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# Pre-Service Teachers' views on the use of computer games in the EFL classroom

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## **Abstract**

According to Gee (2007) “Video games have...a great deal to teach us about how reading works when people actually understand what they are reading” (p.96), while Gozcu and Caganaga (2016) claim that games “reduce anxiety, increase positive feelings and improve self-confidence” (p.133). This makes it sound as if computer games are an ideal tool that would benefit students when learning. By analysing the answers given by 25 pre-service teachers at NTNU and discussing the findings in the light of learning theories, studies on the effect of games in the English as a foreign language (EFL) classroom, along with other studies looking into the views of teachers and pre-service teachers, this study will try to answer a research question related to the use of computer games in the EFL classroom. The aim of this paper is to look at how pre-service teachers understand and define computer games, as well as how they view their pedagogical value as a possible tool to be used in the EFL classroom.

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## 1. Introduction

Traditionally, literacy, which is a big part of the English classroom, is defined as the ability to read and write (Gee, 2007, p.17). In his book *What video games have to teach us about learning and literacy*, Gee argues that the traditional definition of literacy needs to widen to include other sources, such as video games. He goes on to claim that video gaming is a multimodal form of literacy, and states that “multimodality goes far beyond images and words to include sounds, music, movement, and bodily sensations” (p.18). The Norwegian Curriculum implements five basic skills that are deemed necessary for students to be able to progress in school. These skills are oral skills, the ability to express oneself in writing, the ability to read, numeracy and digital skills (UDIR, 2013). Taking into account Gee’s statement about video games as a multimodal form of literacy and the fact that digital skills is an important part of the Norwegian Curriculum, one could argue that video games would be a natural part of a school subject, in this case English.

But despite this, video games, or computer games, which is the term being used in this paper, is not mentioned once in the Norwegian Curriculum. Instead, the competency aims mention digital resources and digital tools. This neither encourages nor forbids the use of computer games in the classroom, but it does open for it. Chen and Yang (2013) suggest that “interactive adventure games can provide language input to learners” (p.130) and compares it to the extensive reading that Steven Krashen talks about, which in some cases have shown that “learners learn more vocabulary through reading than they do as a result of direct language teaching” (Ellis & Shintani, 2014, p.184). However, if computer games are to be implemented in the classroom as a possible tool for language learning, it is the teacher who will have to do this. Therefore, this paper aims to look at how pre-service teachers understand and define computer games, as well as how they view their pedagogical value as a possible tool to be used in the EFL classroom.

There has not, to my knowledge, been any research on this specific topic in Norway, although there has previously been some research on the possible effect of gaming, specifically on reading proficiency. Brevik and Hellekjær (2018) did a study on 463 upper secondary students and their reading proficiency, finding that these *Outliers*, though poor readers in their L1, were good readers in their L2 (p.80). This was mainly attributed to their use of computer games in their free time. With this in mind, pre-service teachers’ attitudes towards computer games becomes more interesting as they may contribute to bringing

computer games into the EFL classroom, possibly enhancing the reading proficiency of such *Outliers* along with other students.

## 2. Theoretical background and literature review

In this section theories and previous research pertaining to computer games will be presented. There are three main subsections: the first one focuses on learning; the second one focuses on studies where games have been used in learning environments; and the last section focuses on the findings from studies that are similar to this one, looking at the opinions of teachers and pre-service teachers.

### 2.1 Learning – Bandura, Piaget & Vygotsky

There are several theories and views on learning, such as Vygotsky's sociocultural theory, Bandura's social cognitive theory and Piaget's cognitive theory. Rather than focusing on just one theoretical perspective of learning, this part of the thesis will look at some of the main principles for each perspective to help discuss the findings of the survey in this study. Due to these theories being derived from *Læring – utvikling – læringsmiljø: En innføring i pedagogisk psykologi* by Karlsdottir & Lysø (2013), which is written in Norwegian, any direct quotes will have been translated into English by the author of this paper.

These learning theories are relevant due to their applicability to language learning as well as learning in general. In addition, the pre-service teachers who have answered the survey connected to this BA have learned about these learning theories during the first semester of their course as it is part of the curriculum in pedagogy. As such, they have been included to the theory section and divided into three subsections.

#### 2.1.1 Bandura – Learning through observation

Bandura's view of learning became known as the social cognitive theory because of its focus on the effects of the environment around the learner, the society, as well as the cognitive part, such as how we as humans understand things (Stokke Olaussen, 2013). There are three important parts of his theory which need to be mentioned. The first is *reciprocal causality*, which is the situation of mutual influence between person, situation and behaviour (p.211). The second is the idea of *learning through observation*, a type of learning where the reciprocal causality comes into its own, the main idea being that a "model" gets observed when performing an action and then the observer replicates that action to try to learn and do it

on their own (p.213). The third and last is the idea of *self-efficacy*, which is a subject's own expectations when it comes to mastering different tasks. Stokke Olaussen (2013) illustrates this by stating that "Our perception of what we can and cannot master has an impact on what tasks we take on, and how much energy we put into completing these tasks" (p.218). Bandura's theory of learning through observation and self-efficacy is important due to students' knowledge, or lack thereof, of computer games. Students who have mastered computer games before may expect to do so again, while those who have not may need a "model" to show them what to do, either in the form of a teacher or fellow student, or through tutorials in the game.

### 2.1.2 Piaget – Constructing schemata

Piaget is perhaps best known for his theory of the stages of development (Åsvoll, 2013), but he is also known for his ideas about *cognitive schemata*, as well as *assimilation* and *accommodation* (p.232-233). Schemata can be seen as constructed and saved patterns of behaviour, meaning that they are internal mental representations of different ideas and actions. These schemata can be added to or adapted through the process of assimilation, which happens when new information gets "added to already existing structures or schemata" (Åsvoll, p.233), or through accommodation, which happens when the new information cannot be added to the existing schemata. This causes an imbalance or conflict between the new information and existing information, creating a need to change the schemata to accommodate this new knowledge, and by doing so regaining an equilibrium (p.233). This is how we learn, according to Piaget, as Åsvoll (2013) contends that "*Learning happens when schemata/structures are altered*" (p.233). Computer games will offer new information and vocabulary to students, and as such this information will be entered into their schemata through the process of assimilation or accommodation, which is why Piaget's theory is important for this study.

### 2.1.3 Vygotsky – Mediating language

Lastly, Vygotsky's theory focuses on language as a mediating tool between human beings (Moen, 2013, p.255). He came up with the idea of the *zone of proximal development* (ZPD) and *scaffolding*. The zone of proximal development can be seen as the area within which a student can gain new knowledge if s/he gets help from a mediating helper. This helper builds scaffolds to help the student reach their potential, and the mediation, or building of the scaffold, happens through the use of language (p.256). Vygotsky also differentiates between



the *interpsychological plane* and the *intrapsychological plane*. These terminologies describe the two ways in which “the child’s cultural development becomes visible” (Moen, 2013, p.253). The interpsychological happens when a child interacts with others on a social level, while the intrapsychological is a mental process happening within the child, where knowledge is gained through interaction and kept because of internalisation (p.253-254). This theory is important in language learning and for this study, because teachers have to make sure the tasks, or in this case computer games, which they give their students must not be outside their ZPD.

## 2.2 Benefits of computer games

In his book, “What video games have to teach us about learning and literacy”, Gee (2007) compares 36 principles of cognitive learning to how learning is facilitated in games and found that these theories were built into good games. He claims that “Good games .... are crafted in ways that encourage and facilitate active and critical learning and thinking” (p.38), which can be seen in studies on games and language learning. Beyza’s (2017) study on the use of language games in EFL classes found games to both be a motivational factor, as well as a facilitator for the acquisition of vocabulary (p.98), while Wu et al. (2014) found that the communication ability of those participating in their DLP (digital learning playground) group was significantly better than those learning in the groups who had ordinary teaching and non-digital board game teaching (p.224). Chen and Yang’s (2013) study sought to examine the effects of an adventure game on foreign language learners as well as their perception towards the game. They claim that these games can expose learners to “an authentic English environment that enhances their listening and/or reading abilities” (p.138). However, Chen and Yang also note that teachers who implement games into their teaching need to make sure that the games they choose matches the proficiency level of their students as a game that is too difficult risks “losing students’ interest” (p.138).

Two of Gee’s (2007) principles will be important for this paper is his *Amplification of Input Principle* as well as the *Achievement Principle*. The first of these two principles relate to how students give small amounts of input to a game, by actions such as pressing buttons, which leads to the computer game producing a lot of output. The second principle is about how players get rewards through games that are “customized to each learner’s level, effort and growing mastery” (p.64), meaning that beginners as well as advanced players will be rewarded for their efforts, which in turn can be seen as a motivational factor.

Gozcu and Caganaga (2016) found that participants in their study learned new vocabulary without having to memorise words. They argue that the value of games lies in the opportunity for incidental practice, but also in the environment it creates that leads to less anxiety around using the target language (p.134). Their study was based around the game *Twister*, which is not a computer game, although the effect may have been the same had it been a computer game as both differ from the usual classroom setting in that they create a more informal space for learning. Galvis Guerrero (2011) found that when he used *Grand Theft Auto: San Andreas* to teach English at a military academy, it helped some of his students to be “more attentive and engaged in class” (p.67). In addition, he listed the gain of vocabulary as a positive effect of the study. Galvis Guerrero also notes that teachers must consider, or reconsider, their use of digital games and technology in cases where their students do not see this type of language instruction as a better alternative to regular language instruction (p.68). Peterson (2012) notes that there is a risk of learning grammatically incorrect forms of language when using computer games, but his overall findings were still positive towards the use of computer games. He found in his study that “the scaffolding provided by peers in the game appears to have contributed to learners’ production of coherent and appropriate TL” (p.377). This is showing that the use of an MMORPG (Massive Multiplayer Online Role-Playing Game) can provide scaffolding from players in the game, leaving the teacher free to observe the class without always having to provide scaffolding for the students to advance their skills.

### 2.3 Teacher attitudes to computer games

Similar studies have been made about the attitudes of teachers and pre-service teachers (PST) towards the implementation of games or game-based language learning in the English as a foreign language (EFL) and English as a second language (ESL) classroom. A study by Kruk (2017) found that after using a game called *Second Life*, PST’s participating in the study were positive to the idea of using this game in their teaching practice as they “perceived the use of *Second Life* for learning English language to be beneficial, specifically in the area of communication and vocabulary” (p.83). Other positive sides of the game that was noted in the study was that the participants considered the game to provide an environment for speaking that was stress-free (p.84), while it also allowed participants to encounter people from different cultures, making it a tool that could be utilised to “teach their future students about English culture and traditions” (p.84). Despite all of this, the participants did recognise that

the game was not particularly helpful “in the development of speaking skills and grammar” (p.83), showing that using this game will not necessarily cover all parts of language learning.

Chik’s (2011) study on digital gaming and social networking, found that the teachers participating in her study “latched on to the negative aspects of both activities” (p.163). Rather than giving digital gaming and social networking a chance by expanding their own skills on the subject and reviewing their potential, the participants “were so engaged in their obligation to provide moral guidance that they became the hindrance to pedagogical change” (p.163). She concluded that teachers who are inexperienced in digital practices are less likely to see the learning potential in these tools (p.164).

Another study on the attitudes of teachers is Sandin’s (2015) master thesis about *Swedish Primary Teachers’ Attitudes towards Integrating Gaming in the EFL Classroom*. She interviewed five teachers who taught grades 4-6 in a small to medium-sized municipality of Sweden (p.5). Sandin showed that among her participants there is an overall positive attitude towards online and offline games. Even though only one of the five interviewees use computer games in their own spare time, those without experience in the field of computer games are positive despite being unsure of how to use games in their classes or lacking the technology to use them, which suggests that “teachers are positive towards integrating their pupils’ interests even though they do not know how to do it” (p.15).

Lastly is Blume’s study (2019), which was carried out on pre-service EFL teachers in Germany. Her study showed that despite the PSTs in the study having a general lack of personal experience with DGBLL (digital game-based language learning), they were receptive towards it (p.16). As the participants were drawn from one university, they can by no means be said to be representative of the population of PSTs in Germany (p.17). The findings do, however, make for a sharp contrast to Chik’s (2011) study where lack of experience led to the teachers being unable to see the learning potential in digital tools.

### 3. Method

In this section, the choice of method will be presented along with the selection criteria, the method of analysis and what could have been done differently when the data was collected.

#### 3.1 Chosen method

The aim of this thesis was to gather information about pre-service teachers’ understanding of computer games and their view on computer games as a possible pedagogical tool in the EFL

classroom. A qualitative method was used in order to collect the data in the form of a semi-structured survey, the study was qualitative rather than quantitative as the focus was on getting more detailed answers from a smaller group rather than answers to fixed responses from a larger group in order to create a statistical overview of the participants' answers.

### 3.2 Selection of informants

The informants for this study were pre-service teachers who are majoring in English in the 1<sup>st</sup>, 2<sup>nd</sup> or 3<sup>rd</sup> year of their degree. This meant that the number of English lectures they had received and the topics they had covered would vary, as would the amount of teaching practice they had done. Although the study could have been done on a bigger scale if it had been sent to other universities where pre-service teachers are studying English, this was not done due to time and resource constraints, and as a result, all the participants are students at MGLU (Master I grunnskolelærerutdanning) and LTGLU (4-årig grunnskolelærerutdanning) at the Norwegian University of Science and Technology (NTNU) in Trondheim. The survey was distributed digitally by the faculty members of the English and Foreign Language Section.

### 3.3 The Survey

This survey was designed to provide fixed responses to some of the questions, followed by open response questions relating to the fixed response questions, making it a semi-standardised questionnaire. This was done to allow for the categorisation of opinions through certain questions in the form of 'Yes/No/Not sure'-answers, where these opinions were elaborated on through an open response follow-up question. The reason for this was to make it possible to quickly gather information about the participants' previous experiences with computer games both in and out of the classroom while also tapping into their views about these experiences, or lack thereof in the cases where they had little or no experience with computer games. The questions in the survey were made with an interest in the topic in mind, rather than based on reading theory and prior research.

The questions asked in the survey were decided upon based on the pre-established research questions of this project. Questions such as "*How would you define the term 'computer games'?*", "*Do you feel like playing computer games in English helped or enhanced your language skills?*", which were followed by a 'in what way'-question, were included in the survey. Other questions focused on whether the participants thought that

computer games could or should be used in the EFL classroom, followed by *why/why not*, and whether they had ever used or thought about using computers in their teaching practice. The survey ended on questions about whether the participants thought that computer games could have pedagogical value or not, and whether they thought students could benefit from the use of computer games in the EFL classroom. I assumed that these questions would provide answers that could be linked to appropriate literature on the subject of video games or computer games in the EFL classroom, as well as learning theories as mentioned in the previous section.

The survey itself was created with Google forms. An advantage of using Google forms is that the results can easily be transferred into an Excel document. In addition, the survey was designed to provide anonymity and as such did not ask for neither name, age, gender, or any other signifiers that could identify the participants. Another reason for omitting a question about gender, apart from it being a possible identifier, is that the possibility of linking computer game habits to gender seemed irrelevant in this context. In addition, the male to female ratio at MGLU and LTGLU in general is not even enough for the survey to give an equal sample size of both genders, and as students were not required as a part of their course to take the survey, the data collected would not necessarily reflect the amount of male and female pre-service teachers who would move on to teach English as a subject.

### 3.4 Possible flaws

In hindsight, there are some parts of the survey that could have been changed to get an even better data-set. One of these would be to change the term *computer games* to *video games*, as using *computer games* could restrict the participants into thinking only of games that can be played on a computer, and thereby disregard games on other platforms such as *PlayStation* or *Xbox*.

The possibility of other flaws is there, but as this was a first-time attempt at a survey, which in turn was not influenced by any read theory or any similar surveys, it is hard to pinpoint what should have been done differently. The fixed response questions could have been integrated into the open answer questions, and as such they are redundant, although at the time the survey was created it was hard to see that they were not needed.

#### 4. Results

This section will look at the data collected through the survey, focusing on four main areas. These four areas are pre-service teachers' definition of computer games, their previous experience with computer games, thoughts on the use of them in the EFL classroom and thoughts on their pedagogical value and how they could benefit their students. The results were divided into these four sub-sections as to better summarise the findings without having to make a subsection for every question asked in the survey.

##### 4.1 Teacher definitions of computer games

The first question in the survey asked the participants to define computer games. The pre-service teachers' definition of computer games varies, but 12 out of 25 (48%) describe it as games played on a computer. A couple expand on this definition by allowing for games played online and on other platforms, such as PlayStation, Xbox and other consoles. A couple of games known for being MMO (Massive Multiplayer Online) games are also mentioned by name, showing that the person mentioning them may include other platforms than just a computer as one of the games mentioned can be played on multiple consoles.

In addition, one person mentioned computer games as "Educational games in school" (participant 14). Interactivity and interactive experiences are key aspects, as is cooperation, entertainment and strategic thinking. It is however important to mention that the answers here could have been different had the participants been asked how they would define *video games* rather than *computer games* as it is a term that is less focused towards computers and more towards console games in general.

##### 4.2 Previous experience with computer games – Did they enhance English language skills?

When asked whether any of their teachers used computer games when teaching during primary, secondary or high school, 10 out of 25 (40%) answered yes. However, only one of those mentioned anything that could be directly related to the subject of English and the learning of new vocabulary. This shows that very few, if any, have experienced first-hand how computer games could be used in the language classroom from a student's point of view.

17 out of 25 (68%) were positive when asked if they felt that playing computer games in English helped or enhanced their language skills.

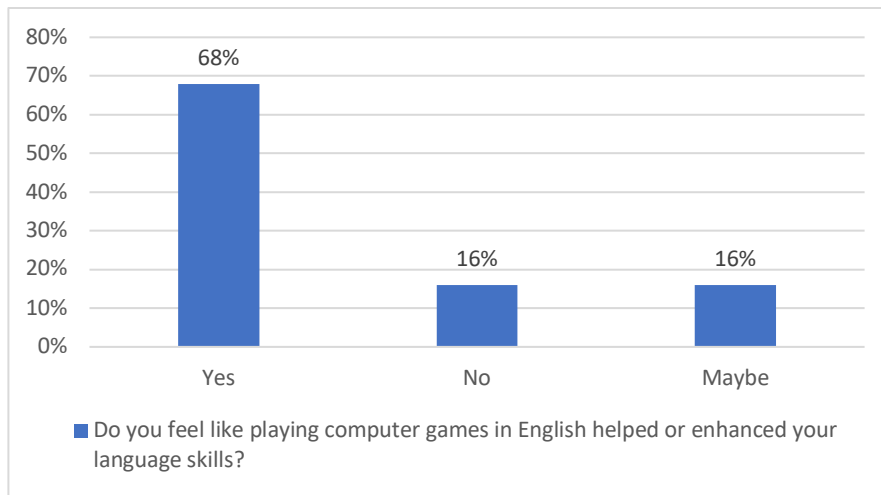


Figure 1: Participant views on whether they felt that playing computer games in English enhanced their language skills (in percentages).

The enhancement of English proficiency was linked to the authenticity of language provided in the games through the dialogue and text encoded into the game. Those mentioning authenticity attributed this to computer games with English language being created with native speakers in mind. It is however important to note that some language in computer games, depending of course on the game, will also include words that even native speakers will be unfamiliar with. Some of the language used will be familiar to a person who has been a member of the gaming community for a while, regardless of whether they are native speakers of English or not, while those new to the gaming community may take longer to put these words into the context of which they are used.

Other than authenticity, some participants mentioned that their general use of language in computer games helped. Because of the demand of having to read the text provided in the game, while trying to put it into context as the player goes along, it helped contextualise new vocabulary for the user. This in turn lead to new words being integrated more smoothly into their own vocabulary. The development of communication skills was also mentioned in the context of having the opportunity to communicate with players from other countries and nationalities, with English as the only common language. In regards of factors outside of the language learning itself, computer games being fun was mentioned as a reason for enhanced language skills, along with language learning being motivated by the thought of getting more integrated into the gaming culture and allowing for better grounds for participating in games. However, even though authenticity, contextualisation, expanding of vocabulary and the development of communication skills were highlighted by some participants, one participant pointed out that although computer games helped *practice* language, the language itself was not learned in games, but outside of them.

#### 4.3 Could vs. should – the use of computer games in the EFL classroom

None of the pre-service teachers who participated in the survey had ever used computer games in their English classes, and two participants quoted lack of freedom and opportunity as the reason for this. However, with only 36% of participants having considered using computer games in their teaching practice, this finding is not surprising. Those who had not considered it had reasons such as lack of knowledge of and experience with computer games, lack of equipment (such as computers, consoles and games, as well as good internet connection) and it being time consuming for a pre-service teacher who will only be at one school for a couple of weeks at a time. Those who had considered it did not always focus the possible use of computer games towards the subject of English, but those who did focused on using them to enhance vocabulary, provide opportunities for cooperation and communication, as well as learning some grammatical features.

When it came to the question of whether computer games *could* be used in the EFL classroom 24 out of 25 participants (96%) said yes. However, when asked whether they *should* be used, only 56% said yes, 40% were unsure and one participant (4%) did not think they should be used as s/he believed that “there are other tools that could be just as beneficial” (participant 24).

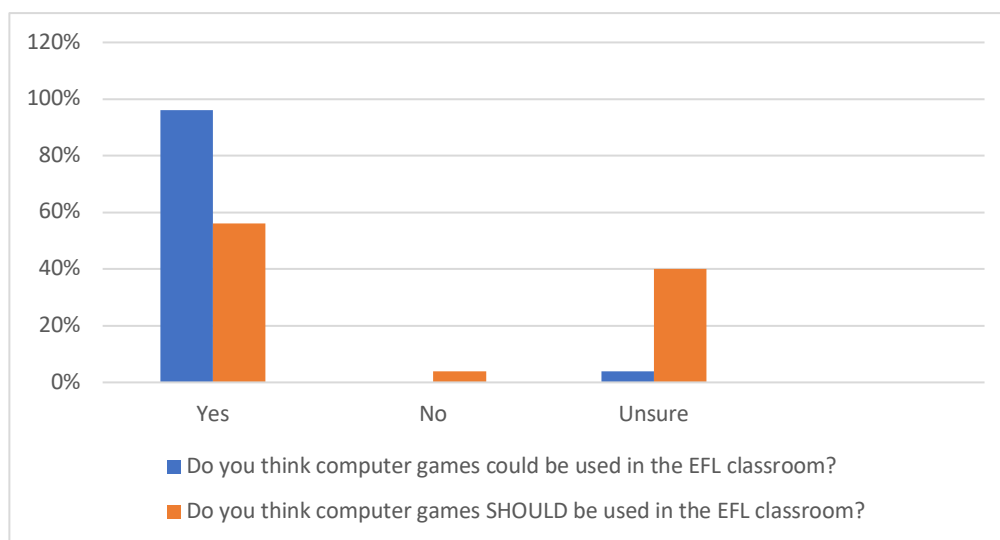


Figure 2: Participant views on whether computer games could or should be used in the EFL classroom (in percentages).

The three main issues that concerned those who were unsure of whether games should be used in the EFL classroom or not, were whether the teacher had the knowledge of games that could be useful, whether the games proved too much of a distraction for the students or not, and whether the students did or did not like computer games. The participants identifying



these issues were still positive to whether computer games could be used in the EFL classroom, showing that they believe in the possibility, but also that they might be unsure of how it will actually work in a classroom setting.

The positive possibilities do, however, seem to outweigh the negative ones. Looking at both the question of *could* and *should*, there seems to be a positive view of computer games' abilities to help with learning in the language classroom. The answers can be divided into those focusing on the learning of language and those focusing on setting conditions for learning of language. The main conditions mentioned in regards of computer games in the EFL classroom is the providing of authenticity through text, motivation through doing something entertaining which distracts from noticing that learning is being done, taking pressure off the students by allowing for less formal and more meaningful communication, as well as allowing for building of relations to their fellow students while relating to the language better through the context provided by games. The focus' on learning of language are linked to the production of output, both orally and written, allowing for the learning of new vocabulary, enhanced pronunciation skills, as well as grammatical features. When it comes to the choice of games the choice of age appropriate content in the form of games is mentioned, as is the choice of game depending on what is meant to be learned by the students.

#### 4.4 The use of games – Pedagogical value and benefits for students

All the participants (100%) agreed that students could benefit from computer games being used in the EFL classroom, while 17 out of 25 (68%) thought computer games could have pedagogical value, the remaining 32% were unsure.

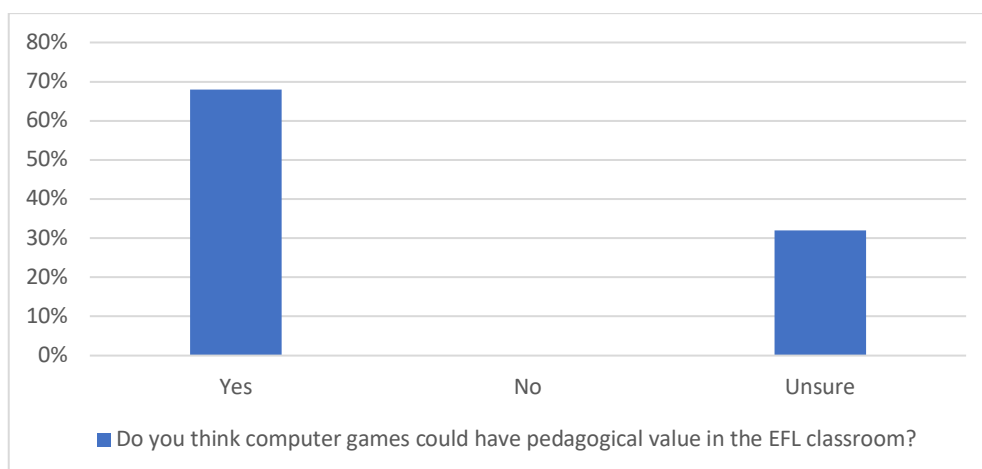


Figure 3: Participant views on whether computer games could have pedagogical value in the EFL classroom (in percentages).

Computer games were mentioned to have a motivational factor, both as a tool and for the students' benefit. This was contributed to games having a "built-in-reward system" (participant 8), as well as them being something different from a text book or a teacher reading and asking questions. In addition to this, they are also seen as providers of authentic forms of text. The aspect of computer games being fun is also mentioned several times and there is an agreement among several participants about the students learning while having fun without seeing the task they are doing as a chore, and about the students having the opportunity to experience that learning can be fun. Several also mention that it will be beneficial to the students who play computer games in their spare time to see that the teacher takes an interest in their interests, as well as being allowed to learn in a way that may suit them better than other teaching methods. These points were agreed upon in both questions.

Other than the previously stated, there are some more factors being linked to the possible pedagogical value of computer games. Some are stating that it could be a good way to encourage students to communicate with players from around the world, as well as opening for the possibility of international collaboration, although there are no suggestions as to how this could be done. Computer games are also mentioned to "facilitate inquiry" (participant 8), while opening for more relational learning rather than instrumental learning. Communication, the students feeling safe when using the language, and building of relations are also positive pedagogical values attributed to computer games. Although there is a need for the teacher to have knowledge about computer games, as well as the games being relevant to what is being taught, for computer games to have value in the classroom. The factors that the participants attribute as pedagogical values in the use of computer games in the EFL classroom are echoed in the benefits for students, and as such need not be analysed further in this section. Instead, we move on to discussing the findings made in light of theory.

## 5. Discussion

This section will look at the results and findings from the survey in the light of previously mentioned theories and research. It has been divided into subsections based on the aim of the thesis, as well as on the most discernible topics uncovered in the analysis of the results from the survey. As such this section aims to get closer to seeing how pre-service teachers understand and define computer games, as well as how they view their pedagogical value as a possible tool to be used in the EFL classroom.

### 5.1 Pre-service teacher definitions of computer games

With almost half the participants describing computer games as games played on a computer, it is easy to draw the conclusion that this could be the immediate thought for many when presented with the same question. However, as noted in both the findings and in the method part of this paper, the results may have been more including of other gaming platforms if the term *video games* had been used instead. Video games is the definition Gee (2007) uses in his book, where he defines the terms as “games played on game platforms...and games played on computers” (p.1), showing that it is a more including term when it comes to the world of digital games. Despite this seemingly narrow explanation, other key aspects were mentioned in regard to computer games. Computer games were said to be a source of interactive experiences and interactivity. This can be seen in regard to Bandura’s principle of reciprocal causality (Stokke Olaussen, 2013), which is the “mutual impact between person, situation and behaviour” (p.211). The game creates the situation, the player represents the person, while the player’s action represents the behaviour.

Another key aspect found in the survey responses were cooperation and collaboration. In their study, Wu et al. (2014) placed their participants in teams to play a digital board game (DBG). The teams in this group “achieved significantly better communication ability” (p.224) compared to the two other groups, who learned through ordinary teaching or through a non-digital board game. Although it seems likely that it was the DBG itself and not the students working in a group that made this a successful experience, it is important to remember that, as Wu et al. says, “a class with less experience in teamwork needs more scaffolding in respect to collaboration” (p.224). Looking at this, computer games can give opportunities for cooperation and teamwork, which in turn can lead to learning. At the same time, due to this cooperation there is a chance of scaffolding happening naturally with students helping each other or the game itself functioning as the scaffold as it can give hints to help the students. This is also true for MMORPG games as Peterson’s (2012) study shows that “the scaffolding provided by peers in the game appears to have contributed to learners’ production of coherent and appropriate TL” (p.337).

### 5.2 Pre-service Teachers’ own experiences

Two fifths of the participants had experiences with their teachers using computer games as a pedagogical tool during their time in school. Only one of these participants mentioned experiences that could be related to English language teaching. This lack of experience with

computer games being used for learning could be related to their thoughts on using it in their own teaching practice, which we will discuss in the next section. Despite this lack of exposure to computer games in an educational setting, 17 out of the 25 participants had positive experiences with playing computer games in English, answering yes to the question of whether they felt that these games helped or enhanced their own language skills. One of the reasons given for this, was the exposure to language, as players have to read a lot of text which is provided in the game to move forward. This coincides with Gee's (2007) *Amplification of Input Principle* which states that "For a little input, learners get a lot of output" (p.64). This means that when playing a game, a player gives input to said game, which leads to the game producing output in the form of text or other types of feedback, leading to the player getting exposure to language through minimal effort.

Participants did mention that computer games helped them contextualise new words and develop their vocabulary, while also providing language that was authentic due to it being created with native speakers in mind. This idea that computer games provide authenticity through the language it exposes the player to is something Wu et al. (2014) took into account as they assumed that their students would "attempt a natural conversation" (p.215) in the digital learning playground they used in their study. Chen and Yang (2012) also comments on the authenticity of the learning environment provided in their study through the adventure game *Bone*, saying that this type of game "can expose learners in an authentic English environment that enhances their listening and/or reading abilities" (p.138). In addition, Kruk (2017) adds to this by claiming that the use of virtual worlds, like *Second Life*, could be useful for both learning and teaching English language, as it can offer "opportunities for authentic communication in a foreign language" (p.85). As such, the authenticity the participants of this study talked about is validated through these studies.

Games often provide a vast amount of language exposure and opportunities to learn new vocabulary, but they also provide context. This can be seen in Beyza's (2017) study, where 66.7% of the participants agreed that "Games provide that words can be presented in a contextualised way" (p.93), while 30.3% agreed partially. The number was even higher on the question of whether games provided an environment where words that were learned could be used in a meaningful context as 71.4% agreed and 25.7% partially agreed (p.94). Gee (2007) says that "In respect to language, people are poor at dealing with lots of words out of context" (p.218) and goes on to claim that games always situate words to show their meaning, giving new vocabulary context. In addition to this contextualisation of vocabulary, games also introduce new vocabulary to the player and gives them "opportunities to engage in discourse

management and to obtain fluency practice in English” (Peterson, 2012, p.376). Participants in Peterson’s study also confirmed this by saying that they learned new vocabulary through playing the MMORPG *Wonderland* (p.376). This adds to the attitude shown in some responses to this study, although one response did point out that playing computer games helped with practicing language, but not with learning language, showing that there are divided opinions amongst the participants about whether language is learned through games or not.

### 5.3 Could or should computer games be used – positive attitudes

Even though none of the PSTs participating in the survey had used computer games in their own teaching practice, there were still positive attitudes towards the use of games in the EFL classroom. This combination of lack of experience and positivity towards computer games was also found in Blume’s (2019) study with German PSTs and their attitude towards digital game-based language learning (DGBLL). With the positive aspects of games being divided into two categories, namely *learning language* and *setting conditions for language learning*, the following subsections will deal with each category.

#### 5.3.1 Learning language

Those who focused on what language features could be learned pointed towards the production of output (orally and written), learning new vocabulary, enhanced pronunciation skills and learning grammatical features. With the learning of grammatical features, the research done by Peterson (2011) and Kruk (2017) suggests that, at least in games where students can interact with players from other countries, there is a risk of picking up grammatically incorrect forms (Peterson, 2011, p.378) and learning “*incorrect grammatical constructions*” (Kruk, 2017, p.79) when talking to someone who knows little about English grammar. This does not mean that grammar cannot be learned through games, but it does mean that the teacher will have to choose what games to use carefully and be aware of what their students can encounter when communicating with other players. Looking at Bandura’s idea of learning through observation (Stokke Olaussen, 2013), students may easily pick up on incorrect grammatical forms when they observe another player’s incorrect use of grammar. In addition, if the students have not learned the correct form of grammar, they may assimilate the new and incorrect grammatical forms into their pre-existing schemata, which in turn

relates to Piaget's theory about learning happening "*when schemata/structures are altered*" (Åsvoll, 2013, p.233).

One of the participants in Kruk's (2017) study commented that "*I did not practice oral communication so I was not able to develop my pronunciation*" (p.80). This is because there was no use of oral chat functions. However, there are games that have these functions integrated, and as such allow students to listen to others pronouncing words, which in turn allow students a chance to mimic these observed pronunciations. The use of computer games does, however, lead to students producing output, especially in online games where students have to communicate with other players. This thought is echoed by some of the participants in Sandin's (2015) study who mention "interaction with others as a positive aspect" (p.12). In contrast to Sandin's study, a study by Chik (2011) shows a negative attitude towards the use of computer games because many "perceived the English used in video games to be inferior" (p.160).

### 5.3.2 Conditions for language learning

Amongst the conditions for language learning which computer games could help facilitate, taking pressure of students by creating a less formal environment was mentioned. This notion gets confirmed in Gozcu and Caganaga's (2016) study where they concluded that "games assist to decrease anxiety" (p.133). Furthermore, they claim that with the informal setting that games provide, the reduction of stress and anxiety about using English can lead to students developing "fluency and speaking styles" (p.133). This idea of games reducing anxiety was confirmed in Peterson's (2011) study as his participants felt that the interaction they did through *Wonderland* "reduced anxiety and enhanced opportunities for risk taking" (p.377). The same conclusions could also be drawn from Kruk's (2017) study where PSTs played *Second Life*.

Although the authenticity and contextualisation games can provide has been discussed earlier, participants also mentioned the entertaining nature of games as a motivational factor for language learning. This notion can be found in some responses gathered from participants in other studies (Gozcu & Caganaga, 2016; Kruk, 2017; Wu et al., 2014). One of the answers gathered from the survey for this study was that games were "a natural motivator as many games have a built-in reward system" (participant 8). This relates back to Gee's (2007) principle of amplification of input, to which he says that "Amplification of input is highly motivating for learning" (p.60). With this he indicates that when players push a few buttons the world of the game comes to life, which in some cases gives a reward for minimal effort.

#### 5.4 Could or should computer games be used – negative attitudes

Although the participants' attitudes towards the use of games were quite positive, some issues were still raised. Regarding PSTs using games in their teaching practice it was pointed out that it may be too time consuming for a PST who is only at one school for shorter periods at a time to start a project where computer games are used. Other issues were computer games possibly working as a distraction for students, teacher's lack of knowledge of how to use computer games as a pedagogical tool, and lack of equipment. Lack of equipment was also mentioned as a concern in Sandin's (2015) study, where one participant said that computers were "a great tool, but they always malfunction in some way" (p.10). Other concerns with equipment would be having enough computers for every student in the class and having a good internet connection, especially if the game is an online game.

The issue of teachers needing knowledge about computer games to be able to use them effectively in the EFL classroom is echoed in Sandin's (2015) study. Four out of the five who participated in her study felt that if they were to use computer games in their teaching they would need "training, courses or information" (p.9) in this area. This is important because teachers will need to know that whatever game they want to use in their classroom is not only appropriate for what is to be taught, but also for the age group of their students. In addition, the teacher needs to make sure that what the game requires from the students is within their zone of proximal development (ZPD). For a child to be able to "utilize their potential for growth and development" (Moen, 2013, p.258) the teacher must, according to Vygotsky's theory, make sure that the task at hand is within the child's ZPD, while the teacher or the game functions as a scaffold to help the child to attain knowledge and information from an activity. However, the teacher also needs to be aware that not all of the students in a class will have experience with or an interest in computer games. In the first scenario the teacher, or fellow students, will have to function as a scaffold until the student gets the hang of it, while in the latter scenario students could get bored or refuse to do the task at hand. Galvis Guerrero (2011) says that "one could sacrifice successful language learners at the cost of using technology that may not necessarily be compatible with their background experiences" (p.66). This means that although some students will surely benefit from the use of computer games, this will not be the case for all students, and as such teachers need to be aware of their students while also having knowledge about the computer games they decide to use.

### 5.5 Benefits for students

One of the benefits for students can be classified as something that will benefit those who have previous experience with computer games more than those who do not. This is because they have previous experience in mastering games and may feel adequately prepared to handle similar games and situations. The previous experiences relate to the idea of self-efficacy, the expectations an individual has when it comes to the mastery of certain tasks (Stokke Olaussen, 2013). In short, “Our perception of what we can and cannot master has an impact on what tasks we take on, and how much energy we put into completing these tasks” (p.218). So, students who have previous experience with mastering computer games may expect to master them in the classroom too. This is a part of their self-efficacy, their expectation of mastering a task. One of the participants in the survey said that “A teacher that shows an interest in her students’ activities is a teacher students trust. I think that by using games in the classroom, the teacher shows that she is willing to engage in what students are interested in” (participant 17). This interest the teacher shows can in turn help engage those who do not have much experience with computer games as well. Through Bandura’s idea of learning through observation (p.212), by the teacher functioning as a “model” and providing a positive attitude towards computer games and learning, the students may observe this and approach games with a similar attitude.

Another benefit listed was computer games being fun and thereby motivating, especially for those “who don’t like traditional teaching” (participant 19). Galvis Guerrero (2011) agrees with this when he suggests that games “not only provide mere entertainment, but also bring about situations for learning that challenge traditional ways of teaching” (p.66). The notion of games as a motivational factor was discussed previously in regard to Gee’s (2007) *Amplification of Input Principle* along with the idea that games work as a motivator due to their “built-in reward system” (participant 8). The reward system is not only beneficial for those who have previous experience with computer games, rather students are rewarded regardless. According to Gee’s *Achievement Principle* it does not matter what skill level learners have as “there are intrinsic rewards from the beginning, customized to each learner’s level, effort, and growing mastery” (p.64). So, it does not matter whether students are at a beginner or advanced level when it comes to the game being played, they will still be rewarded according to their effort, which in turn works as a motivational factor.



## 5.6 Pedagogical value

One of the pedagogical values the PSTs mentioned in the survey was that it could encourage students to communicate with players from around the world. This notion is supported by the previously mentioned studies where online games or virtual worlds were used (Kruk, 2017; Peterson, 2011). These studies found that participants communicated with other players and through this felt like they developed their “reading skills and vocabulary” (Peterson, 2011, p.376) while also developing a desire to “learn about other cultures” (Kruk, 2017, p.81). This exposure to other cultures can happen through online games because of the ease with which it lets students communicate with players from other countries, making for a more authentic experience than just reading about people from other cultures in traditional textbooks. This function can be found in online rather than offline computer games, and although it can indeed be a way for children to get exposed to new vocabulary and different cultures, the teacher needs to be aware of the dangers of online gaming as well. The participants of Chik’s (2011) study were concerned with the possibility of strangers and sexual predators in online environments, calling for parental guidance (p.160). For one teacher having a class of perhaps twenty individuals on the same game, it might be hard to keep track of all the communication that goes on, meaning that the teacher must make sure that the students know what is appropriate and not when communicating with strangers.

It was pointed out by one participant that the use of computer games allows for “a relational way of learning a subject rather than an instrumental way” (participant 8). With language learning, this relates to the way computer games presents new vocabulary by giving it context and making it easier for the player to understand the meaning of new words. They understand not only the word, but also how to use it in context. This is in accordance to what was previously discussed with Gee’s (2007) claim of games providing context by situating words to show their meaning (p.218), in addition to the response participants gave in Beyza’s (2017) study. Other pedagogical values such as motivation, authenticity and taking pressure of students have been discussed earlier in this paper and as such do not need to be discussed further.

## 6. Conclusion

The aim of this paper was to examine how pre-service teachers understand and define computer games, as well as how they view their pedagogical value as a possible tool to be used in the EFL classroom. Put simply, the term computer game was in many cases understood and described as games played on a computer. But the survey also revealed that

some participants viewed them as a source for interactive experiences and interactivity, as well as cooperation and collaboration. The first two can be linked to the Bandura's of reciprocal causality, the "mutual impact between person, situation and behaviour" (Stokke Olausen, 2013, p.211), while the second two can be seen in accordance with the scaffolding such cooperation can provide (Peterson 2012; Wu et al. 2014).

Although it was found that none of the PSTs in this study had used computer games in their own teaching practice, many were positive towards the pedagogical value of computer games. This positive attitude correlates with Blume's (2019) study, while standing in contrast to the study done by Chik (2011), showing that a lack of experience does not necessarily lead to a negative attitude to computer games, but it does not always lead to a positive attitude either. Factors such as motivation, authenticity, creating context, and making the learning environment safer for students by removing the pressure from a more formal setting for language learning were identified by the PSTs in this study and verified by various literature and research (Beyza, 2017; Chen & Yang, 2012; Galvis Guerrero, 2011; Gee, 2007; Gozcu & Caganaga, 2016; Kruk, 2017; Peterson, 2011; Sandin, 2015; Wu et al., 2014). In short, the overall attitudes towards computer games as a possible tool in the EFL classroom were positive, but some concerns were also identified. Some participants pointed out that computer games could work as a distraction rather than a positive addition to the classroom, while others worried about the lack of equipment or lack of knowledge from the teacher's side. The last two sentiments were supported by Sandin's (2015) study, where participants felt like they needed more information and training to be able to "use games in their teaching" (p.9). To summarise, the attitude towards the pedagogical value of computer games is mostly positive amongst the PSTs who responded to the survey for this study. However, as this is just a small sample of the number of PSTs at NTNU, it is impossible to know whether this attitude is representative throughout the university.

Ideally, this is a topic that should be explored further, both to further explore the attitudes pre-service teachers have towards using computer games in the EFL classroom, as well as to see how teacher education can perhaps be improved by training and information being given about how to better take advantage of computer games as a tool to work with in the classroom. Things have been mentioned in this paper about how computer games can benefit students, for example by providing context to new vocabulary and by giving opportunities to use language in authentic situations. All of this is well and good and should count towards using computer games in the classroom. I would however like to end this paper on a quote from Gee (2007), because it is important to remember that computer games on

their own is not the reason for learning. “Real learning comes from the social and interactional systems within which a powerful technology like video games is placed, not from the game all by itself” (p.216).

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