

# The Class of Us

*A Study Across Several Schools in Sweden Comparing the EFL Comprehension of Playing the Video Game The Last of Us Versus Viewing the Television Adaptation*



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Term: Spring 2023

Course: ÄENM02

Individual Research Project (30 hp)

English Teacher Education

## Abstract

Contemporary English as a foreign language (EFL) classrooms in upper secondary schools in Sweden make frequent use of receptive media such as movies and television to facilitate language learning. The more interactive medium of video games is seldom used for the same purpose, despite previous research indicating that the added layer of interactivity can bring benefits such as improvements to vocabulary, written production and reading comprehension. The field of educational video games research has previously focused on games designed with education in mind, and less on narrative experiences for the purpose of EFL learning. This study aims to make a direct contribution to this field by analyzing the results of a receptive comprehension test which students took after playing the prologue of the 2014 video game *The Last of Us: Remastered*. This result was then compared to a control group which took the same test after watching the 2023 television adaptation of the same narrative. Out of a possible maximum of 14 correct answers on the comprehension test, results show that the test group of 63 video game players yielded a marginally lower average of 10.79 compared to the 10.94 average for the control group of 63 television viewers. However, the two-tailed p-value of .688 indicates that one cannot reject the null hypothesis that this small difference is the result of pure chance. The large number of subjects and the data's approximation to a normal distribution curve instead indicate that the video game can be as effective as the television series in an EFL comprehension context without any impact on the quality of comprehension. To build upon these results, future researchers are encouraged to bring narrative video games like *The Last of Us* even closer to the EFL classroom through action research or more longitudinal studies.

**Keywords:** EFL, English as a Foreign Language, Video Games, CALL, The Last of Us,

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# 1. Introduction

"Tommy: A bad reputation doesn't mean you're bad."

(Druckmann & Manzin, 2023)

While popular media, such as television series, films, and contemporary literature have long been established in the English classrooms of Sweden, video games have instead been disregarded in Swedish English foreign language (EFL) learning. When video games were regarded as a niche interest, this was not surprising, but in recent years the commercial video game industry has proven itself a force to be reckoned with, nearly equaling the size of the entire movie and television industries combined in revenue in 2021 (Accenture, 2021; Motion Picture Association, 2022). As they grow in influence of our culture, particularly in Sweden where the commercial video game industry is thriving (Dataspelsbranschen, 2023), it is becoming increasingly difficult to ignore the educational potential video games may have in contrast to less responsive media. In fact, it has already been suggested that the immersive and interactive elements of video games could stimulate learning in ways that traditional mediums such as film and literature cannot (cf. Gee, 2007; Hattie, 2012; Parsayi & Soyooof, 2018). However, this is not to say that there are not any limitations, such as the matters of logistics and video game literacy. But if these can be overcome, there is nothing in the Swedish educational system preventing video games from entering the classroom in a meaningful way.

The Swedish school curriculum is largely governed by the Swedish National Agency for Education (Skolverket), which has split EFL education at upper secondary school into three courses: English 5, English 6 and English 7 (2022a, p. 2). These courses roughly correspond

to the levels B1.2, B2.1 and B2.2 respectively of the Common European Framework of Reference for Languages (CEFR; Skolverket, 2022b, p. 7). Skolverket (2022a) holds that these English courses must all feature a variation in spoken English to facilitate learning through students' receptive skills. Starting with English 5 in the first year, Skolverket specifically highlights that teachers must make use of various media of spoken English (p. 2). Furthermore, it is expected that literature and other fiction should be included, with animated and live action films being provided examples of the latter (Skolverket, 2022b, p. 16). The succeeding courses, 6 and 7, require the presence of spoken English at a higher tempo and across multiple sociolects and dialects, with no regard to which specific medium it comes from (2022a, pp. 5, 8). Whilst the receptive media required in the classroom is sometimes exemplified by film and literature, the truth is that there is space in Skolverket's course plans for video games to be used in the same manner, enabling further investigation into the medium's educational potential.

Research on the relationship between video games and learning rose to prominence with the emergence of the field of computer assisted language learning (CALL) in the 1980s, which found them to be “more interesting, demanding, and effective as compared to unresponsive learning media” (Quandt & Kowert, 2016, p. 182). A majority of studies on video games within this field have, however, been conducted on small-scale study groups, or otherwise focused not on commercial video games but rather on *educational video games*, historically referred to by some studies as *serious games* (Muriel & Crawford, 2018). Likewise, many such studies lack control groups, making reported benefits of using video games less reliable (Peterson, 2013). Researchers from Sweden have claimed that further research is needed on CALL's relationship to foreign language acquisition aspects such as written production and reading comprehension (Sylvén & Sundqvist, 2012). It has also been claimed that further



exploration of the classroom potential of video games is sorely needed due to their underrepresentation in contrast to other media such as books, movies or television series (Isbister, 2016). What this means is that there is an outspoken need for research to be done on the relationship between commercial video games and foreign language comprehension, especially on a larger scale and with a control group.

## 1.1 Aims of the study

With this study, we sought to analyze the feasibility of using *narrative video games* to test EFL comprehension compared to a more traditional audiovisual medium. In order to explore this field, the following research question was investigated:

How do the results of an EFL comprehension test following a narrative video game compare to those of a television adaptation in the context of an upper secondary school English classroom in Sweden?

A detailed discussion of the comprehension test is given in the methodology section. However, in short, the test is primarily used to determine how well the subject understood the narrative and dialogue. A possible learning outcome of this exercise would arguably be to expose the learner to immersive media featuring the target language spoken natively, although this is not something that we are testing for. We are, however, additionally measuring attitudes toward the material and the educational potential of video games in a brief survey following the comprehension test.

The true aim behind our research is to make a contribution based on a large-scale comparative study, to the discussion concerning video games' potential as a tool for EFL

education. This relationship is admittedly complicated, with video games' consumption being more difficult to conduct collectively than movies and television and their equipment more expensive than books. However, if a comparable relationship between language comprehension and video games to that of other media can be found, there are some worthwhile pedagogical implications to be discussed.

## 2. Background

With our ambition of making a contribution to the field of video games as narrative tools for EFL education, it inevitably requires plenty of background to be provided in the form of definitions, material and current state of previous research. This section serves to contextualize the study by first discussing the definition and outlining research of video games, educational and narrative, as well as the video game acting as the focus of the study. This is followed by sections dealing with previous research into video games as they relate to computer assisted language learning and other media, as well as the multimodal properties afforded by the medium. Lastly, we address some common criticisms of video games, particularly criticisms in regard to their potential in education.

### 2.1 The Meaning of Video Games

The Cambridge Dictionary defines a *video game* as “a game in which the player controls moving pictures on a screen by pressing buttons” (Cambridge, n.d.). This is a generous and ambiguous definition, which is emphasized by Ivory (2016) who states that it is “often used as a talismanic catch-all term for nearly any form of interactive digital entertainment” (p. 1). He continues that the multifaceted nature of video games entails that the content, properties and targeted audience may vary quite substantially from one to the next. Indeed, Ivory remarks that video games ought to be seen as a multitude of recreational forms with a shared history that, in turn, stems from “more than one evolutionary stream of conceptualization and innovation” (p. 17).

Nowadays, a vast number of people interact with video games on a daily basis (Isbister, 2016, p. 15). Muriel and Crawford (2018) identify “fun” as a key virtue in an increasing number of

aspects of our society today, in which gamification, and thereby video games, play a leading role (p. 24). In addition, it is a global industry which is still growing rapidly, estimated to be worth over \$300 billion in 2021 (Accenture, 2021). This is comparable to the entirety of the global movie and television industries combined which were estimated to be worth \$328.2 billion the same year (Motion Picture Association, 2022, p. 9). Sweden's video game industry in particular has experienced dramatic growth in recent years, generating an estimated \$6.2 billion in revenue in 2021, foreign subsidiaries included (Dataspelsbranschen, 2023, p. 8). Contemporary culture is thus shaped significantly by this technology, especially in Sweden and in recent years.

The growing popularity of video games as an industry is legitimizing the medium as a serious tool for education, as exemplified by a rapid growth of video game-related educational courses (Muriel & Crawford, 2018, p. 35). Parsayi and Soyooof (2018) highlight that many scholars believe that video games are “indispensable as a resource” for not just learning in general, but also for specifically “teaching languages and literacy” (p. 109). Reading, speaking, listening and vocabulary development are all skills which they claim can be fostered by the medium. There is a consensus that it has the potential to evolve education, cited by anything from scholars to even heads of state (Sherry, 2016, p. 116). The use of video games in schools is increasing, and not just in terms of video games for educational purposes, but also regular, commercial video games (p. 35). It is worth discussing briefly what this distinction implies.

## 2.2 Educational and Narrative Video Games

There are numerous potential uses for the medium that are not necessarily associated with forms of entertainment alone. *Serious games*, for instance, is a term which has historically

been used to describe video games that seek to combine the entertainment aspects of video gaming with the learning aspects of education (Sanford et al., 2015, as cited by Muriel & Crawford, 2018, p. 25). The educational material may relate to several areas, and could for example involve political, societal or work-force related topics. An example of this is the quiz-platform *Kahoot!*, which is often used for serious game purposes (Zhonggen, 2021, p. 2). However, to avoid confusing serious games with games directed toward a mature audience, we will set that term aside and make use of the less ambiguous term *educational video games* in its stead.

The game in the present study (see section 2.3) does not, however, fall into the category of educational video games; it is rather a video game intended for entertainment and commercial purposes. More specifically, it belongs to the genre of *narrative video games*. Although the ways in which narrative video games operate may vary drastically from one to the next, all narrative video games have the common trait of wanting to relay a story. Tavinor (2009) defines narrative video games as games that “structure their content into a temporal arrangement providing a point of view – often, but not necessarily, that of a narrator – that motivates and guides an interpretation of that material” (p. 111). Following Tavinor’s definition, narrative video games can therefore, to some extent, be likened to other narrative mediums such as novels or films; the difference being that many video game stories allow for failure and crossroad events, leading the story in different directions with several potential outcomes. Regardless, the stories of narrative video games still comprise “an unfolding plot with a beginning, middle, and an end” (p. 111). It is based upon this similarity between narrative video games and other storytelling media that the present study takes form.

The above discussion can also be framed in terms borrowed from CALL, where two theoretical standpoints exist. These two camps, the *ludologists* and *narratologists*, have differing opinions on whether or not video games can be studied as a form of narrative, with ludologists arguing that video games ought to be seen as an entirely separate medium with varying degrees of interactive storytelling components, whereas narratologists are of the opinion that video game narratives are comparable to any other form of narrative media (Peterson, 2013, pp. 17-18). As the field of video game studies has grown in recent years, these divergent viewpoints have been bridged by a general recognition that some types of video games produce narrative sequences, and that *narratology* can be a useful tool to understand certain elements of these video games (Peterson, 2013, p. 19). Through its use of a narrative video game, our study can be argued to approach this debate from the perspective of narratology, yet we have aimed to conduct our research using a more neutral and epistemological methodology. Instead, our intention is simply to investigate whether there is any merit to video game narratives comparable to narratives of other mediums without overlooking the inherent differences.

## 2.3 The Last of Us

The video game chosen for this study is *The Last of Us*, for reasons which are made clear in part here. Additional reasoning can be found later when we discuss criticisms (section 2.7) and in the methodology (section 3.1). Most importantly, though, this section contextualizes what *The Last of Us* is.

*The Last of Us* was first released as a video game for the PlayStation 3 console in 2013, with a faithful television adaptation following a decade later in 2023. Other combinations of cross-media adaptations including video games were considered, but none were found to be

as comparable or acclaimed as the two versions of *The Last of Us*. It tells the story of Joel, a survivor 20 years after a pandemic ruined civilization, who is tasked with smuggling 14 year-old Ellie across the United States (PlayStation, 2023). *The Last of Us* does not fall into the category of educational video games. Quite contrary, it is void of any educational intentions except, perhaps, the moral revelations that its story might bring in the same sense that a film or novel could. Instead, it is a narrative video game as well as an action video game made by the studio *Naughty Dog*, renowned for “brilliantly told stories” with characters that the player can empathize with and project themselves onto (Williams, cited by Paterson et al., 2020, p. 8). As a video game, *The Last of Us* has been described by outlets such as *The Guardian* to be “visually arresting, mechanically solid, maturely written, and by turns heart-rendering, tense, unnerving and brutal” (Sartori, 2013).

*The Last of Us* being adapted as a television series was well received by many outlets, including *The Guardian*, who calls it a good candidate for the medium precisely because of its linearity, meaning every consumer experiences the same story without subverting the director’s script through player choice (MacDonald, 2023). *Time Magazine* partially attributes this success to the fact that one of the co-creators of the video game, Neil Druckmann, returned to co-create the television series (Berman, 2023). The fact that the video game and television adaptation share a creative lead at the helm of both versions is a testament to their consistency and quality, which enables the direct comparisons between them which this study requires. Previous attempts to adapt video game franchises, such as *Mortal Kombat* and *Assassin’s Creed*, have failed due to poor reactions from audiences, critics or both. But *The Last of Us* has the fortune of building upon what BBC News claims is “seen as the pinnacle of gaming storytelling” with the potential to show a new unfamiliar audience “how mature

the games industry has become and how emotional, complex and moving the stories it tells can be” (Powell, 2023).

This praise for the video game especially is important as it illustrates that *The Last of Us* can effectively be argued to belong to the larger cultural heritage of the west. In fact, in 2023 it was entered into the *World Video Game Hall of Fame*, which selectively inducts video games due to their influence on the video game industry, popular culture or society in general (The Strong National Museum of Play, n.d.). Only 40 video games in total have been added as of 2023, and with the criteria’s emphasis on cultural impact, *The Last of Us* enjoys a special privilege of being the most recently published video game to be inducted.

Sweden does not possess a canon for either Swedish or English literature, even less for video games, but that does not mean that teachers are given no guidance. In an article published by Skolverket, teachers are encouraged to take Felski’s four ways of thinking about literature into account when selecting texts for language learning: *recognition, enchantment, knowledge and shock* (Graeske & Lundström, 2016). This means that the literature should depict experiences which students can relate to, be immersed in, gain knowledge from or be challenged by, respectively (p. 1). When taking into account the critical reception mentioned above, it seems apparent that *The Last of Us* fulfills some – if not all – of these criteria. Additionally, in the overarching curriculum for Swedish upper secondary school, teachers are required to provide students with knowledge and insight into the aforementioned larger cultural heritage of the west (Skolverket, 2022c).

These are the theoretical reasons for why *The Last of Us* was chosen in this study as the object of its research. The more pragmatic reasons are addressed in section 3.1, but it is worth



clarifying already that this study does not utilize the entire narrative of *The Last of Us*. The runtime of the series measures up to nine hours and the video game is even longer at approximately 15 hours. The study was therefore restricted to exclusively make use of the prologue to the story, which has been referred to by critics as a distinct and iconic independent story by itself (Cordner, 2020, p. 36).

## 2.4 Video Games and CALL

When discussing video games and language learning, it is almost impossible not to frame it within the context of the wider field of computer assisted language learning. Early studies of CALL focused mostly on educational video games, often based on text production and vocabulary memorization (Peterson, 2013, p. 63). The focus on text input is likely due to the fact that the video games used in these earlier studies were generally text-based (cf. Jones, 1986; Culley, Mulford & Milbury-Steen, 1986; Palmberg, 1988; Cheung & Harrison, 1992), thereby being closer in comparison to a work of literature than an audiovisual medium.

More recent studies have, on the other hand, broadened the field of CALL to include video games with virtual environments as well, among which massive multiplayer online role-playing games (MMORPGs) have been especially prevalent (Peterson, 2013, p. 78). In such studies, MMORPGs, alongside narrative video games in general, have been attributed to be beneficial for vocabulary acquisition (cf. Sylvén & Sundquist 2012; Peterson 2013; Goh 2016). In a meta study that synthesized findings from 31 such studies, Jabbari and Eslami (2018) reinforced the notion that MMORPGs benefit vocabulary acquisition and developing communication skills in the target language. Nonetheless, they conclude that current research on video games and CALL is largely qualitative and argue that future studies on MMORPGs, and other video game genres, should seek to research language learning aspects other than

vocabulary acquisition and communicative proficiency as well as follow different research paradigms and approaches (p. 106). Sylvén and Sundquist (2012) likewise stressed the importance of broadening the field by examining other aspects of second language acquisition, not just limited to English, and focusing on different video game genres (p. 17).

Few studies within the field of CALL have sought to test linear narrative video games such as *The Last of Us*, however, and fewer yet within the confines of language comprehension. In a study from 2011, Chen and Yang found that a majority of 35 participating students playing *Bone*, a narrative puzzle game, reported that the game had helped them improve their receptive language skills (p. 172). Among other factors, the participants mentioned the game design as a key feature that had aided their learning (p. 171). Although they concluded that narrative non-learning oriented video games may yield “improvements in listening, reading, and vocabulary knowledge” (p. 174), the study itself lacked data to support this claim. In light of this research gap, Chen and Yang argue that the field would benefit from more comparative studies with sufficient control groups or pre- and post tests (p. 174). What can be concluded from Chen and Yang's study, on the other hand, is that using story driven video games to assist language learning seems to increase student motivation, with a third of their participants stating that the adventure game motivated language learning (p. 173).

In addition, a mixed methods study based on the narrative video game *The Secret of Monkey Island – Special Edition*<sup>TM</sup>, involving 30 EFL students, qualitatively reported similar attitudes; a majority of participants had found the narrative video game medium helpful in improving their language comprehension generally and their vocabulary specifically (Janebi Enayat & Haghightpasand, 2017, pp. 70-71). Here, unlike Chen and Yang's study, the positive impact on vocabulary was also confirmed by the results from a vocabulary test which

constituted the quantitative element of the study. The results showed a statistically significant increase in participants' receptive recall skills for the students who had played the video game in contrast to a control group who partook in traditional teacher-led vocabulary lessons (p. 69). When taking these qualitative and quantitative findings into account it would appear as though video games indeed can function as a tool to bolster EFL learning. Whether or not the benefits conveyed through these smaller-scale studies have any substantial didactical merits, however, remains to be determined in larger, more quantitative, and generalizable studies. To that end, the present paper may offer much needed insight through its quantitative EFL comprehension test and large sample of subjects featuring a control group representing traditional media.

## 2.5 Video Games and Traditional Media

The implications and potential benefits of computer assisted learning in general have been thoroughly examined in a plethora of previous studies, especially in contrast to other methods and mediums. This is evident from Hattie's renowned meta-study, first published in 2008, where, among other studies, findings from over 80 meta-analyses on the topic of computer assisted learning were synthesized. Hattie's framework assigns the different didactical approaches with an "achievement" score, generally ranging from -1 to +1. The variables were then given a score with an average effect size of .40, which Hattie went on to claim should be the minimum for any approach to be worth pursuing (Hattie, 2012, pp. 2-3). To contrast video games, the effect size of "Television" was rated as poorly as -.18 (p. 254) and the effect of "TV on reading" was measured as -.15 (p. 201). As for interactive mediums, "Gaming/simulations" was rated as slightly below average but still notably positive at .35 (Visible Learning, 2023). Closely related variables such as "Interactive video methods" and "Tactile stimulation" were rated as .52 and .58 respectively, demonstrably more effective

(Hattie, 2012, pp. 222, 252). The effect of computers overall on student achievement was .37, generally positive at all levels of abilities and schooling (Hattie & Yates, 2014, p. 198). To this latter result, Hattie concludes that computers should not replace regular teaching methods, nor the teachers themselves, but that they can be utilized to “deliver instruction to other humans through a different medium, and in a different manner” (p. 199).

According to Quandt and Kowert (2016), some of the benefits of video games as an educational tool include immersion, interactivity and rewarding skill (p. 182). They further claim that video games yield improvements in cognitive abilities like reactions and processing complex tasks, making them “more interesting, demanding, and effective as compared to unresponsive learning media” such as television (p. 182). On the subject of skill, Hattie (2012) writes that video games have clear goals and provide people with constant feedback on their performance (p. 108). Players are pedagogically taught the scale of the challenge, what is needed to succeed and allowed to practice at their own pace to overcome failure and achieve success. Such instruction has many applications, for example as a rehabilitative platform for visual disorders (e.g. amblyopia; Dale & Green, 2016, p. 142). Furthermore, research has shown that even dyslexic children can see improved visual, attentional and even reading skills as a result of playing commercial action video games (Franceschini et al., cited by Dale & Green, 2016, p. 142).

Video games also afford the consumer to feel a wider range of emotions than television, with Isbister (2016) arguing that feelings like guilt and pride are solely enabled by the interactivity of video games because it lets the consumer feel partial responsibility for the actions committed by the character under their control (pp. 8-9). Building upon this, Gee (2007) argues that the consumer identifying with the video game character transcends the way they

would with a character from a novel or movie because the relationship is active, not passive, and because it is reflective in the sense that the consumer's choices led the character to its current position and/or abilities (pp. 53-54). Even critics acknowledge in reviews of the television adaptation of *The Last of Us* that a certain "magic" is lost when you take away the immersion that comes with inhabiting and identifying with the character for so long in a way that is not possible with mere viewing (MacDonald, 2023). Video game players are in the narrative operationally and mechanically, which makes them a "central agent" of the system (Muriel & Crawford, 2018, pp. 59-70).

This notion does not go unopposed however, with others countering that letting the consumer "become" their character stands in opposition to them empathizing with them (Williams, cited by Paterson et al., 2020, p. 6). The reasoning there is that the consumer can emotionally justify or distance themselves from their own actions in a way which the forced perspective of a set character in a novel or movie would prevent. On the other hand, there is research which suggests otherwise. Isbister (2016), for instance, cites a neuropsychology study which found that the act of playing rather than watching activated "parts of the brain associated with motivation and reward" in a way which she compares to running a race instead of watching a movie about a race (p. 3). These findings are supported by Gee's ideas on *multimodality*; that the interactive elements of video games may bolster motivation and immersion (2007, pp. 53-54).

## 2.6 Multimodality

It should come as no surprise that most, if not all, second language acquisition theories agree that language input in the target language is a vital part of language learning. Krashen's hypothesis on comprehensible input especially stresses that language acquisition takes place

when the learner is exposed to input in the target language that is slightly more advanced than the language they currently possess (Lightbown & Spada, 2013, p. 106). It should be noted that interaction-based hypotheses, such as those present within Vygotsky's sociocultural perspective, also stress the importance of interaction between interlocutors (p. 118). This does not distract from the fact that video games, just like any other audiovisual media, could facilitate fruitful learner interaction, as has been noted in previous CALL studies (Sylvén & Sundquist, 2012, p. 305). In fact, the interactivity of video games might offer plentiful opportunities for language acquisition, in addition to the language input that is comparable to other forms of audiovisual media.

Video games feature several layers of modality and inputs, ranging from scripted dialogues to interactive player-controlled actions that together form a whole. Gee (2007) explains that the *multimodal principle* reflects how “meaning, thinking, and learning [in video games] are linked to multiple modalities (words, images, actions, sounds, etc.) and not just to words.” (p. 106). In other words, the different modalities can be seen as fragmented inputs that together form a meaningful and immersive entity (Gee, 2007, p. 106). Similarly, Hattie and Yates (2014) argue that “our brain is set up, incredibly well, as a device that integrates information from different modalities” (p. 115). It would seem probable, therefore, that the multimodal properties of the video game medium may be beneficial for language learning, and falls in line with the earlier discussed findings in sections 2.4 and 2.5. It remains to be seen, however, how multimodality affects EFL comprehension in the way this present study explores it.

## 2.7 Criticisms

Video games as a medium are plagued by prejudices and negative assumptions, some of which have already been discussed in relation to other previous research. An example of this

was the issue of agency in section 2.5. However, there are additional criticisms worth addressing, which for the purpose of this section has been split up into subsections. These critiques are, in order, that playing video games as an activity has been regarded as unhealthy, masculine, self-indulgent and violent. Additionally, the last two subsections deal with the assertions that the interactivity of video games can be difficult to adapt to and may lead to conflicts with the narratives. Further limitations, those who align closer to the methodology of this study, are found in section 6.3.

### 2.7.1 Health and Socialization

On the notion that video games are unhealthy, the assumption is that playing video games promotes a stationary, solitary lifestyle. This assumption has been refuted by research. One survey of 7000 video game players found no correlation between playing video games and having an unhealthy weight, admittedly relying on the limited metric of body mass index (Williams, Yee & Caplan, 2008, as cited by Bowman, 2016, p. 32). The critique of video games' ability to promote social activity was in turn refuted by one study which suggests that video games may actually assist in developing social skills rather than limit them (Kowert & Oldmeadow, 2013, as cited by Bowman, 2016, p. 32).

While *The Last of Us* is not a video game designed with social interaction in mind, it can still be turned into a social experience. Mäyra (2016) argues that the knowledge that others are playing the same video game as you inherently makes it social (p. 161). This is because players in such contexts often connect with each other to discuss and bond over their shared experience, for example on internet forums which can be compared to book clubs (p. 160). Thus, for those teachers wishing to keep their syllabus social, the gameplay can be broken up

by occasional discussions. This is something which teachers are well familiar with since it is an already established practice for literature modules.

### 2.7.2 Gender Associations

Ivory (2016) claims that video gaming has traditionally been seen as a predominantly male activity, but he adds that they nowadays only constitute a negligible majority. A persistent difference, on the other hand, lies in what types of video games the two genders typically prefer to play; women reportedly favor puzzle-type video games, whilst men prefer sport- and action-themed video games (p. 15). Although these preferences are hardly black and white, they are nonetheless of relevance in the present study. As mentioned before, *The Last of Us* is in addition to being a narrative video game also an action video game and its use might therefore benefit male students more than female students. Ultimately, however, this is not necessarily a flaw. For one, male students in Sweden are significantly behind female students in academic performance. In 2018, only 65% of male graduates of upper secondary school fulfilled the criteria required to apply for higher education compared to roughly 80% of female graduates (Sandberg, 2019). Therefore, there is a need for research to investigate teaching methods which might specifically benefit male students, or at least provide a variation in material which entices these potentially overlooked preferences. Secondly, as is presented in 3.2, gender is a variable which was recorded and accounted for in the data collection (see Table 2). This means that this study isolates and analyzes gender as a variable as part of its results (see section 5.1.3).

### 2.7.3 The Problem of Content

Video games have also been discredited as self-gratifying and meaningless (Bowman, 2016, p. 33). Gee (2007) refers to this as *the problem of content* and counters it by demonstrating that all content is only as meaningful as people make it out to be, regardless of whether it is



the subject of academics or video game players (2007, p. 22). Furthermore, it is also subjective and dependent on the video game itself. As mentioned in section 2.1, *video game* is a broad catch-all term for most interactive digital entertainment (Ivory, 2016), and it would be ill-advised to dismiss the entire medium with broad generalizations.

#### 2.7.4 Mature Content

On the subject of content, a debate which is often publicized in relation to video games is the prevalence of violent action video games. The subject of this study, *The Last of Us*, can be described as one such game, with the Pan European Game Information (PEGI) organization recommending it to players aged 18 and above due to its violence and mature language (PlayStation, 2023). It needs to be stressed that this is only a recommendation, not legally binding, and mainly intended for parents to be able to make an informed decision when buying video games for children (PEGI, n.d.). Analogously, one could extend this to teachers who should also use content warnings to make an informed decision about what material to include in their syllabi. In fact, we would argue that using a video game or other medium depicting mature content can be productive and educational, since it lays the foundation for an unapologetic nuanced discussion around ethics, human experiences and social issues, as required by Skolverket for English in upper secondary school (Skolverket, 2022b, p. 16).

It is a commonly held belief that video game violence promotes real life violence. Yet this is unsupported by scientific research. Connections between violent behavior and video games have been demonstrated to hold no credibility beyond those of other mediums such as films and that these effects, in turn, are negligible (Bowman 2016 p. 33; Sherry 2001 cited in Ferguson, 2012, p. 13). On the contrary, some studies suggest that playing violent video games provides numerous benefits such as “higher visuospatial acuity, perception,

processing, visual memory, and mental rotation” (Ferguson, 2012, p. 19). Other research, focused on action video games, discovered benefits through “improved sustained attention and reduced impulsivity” (Olson, 2016, p. 42). Regardless, it is reasonable to assume that using video games with mature elements in the classroom is not too dissimilar to utilizing a movie or novel with similarly mature elements for the same purpose of moral exploration outlined above.

Nonetheless, the presence of violence and strong language naturally warrants an ethical consideration on the usage of the video game in the present study, as some students may be disturbed or otherwise made uncomfortable by the material. A thorough discussion about these risks, and how they have been minimized, can therefore be found in section 3.3 of the present paper.

### 2.7.5 Game Literacy

In contrast to video games, it is more common to talk about literacy in the classroom in relation to movies, books, or the occasional television series (Isbister, 2016, p. xvi). This could be due to the practical constraints attached to the medium, such as teacher prejudices or limitations in their time commitment (Ferguson, 2012, p. 21). As a result of this, many students lack the necessary tools to fully understand the medium from a more narrative point of view, simply because they are not taught to apply the same principles to interpret video games as they would when interpreting literature, film or even music inside of the classroom (Isbister, 2016, p. xvi).

A student’s lack of experience with video games has been said to reduce the educational value. DeVane and Squire (2012) argue that inexperienced players can not “read” video

games or see as much of its content as those with a higher level of video game expertise (p. 62). Thus, one must first learn how to play the game before one can consider other uses for it (Zagal, 2010, p. 115). As a partial solution, this is another reason why this study limits the scope of its video game to its introductory prologue, thereby easing subjects into the game in addition to reducing the time commitment.

### 2.7.6 Ludonarrative Dissonance

Something which many video games, narrative video games in particular, are often accused of is *ludonarrative dissonance*. This occurs when the interactive, or ludic, elements of a medium come into conflict with its narrative in a way which is detrimental to the immersion and enjoyment of the consumer (Howe, 2017, pp. 44-45). This is prominent with video games where the player takes control of a character with established values which the player has the option to, or is sometimes forced to, disregard to progress with the game in a way which the narrative fails to account for. It is often inevitable when video games provide the player with several options on how to approach the interactive sequences. In such sequences, some options will naturally be less agreeable to the protagonist's characterization than others. As an example, the protagonist Geralt of Rivia from the video game *The Witcher 3: The Wild Hunt* insists that he never kills humans but the player has the ability to dispatch hundreds of them throughout the game (p. 45). Such a hypocritical conflict between words and actions could impede a character analysis taking place in the classroom, especially to those unaware of the phenomenon. This is less of an issue with *The Last of Us*, however, due to how the potentially violent actions of the player are controlled by the linear storytelling as well as justified by the harsh nature of its apocalyptic world.

## 3. Methodology

With the present study, we sought to compare the EFL learning potential of a narrative video game with that of a more traditional audiovisual medium. This was done following a quantitative methodology, which refers to the aim of collecting objective, generalizable and replicable data in an obstructive and controlled environment (Nunan, 1992, p. 4). In order to do so, we opted for a comparative approach; constructing a survey and comprehension test with which we could compare participating students' receptive abilities and attitudes after being subjected to samples of either a video game or a television series. This data collection occurred in breakout rooms near the students' classrooms, which in combination with the construction of the material would place this study on the interventionist and preselective sides of van Lier's research parameters as mentioned by Nunan (p. 5).

This section provides an overview of the methodology of this study. It begins with presenting the pragmatics of the material and physical equipment, followed by the demographic composition of the participants, a deconstruction of the questionnaire, its parts and execution, the ethical considerations thereof, as well as the ensuing content analysis. This section is concluded with the insights gained from a small pilot study that was conducted ahead of the full study. Limitations of this methodology are not presented until subsection 6.3 of the conclusion as it connects to this study's implications for future research.

### 3.1 Material

The material used in this research, as discussed in subsection 2.3, is the video game *The Last of Us* and the television series of the same name. Specifically, the study's participants were invited to engage with the prologue of the video game and a short edited section of the first

episode of the television series, both of which the subsequent comprehension test also was based on.

The idea of focusing on the prologue is made possible due to the fact that it can essentially be viewed as a self-contained story in itself. It is roughly 15 minutes long and portrays the apocalyptic outbreak of the pandemic from the perspective of Joel's daughter Sarah in a segment which has been described as full of "subtly built tension, quiet character moments, and explosive chaos" (Cordner, 2020, p. 30). This combination of tension and action creates an engaging introduction to the world and story that the authors are trying to tell through a combination of something that is familiar yet surprising (pp. 30-31). This familiarity is found specifically in exploring what a parent is willing to do in order to protect their child in a dangerous situation (p. 36). In addition to being a self-contained story, the prologue by itself can also be argued to touch upon some of Felski's ways of thinking about literature, endorsed by Skolverket (Graeske & Lundström, 2016), especially enchantment and shock (see section 2.3).

Additionally, the prologue serves as an introduction in a pragmatic sense as well by being light on video game mechanics, restricting the player to only use a stick to move and two buttons to interact with objects. More advanced controls, like combat or environmental puzzles, are not introduced until later in the game. Thus, the focus for the subject should be less on the controls or instructions on how to play the game and more on being immersed in the narrative. This combined with the above discussed self-contained nature of the narrative makes the prologue a perfect candidate for the aim and logistics of our research.

In the television series we get the same story, perspective, and introduction to the world as in the video game. The difference is that in this version the audience does not have the same interactivity with the story as in the video game. However, the television series manages to recreate some segments shot-for-shot at certain key moments (see Figure 1). This means that the narrative difference between the two is, at times, almost negligible. Thus, a comparative study like the present one is made possible.

**Figure 1**

*Figure Showing the Likeness Between The Television Series and Video Game, in Screenshots with the Dialogue Transcribed Below (Pictures Have Been Edited for Visual Clarity)*

Video Game	Television Series
	
<p>Joel: Where did you get the money for this? Sarah: Drugs. I sell hardcore drugs.</p>	<p>Joel: Where did you get the money for this? Sarah: Drugs. I sell hardcore drugs.</p>
	
<p>Tommy: No gettin' into Travis County. Joel: That means we need to get the hell out. Take 71.</p>	<p>Joel: You take 70– Tommy: 71, I know.</p>

	
<p>Tommy: Holy Hell. That's Louis' farm.</p>	<p>Tommy: God. It's Jimmy's place.</p>
	
<p>Soldier: Stop right there! Joel: Easy now. We are not sick.</p>	<p>Soldier: Stop right there! Joel: Okay... We're not sick.</p>

(Druckmann & Straley, 2014; Druckmann & Manzin, 2023)

The first episode of the series includes a recreation of the prologue but also expands upon it significantly, adding several scenes taking place before the narrative begins in the video game. It also includes scenes taking place after the video game's prologue. To match the video game prologue in content and runtime, we have therefore cut out a slice of the episode for our usage which is 18 minutes and 45 seconds long. Our cut begins and ends with the same scenes as the prologue from the video game, with Joel arriving home from work and Sarah getting shot, respectively. Between these scenes we have made no additional cuts, allowing the episode to maintain its internal consistency and pacing. Despite this, as illustrated in Figure 1 above, there are minor discrepancies in both dialogue and framing between the adaptations. One example of this is the third row of Figure 1 depicting the burning farm. In the video game, it is on the car's left side, but in the television series, it is on

the right. Moreso, it is referred to as “Louis’ farm” in the video game and as “Jimmy’s place” in the other. Most differences are found in minor details such as this, while the overall narrative and major details remain consistent.

### 3.1.1 Material & Equipment

The material and equipment that were used during the data collection are presented in Table 1 in this section for full transparency. In our data collection, we sought to be able to test up to six students simultaneously, requiring enough equipment for three viewers of the television cut and three players of the video game at the same time. Although we strived for parity in technology as much as possible, we were nonetheless limited by the equipment which we had available to us. Due to differing manufacturers and models, minor inconsistencies may arguably have occurred in terms of visual and audio equipment, for example. To combat this, we made sure to vary which group used which equipment.

In regard to the video game, full parity was achieved since we had access to three units of Sony’s PlayStation 4 console and three copies of the 2014 version of the game, titled *The Last of Us: Remastered*. This version was designed for that console, being a successor to the PlayStation 3 console which the original title was published for, making higher visual fidelity possible (PlayStation, 2023). Since it otherwise left the narrative unaltered, we did not find it necessary to procure copies of the PlayStation 3 original from 2013 nor the remake made for PlayStation 5 from 2022.



**Table 1**

*List of Equipment Used in the Data Collection Process*

Type	Manufacturer	Model/Unit	Amount
Video Game Console	Sony	PlayStation 4 (CUH11)	1
	Sony	PlayStation 4 (CUH12)	2
Laptop	Asus Zenbook	UX305C	1
	Asus	C423N	1
	Asus	TUF A15 FA506	1
	Acer	Aspire S3-392G	1
	HP	Pavilion Aero Laptop 13	1
Display Screen	Asus	V7279HE	1
	AOC	G2460	1
	BenQ	XL2411-B	1
Headphones	Koss	UR5	2
	Logitech	G435	1
	Marshall	Major III	1
	Urbanears	Humlan	1
	HyperX	Cloud	2

In this section, it is also worthwhile to briefly introduce the physical questionnaire which subjects partook in (see Appendix A). It is composed of three parts:

1. The first part is a waiver explaining the ethics behind the study, alongside a few questions collecting biometrics on the participants. In this part, they are also tasked with answering questions related to themselves, their education and their familiarity with video games and *The Last of Us*. This part is largely discussed in sections 3.2 and 3.3.

2. The second part is a comprehension test consisting of 14 items. The test items are a mix of multiple-choice and short open-ended questions. This part is discussed in section 3.4.1.
3. The last part is a brief attitudinal survey with five six-point Likert-scale items about their experience, discussed in section 3.4.2.

## 3.2 Participants

Participation in this study consisted of 129 students from three different upper secondary schools located in two different cities in the south of Sweden. To preserve the anonymity of the participants, their schools are given the following pseudonyms: *Agaricus Vocational School*, *Boletus Public High School* and *Craterellus Academy*. The participants were selected through a method referred to as convenience sampling which, as described by Dörnyei (2010), entails that the participants are selected from any available population that is suitable for the test (p. 72). We strived to ensure that no gender, English course, or specific type of program, vocational or theoretical, would be overrepresented. However, we nonetheless had to abide by the wishes of the schools we approached. As is the case with convenience sampling, some school administrations and classrooms being more cooperative than others does have an impact on the types of populations available for sampling.

The participants were all volunteers, aged 16-19 with different backgrounds, genders, and prior knowledge of the English language, since they were attending either English 5, 6, or 7. Another variable impacting comprehension of the material is whether the subjects were already familiar with it prior to the test, e.g. if they had played or viewed *The Last of Us* before. To maximize the number of participants, we still include these subjects in the data presentation. However, we asked them to disclose in the initial part of the questionnaire, alongside their biometrical information, if they had any such prior knowledge of the material

(see Appendix A). Likewise, subjects were also asked to disclose how often they played video games in general. By doing this, we could collect their data and isolate it if necessary when analyzing against those variables specifically, as is also done with gender, English course level, and school program.

Data was collected by escorting the two-to-six volunteering subjects at a time from their classroom into a separate room where they would partake in the material and fill out the questionnaire. They were given multiple opportunities to opt out and could leave the test at any time, which is discussed in greater detail in section 3.3.

**Table 2**

*Distribution of Gender Between the Participants, Divided by Schools*

<i>Gender</i>	<i>Agaricus Vocational School</i>	<i>Boletus Public High</i>	<i>Craterellus Academy</i>	<i>Gender Total</i>
Female	6	16	9	31
Male	64	12	18	94
N/B	1	2	1	4
<i>Total</i>	71	30	28	129

*N/B = Non-Binary / Did not want to say*

In Table 2, we see the distribution of gender across all schools and between each gender identity. As evident in the table, we had an overrepresentation of male-identifying participants. This is a result of the earlier discussed method of convenience sampling, due to the fact that the school which granted us access to the most classes of students, *Agaricus Vocational School*, happened to be a male-dominated vocational school. This also resulted in

an overrepresentation of vocational programs among the test subjects, as can be observed in Table 3 below mapping the distribution of participants by school program.

**Table 3**

*Distribution Of The Participants, Divided By Educational Programs<sup>1</sup>*

<i>Program</i>	<i>Number of Participants</i>
Heating, Water & Property Management	46
Construction	20
Commerce & Administration	5
<i>Total (Vocational)</i>	71
Tech & Engineering	20
Natural Science	20
Social Science	12
Arts	6
<i>Total (Theoretic)</i>	58
<i>Total (All)</i>	129

To simplify this variable, we have elected to keep the comparisons to only the type of program, vocational or theoretical, rather than analyze specific programs. This is true for the results and analysis sections as well. The vocational programs account for a total of 55.0% of the sample population. Compare this to national statistics where only about 29.2% of upper secondary school students in Sweden attend vocational programs (Skolverket, 2022d).

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<sup>1</sup> The names of the programs are directly translated into English from Swedish.

**Table 4**

*Distribution of English Classes Between the Participants, Divided by Schools*

English Class	<i>Agaricus Vocational School</i>	<i>Boletus Public High</i>	<i>Craterellus Academy</i>	<i>Total</i>
English 5	44	0	9	53
English 6	27	18	19	64
English 7	0	12	0	12
<i>Total</i>	71	30	28	129

Table 4 shows the distribution of how many participants attend each course of English: 5, 6 and 7. The breakdown is thus 41.1% attending English 5, 49.6% English 6, and 9.3% English 7. It is worthwhile to consider that the English 7 sample size, consisting only of 12 students, is quite small. On the other hand, this is likely an effect of the fact that English 7 is an elective course, in contrast to English 5 and 6 which are compulsive.

**Table 5**

*Distribution of Exposure to Media Type, Divided by Schools and Gender*

	<i>Agaricus Vocational School</i>		<i>Boletus Public High</i>		<i>Craterellus Academy</i>	
Media type	Game	TV	Game	TV	Game	TV
Female	4	2	8	8	6	3
Male	32	32	6	6	8	11
N/B	0	1	1	1	1	0
<i>Total</i>	36	34	15	15	15	14

*N/B = Non-Binary / Did not want to say*

Table 5 displays how many participants played the video game or watched the television series, grouped by participating schools as well as gender. In regard to the division of playing and viewing populations, we aimed for an even split and any differences were mainly the result of withdrawals (see section 3.3).

### 3.3 Ethical Considerations

Due to the fact that the present study incorporates data gathered from a vast number of participants and that the audiovisual materials were intended for a mature audience (as noted in section 2.7.4), it was of great importance to consider the ethics of this study thoroughly. In its design, we therefore opted to follow the guidelines provided in a report by the Swedish Research Council (SRC).

The SRC (2017) states that all research must provide the participants with sufficient information about the nature of the study, its content, and purposes (p. 15). Additionally, the participants must provide their consent to partaking in the study. With these praxes in mind, the survey included a consent form on its first page, which detailed the purpose of the study and asked for the students' signatures as a means of obtaining consent. Subjects were also encouraged to terminate the test at any time should they change their minds about participating. Even after the completion of the test, subjects were told that they were given a timeframe of over a month to reach out to us through their teachers and withdraw their data from the test should they wish to do so (see Appendix B).

Furthermore, we found it especially important to inform the participants of the mature nature of the audiovisual content, in both oral and written form. Already in introducing ourselves and the study to the classroom of participants did we disclaim that the material contained

violence and strong language. This was then repeated as part of the introductory script which was followed at the testing location (see Appendix B). The consent form additionally includes a paragraph entailing that the participants, through signing, were aware of and comfortable with viewing such content (see Appendix A). Due to these precautions, we argue that the participants were sufficiently informed on multiple occasions, both within the classroom before we were accepting volunteers and then subsequently at the testing location.

Another important aspect of ethical consideration in research is confidentiality. Although we did not gather data that could be considered especially sensitive, the SRC (2017) nonetheless states that the researcher should, if possible, anonymize personal information such as names (p. 41). In doing so, the researcher should also be explicit about what information will be visible in the finalized paper and what it will be used for. Hence, the previously mentioned consent form (see subsection 3.1) also included the information that the participants' names would not be used in the research paper, thus ensuring anonymity.

A total of three subjects abandoned the test during the procedure, not counted in the total of 129. We did not press them for any explanations as to why, though we observed no indication that it could be due to the mature content. In the time since the conclusion of the data collection, no subjects reached out and withdrew their data after-the-fact.

### 3.4 Instrumentation

While the initial biometrical section of the survey has already been discussed and its results overviewed, the remainder of the instrumentation, its design process and execution are presented in this section.

### 3.4.1 Comprehension Test

In our ambition of utilizing a television series as material for a control group, we would naturally aim to find and use an established lesson plan to represent ordinary classroom activities. This might have been possible with other audiovisual material, such as culturally relevant films, documentaries, news broadcasts or other educational content. One popular source of such material in Sweden is the Swedish Educational Broadcasting Company: a state-financed public service company whose mission is to provide free educational audiovisual content alongside complementary lesson plans and comprehension activities (n.d.). However, there is no such established complementary material for the television series *The Last of Us* due to its recency. Drawing upon our own credentials as teachers, and following multiple close viewings of both versions of the material, we instead crafted our own questions inspired by traditional complementary material and NAFS (*Project of National Exams in Foreign Languages*<sup>2</sup>).

At the testing location, before being allowed to answer these constructed comprehension items, the subjects were randomly assigned to either play the video game or watch the television series we had prepared for them with headphones. They had no contact or communication with each other: only with the test facilitator. In order to make the test as accessible as possible for all of the subjects, subtitles in English were enabled for both mediums. The subjects were restricted from rewinding or pausing the material during this portion of the test. However, the subjects were allowed to take notes on a separate sheet. In the event of non-compliance with any rule, the participant was warned and corrected. Upon repetition, or if the violation was discovered too late, the affected portions of the test would be terminated.

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<sup>2</sup>Translated from Swedish: Projektet för nationella proven i främmande språk.



As an additional output of data, we utilized stopwatches to measure the time it took for the video game players to complete the prologue. This was done partially because it was within our ability to do so and could yield interesting results, and partially because we wished to investigate whether there would be any correlation between the time taken to consume the material and the comprehension of the material. This could then be tied to a discussion around game literacy, specifically whether players who struggled to progress through the game had a more difficult time to “read” the material, as the theories of DeVane and Squire (2012) would suggest. These results are presented in section 4.2.1.

It could be argued, due to the bespoke nature of our material and the interventionist nature of our testing, that our population of television viewing subjects is not a proper control group. In a strict semantic sense, this argument might hold merit and is worth acknowledging. However, since the construction of the aforementioned bespoke instrumentation was created by teachers with the intention of mimicking a lesson's possible audiovisual comprehension assessment situation, we argue that this context is still representative enough of traditional classroom activities to be referred to as a control group. Regardless, it also serves the same function in a comparative study, with this population representing a traditionally accepted educational medium in contrast to the more experimental medium of video games.

As for the comprehension test items, one aforementioned source of inspiration was the layout, difficulty, and tactile feeling of the standardized national tests NAFS, which are constructed by the University of Gothenburg and given once a year to each student in upper secondary school in Sweden (Göteborgs Universitet, 2023). This is one of the reasons why the questionnaire was done on paper and not in digital form. The decision to partially use

NAFS for inspiration also to ensure a level of quality and accessibility that would be familiar across all three of the English courses, for which reason it most closely resembles the difficulty level of English 5. This might have rendered the material too easy for higher levels of English courses, but we discuss that further in subsection 6.3.3.

## Figure 2

*An Excerpt From the Comprehension Test Showing Example Items and Finalized Design (See Appendix A for the Test in Full)*

**2: Comprehension test based on “The Last of Us”**

Some of these questions require you to give a short answer, while others give you multiple answers to choose from. Choose the answer which you believe best answers the question.

1. How are Joel and Sarah related to each other?

[Any answer mentioning **father, daughter** and/or **family**.]

---

2. What is Sarah’s relation to Tommy?

He is her father’s uncle.

**He is her father’s brother.**

He is her cousin.

He is a friend of her father.

3. In the beginning of the story, why did Joel come home so late?

[Any answer mentioning a **job** or **work**.]

---

The items are designed to contain a mix of multiple-choice questions and short-form answers, as seen in Figure 2. The choice to include multiple-choice items was made partially because of the common occurrence of such items in language proficiency testing. It also shortens the time needed to be spent on the item in question, thus lowering the total time needed to complete the questionnaire. Additionally, it helps the participant collect and focus their

thoughts in a manner that an open-ended question does not (Dörnyei, 2010, p. 48). Between this study's multiple authors, items were developed individually based on close viewings of the material and peer-reviewed between each other and against similar items in NAFS tests. After a thorough discussion and close scrutiny, a consensus was reached on which items to include and which were better suited as multiple-choice or short-form questions, eventually resulting in the finalized list of 14 comprehension items.

In accordance with Dörnyei (2010), the possible answers in the multiple-choice items should be listed in a natural order which feels logical based on the alternatives and the question itself. If that is not possible, the arrangement should be in alphabetical order or random (p. 48). In order to keep the order as balanced and neutral as possible, the answers to these multiple-choice items are sorted in random order. All the answers are grammatically correct and, for some items, multiple options could be argued to be correct since that is often the case in tests constructed by NAFS. However, the instructions make it clear that, in such cases, subjects must choose the answer they consider the most fitting (see Appendix A).

The second group of items in the questionnaire are a variation of open-ended questions. On one hand, these are often not ideal in time-sensitive situations since they tend to occupy a lot of the participant's attention (Dörnyei, 2010, p. 51). On the other hand, in a proficiency testing setting, there is some merit to allowing the participant the freedom of expression that an open-ended question gives. One can then make use of a middle ground between open-ended questions and multiple-choice questions known as *specific open questions*, meaning items that can only be answered according to a coded answer key (p. 52). This is the type of open-ended question we have utilized in our test, visible in Figure 2 which also demonstrates our coded answer key.

### 3.4.2 Attitudinal Survey

The comprehension test is followed by an evaluation of the experience through an attitudinal survey with five items. Each item in this part is a statement such as: *I thought it was difficult to follow along with the story*, or *I would like video games to be used more in the classroom*<sup>3</sup>. The same five statements were given to all of the participants, regardless of if they played the video game or watched the television series. These statements are paired with a six-point Likert-scale, where the participant was asked to mark on the scale how much they agreed or disagreed with the given statement. The scale uses an even number of possible answers, which is a well established method within survey research to coax subjects toward taking a stance (Dörnyei, 2010, p. 28). One of the items is also phrased in the negative to prevent the participants from only marking one side of the scale (p. 43).

The idea of including this evaluation is to get simple, yet direct feedback from the participants that later could be analyzed and help nurture a discussion on the validity of using video games in the classroom. There is a risk that subjects will feel inclined to answer such items with values they believe will satisfy the researchers. We tried to combat such bias by urging the students to be honest and set the purpose of the study aside in answering this evaluation as part of our script (see Appendix B).

Both the first and third parts were conducted in Swedish, which differed from the second part. This is due to the nature of the parts and the function that they filled. The second part was an English comprehension test, meaning that it was conducted in English and part of the test design itself. The first and third parts were of a more demographical and administrative nature and thus could not afford any miscommunication between the participating subject and

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<sup>3</sup> A direct translation from Swedish. See Appendix A for the full questionnaire.

the test. This is why these parts are written in Swedish and not English, since Swedish is the administrative language and the native language for most of the participants, thereby mitigating the risk of miscommunication.

### 3.5 Content Analysis

For the data to be successfully extracted from the questionnaires, it had to be cleaned and processed. Additionally, all of the comprehension tests needed to be individually checked and marked. The open-ended items were coded against the previously mentioned answer key, as illustrated by Items 1 and 3 in Figure 2. As part of the cleaning process, all comprehension test answers from participants who had been deemed dismissible were removed, since they could interfere with the reliability of the comprehension test (Dörnyei, 2010 p. 88). Out of the 129 participants, two subjects from the player population and one from the viewer population were discarded on the grounds of not complying with the given instructions. On all three occasions, the subject had answered the comprehension test questions while viewing or playing the material rather than afterward as instructed. Our reasoning behind this rule and the decision to exclude these results were multifaceted: to minimize distractions during the exposure to the material in question and that the collected data should avoid recency bias and reflect comprehension rather than mimicry (see section 6.3.2). These reasons are intended to help ensure the validity of the results. Lastly, there was the additional reasoning that exempting violations would go against the spirit of the authentic testing context which we aspired to recreate.

If a question was incorrectly answered, according to the processes suggested by Dörnyei (2010), it would be set aside and analyzed to see if the incorrect answer was rooted in a language barrier problem, or not understanding the question or assignment (p. 89). What we

found was more often the case, however, were subjects who had ticked more than one option for a multiple-choice item. In such cases, we tried to determine if the subject had simply regretted their first choice and highlighted a second choice more clearly. In cases where we could not discriminate between the markings, the answers to those items were dismissed as invalid. Lastly, despite our efforts to craft items which equally applied to both versions of the narrative, a few subjects still submitted short-form answers based on dialogue only found in one version. Of these, some were found correct enough to lead to revisions to the answer key.

### 3.6 Pilot Study

In order to test the validity and design of the questionnaire, a small-scale pilot study was conducted, as recommended by Dörnyei (2010, p. 53). The study was conducted on location at a school targeting a select number of upper secondary school students. Due to unforeseen events, only two test subjects became available for the pilot, of which we tasked one with each medium.

Despite this, the pilot study was still insightful. For example, we got tangible experience with setting up a testing environment suitable for our field research. The transport and setup of all the necessary equipment proved easier than we had anticipated. It demonstrated how feasible it was to test multiple students simultaneously and indicated that the test would last around 30 minutes, including instruction and test-taking. This gave us an estimate of how many students we could test at once and at what pace we could do so, which was essential information to pass on to the teachers and schools we had been in contact with.

Another realization following the pilot was the need for a script to follow for giving instructions. This would not only ensure that instruction was optimized and efficient, but also

standardized across all three researchers as we would need to separate and test across different schools for the full study. This finalized script can be found at the end of this study as Appendix B.

Lastly, looking at the results of the test, we were also able to make tweaks to the questionnaire and fix any errors or misleading aspects of the questions or instructions that were made apparent through the students' answers and feedback. For example, both participating subjects had trouble with Item 6 (see Appendix A) in the second part, prompting some clarification ahead of the full study.

## 4. Results

In this section we present the results of the data gathered during the collection process. The data and the participants are primarily split into three major sections, first presenting exclusively the results of the television viewing control group's comprehension test followed by those of the video game playing test group. We conclude by presenting the results from the Likert-scale survey in a third section which starts with the data of the television viewers and ends with the video game players. Henceforth, the two major participating groups will be abbreviated to viewers for the ones who watched the television series and players for those who played the video game.

The comprehension test sections are additionally divided into minor subsections presenting one variable at a time, first the overall comprehension test scores, then sorted by gender, English course level, school program and prior video gaming experience. The section on players additionally opens with the data from the time taken to complete the prologue.

### 4.1 The Television Series

Here, we are presenting data as it relates only to the subjects who watched the television version of *The Last of Us*. Out of 64 participants in this section, only one failed to follow the instructions, resulting in their test answers being taken out of the sample<sup>4</sup>. To reiterate, we first present the viewers' overall test results from the comprehension test. Thereafter, the test scores are presented in relation to the many variables that were measured.

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<sup>4</sup> For the record, that subject scored 12 out of 14.

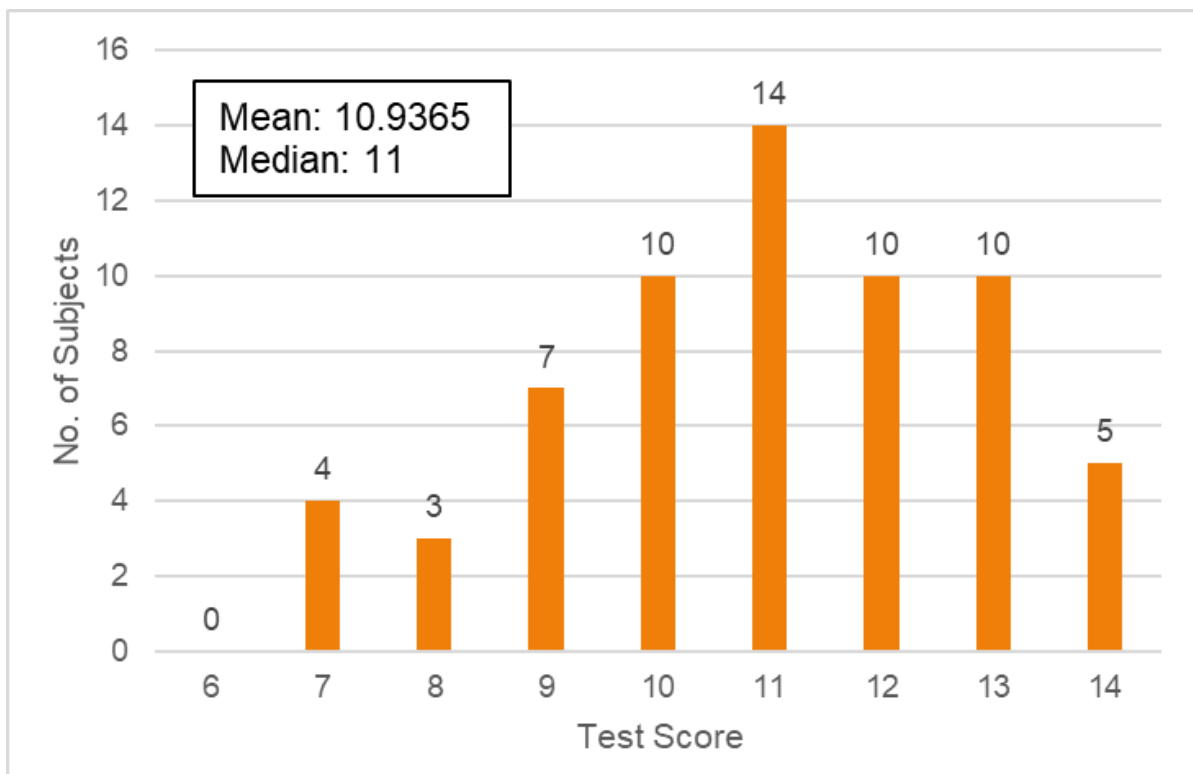


### 4.1.1 The Viewers' Total Scores for the Comprehension Test

In Figure 3, we see the results of all 63 valid tests from viewers, as well as the mean of 10.94 and median of 11, the latter of which was achieved by 14 out of 63, or 22.2%, of subjects. Other observations include that on one hand, five subjects achieved the maximum of 14 correct answers while on the other hand, four subjects achieved a score of 7, representing the lowest for this population.

**Figure 3**

*Distribution of All Test Scores (Viewers)*



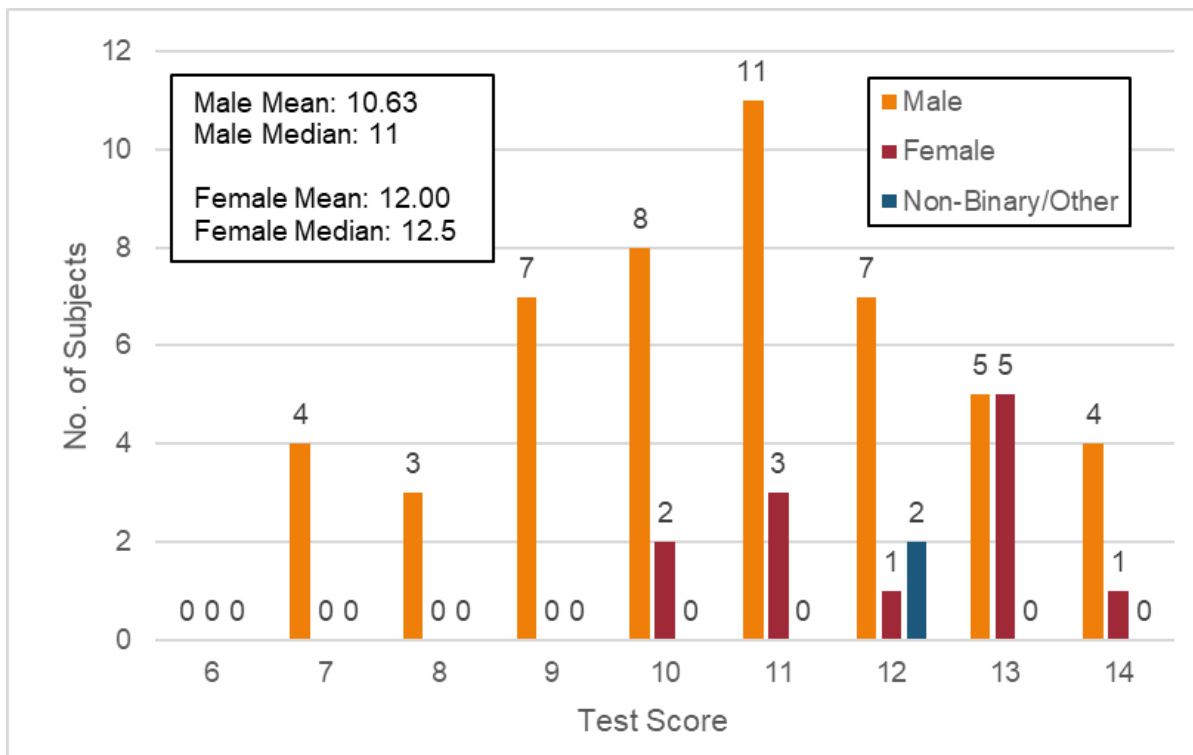
These overall results naturally encompass a wide range of factors and variables which need to be further presented. These are intended to allow for a more comprehensive, insightful, and valid analysis of the data.

### 4.1.2 The Viewers' Test Scores in Relation to Measured Variables

We are only concentrating our comparison on male- and female-identifying subjects for the sole reason that the sample size was too small for subjects who identified as anything else, as can be observed in Figure 4. In this case, only two viewers checked “Non-binary” or “Other/Do not want to say” as their gender, both of whom scored 12.

**Figure 4**

*Distribution of All Test Scores by Gender (Viewers)*

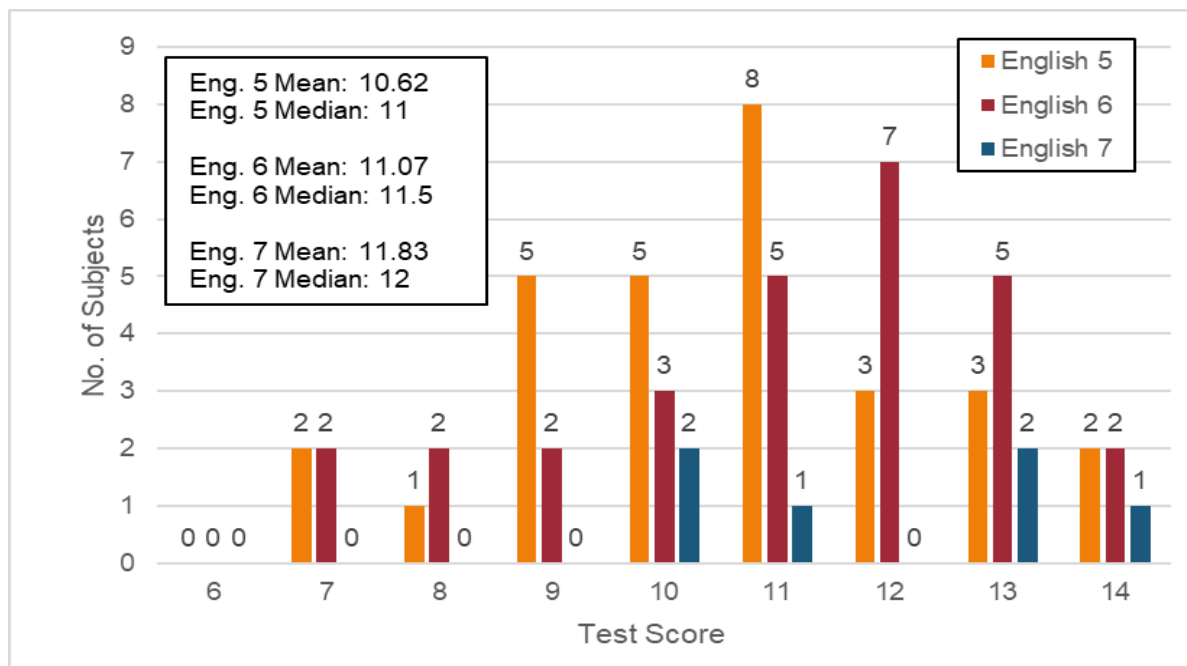


Compared to the overall average of 10.94, male subjects scored on the lower side with an average of 10.63 while female subjects scored on the higher side with 12.00. Observing medians, the difference is even higher, with 12.5 for females and 11 for males. However, an acknowledgment must be made that the sample size for females who watched the television series is significantly lower at 12, compared to males at 49, making its mean more vulnerable

to outliers. In the succeeding analysis we have therefore opted to combine viewers' and players' results when discussing gender as a variable (see subsection 5.1.3), giving a more statistically significant number of 30 female subjects in total.

**Figure 5**

*Distribution of All Test Scores by English Course (Viewers)*



Out of the 63 viewers, 29 were enrolled in English 5, 28 in English 6, and only six in English 7. The comparison between English 5 and 6 is, therefore, more fair, while the results of English 7 are less reliable. With that said, the results still show the clear, and expected, trend of scores getting higher the further along students are in their English upper secondary school education. Each successive course has a mean and median which improves in comparison to the last.

**Figure 6**

*Distribution of All Test Scores by Type of Program (Viewers)*

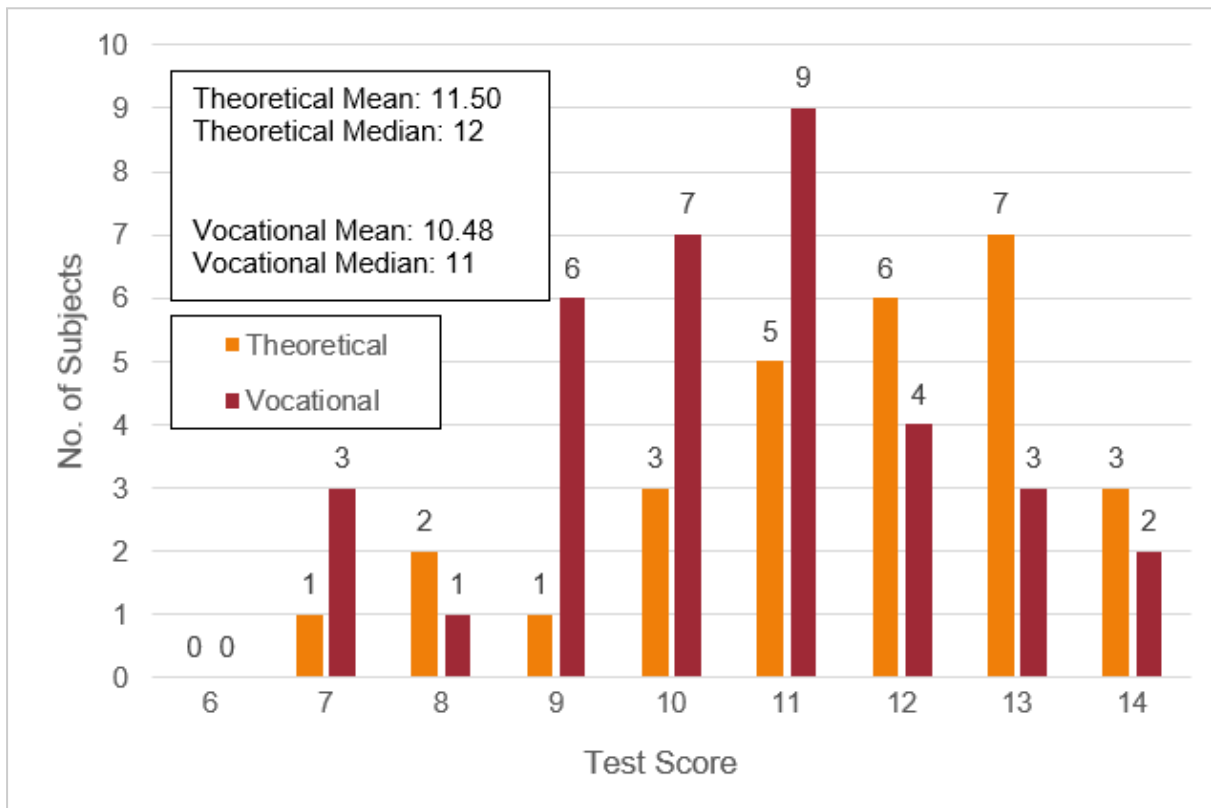


Figure 6 above shows the distribution of the test scores divided by program type, vocational versus theoretical. Out of the 63 viewers, 35 were from vocational programs and the remaining 28 were from theoretical programs. The mean and median are significantly higher for the theoretical programs at 11.21 and 11.5 than for the vocational programs at 10.45 and 11, respectively.

**Table 6**

*Average Test Scores by Gaming Frequency (Viewers)*

<i>Gaming frequency</i>	<i>Weekly</i>	<i>Monthly</i>	<i>Rarely/Never</i>
Amount of subjects	38	10	15
Mean score	11.16	9.80	11.13
Median score	11	10	11
Mode score	11	<i>Unavailable*</i>	13

*\*Unavailable due to four scores, 8, 10, 11 and 12, all being tied for the most entries with two each.*

Since we do not expect gaming frequency to have an impact on the subjects who watched the television series, we see no need for a full bar chart of results regarding this variable. But to enable comparisons to the video game playing population, we are still showing the mean, median, and mode results in Table 6. These results seem to confirm this hypothesis of no difference, where the mean scores are nearly identical at 11.16 and 11.13 for the most and least frequent gaming groups respectively. The bridging group has a significantly lower mean at 9.80, although its sample size is smaller.

**Table 7**

*Test Scores by Experience with The Video Game (Viewers)*

<i>Answer</i>	<i>Played Recently</i>	<i>Played Long Ago</i>	<i>Watched Recently</i>	<i>Watched Long Ago</i>	<i>No Experience</i>	<i>Any Experience</i>
Subjects	3	8	4	12	35	27
Mean	11.667	10.875	11.500	10.750	10.857	11.000
Median	11	11	11.5	11	11	11
Mode	11	11	<i>Unavailable*</i>	12, 11	11	11

*\*Unavailable due to all subjects scoring differently.*

Prior gaming experience with *The Last of Us* specifically, on the other hand, could possibly influence the scores. On the demographic survey's item about the video game, there were five alternatives: whether they had played it within the past year or longer ago, watched someone else play it within the past year or longer ago, or lastly: had no prior experience with it whatsoever. Above, in Table 7, is a breakdown of the amount of subjects and the average test scores of each group. It shows the expected trend of having a higher mean score when exposed to the video game recently. In the final column, the first four columns were combined to form a category referred to as having "Any experience" with the video game, which is the grouping used henceforth.

With regard to prior experience with the television series, it is easier to draw a line between prior experience and little to no experience due to the series' recency. All subjects who answered that they have watched it or heard a lot about it are counted as having experience with the series. Conversely, all subjects who answered that they have only heard a little about it or have no experience with it are counted as having no experience with the series. Below, in Table 8, are the test scores of various groups categorized by their previous experience of either, or both, versions of *The Last of Us*.

**Table 8**

*Table of Test Scores by Prior Experience with The Last of Us (Viewers)*

<i>Group</i>	<i>No Experience</i>	<i>Experienced with Game Only</i>	<i>Experienced with Series Only</i>	<i>Experienced with Both</i>
Subjects	29	9	7	18
Mean	10.83	10.11	11.14	11.44
Median	11	10	12	11
Mode	11	7	12	11

Compared to the overall average of 10.94, only the groups with prior experience of the TV series averaged a higher test score at 11.44. The nine subjects who have previous experience with the video game but not the television series, though admittedly few in number, actually held the lowest average with 10.11. Their mode is notably even lower due to three subjects all scoring 7, the lowest of the group. These results are all available in more detail in Figure 7 below.

**Figure 7**

*Chart of Test Scores by Prior Experience with The Last of Us (Viewers)*

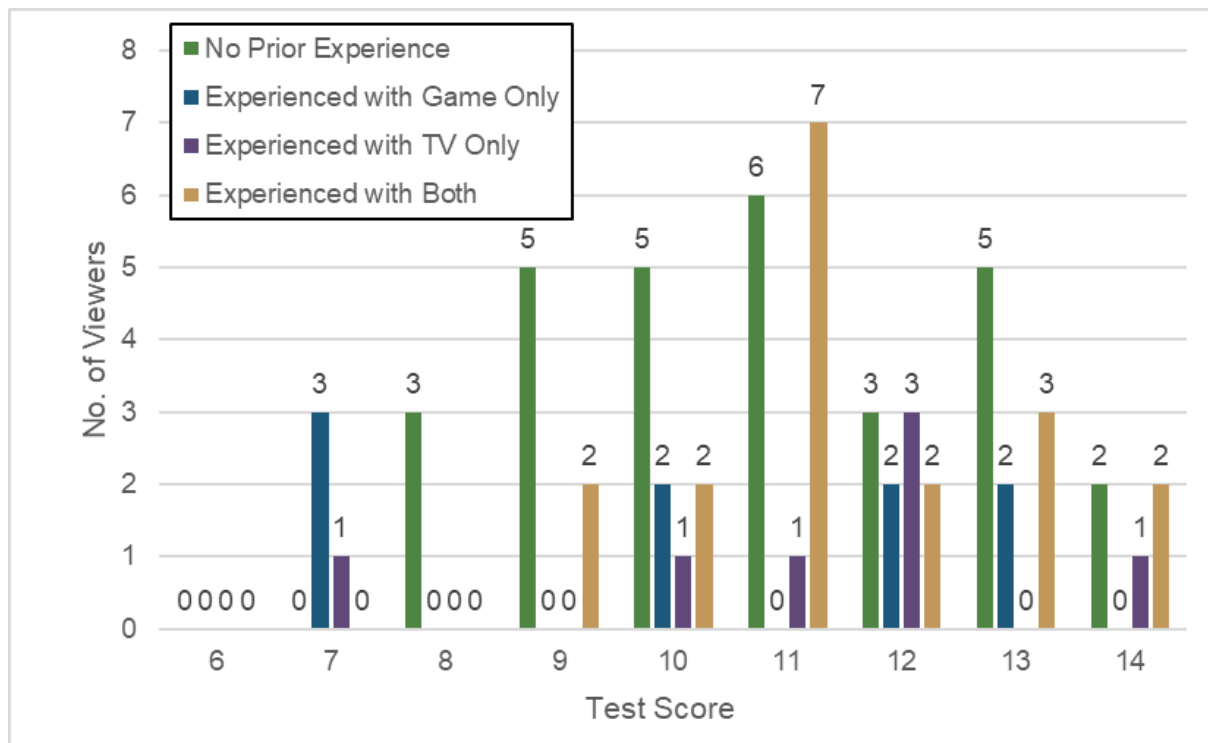
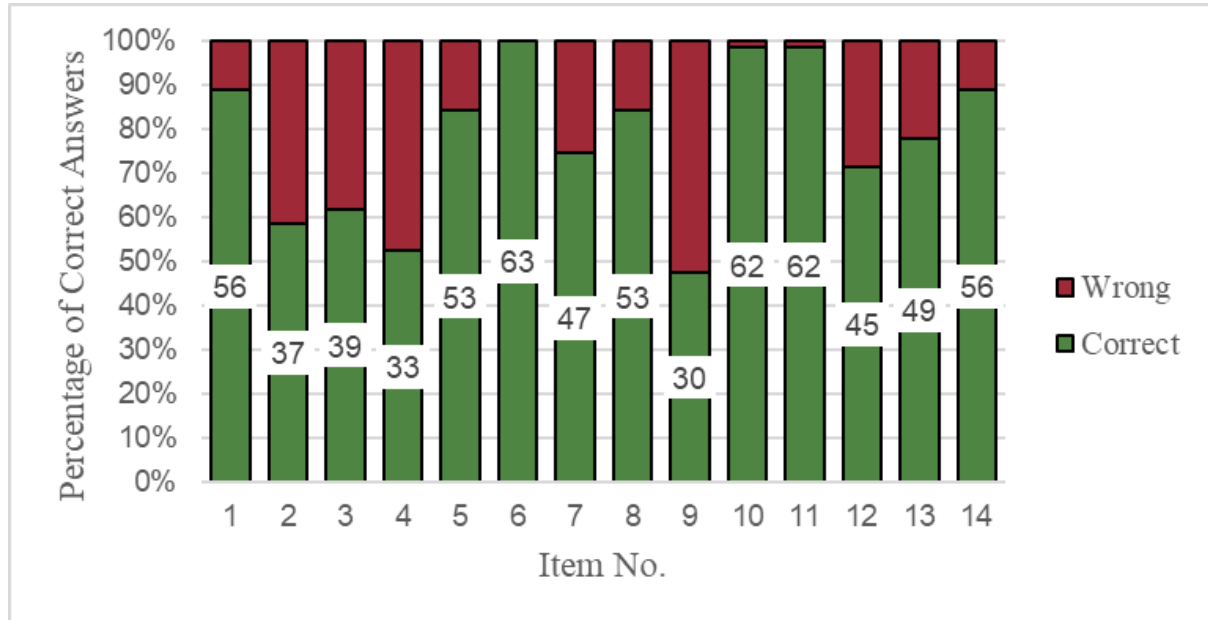


Figure 8 illustrates how many viewers out of the total 63 answered items correctly, item-by-item. The “easiest” item appears to have been 6, which 100% of viewers answered correctly, whereas the most difficult item appears to have been 9, which only 30 out of 63, or 47.6%, answered correctly.

**Figure 8**

*Amount of Subjects who Answered Correctly Item-By-Item (Viewers)*



These numbers are interesting, but only tell half of the story. To gain a fuller picture, the results of the players are presented in the following section, but direct comparisons are still saved for the analysis.

## 4.2 The Video Game

Here, we present the results from the participants that played the video game version of *The Last of Us*. Out of the total of 65 participants from this population, two players failed to comply with the given instructions, leading to their test scores being invalidated and removed from the sample. Consequently, the number of test scores accounted for in the graphs below is the same as for the viewers: 63.



We begin by presenting the players' final times and comparing them to their test scores, since this is the only datapoint not present in the other sample. Thereafter we follow the same structure as section 4.1, beginning with the players' totals scored from the comprehension test. This leads into a presentation of all of the measured variables in comparison to these test scores.

#### 4.2.1 The Players' Final Times and Correlation With Test Scores

**Figure 9**

*Chart of Time Taken to Complete the Video Game Prologue*

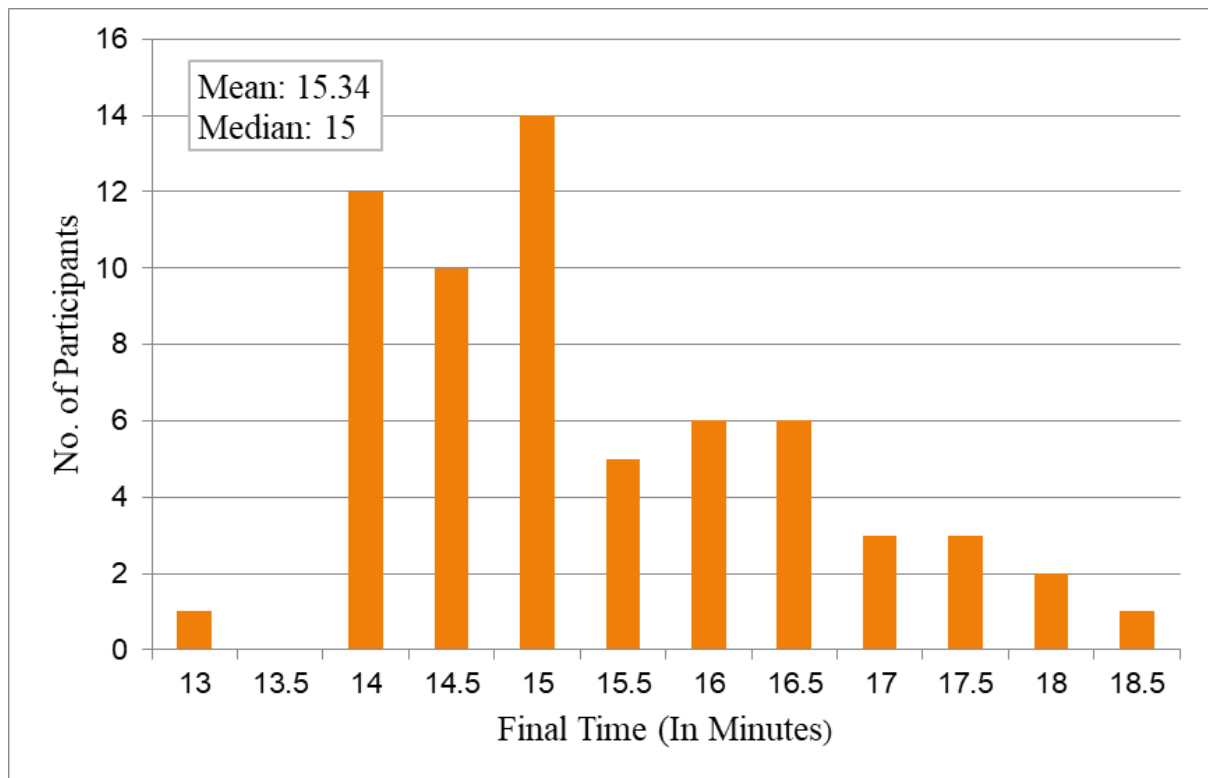
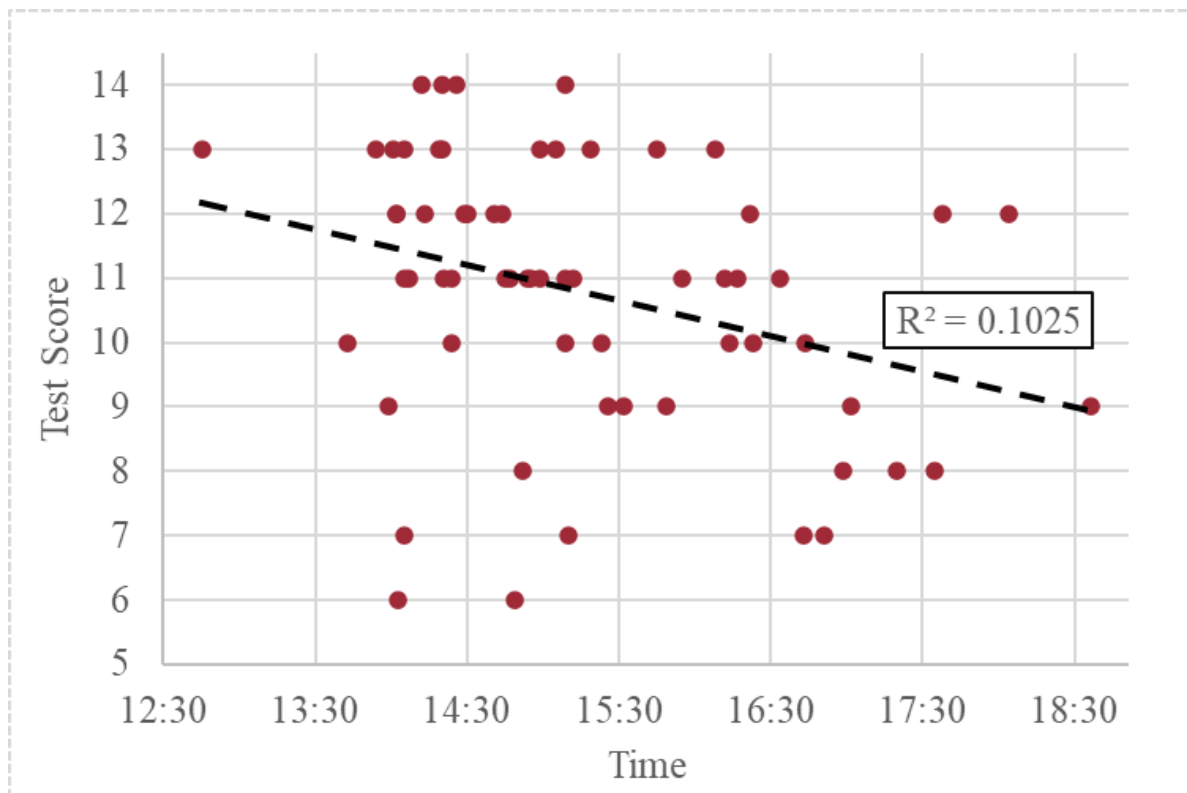


Figure 9 illustrates the time taken to complete the video game's prologue for all 63 valid tests. For the sake of visualization and comparability, the final times of participants were rounded down to whole or half minutes. The mean was 15.34 minutes, meaning roughly 15 minutes and 20 seconds, with the median being 15 minutes. The fastest time was 12 minutes

and 45 seconds, with the slowest being 18 minutes and 37 seconds. All subjects therefore concluded the video game prologue faster than the runtime of our slice of the television series, being 18 minutes and 45 seconds.

**Figure 10**

*Regression Curve Visualizing the Correlation Between Players' Final Times and Test Scores*



It is of interest to determine whether the differences in final time had any effect on the participants' total scores. In order to explore this possible correlation, a regression analysis was conducted and plotted into the regression curve seen in Figure 10. As the spread out data points in the figure clearly show, there seems to be little to no correlation between the time taken and the subjects' final scores.

**Table 9**

*Regression Statistics for Figure 10*

Multiple R	R Square	Adjusted R Square	Standard Error	Observations
0.320134	0.102486	0.087772	0.000803	63

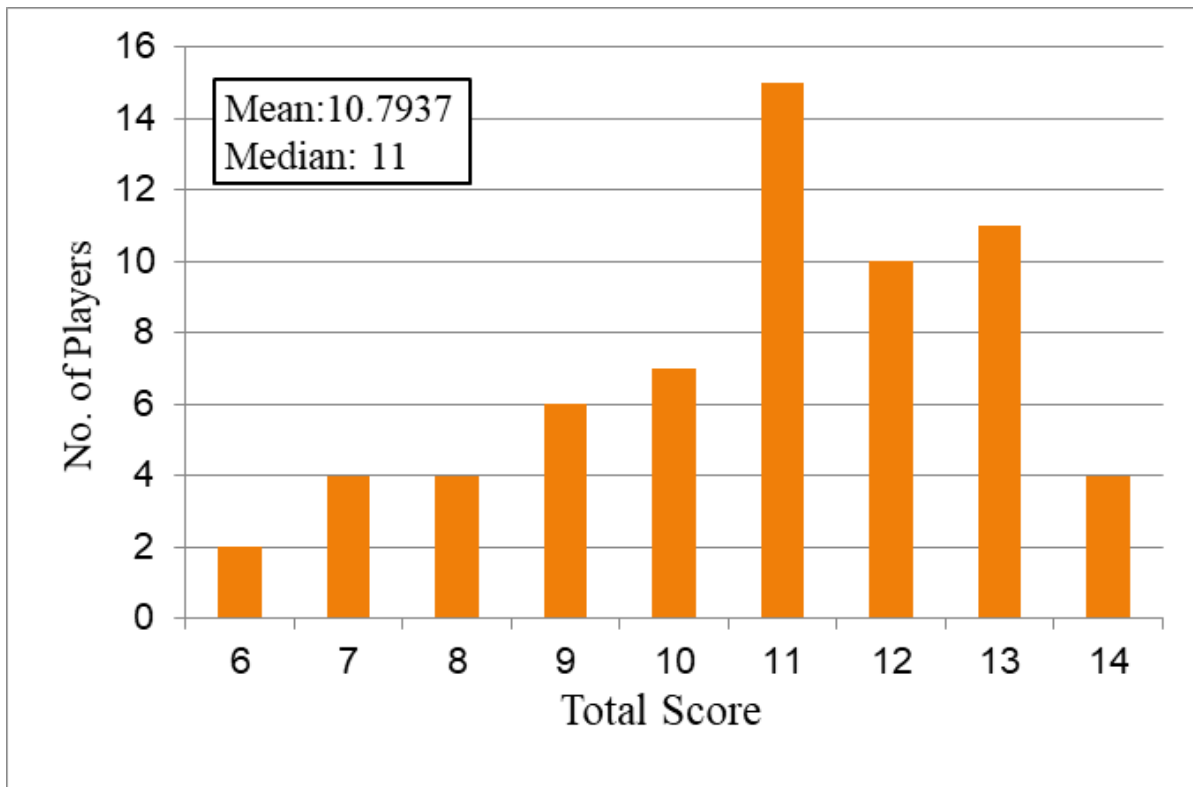
The R squared and adjusted R square values, visible in Table 9 above, also indicate no correlation between these two variables, since both of them are close to zero. The standard error of .0008 entails that these values are most likely accurate.

#### 4.2.2 The Players' Total Scores for the Comprehension Test

With the time variable accounted for we now turn to the unaltered total scores of the players, before delving into the other variables. Figure 11 visualizes the results of the 63 players whose tests were deemed valid. The mean score for players was 10.79 and the median was 11, the latter of which was attained by 15 out of the 63 participants, or 23.8%, of subjects. The maximum score of 14 was achieved by four of the players, whilst two players received a score of 6, thereby constituting the lowest scores of this group and in the study at large.

**Figure 11**

*Distribution of All Test Scores (Players)*

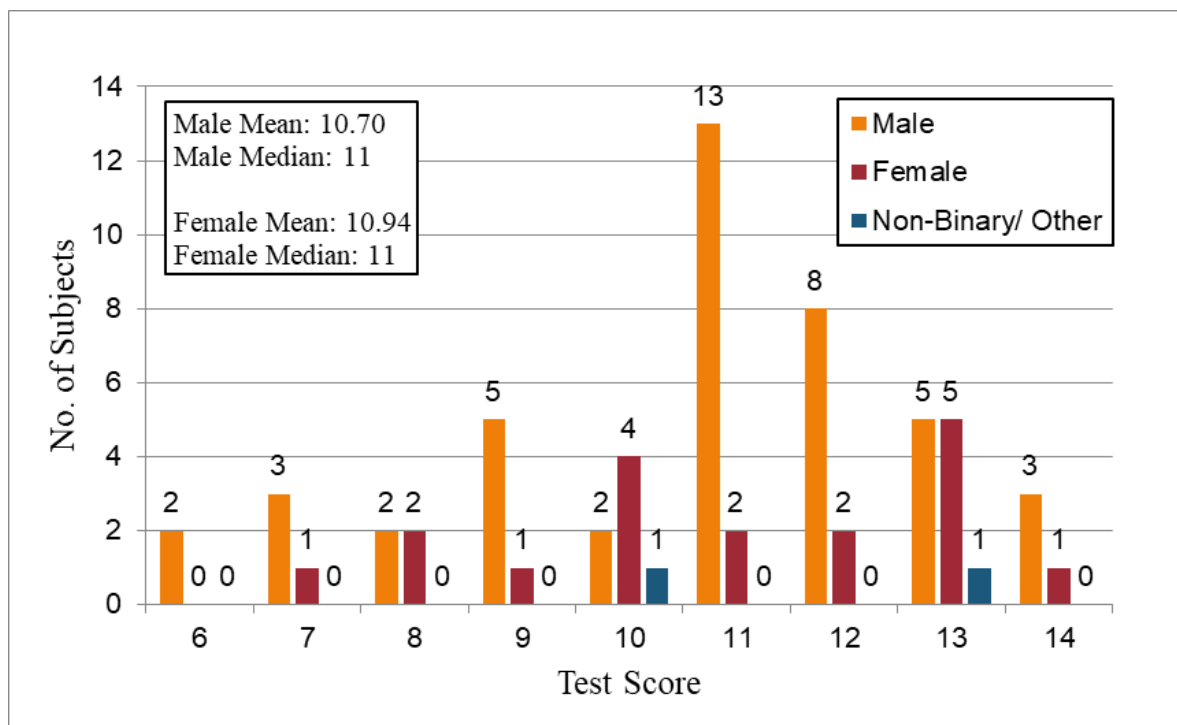


With these results in mind, it is now of interest to compare them with the other observed variables, the first one being a comparison between genders. These comparisons between the comprehension test scores and the variables, and possible correlations thereof will enable more valid and astute observations in the subsequent data analysis.

#### 4.2.3 The Players' Test Scores in Relation to Measured Variables

**Figure 12**

*Distribution of All Test Scores by Gender (Players)*

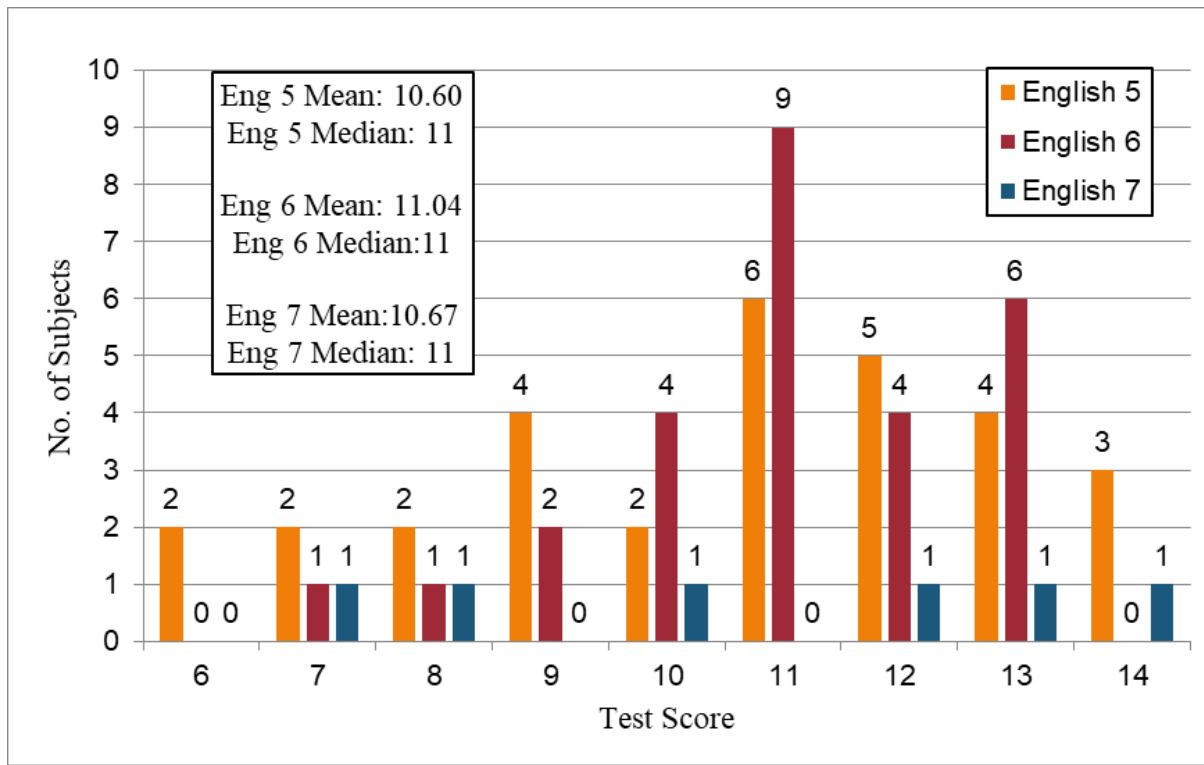


Similar to the respective chart of the viewers' scores, the two participants identifying as "non-binary" or "other" are too few to constitute a reliable sample size. The comparison will therefore be centered around the scores of male and female participants.

With a mean score of 10.94, the female participants outperformed both the male participants' mean of 10.70 and the total mean score of 10.79. The observed median scores were, on the other hand, both 11. However, the sample size for females was, as has already been noted in subsection 4.1.2, substantially smaller than the male equivalent; the female sample size consisted of 18 players, whilst male players numbered 43 in total.

**Figure 13**

*Distribution of All Test Scores by English Course (Players)*

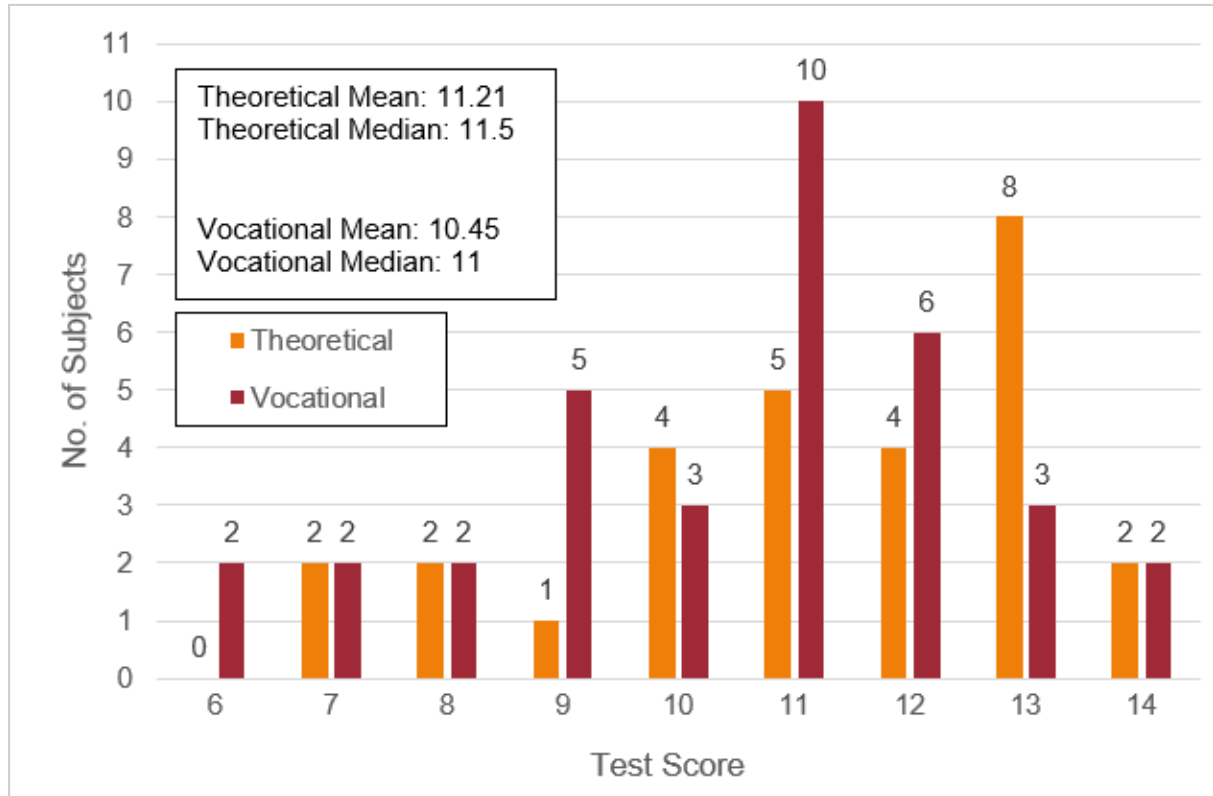


The distribution of the 63 players between the three English courses was as follows: 30 participants were enrolled in English 5, 27 in English 6, and six in English 7. The participants taking the English 5 course performed the worst, with a mean score of 10.60. Participants from English 7 showed a slightly higher mean score of 10.67. The players enrolled in English 6 scored the highest, with a mean of 11.04. All three groups had a median score of 11.

Although English 7 students yielded a lower test score than English 6 students here, it should be noted that the small sample size of English 7 students renders its mean and median, and any comparison thereof, less reliable. When isolating English course level as a variable in the analysis section, the English 7 sample size is slightly more significant at 12 (see subsection 5.1.4).

**Figure 14**

*Distribution of All Test Scores by Type of Program (Players)*

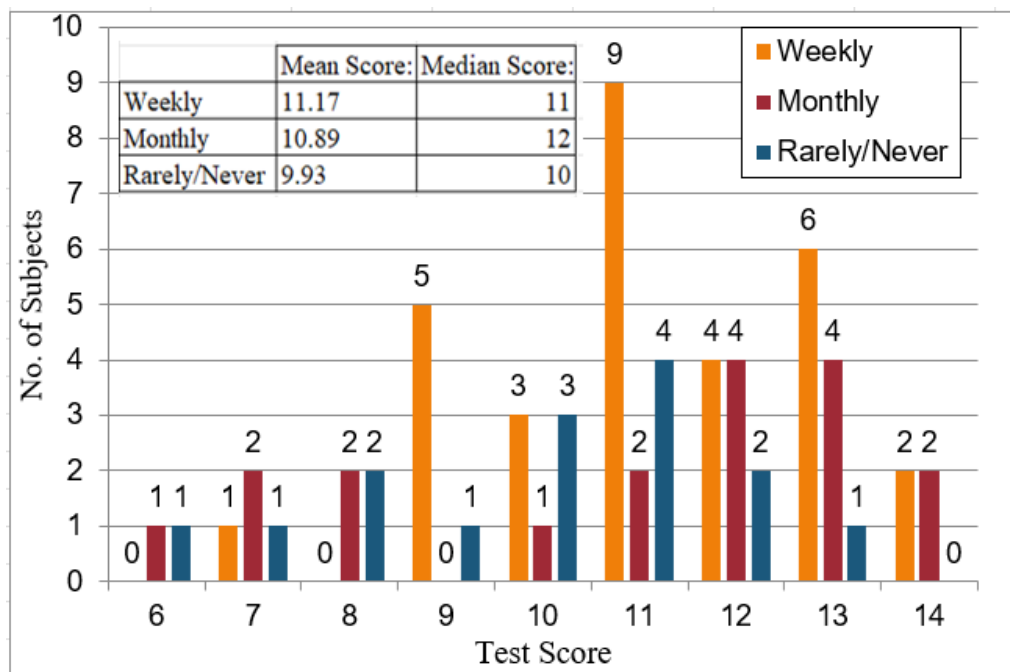


Out of the 63 players, 28 came from a theoretical program and 35 from a vocational program. The players from the theoretical programs scored a higher mean of 11.21 and median of 11.5 than the vocational programs at 10.45 and 11, respectively.

Figure 15 presents the players' test scores' relation to their gaming frequency: a variable we determined to be of more relevance for the players than the viewers, as their scores could potentially be affected by their video game literacy. For this reason, we here present a full chart of results rather than a summarized table.

**Figure 15**

*Distribution of Test Scores by Gaming Frequency (Players)*



30 subjects, or 47.6%, answered that they played video games on a weekly basis, 18 participants, or 28.6%, reported that they played video games at least once a month, and 15, or 23.8%, answered that they either “rarely” or “never” played video games. Only the means show a visible trend with more frequent video gaming leading to increased scores, with the rarely/never, monthly and weekly groups having the increasing means of 9.93, 10.89, and 11.17 respectively. As can be seen in the figure, however, this trend is not supported by the medians and modes, which the bridging group of monthly players achieved the highest results in regard to. Additionally, it should be noted that only the weekly players could be argued to constitute a statistically significant sample size.



**Table 10**

*Test Scores by Experience with The Video Game (Players)*

Answer	<i>Played Recently</i>	<i>Played Long Ago</i>	<i>Watched Recently</i>	<i>Watched Long Ago</i>	<i>No Experience</i>	<i>Any Experience</i>
Subjects	5	7	2	7	42	21
Mean	12.750	10.857	11.500	12.714	10.286	11.950
Median	13	11	11.5	13	11	12
Mode	13	13, 10	#N/A	14, 13, 12	11	13

Table 10 explores the effect any prior experience with the video game version of *The Last of Us* might have had on the players' scores. It uses the same categories as established in Table 7, including the grouping of "any experience", due to the fact that the narrower categories contain too few subjects to be considered reliable on their own. The 42 subjects who responded that they had had no prior experience with it achieved a mean score of 10.29. The total mean for subjects reporting any experience was considerably higher at 11.95. The median scores showed similar results; the group claiming no experience attained a median score of 11, whilst the other group had a median score of 12.

**Table 11**

*Table of Test Scores by Experience With The Last of Us (Players)*

Group	<i>No Experience</i>	<i>Experienced with Game Only</i>	<i>Experienced with Series Only</i>	<i>Experienced with Both</i>
Subjects	34	8	8	13
Mean	10.06	11.88	11.25	11.77
Median	11	12	12	12
Mode	11	<i>Unavailable*</i>	<i>Unavailable**</i>	13

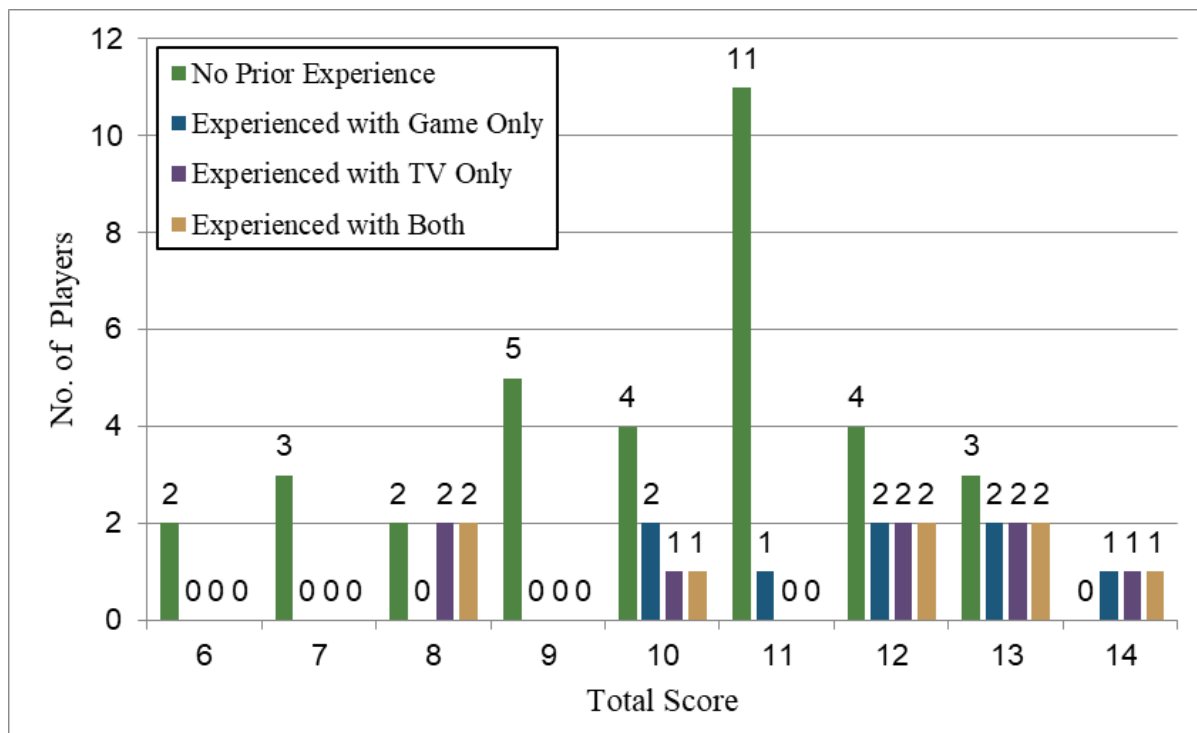
\* *unavailable due to the mode being tied between the scores of 10, 12 and 13*

\*\* *unavailable due to the mode being tied between the scores of 8, 12 and 13*

Table 11 shows the results as categorized by prior experience with any version of *The Last of Us* as a variable. We utilize the same definitions of experience as used in Table 8 here as well. The results show that players with prior experience with either, or both, the television series and the video game averaged a higher score than the total average of 10.79. The median score of 12, achieved by all groups with experience of either or both mediums was also higher than that of the group without any experience, who attained a median score of 11. Below, Figure 16 plots all individual results of these categories in a bar chart.

**Figure 16**

*Chart of Test Scores by Experience With The Last of Us (Players)*



**Figure 17**

*Amount of Subjects who Answered Correctly Item-By-Item (Players)*

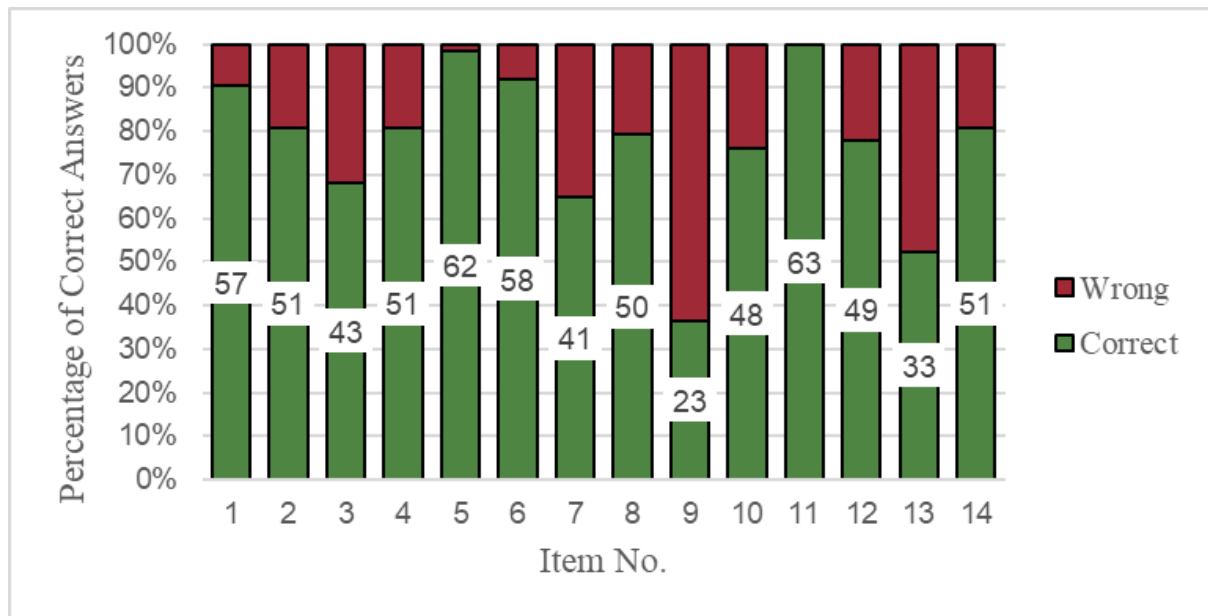


Figure 17 is a visualization of how many out of the 63 players answered each item correctly. As evident from the figure, Item 9 was the most difficult item for players which only 23, or 36.5%, answered correctly. All playing subjects answered Item 11 correctly, making it the “easiest” item for this population.

### 4.3 Attitudinal Test Scores

The last results to present are those of the third, attitudinal, part of the survey. Following the same division as earlier in this section, we begin with isolating the data from the viewer population and then the player population in separate subsections.

#### 4.3.1 The Viewers’ Attitudinal Test Scores

Although these scores are unlikely to have any bearing on the participants’ comprehension scores themselves, it is nonetheless of interest for the subsequent analysis to present their

attitudes, as they may bring additional insight into whether it is worthwhile or not to bring video games into the classroom.

**Figure 18**

*Results of the Likert-Scale Survey (Viewers)*

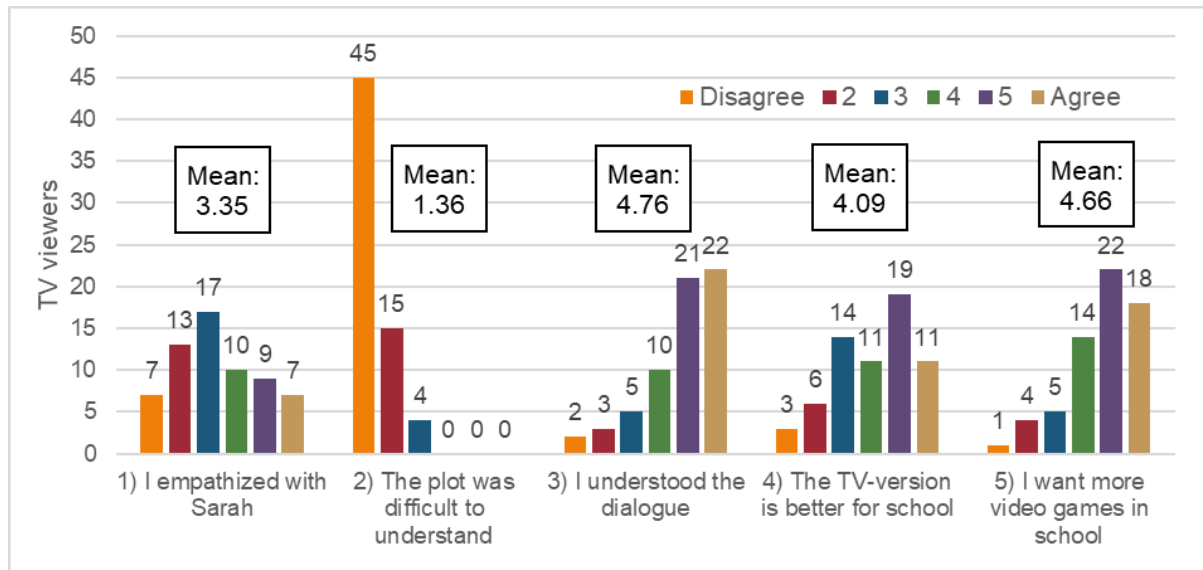


Figure 18 above illustrates all answers to this survey, although the phrasing of the items has been shortened slightly and translated to English to enhance readability (see Appendix A for the unaltered statements). The means were calculated by assigning the six options on the scale from disagree to agree with the numbers 1 to 6, respectively, and calculating the averages of these. This data includes the answers from the one viewer whose comprehension test was invalid, as the attitudinal items are subjective and independent from the comprehension test. It should be noted that one subject ticked two options on Item 1 and another subject did not answer Item 3. Both of these specific item answers have been excluded from the data collection. Overall, subjects tended to “disagree” on the first two statements, weakly on the subject of empathizing with the protagonist but strongly on finding

the plot difficult to understand. The latter three statements all yielded moderately strong “agree”-inputs from the subjects.

The result of Item 4 concerns the television version of *The Last of Us* specifically. The original statement, translated to English, is: *I feel that the medium I got to experience (video game or television series) helped me understand the story and language better than the other medium would have*<sup>5</sup>. The mean result of 4.09, with a clearly visible mode of 5, therefore means that subjects tended to feel that the television series was more suitable to them in an educational context than they imagine that the video game version would have been. This comparison is naturally biased from subjects having just, and exclusively, experienced the television version. In an attempt to combat this, one can look at the results of this item when isolating subjects with prior experience with the video game since these subjects will then have experienced both. Doing so reduces the number of subjects from 63 to 27, among which the average is reduced negligibly to 4.07. Going further as to only take into account subjects who have played the video game themselves, rather than watch someone else play it, yields only 11 subjects with an average of 5.00 exactly. This is a substantial increase due to four out of these 11 rating this item the highest level of “agree”.

#### 4.3.2 The Players’ Attitudinal Test Scores

The last dataset presented are the results of the attitudinal survey for the players. To reiterate what was noted in the section above, these scores are not directly related to the comprehension tests, but instead a helpful additional perspective for analysis.

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<sup>5</sup> A direct translation from Swedish. See Appendix A for the full questionnaire.

**Figure 19**

*Results of the Likert-Scale Survey (Players)*

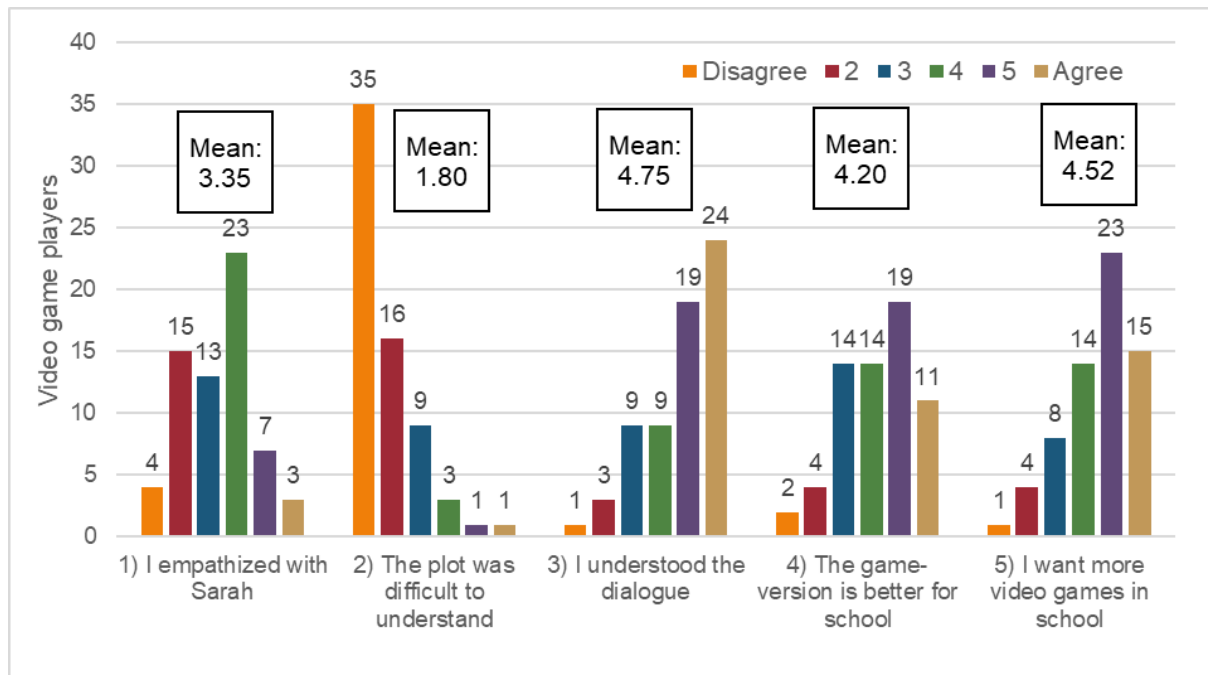


Figure 19 illustrates the 65 video game playing subjects’ answers to the Likert-scale survey, including answers from the two players whose comprehension tests were invalid, again because these attitudinal items are subjective and independent from the comprehension test. The statements are the same abbreviated translations as in Figure 18.

Despite a mean score of 3.35 which is below the middle of 3.5 and therefore a slightly negative response, 50.7% of subjects answered four or above, indicating that a small majority of subjects agreed with the notion that they empathized with the protagonist to some extent. The second statement, with a mean score of 1.80, indicated that most students had little to no difficulty grasping the game’s story. The third statement had a mean of 4.75 and a mode of 6, entailing that most subjects had had little difficulty understanding the dialogue. Items 4 and 5 saw subjects predominantly positioning themselves on the agreeing side.

In order to allow for a thorough comparison between the viewers' and the players' attitudes toward their respective mediums, it is of importance to present the results of Item 4 in further detail. To repeat, Item 4's original, translated statement is: *I feel that the medium I got to experience (video game or television series) helped me understand the story and language better than the other medium would have.* The players generally agreed with this statement, which is evident from the mean result of 4.20 and the mode of 5. It is, nonetheless, necessary to consider that these participants only interacted with the video game version of *The Last of Us*. As a counter to this possible bias, we also choose to present the answers of the 21 participants who reported that they had had some experience with the television series before. Their mean score for Item 4 was 4.29, a slight increase from the total mean of 4.20. If we only take into account the 11 players who had previously watched an episode or more of the television series, however, the average response was slightly lower, with a mean score of exactly 4.00. Lastly, it should be noted that these subgroups are too few in number to constitute statistically significant data on their own.

## 5. Analysis

In the following section, we sought to compare and analyze the results presented in the previous section in order to answer the present study's research question:

How do the results of an EFL comprehension test following a narrative video game compare to those of a television adaptation in the context of an upper secondary school English classroom in Sweden?

Firstly, the average scores of the two student samples will be compared and visualized through a normal distribution curve in order to establish a basic overview of how the two mediums compare. Thereafter, the measured variables presented in the results section, their relation to the final test scores when combining the populations, and possible correlations thereof, will be discussed. Lastly, the participants' attitudes, which were measured using a Likert-scale in the third part of the survey, will be taken into account.

### 5.1 Test Scores

Among the total of 65 subjects who played the game, and 64 who viewed the television series, two players and one viewer failed to follow the test instructions. Therefore only 63 tests from each group are used for the purpose of comparing valid test scores in this section.

The test scores from the players and the viewers, and what they may entail, are arguably multifaceted. In order to delve deeper into the nature of these results, it is nonetheless logical to first begin with the broadest point of comparison: how the two populations compare overall. This is followed by subsections analyzing the results by variables in the order of



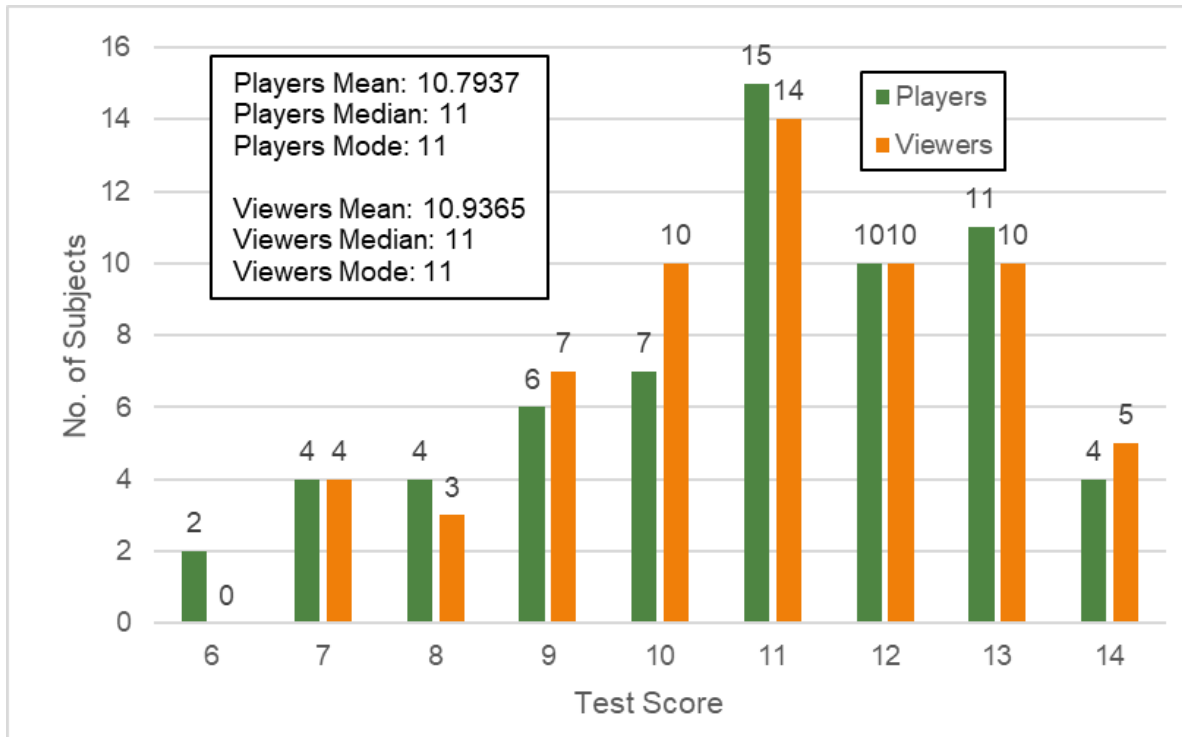
gaming frequency, gender, English course level, and school program. We must acknowledge that in analyzing these variables, we are not taking into account how they may influence one another, but rather isolating them one after the other.

### 5.1.1 Overall Scores

With the exception of the two players who scored a 6, the distribution of results in Figure 20 across both groups look quite similar. The median and mode of both populations are the same at 11. The means differ slightly, however, yielding the result that the viewers, with a mean score of 10.94, outperformed the players who had a marginally lower mean score of 10.79. This raw data by itself would imply that students are slightly more receptive to the more traditional classroom medium of television viewing than the interactive medium of video game playing. It remains to be seen, however, if this implication holds up to further statistical analysis.

**Figure 20**

*Distribution of All Test Scores for Players and Viewers*



Before a conclusion can be drawn about the difference in means, it must be evaluated how reliable this discrepancy is. To do so, we must test these statistics to ensure that the difference is representative of the larger population and not the result of chance. Since we are comparing the same variable, test scores, across two independent sets of data, players and viewers, we settled on a two-sample t-test. For this, however, we needed to establish whether the variances were equal or unequal across the populations. This is what an F-test is for, which was conducted and yielded the variances in Table 12 below.

**Table 12**

*F-Test Two-Sample for Variances Between Players and Viewers*

	Players ( $n=63$ )	Viewers ( $n=63$ )
Mean	10.79365079	10.93650794
Variance	4.327700973	3.608806964
df	62	62

Through this test, we can conclude that the players' data has a variance of 4.33 whereas the viewers' data has a variance of 3.61. While some may argue that these are near enough to assume an equal variance, we nonetheless opted for a t-test assuming unequal variance. This is due in part to the still significant increase of 19.9% from the viewers' variance to the players' and in part to the fact that the test conditions were not exactly the same for the two populations, since the differing mediums consumed still made up part of the material for the test. For these reasons, the following subsections for the different variables have also all been done with t-tests assuming unequal variances.

Following this, we put the data through a two-sample t-test assuming unequal variances, where the hypothesized mean difference was set as 0. The null hypothesis is that the difference in means is the result of pure chance. The odds of this being true is known as the p-value and is somewhere between 0 and 1, which can easily be translated to a percentage. The typical tolerance level, known as the  $\alpha$ -stat, for rejecting the null hypothesis is usually set at anything below .05, meaning 5%. Therefore, if any of the following t-tests output a p-value below .05, this means that the result is statistically significant and the correlation likely enough to not be the result of pure chance.

**Table 13**

*Two-Sample t-Test Assuming Unequal Variances Between Players and Viewers*

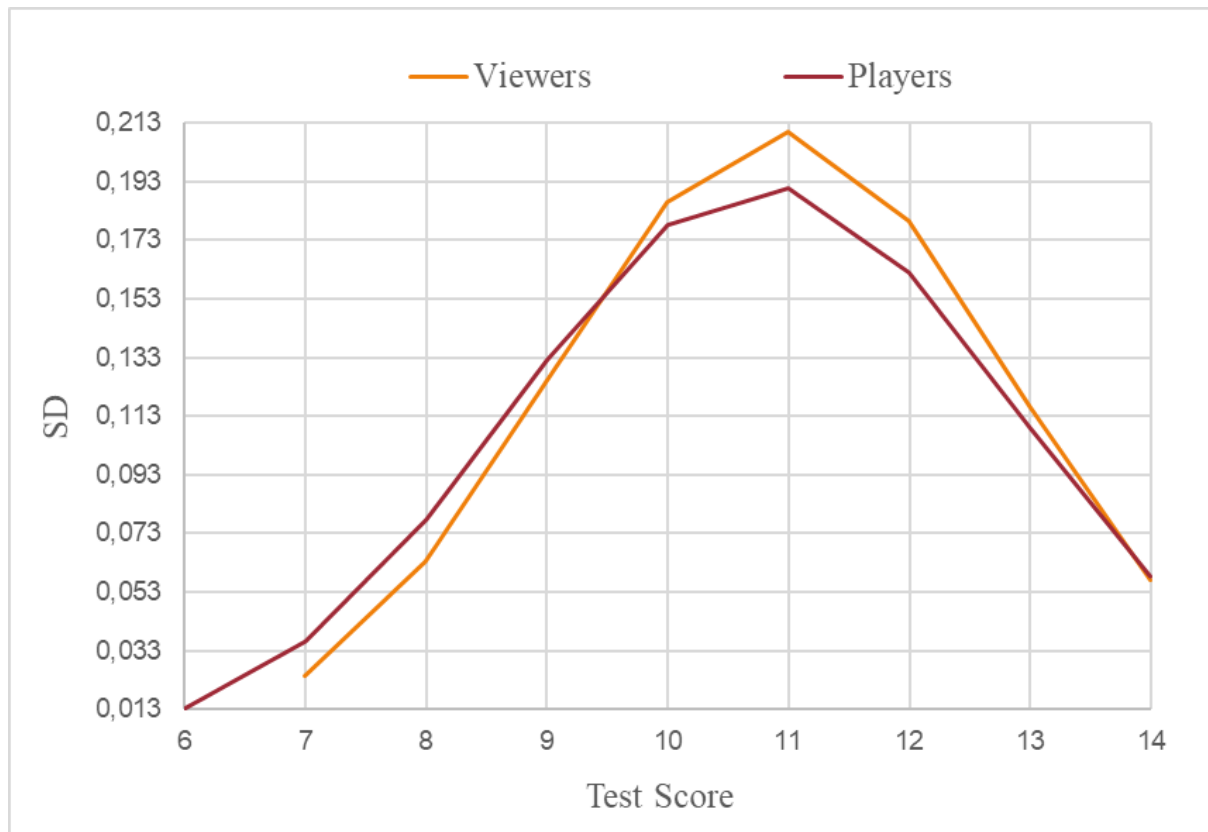
One-tailed		Two-tailed		Hypothesized Mean Difference	df	t Stat
P(T<=t)	t Critical	P(T<=t)	t Critical			
0.344010	1.657336	0.688020	1.979438	0	123	-0.402492

As can be seen in Table 13, the p-value is .344 for the one-tailed test and .688 for the two-tailed. This means that if we were only testing to see if players could perform equal to or better than viewers, then the result given has a 34.4% chance of being the result of pure chance. If we were expecting to see any difference at all, for better or worse, then the result had a 68.8% chance of being the result of pure chance. We are chiefly interested in the latter, but this makes no difference. Since both the one-tailed and two-tailed p-values exceed the  $\alpha$ -stat tolerance of .05, the null hypothesis cannot be rejected. Ergo, the small difference observed between the average test score of players and viewers is too likely to be the result of pure chance to be statistically significant.

If we are expecting no difference between the groups, meaning that video games could effectively substitute television in the classroom without impacting the quality of education, one way to examine if our data is representative would be to plot it in a distribution curve. If it can be approximated to a normal distribution curve, this would suggest that there is enough data for the results to be successfully extrapolated to be representative (Rasinger, 2013, p. 139). To further determine how probable it is that these results are representative of the population, the standard error of the normal distribution curve must also be taken into account (Rasinger, 2013, p. 145).

**Figure 21**

*The Spread of Results for Viewers and Players Plotted Into a Normal Distribution Curve*



As is visible in Figure 21 above, the viewer and player samples can both be plotted into fairly symmetrical distribution curves. A somewhat even distribution, as noted in Rasinger (2013), is of importance in order to conduct valid statistical analyses (p. 140). Another indication that the distribution is fairly normal is that the means of 10.79 for players and 10.94 for viewers are relatively close to the medians and modes of 11 for both groups. The standard deviations (SD) of the populations are 2.08 and 1.89 for players and viewers respectively (see Table 14). 60.3% of players and 54.0% of viewers are within one SD of the mean, which falls short of the expected 68.3% in a perfect normal distribution (Rasinger, 2013, p. 140). On the other hand, 96.8% of players and 93.7% of viewers are within two SDs of the mean, which is close to the 95.0% which we should expect (Rasinger, 2013, p. 140). The underrepresentation of

subjects within one SD could be explained by the test having too few items, which promotes indivisible large groupings of scores around the mean.

**Table 14**

*Standard Deviation and Skew for Viewer and Player Total Scores*

	Players (n=63)	Viewers (n=63)
Mean	10.79365079	10.93650794
SD	2.080313	1.899686
Skew	-0.54832	-0.32891

The slight deviation from a normal distribution may be testament to a skew in the distribution curve. This was tested through a skew-test presented in Table 14 above. The skew value of -.55 and -.33 indicate that both the players and viewers are subject to a right-skewed distribution, which is also visible in Figure 21. This does not indicate that the data is unreliable, but rather that the test items likely were too “easy” to facilitate a perfect normal distribution. This is especially evident due to the fact that the top score of 14 falls within two SDs of the mean, which should not be the case in a perfect normal distribution. This can be connected to *the ceiling effect* which occurs when many participants are clustered near the highest limit of the test, thus entailing that the participants have not been sufficiently challenged by the test’s items to accommodate a believable variance in the total scores (Garin, 2014, p. 631). This is discussed further in 6.3.3.

Despite this skew, in combination with previously discussed factors such as the similar means, mediums, and modes, it would appear that the data indeed follows a fairly normal distribution. What this represents when attempting to extrapolate this data to a larger population can be debated. It could be argued that this still only represents the nature of the

sample itself: the genders and school types, socioeconomic and ethnic compositions of the students and schools sampled. We would nonetheless argue that, due to the large size of the sample, and its data's approximation to a normal distribution, it can be indicative of Swedish upper secondary schools' EFL students in general.

It would then appear to us that the video game medium does not impose any substantial benefit, nor drawback to EFL students' comprehension of English. Although the viewers arguably performed marginally better, with a mean score of 10.94 as opposed to 10.79, the previously mentioned p-values (see Table 13) indicate that this variance potentially could be due to pure chance. We interpret these findings as an indication that video games can indeed be used as a medium for EFL comprehension tests on the same bases that more traditional mediums are used, without any significant negative effects on the score. Nevertheless, the similar scores between the control group and players do put to question whether *multimodality* can be said to be a boon to EFL comprehension, in the same fashion that other studies indicate that it can be attributed to help with language acquisition (cf. Chen and Yang 2011; Sylvén & Sundquist 2012; Janebi Enayat & Haghghatpasand, 2017). This can be further investigated by isolating video game literacy as a variable.

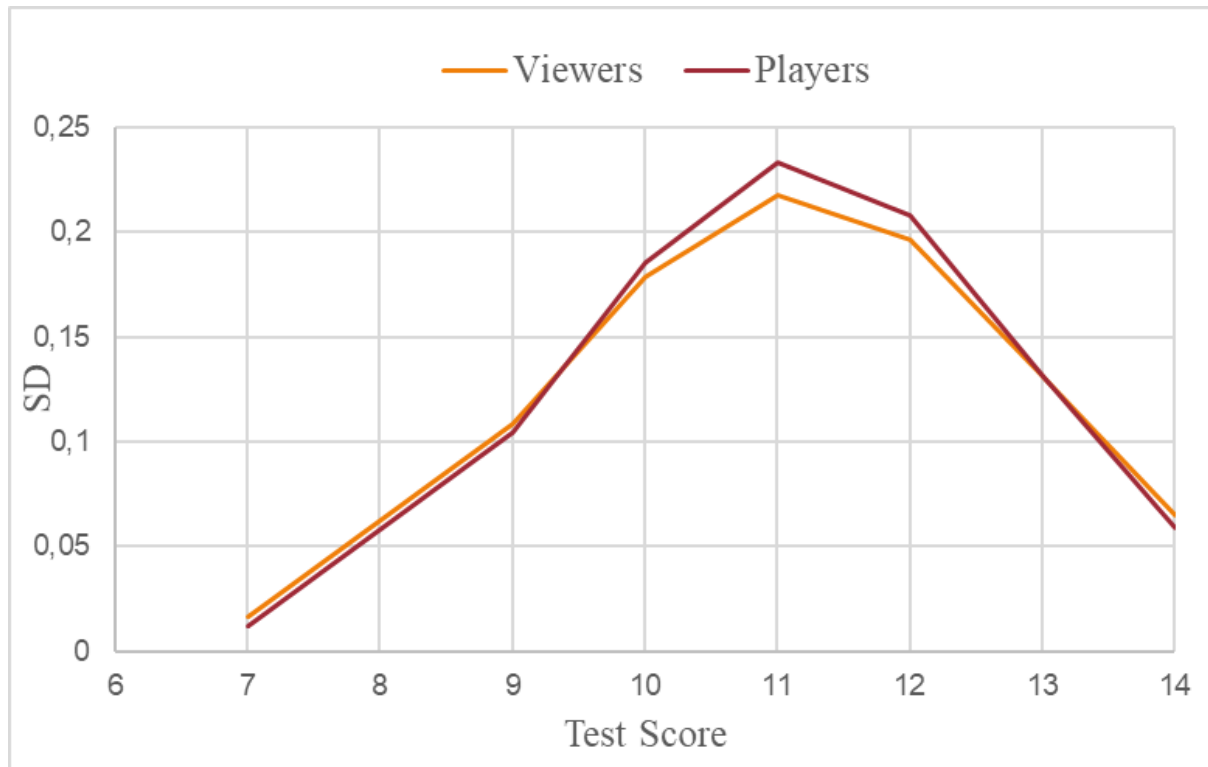
### 5.1.2 Experience with Video Games

Among all other variables, we shall first analyze how habitual players fared in the test, following the multimodal argument that the lack of video game literacy might have hindered less experienced players from being fully immersed in the video game narrative. For the purpose of this variable, we are only counting subjects who reported playing video games the

most frequently. This was the option of *Several times per week*<sup>6</sup>, which encompasses 68, or a slim majority, of subjects.

## Figure 22

*The Spread of Results of Frequent Players Plotted Into a Normal Distribution Curve*



As was observed with Figure 21, Figure 22 likewise shows a fairly normal distribution. This is evident from the fact that the means of the players and viewers, at 11.17 and 11.16 respectively, are fairly close to the median and mode of 11 for both groups (see Table 6 and Figure 15). Additionally, we can see that the above plotted normal distribution curves appear to be fairly symmetrical. The slight right-ward skew of player and viewer normal distribution curves evident in Table 15 below, at -.32 and -.33 respectively, can once again be seen as an

<sup>6</sup> A direct translation from Swedish. See Appendix A for the full questionnaire.



indication that the survey's items were too easy, as the top score fell within two SDs from the mean for these groupings as well.

**Table 15**

*Standard Deviation, Mean, and Skew of Frequent Players Among Viewers and Players*

	Habitual Players Among Players (n=30)	Habitual Players Among Viewers (n=38)
Mean	11.16667	11.15789
SD	1.703613	1.823663
Skew	-0.32297	-0.33132

The fact that the 30 players who stated that they were frequent players had a mean score of 11.17, significantly higher than the overall mean for players of 10.79, is of great interest for the aim of the study. At a glance, DeVane and Squire's (2012) previously mentioned argument (see subsection 2.7.5), that inexperienced players are less able to "read" the game when limited by their gaming proficiency (p. 62), could consequently be said to have some merit. This idea can, however, be swiftly disregarded by taking into account the scores of the habitual players of the viewer population; they achieved an average score of 11.16. Due to the minimal difference of .01, the notion that the higher score of players could be attributed to the game's immersive elements and Gee's multimodal principle is therefore unfounded. On the other hand, when contrasting both of these means with those of the non-frequent video game players, these results are in line with the findings in Sylvén and Sundquist's (2012) study on Swedish EFL students' extramural gaming habits. They found that students who played video games regularly generally performed better in curricular vocabulary tests (p. 302). Our results for this variable can then be argued to represent a correlation between habitual video game

playing and a higher English proficiency level in general, rather than it being dependent on the medium experienced in our test.

### 5.1.3 Gender

Male test subjects and their means of 10.63 among 49 viewers and 10.70 among 43 players, for a combined average of 10.66, performed worse than female subjects who, with their means of 12.00 among 12 viewers and 10.94 among 18 players, yielded a combined average of 11.36. With such a large difference between mean scores, it is of interest to test whether this variation in scores is statistically significant. Again, this is done through a t-test assuming unequal variances for the reasons explained in 5.1.1. For consistency as well as transparency, we have henceforth also chosen to always display both the one-tailed as well as two-tailed values, even though they are of different relevance to different variables.

**Table 16**

*Two-Sample T-Test Assuming Unequal Variances Between All Male and Female Participants*

One-tailed		Two-tailed		Hypothesized Mean Difference	df	t Stat
P(T<=t)	t Critical	P(T<=t)	t Critical			
0.042431	1.674116	0.084862	2.005746	0	53	1.756022

As illustrated in Table 16, the p-values were calculated to be .042 for the one-tailed test and .085 for the two-tailed test. Although the one-tailed p-value lies within the bounds of the typical tolerance level of  $p < .05$  we are primarily interested in the two-tailed result of .085, since we are testing for a difference in score in any direction. Consequently, we cannot reject the null hypothesis, despite the relatively low p-value of .085.

Regardless, it is curious that our results suggest an opposition to the trend of other studies within the field of CALL, such as Sylvén and Sundquist (2012), where boys generally outperformed girls (p. 313). They do instead align with the larger trend in education in Sweden where girls tend to outperform boys overall (Sandberg, 2019), as mentioned in section 2.7.2. It can also be speculated that the scores in this study are a testament to the contemporary near parity between the genders in regard to who plays video games (Ivory, 2016, p. 15). What can be said with certainty is that the previously mentioned fact that males generally favor action-oriented games did not lend any discernible advantage to the male participants of the present study.

#### 5.1.4 English Course Level

Which English course the participating students were currently enrolled in seemed to have a positively trending effect on their results, where English 5 students yielded a combined average of 10.47, English 6 students an average of 11.13 and English 7 students an average of 11.25. One can therefore see the expected trend of scores increasing with the English course level, although the English 7 group still only consists of 12 subjects. Since we believe that this size is still too small to be significant, rather than conduct an ANOVA encompassing all three sets of data, we chose to only test the data of English 5 and 6 which could be done using a t-test.

**Table 17**

*Two-Sample T-Test Assuming Unequal Variances Between English 5 and English 6*

One-tailed		Two-tailed		Hypothesized Mean Difference	df	t Stat
P(T<=t)	t Critical	P(T<=t)	t Critical			
0.038101	1.65993	0.076201	1.983495	0	102	-1.79136

Since it is reasonable to assume that the participants enrolled in the more advanced English course of English 6 should fare better than students in the other sample, we are strictly concerned with the one-tailed p-value of .038. On account of this value falling below the tolerance level of .05, we can reject the null hypothesis and conclude that the difference in scores is statistically significant. This is, again, to be expected since students have to complete English 5 to be enrolled in English 6. The higher result of English 7 students, despite the smaller sample size, is likewise expected for the same reason. The fact that this variable, along with the course level variable, follows their respective expected trends in relation to both populations speaks for the reliability of our data.

### 5.1.5 Programs

When examining the overall result between the different types of programs, vocational or theoretical, the total mean for the 56 subjects from theoretical programs is 11.36 with a median of 12, while the 70 subjects from the vocational programs have a mean of 10.47 with a median of 11. As with other variables, we conducted a two-sample t-test assuming unequal variances to evaluate the statistical significance of this difference.

**Table 18**

*Two-Sample T-Test Assuming Unequal Variances Between Vocational and Theoretical Programs*

One-tailed		Two-tailed		Hypothesized Mean Difference	df	t Stat
P(T<=t)	t Critical	P(T<=t)	t Critical			
0.006139	1.657869	0.012278	1.980272	0	118	-2.543199

As with the scores by gender, we do not expect a difference in either direction, meaning that we are interested in a two-tailed t-test. Table 18 reveals that the two-tailed p-value is .012, meaning that the null hypothesis can be rejected. In fact, this is the lowest two-tailed p-value of all variables and thereby the most statistically significant difference in this study. The reason why is likely found in how it reflects a wider national trend where students from theoretical programs graduated with grades 12.3% higher than students from vocational programs in 2021 (Skolverket, 2022e).

## 5.2 Attitudinal Scores

In this section we discuss and analyze the results and scores from the attitudinal survey that followed the comprehension test. All of the mean values are shown together with their corresponding questionnaire items in Table 19 below. It uses the same abbreviated translations for the items as Figure 18 and Figure 19.

**Table 19**

*Table Describing the Averages Between the Participating Groups (Players and Viewers)*

<i>Item</i>	<i>Viewers (Mean)</i>	<i>Players (Mean)</i>
1) I empathized with Sarah.	3.35	3.35
2) The plot was difficult to understand.	1.36	1.80
3) I understood the dialogue.	4.76	4.75
4) I preferred my version.	4.09	4.20
5) I want more games in school.	4.66	4.52

The results from the attitudinal survey show that the mean value of the responses to Item 1, *I empathized with Sarah*, is 3.35 regardless of medium, which in turn is considered to be

negative since the value is below the middle value of 3.5. In constructing this item, we intended to compare its results to some of the previous research on the added immersion of video games. As stated in section 2.5, actions taken in video games can reflect the emotional experiences of the player and thus create a feeling of partial responsibility for said characters (Isbister, 2016, pp. 8-9). In accordance with Gee (2007), this can help the player identify with the characters more, thus engrossing the player in the narrative in a way that is not possible with books or television series. It is interesting that this trend is not reflected in our results, with the two populations yielding the exact same average. A theory as to why this could be is that the material was too short and that students did not have enough time to feel immersed. As is discussed in 6.3.4, it is possible that a more longitudinal study could instead have seen a diverging trend the longer the exposure to the material progressed.

Continuing the negative trend is the answer to Item 2, *The plot was difficult to understand*, which asked if the participants had trouble following the plot. We were expecting a negative trend for this item since it was deliberately phrased in the negative to stop subjects from only marking one side of the scale for all items. Thus, the results clearly show that neither group had such difficulties. The players agreed slightly more with a mean of 1.80 compared to the viewers who had a mean of 1.36. The reasoning for this difference can be explained by the difference in the amount of dialogue since, due to the medium, the television series has a higher amount of dialogue compared to the video game. Or perhaps this can be explained by the obstacle of game literacy, as discussed in sections 2.7.5 and 5.1.2, whereby the reading of video game narratives can be hurt by a lack of experience with the medium (DeVane & Squire, 2012, p. 62).

The difference in the response to Item 3, *I understood the dialogue*, between the two groups is also negligible. The mean of 4.76 for the viewers and 4.75 for the players places both on the agreeing end of the scale. This result allows us to assume that the language level is at an appropriate level for both mediums, thereby bolstering the validity of comparing the two mediums for this level of EFL education in Sweden.

The most interesting results from the attitudinal section is perhaps those regarding Item 4, whose full translation is: *I feel that the medium I got to experience (video game or television series) helped me understand the story and language better than the other medium would have*<sup>7</sup>. Here, both populations gave a positive response. The players showed a mean of 4.20 and the viewers a mean of 4.09. This positivity for both mediums could be explained by a bias toward their own recent experience, but the higher mean of players lends some credibility to the theories of immersion which have been discussed previously (see subsection 2.5). We would, however, argue that the most noteworthy finding in regard to Item 4 does not lie in this difference, especially due to the speculative nature of Item 4, as the participants had no real experience with the other medium. Indeed, the most intriguing finding is rather that a clear majority of both populations found their respective medium to have helped them comprehend the plot and language, thereby underlining the educational potential of both mediums.

The educational possibilities of video games alluded to in the answers of Item 4 are reflected in the strong positive mean results of 4.66 and 4.52 from the final item in the attitudinal survey, Item 5, fully translated as: *I want video games to be utilized more in the English classroom*<sup>8</sup>. These findings serve as an indication that more studies on the subject are

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<sup>7</sup> A direct translation from Swedish. See Appendix A for the full questionnaire.

<sup>8</sup> A direct translation from Swedish. See Appendix A for the full questionnaire.

warranted, since 102 out of 129 participants, or 79.1%, answered 4 or higher, thereby agreeing that video games should be used more in the English classroom. These positive attitudes among EFL students toward the usage of video games in the classroom has been reciprocated in other, previously mentioned, studies within CALL (cf. Chen & Yang 2011; Sylvén & Sundquist 2012; Janebi Enayat & Haghighatpasand, 2017). This desire for further implementation and usage of the medium within the EFL classroom can, in turn, be interpreted as an opportunity to raise both morale and motivation among students. Even by solely taking these attitudinal findings into account, we argue that it is evident that further research of implementing video games into EFL teaching is a worthwhile pursuit. At least, its inclusion would encourage a diversification of audiovisual mediums which would encompass a greater variety of learning styles and student preferences.



## 6. Conclusion

The final part of this study is divided into a summary of the analysis followed by a brief discussion of the potential pedagogical applications of our results, the limitations of our study and some suggestions for future research in the field.

### 6.1 Summary

This large-scale study sought to compare the results of an EFL comprehension test following a narrative video game in contrast to a television adaptation in the context of an upper secondary school EFL classroom in Sweden. In this study, the viewers of the television adaptation served as a control group, representing a medium more traditionally accepted and used in Swedish classrooms. Against a background of research into the benefits of the added layer of interactivity which video games provide, the study aimed to provide insights into whether this interactivity would hinder or promote foreign language learning.

The results of the comprehension test indicate a minor difference in average results to the benefit of television viewing. This difference is statistically insignificant and unreliable, seeming instead to suggest that there is no discernible difference between the mediums. The large number of subjects tested and their data's approximation of a normal distribution curve strengthen the reliability of this result. Therefore, this study finds that a video game narrative can effectively be used in the same manner as a television series in the classroom, with no loss or gain of language comprehension.

Isolating other variables, it can further be established that when observing only subjects who play video games on a weekly basis, the average test scores improve significantly. In fact, the

difference was reversed to the benefit of the subjects playing the video game version, although this difference is also minor and statistically insignificant. Other variables analyzed include the time taken to play the video game, which bore no impact on the results, gender, where female subjects outperformed male subjects, as well as the level of English course, where the results predictably got higher as the level of education rose. The relationship between test scores and the type of upper secondary school program was also studied, although broadly in divisions of vocational and theoretical programs, and it was discovered that students of theoretical programs scored higher than students of vocational programs.

The comprehension test also included an attitudinal Likert-scale survey, where the first item established no relationship between empathy for the protagonist and the medium consumed, which both groups answered neutrally on average. The second item indicated a small increase in difficulties comprehending the plot of the narrative when playing the video game version, although both groups in general answered strongly in the negative. The third item found no significant difference between the mediums in terms of comprehending the dialogue and subtitles, with both groups near equally averaging toward finding it easy to comprehend. The fourth item directly asked subjects to answer whether they preferred their version, video game or television series, to that of the other. Both groups answered that they preferred their version, but players on average submitted their preference as stronger. Lastly, the final item asked subjects if they would like to see more video games in English education moving forward, which a large majority of both players and viewers agreed with.

## 6.2 Pedagogical Implications

The present study shows that video games have a future within EFL education. By looking directly at the results from this study, one can determine that a video game like *The Last of*

*Us* is applicable in a classroom setting if treated correctly. Using this study as inspiration, teachers could use *The Last of Us* or any similar video game as a way to train and test the audiovisual receptive skills of their students in the target language.

From a classroom perspective, using a video game in an EFL classroom to develop and test comprehension fills a similar function as a movie or television series would. It exposes the learners to the target language, in this case English, in a manner that simulates reality and how they would encounter the language outside of the classroom. Setting the inherent logistical efforts aside, this entails that a teacher, in theory, could take the material that makes up the foundation of the testing portion of the present study, i.e. the prologue of the video game and the accompanying assessment items, and apply it directly inside their classroom. Such an undertaking is incentivized not only by the fact that students themselves reported that the video game medium had helped them comprehend the story of *The Last of Us*, but also that a great majority wished to see an increase of the medium's usage in EFL education.

The major difference between using a video game compared to a movie is that a video game has a level of active participation that a passive medium like a television series or movie does not have. Although this multimodality does not appear to have any substantial effect on students' ability to comprehend English from this study's results, its parity with traditional media does provide new options for interactive activities and assignments within the EFL classroom. One slightly different genre of video games worth exploring further in this regard are narrative video games featuring player choices which direct the narrative, such as *Detroit: Become Human*. Thereby, students could potentially experience vastly different stories through the same video game world. This, in turn, could foster fruitful and varied reflections or production assignments.

The inevitable challenge with implementing video games into the classroom are, nevertheless, the logistical problems of providing each and every student with the means to play and experience the game. Providing solutions for such an undertaking is, however, beyond the scope of the present study. Although, with the rise of more powerful personal computers in classrooms, it appears to be only a matter of time for this barrier of entry to be lowered.

## 6.3 Limitations

Some logistical limitations did impact this study, such as only being conducted on a few subjects at a time, in sessions of roughly 30 minutes. There are also other limitations worth discussing, some unavoidable in varying degrees, but others which are more related to choices made by us in the design of our study. This section goes over these and concludes with some potential improvements of the study that were realized too late into the data collection, and are simply left as suggested revisions for future research.

### 6.3.1 Pre-Test

Due to the absence of a pre-test in the present study, there was no way of measuring the participants' EFL skills prior to their participation. It would have more accurately determined whether the test had an impact on the students' learning and would also have ensured that the students met the minimum language requirements for participation, in this case the completion of compulsory school, tied to B1.1 on the CEFR-scale (Skolverket, 2022b, p. 7). The lack of pre-tests, and post-tests for that matter, is a common occurrence within the field of CALL (Peterson, 2013, pp. 46-47). In our case, we chose to prioritize a larger sample size

of participants and having a control group, the latter of which is also particularly needed in CALL (p. 47).

### 6.3.2 The Recency Effect

Since this study focuses on comprehension and not literacy or any deeper analytical aspects, the recency effect as proposed by Hattie and Yates (2014) becomes relevant, due to its possible influence over the questionnaires. The recency effect occurs when information which has entered a person's mind closely in time is for that reason readily accessible when they are trying to recall said information (Hattie & Yates, 2014, p. 116). This means that the subject is more likely to remember the last things that happened in the television series or video game than things which transpired earlier. However, depending on the person, this effect might be more or less prominent, meaning that some of the participants might have an easier time than others answering the questions based on context rather than comprehension. Nonetheless, this was one of the reasons we did not allow test subjects to answer test questions during the exposure to the material. However, given any receptive comprehension assessment situation, some degree of the recency effect will always be unavoidable.

### 6.3.3 The Ceiling Effect

The normal distribution and subsequent skew-test of our overall test scores revealed that they had a noticeable right-ward skew, meaning that an unexpected number of participants had attained the top-score of 14 in the comprehension test. In statistics, such a phenomenon is often described as *the ceiling effect*. As noted in subsection 5.1.1, this effect is used to describe circumstances where the top-score of a test is achieved by an unprecedented number of participants (Garin, 2014, p. 631). It is probable that this was caused by our pursuit to include all three English courses of the Swedish upper secondary school.

As stated in subsection 3.4.1, the comprehension test was designed with the course criteria of all English courses in mind, thus when administered to participants attending a higher level, the test will naturally pose less of a challenge, hence skewing the results toward the right. We acknowledge that we may have been too generous in our estimation of this difficulty level, but we wished to minimize the risk of making the questions too complex and frustrating for the subjects, thereby jeopardizing the data collection.

#### 6.3.4 Suggested Revisions for Future Research

With the conclusion of this study's data collection, some considerations were brought up too late to be planned for. An example of this was the fact that some recurring student answers were found correct enough to lead to revisions of the answer key (see section 3.5). In spite of this, we still consider the questions themselves to be well formulated and accurate to the material. Although, for the purpose of data processing, it would have been beneficial to have more items to encourage a greater variation of results and combat the ceiling effect.

One significant point to emphasize is the fact that this study only analyzed one variable at a time as they related to the test scores. It is naturally true that one variable can affect another, and that it is a significant limitation that this study does not account for this in its data processing. The correlations presented in this study, in sections 5.1.2 through 5.1.5, should perhaps best be seen as potential launch points for future, more focused studies. These studies could, for instance, seek to explore the interplay between these variables, thereby bringing further depth to the understanding of how video games may affect language comprehension.

Improvements to the Likert-scale items could also have been made. We believe that the first item, *I felt an emotional connection to Sarah*<sup>9</sup>, would serve the purpose of addressing immersion better with a formulation such as *I felt immersed in the story*. Additionally, an item which would have been useful to add would be a statement such as *The violence and language of the material made me uncomfortable* to investigate the concerns of mature content in video games addressed in section 2.7.4. As for the data collection itself, while we are content with the amount of participants, perhaps more could have been done to pursue a more diverse sample. Future studies are additionally encouraged to implement pre- and post-tests.

The last thing that we wish to note is that the potential immersion for the players is reduced when the test is based only on a video game's prologue, which is primarily designed to set up its story and characters. This might not be enough time for the benefits of video game immersion and multimodality to be felt by subjects or be measurable by researchers; participants might not have had sufficient time to become familiar with the material. This would naturally affect the attitudinal item on immersion mentioned above as well. Therefore, the participants of a study on video game immersion might benefit from more time given with the material to better familiarize themselves and empathize with the characters and narrative.

## 6.4 Future Research

First of all, it is imperative to stress that this study was made in Sweden within a Swedish educational context. Therefore, we suggest that future studies should seek to replicate the

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<sup>9</sup> A direct translation from Swedish. See Appendix A for the full questionnaire.

present study within the context of other cultures in order to explore the bearing of narrative video games, such as *The Last of Us*, internationally.

Furthermore, much else remains to be researched in regard to the didactical applications of narrative video games in EFL learning. This study in its purest form is a pilot study of its field and should therefore be treated as such. It has shown the validity of video games in the classroom and how they can be used. For future research, more longitudinal studies with similar games need to be conducted, in order to further explore the potential of immersion and find suitable assignments for the medium. This may be achieved, either through a more clinical setting or alternatively, through action research exploring how video games can be practically applied in a classroom setting without being a possible logistical burden on either the teacher or the school.

Researchers not limited by the need for a comparative control can explore a wider range of video games. Examples of these could be video games such as *Spec Ops: The Line* or *Life is Strange* due to their narrative elements. More text-based video games like *Ace Attorney* and *Zork* could also have a possible application in the classroom due to their design, being heavily focussed on reading and logical thinking.

In our opinion, the next step in both CALL and the practical processes of including video games in the English classroom is to produce a possible unit plan that utilizes video games in the classroom with assignments and examinations, to really test if it is a feasible addition to modern education on a full scale.

"Ellie: After all we've been through. Everything that I've done. It can't be for nothing."

(Druckmann & Straley, 2014)



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## Appendix A: Questionnaire (with answer key)

### Studie om språkuppfattning baserat på “The Last of Us”

Detta dokument är delat i tre delar. Den första delen är en enkät för information som berör dig och dina vanor och bör besvaras direkt. Den andra delen är ett kort språkförståelseprov. Du uppmuntras att läsa igenom även del 2:s frågor innan “The Last of Us” påbörjas, men undvik att besvara dem förrän efteråt. Tredje och sista delen handlar kortfattat om vad du tyckte om upplevelsen och upplägget.

Allra först behöver du intyga att du är över 15 år gammal och att du är villig att dela med dig av denna information i vetenskapligt syfte. Du är ombedd att ange ditt namn här, men detta är endast för att vi ska kunna identifiera vilken data som är din ifall du senare önskar dra tillbaka ditt deltagande. I syfte av studien är din data anonym och du kan kontakta oss för att dra tillbaka din information från studien fram tills den 21:e maj.

Genom din underskrift intygar du även att du förstått och accepterar att “The Last of Us” är rekommenderat för en vuxen publik eftersom det innehåller våld och svordomar, men att du ändå är villig att ta del av materialet.

Signera nedan med namnförtydligande:

Signatur: \_\_\_\_\_

Namnförtydligande: \_\_\_\_\_

## 1: Information om dig och dina vanor

1) Hur gammal är du? \_\_\_\_\_

2) Vilket gymnasieprogram går du?

---

3) Vilket kön identifierar du dig med?

Man                       Kvinna                       Icke-binär                       Annat/Vill ej ange

4) Har du engelska som modersmål?     Ja.     Nej.

5) Vilken kurs i engelska går du?

Engelska 5                       Engelska 6                       Engelska 7

6) Hur ofta spelar du spel på dator eller spelkonsol (t.ex. Xbox, PlayStation, Nintendo)?

Flera gånger i veckan.                       Några gånger i månaden.                       Sällan.                       Aldrig.

7) Har du någon tidigare erfarenhet med datorspelet "The Last of Us", även känt som "The Last of Us: Remastered" eller "The Last of Us: Part I"?

Jag har spelat det nyligen (inom 1 år).

Jag har spelat det för länge sedan (längre än 1 år tillbaka).

Jag har tittat på när någon annan spelat det nyligen (inom 1 år).

Jag har tittat på när någon annan spelat det för länge sedan (längre än 1 år tillbaka).

Jag har ingen tidigare erfarenhet av spelet.

8) Har du någon tidigare erfarenhet med TV-serien "The Last of Us"?

Jag har sett minst 1 avsnitt av serien.                       Jag har hört mycket om den men inte sett den.

Jag har bara hört lite om serien.                       Jag vet ingenting om serien.

## 2: Comprehension test based on “The Last of Us”

Some of these questions require you to give a short answer, while others give you multiple answers to choose from. Choose the answer which you believe best answers the question.

1. How are Joel and Sarah related to each other?

[Any answer mentioning **father, daughter** and/or **family**.]

---

2. What is Sarah’s relation to Tommy?

- He is her father’s uncle.
- **He is her father’s brother.**
- He is her cousin.
- He is a friend of her father.

3. In the beginning of the story, why did Joel come home so late?

[Any answer mentioning a **job** or **work**.] or (for the TV series) [Specifying that they got the **wrong sized headers**.]

---

4. Why did Sarah give Joel a watch?

- It had been broken.
- He was bad at keeping time.
- **It was Joel’s birthday.**
- She wanted to surprise him.

5. How did Sarah claim that she had money to pay for the watch?

- Saving up her allowance.
- Stealing from hardcore thugs.
- Working a job.
- **Selling heavy drugs.**

6. Who is the **first** infected person they encounter?

- **A neighbor.**
- A gardener.
- A mailman.
- A soldier.



7. Why did Tommy and Joel tell Sarah that they were safe from the infection?

- They were lying.
- They were all vaccinated.
- **They were not from the city.**
- They were not hurt.

8. Why did Tommy want to help the strangers on the side of the road?

[The people **had a kid** with them.]

---

9. Name **one** reason for why Joel was against helping the strangers?

[**Joel and Tommy also had a kid**] or [**Somebody else would come along.**] or (for the game) [**they had not seen what Joel had seen.**]

---

10. Why didn't they escape via the highway?

- **The highway was blocked off.**
- A gas station had exploded.
- The smaller roads seemed safer.
- There were too many infected.

11. Why does Joel have to carry Sarah after the crash?

- She was too scared.
- She was dizzy/hurt her head.
- She was sleeping/had fainted.
- **She hurt her foot/leg.**

12. How does Joel respond when Sarah asks "What about Tommy"?

[That **Joel** needed to **get her to safety first** and/or that they would **come back for him.**]

---

13. What is the **main reason** Joel gave the soldier to let them go?

[That they are **not sick/infected** or (for the video game) that **they had been through hell**]

---

14. Why does the soldier shoot at Sarah and Joel?

- He thinks Sarah might be infected.
- **He is ordered to.**
- He is scared.
- He thinks they are dangerous.

### 3: Några påståenden om din upplevelse

Nedan finns några påståenden kring din upplevelse. Du markerar var på skalan hur mycket du håller med eller inte håller med i det angivna påståendet. Det finns inga rätt eller fel.

1. Jag kände en känslomässig koppling till Sarah.

Håller inte alls med       Håller helt med

2. Jag tyckte det var svårt att fokusera på handlingen.

Håller inte alls med       Håller helt med

3. Jag hade inga problem med att förstå vad som sades av karaktärerna.

Håller inte alls med       Håller helt med

4. Jag känner att mediet jag fick uppleva (datorspel eller tv-serie) hjälpte mig att förstå handlingen och språket bättre än det andra mediet hade.

Håller inte alls med       Håller helt med

5. Jag vill att datorspel används mer i engelskundervisningen.

Håller inte alls med       Håller helt med

## Appendix B: Field Test Script (Swedish)

### Script for “The Last of Us” Field Research

*[Så fort eleverna kommer in, dela in dem slumpartat genom att be dem välja en hand. När de är indelade, instruera dem att slå sig ner men inte röra någonting ännu. Dela ut lösblad och prov, udda nummer till spelare och jämna nummer till tittare. Inled med ditt namn, sedan följ manus.]*

#### **Manus:**

Vi är ett forskarteam från Lunds universitet som utför en studie med syftet att undersöka tv-spels potential i engelska-klassrummet. Studien använder sig av spelet “The Last of Us: Remastered” från 2014 och tv-serien “The Last of Us” från 2023. En varning är i sin ordning att båda dessa är riktade till en vuxen publik på grund av våld och grovt språk. Skulle detta påverka din vilja att delta i studien, kan du närsomhelst dra dig ur och lämna testet. Skulle du även i efterhand bli obekvämt med att din data används kan du kontakta oss, genom er lärare, och be oss radera din data från studien fram tills den 21:e maj. Oavsett så kommer din data vara anonym, vi ber endast om din namnunderskrift för att säkerställa ditt samtycke samt att vi ska kunna identifiera vilken data som är din utifall du vill dra dig ur.

Med det sagt, du kommer nu antingen spela spelets prolog eller titta på tv-seriens version av samma prolog. Under denna tid får du inte pausa, starta om, spola tillbaka osv. Du får däremot lov att föra anteckningar på lösblad.

Provet du har framför dig är indelat i tre delar:

Den första delen är delvis ett samtyckesformulär som upprepar mycket av det som sagts nu. Därefter kommer några personliga frågor om exempelvis dina spelvanor. Denna enkät del kommer du snart få läsa igenom, skriva under, och svara på, om du fortfarande önskar delta.

Del två är ett språkförståelseprov som ber dig besvara frågor om “The Last of Us” prolog. Denna besvaras efter att du spelat eller tittat färdigt, men vi ber dig att läsa igenom den innan du börjar spela eller titta.

Den tredje och sista delen är en enkät som ber dig ta ställning till några påståenden om din upplevelse. Denna är helt subjektiv och vi ber dig att vara så ärlig som möjligt. Låt inte syftet med studien påverka din sanna åsikt.

Under testets gång får ni inte prata med varandra. Skulle någonting vara oklart, vare sig det är instruktionerna eller enstaka ord, känn er fria att istället räkka upp en hand och fråga mig/oss.

Då är vi redo att börja. Läs alltså igenom del 1, signera och svara på frågorna. Läs därefter igenom del 2. Räck upp handen när du är färdig, så startar vi testet åt er. Fortsätt sedan tills - för dig som tittar - klippet är slut, eller - för dig som spelar - när titeln “THE LAST OF US” kommer upp, vilket även vi kommer vara vaksamma efter.

*[Se till att eleven läst del 2. Starta sedan “The Last of Us”, och för spelaren, starta även ett tidtagarur. Passa på att uppdatera anteckningar under denna tid. Stoppa dem, inklusive spelarens tidtagning, när de är klara enligt tidigare instruktion.]*

Varsågod att svara på del 2 och 3 nu. När du är färdig ber vi dig vänta tills alla är klara så vi kan gå tillbaka till klassrummet tillsammans. Försök att svara på alla frågor, även om det bara är en chansning.

*[Under tiden de skriver provet: nollställ tekniken och desinficera hörlurar. När alla är klara, samla in prov och lösblad, anteckna spelarens tid på dess framsida och gå därefter med dem till klassrummet och hämta nästa par/grupp elever.]*