to teach others. (Teacher, STU 4)

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⁴The notion of 'the common third' is often used in pedagogics in Denmark. It denotes situations where professionals, such as pedagogues, are able to relate authentically to the children in their care through a shared interest in a common third, which can be anything that both parties share an interest in, such as watching a movie or going camping; the key thing is that it enables the professional and their ward to transcend the roles that they have to fulfill in a given situation and instead to relate to each other as subjects.

In this way, we can identify two different pedagogical approaches to teaching CS:GO in the STU classroom: One is asking skilled students to be co-teachers as a way of supporting the teacher and increasing other students' possibilities for participation, while the other approach involves supplying a coach or co-teacher, who is an expert player and able to challenge the students who are skilled in the game.

## 6 DISCUSSION

In the present dataset, we clearly see that the teachers working with students with ASD experience significant potential and benefits by incorporating esports, or structured gaming, into the educational context. Reaping these rewards, however, is only possible if specific challenges can be met.

Theme 1 shows that the teachers are highly motivated to use esports as a tool or medium to teach high-level skills such as teamwork, communication, sustained attention, and problem solving, as well as offering opportunities for the students to try on leadership roles and build stronger social ties. From the perspective of SDT, we might hypothesize that playing CS:GO allows for students to have their basic needs met. Playing video games like CS:GO is very much an autonomous act, because the students are internally motivated to play, they already have a strong interest in gaming, and therefore gaming is a desired and valued activity. Digital games are designed to provide clear goals and clear feedback on how to attain those goals so as to not be too frustrating. However, adding a coach, who can even further help scaffold the activity and provide goals and feedback adds to the probability that esports practice will foster feelings of competence. The fact that esports practice takes place with the players being physically close to and extremely dependent on each other and the team to succeed guarantees that players will experience relatedness. Even if the team is failing, it is failing as a team and with the coach, rather than as isolated individuals.⁵ The feelings of competence and relatedness are also fostered in all situations where the students help each other to become better at the game or as teammates, but perhaps especially, when students take on the role of teacher to help the actual teacher or their fellow students.

By facilitating esports activities, teachers and coaches are able to move valued behavior within the continuum of extrinsically motivated behavior from the external to the internal end of the spectrum. In other words, students are more motivated to work together as a team, communicate verbally and non-verbally, participate in physical exercise, socialize, and so forth, because these are no longer behaviors that are simply forced by parents and teachers, but are becoming internalized, assimilated, and integrated because they are aligned with the students' personal values and goal to be a better esports player.

The findings from theme 2 concern how the teachers experienced their role as teachers in relation to the esports activities. What is clear from this theme is that there were significant differences in the teachers' experience of their roles as to whether they initiated the esports activities on their own or the activities were facilitated by

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⁵Reviewer two of this article believes this statement to be one-sided and uncritical. We appreciate this comment but would argue that one of the qualities of a great coach lies in their ability to reduce or completely eliminate toxic language and un-sportsperson-like behavior; see e.g., Nielsen and Hanghøj [29].

an external esports provider. In summary, those teachers who had sufficient experience with CS:GO to master the operational dimensions of the game clearly experienced a strong sense of autonomy by being able to identify and pursue their own pedagogical aims by, for example, organizing teams of students or facilitating dialogue in relation to the game [14]. This finding is in sharp contrast to those teachers who had limited game expertise and mainly assumed the role of passive observers taking an outsider's perspective when visiting the esports provider with their students. Not having sufficient experience with the operational dimension of the game, they reported few insights into the cultural and critical dimensions of the game literacy involved in teaching with the game. Moreover, the teachers who experienced autonomy in teaching with the game were more interested in teaching the game in the classroom.

At the same time, we also identified slightly different pedagogical aims between the two STUs that orchestrated their own esports activities. One teacher mainly emphasized the game activities as a way of initiating communication and supporting relatedness with the students. In contrast, the teachers from another STU, who had more experience with esports activities, had gradually turned their focus toward providing students more opportunities to develop their game skills through a co-teacher, who was hired mainly on the basis of his skills as an expert player. This finding indicates that there are different approaches to teaching CS:GO with students in the STU classroom. Teachers need to reflect on what the focus should be: Should the main pedagogical focus be on increasing student ownership of a collaborative learning experience, where students are encouraged to support each other and communicate about their game experiences? Or should the main focus be on challenging, motivating, and further developing the game literacy of those students who are primarily motivated to become more skilled players?

These findings also highlight the importance of having sufficient game skills when teaching esports. When we compare the teachers at the different STUs, it is clear that they represent different levels of game expertise with CS:GO, ranging from no skills to speak of, to moderate or expert skill levels, which has significant influence on the pedagogical opportunities open to them in teaching with the game. This raises a question of how skilled teachers need to be in order to teach with CS:GO and point to the importance of gradually developing pedagogical expertise with a specific game over time [30]. At the same time, it is important not to conclude that an increase in teachers' game skills necessarily implies an increase in the educational quality of the teaching. This calls for further research into how the STU teachers' game literacy involves both different operational game skills, as well as pedagogical knowledge, and expertise with the game when teaching young people with ASD, who may have widely different interests and expertise in relation to the game being used.

## 7 LIMITATIONS

There are obvious limitations to our study, as it is solely based on interviews with four teachers and one coach. The study would have benefitted immensely from interviews with students and observations of esports activities in the classroom. However, it was not possible to collect these data because of the COVID-19 pandemic.

We therefore cannot know if the students agree with their teachers' assessments that they thrive when they participate in esports activities. Future randomized controlled studies will have to be conducted to determine whether esports actually contributes to increased well-being as our study suggests.

## 8 CONCLUSIONS

In this study, we explored how teachers become motivated by and experience the use of esports activities as a pedagogical tool to support students with ASD. In summary, our findings suggest that there are many different pedagogical approaches for supporting young people with ASD through esports activities. It is not possible to speak with any kind of certainty about what it means to incorporate esports into the school curriculum because different schools incorporate esports in a wide variety of ways, using staff members that have widely ranging abilities and knowledge within the sphere of esports. However, all of the institutions that took part in this study saw great potential in incorporating esports into the educational context of young people with ASD, especially when the teachers were familiar with the games being taught and were able to relate them to local pedagogical aims.

## REFERENCES

[1] A. Fiskaali, A. Lieberoth, and H. Spindler. 2020. Exploring institutionalised esport in high school: A mixed methods study of well-being. In P. Fotaris (Ed.), *Proceedings of the 14th European Conference on Game Based Learning, ECGBL 2020* (pp. 160-167). Dechema e.V., 160-167. DOI: https://doi.org/10.34190/GBL.20.045.

[2] T. L. Taylor. 2012. *Raising the Stakes: E-sports and the Professionalization of Computer Gaming* (1st. ed.). MIT Press, Cambridge, MA.

[3] E. Witkowski. 2012. On the digital playing field: How we "do sport" with networked computer games. *Games and Culture* 7, 5 (Aug. 2012), 349-374.

[4] H. M. Zakari, M. Ma, and D. Simmons. 2014. A review of serious games for children with autism spectrum disorders (ASD). In *International Conference on Serious Games Development and Applications*. Springer, Cham, 93-106.

[5] Hidden Path Entertainment. 2012. *Counter-Strike: Global Offensive.* Valve Corporation, Bellevue, WA.

[6] American Psychiatric Association. 2013. *Diagnostic and Statistical Manual Of Mental Disorders: DSM-5.* American Psychiatric Association, Washington, DC.

[7] K. Durkin. 2010. Videogames and young people with developmental disorders. *Review of General Psychology* 14, 2 (June 2010), 122-140.

[8] M. Sundberg, "Online gaming, loneliness and friendships among adolescents and adults with ASD," *Computers in Human Behavior*, vol. 79, pp. 105–110, Feb. 2018, doi: 10.1016/j.chb.2017.10.020.

[9] B. G. Stone, K. A. Mills, and B. Saggers. 2019. Online multiplayer games for the social interactions of children with autism spectrum disorder: a resource for inclusive education. *International Journal of Inclusive Education* 23, 2 (Jan. 2018), 209-228.

[10] R. M. Ryan and E. L. Deci. 2001. On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology* 52, (Feb. 2001), 141-166. DOI: https://doi.org/10.1146/annurev.psych.52.1.141

[11] R. M. Ryan and E. L. Deci, Self-Determination Theory: Basic Psychological Needs in Motivation, Development, and Wellness. New York: Guilford Press, 2017.

[12] E. L. Deci and R. M. Ryan, "The 'What' and 'Why' of Goal Pursuits: Human Needs and the Self-Determination of Behavior," *Psychological inquiry*, vol. 11, no. 4, pp. 227–268, 2000, doi: 10.1207/S15327965PLI1104_01.

[13] R. M. Ryan, C. S. Rigby, and A. Przybylski. 2006. The motivational pull of video games: A self-determination theory approach. *Motivation and Emotion* 30, 4 (Nov. 2006), 344-360.

[14] R. M. Ryan and E. L. Deci. 2020. Intrinsic and extrinsic motivation from a self-determination theory perspective: definitions, theory, practices, and future directions. *Contemporary Educational Psychology* 61, (April 2020), 101860.

[15] M. L. Morán, M. Hagiwara, S. K. Raley, A. H. Alsaeed, K. A. Shogren, X. Qian, L. E. Goméz, and M. Á. Alcedo. 2020. Self-determination of students with autism spectrum disorder: a systematic review. *Journal of Developmental and Physical Disabilities*, (Nov. 2020), 1-22. DOI: https://doi.org/10.1007/s10882-020-09779-1

[16] R. M. Ryan and E. L. Deci, "On Happiness and Human Potentials: A Review of Research on Hedonic and Eudaimonic Well-Being," *Annual review of psychology*, vol. 52, no. 1, pp. 141–166, 2001, doi: 10.1146/annurev.psych.52.1.141.

[17] M. Kangas, A. Koskinen, and L. Krokfors. 2017. A qualitative literature review of educational games in the classroom: the teacher's pedagogical activities. *Teachers and Teaching* 23, 4 (July 2016), 451-470.

[18] J. Bourgonjon, F. De Grove, C. De Smet, J. Van Looy, R. Soetaert, and M. Valcke. 2013. Acceptance of game-based learning by secondary school teachers. *Computers & Education* 67, (Sept. 2013), 21-35.

[19] L. M. Takeuchi and S. Vaala. 2014. *Level Up Learning: A National Survey on Teaching with Digital Games*. Report. The Joan Ganz Cooney Center at Sesame Workshop, New York.

[20] D. B. Clark, E. E. Tanner-Smith, and S. S. Killingsworth. 2016. Digital games, design, and learning: A systematic review and meta-analysis. *Review of Educational Research* 86, 1 (March 2016), 79-122.

[21] H. C. Arnseth, T. Hanghøj, and K. Silseth. 2018. Games as tools for dialogic teaching and learning: outlining a pedagogical model for researching and designing game-based learning environments. In Hans Christian Arnseth *et al.* (eds.). *Games and Education: Designs in and for Learning*. Brill Sense, Leiden, 123-139.

[22] J. Bourgonjon. 2014. The meaning and relevance of video game literacy. *CLCWeb: Comparative Literature and Culture* 16, 5, article 8, 12 pages. DOI: https://doi.org/

10.7771/1481-4374.2510

[23] T. Hanghøj and L. D. Møller. 2017. Den spilkompetente lærer - mellem game literacy and gamemastering [The game competent teacher - between game literacy and game mastering]. *Learning Tech – Tidsskrift for læremidler, didaktik og teknologi* 3, 8-31.

[24] V. Braun and V. Clarke, "Using thematic analysis in psychology," *Qual. Res. Psychol.*, vol. 3, no. 2, pp. 77–101, Jan. 2006, doi: 10.1191/1478088706qp063oa.

[25] V. Braun and V. Clarke, "Thematic analysis," in APA handbook of research methods in psychology, Vol 2: Research designs: Quantitative, qualitative, neuropsychological, and biological., C. Harris, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, and K. J. Sher, Eds. Washington, DC, US: American Psychological Association, 2012, pp. 57–71. doi: 10.1037/13620-004.

[26] A. Madill, A. Jordan, and C. Shirley. 2000. Objectivity and reliability in qualitative analysis: Realist, contextualist and radical constructionist epistemologies. *British Journal of Psychology* 91, 1 (Feb. 2000), 1-20.

[27] Danish Ministry of Education. 2017. Evaluering af Særligt Tilrettelagt Ungdomsuddannelse. [Evaluation of Specially Organised Youth Education]. Report. Retrieved from: https://www.uvm.dk/publikationer/gymnasiale-uddannelser/2017-epinion-evaluering-af-saerlig-tilrettelagt-ungdomsuddannelse

[28] M. Husen, "'Det fælles tredie' [The Commond Third]," in *Kultur & pædagogik*, B. Pécseli, Ed. Copenhagen: Hans Reitzels Forlag, 1996, pp. 218–232.

[29] R. K. L. Nielsen and T. Hanghøj. 2019. Esports skills are people skills. In *Proceedings of the 13th European Conference on Game-Based Learning*, October 3-4, Odense, Denmark, EGBL, 535-542.

[30] A. Foster and M. Shah. 2020. Principles for advancing game-based learning in teacher education. *Journal of Digital Learning in Teacher Education* 36, 2 (Feb. 2020), 84-95.