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ESPORTS PENETRATION IN THE GLOBAL MARKET – INSERTION IN EDUCATION SECTOR

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Abstract

Known as one of the most popular digital entertainment media by the tech community, esports, or electronic sports, are being implemented in school programs. It seems like a difficult issue to be a reality, but in fact there are even countries that support schools and universities to practice esports as a method that promotes the development of students' skills. This report aims to assess whether the insertion of e-sports in education is a viable and relevant strategic procedure.

A quantitative study was used to assess the issue, based on a sample targeted exclusively at teachers. A questionnaire was then conducted, which encompassed the study variables: Technological Adoption, Popularity of Esports, Esports vs. Sports, Insertion in Education, Perception of Esports Community and Pandemic Impact. Through the data collected, it was possible to test the relationship of technology with teaching and the teachers' knowledge about esports, to understand the credibility that insertion in the education business presents.

It was observed that technology is an increasingly sought-after element as a method to support teaching by teachers. However, the subject of esports and its insertion in education, due to its novelty character, is a topic that still generates some confusion in the teachers' way of thinking. On the other hand, on the bright side of things, the sample believes in the added value that esports may represent for the academic and professional career of practitioners, revealing itself as a key factor for their insertion.

Resumo

Conhecido como um dos meios de entretenimento digital mais procurado pela comunidade tecnológica, os e-sports, ou desportos eletrónicos, estão a ser implementados em programas escolares. Parece uma questão difícil de ser real, mas de facto existem mesmo países que apoiam escolas e universidades para a prática de e-sports como método que promoção ao desenvolvimento de capacidades nos alunos. Este relatório, tem como objetivo avaliar se a inserção dos e-sports na educação é um procedimento estratégico viável e relevante.

Um estudo quantitativo foi utilizado para a avaliação da questão, tendo por base uma amostra direcionada exclusivamente para professores. Foi então realizado um questionário, que englobava a variáveis de estudo: Adoção Tecnológica, Popularidade dos E-sports, E-sports vs. Desportos, Inserção na Educação, Perceção sobre a Comunidade E-sports e Impacto da Pandemia. Através dos dados recolhidos, foi possível testar a relação da tecnologia com o ensino e o conhecimento dos professores sobre a temática e-sports, com a finalidade de perceber a credibilidade que a inserção no ramo da educação apresenta.

Foi observável que a tecnologia é um elemento cada vez mais procurado como método de apoio ao ensino pelos professores. Contudo, o tema e-sports e a sua inserção na educação, devido ao seu caráter de novidade, é um tema que ainda gera alguma confusão na forma de pensar dos professores. Em contrapartida, no lado bom do acontecimento, a amostra acredita na mais-valia que os e-sports podem representar para a carreira académica e profissional dos praticantes, revelando-se como um fator chave para a sua inserção.

Código JEL: I25, M3, O35, Z29

Palavras-chave: E-sports, desporto, tecnologia, educação, professores

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1. Introduction

This dissertation report aims to evaluate the growth of the esports industry, focusing on the feasibility of its insertion in the education sector. When esports are associated with the educational field, many questions are raised about its application. But the reality is that there are already countries that have this new aspect in practice. Traditional academic institutions, such as USC (University of Southern California), UT Austin (University of Texas at Austin), and SMU (Singapore Management University), offer bachelor's and master's programs in game development, digital innovation, esports management and administration, and entrepreneurship (Panhans et al., 2021). With this in view, the opinion of teachers from elementary school to higher education was tested on a questionnaire developed using the literature-based research questions (see Table 1).

Known as one of the fastest growing forms of digital entertainment, esports (electronic sports) have shown tremendous popularity, mainly driven by technological development (Cranmer et al., 2021). Cases in point are, the increased preference for online gaming (Hamari & Sjöblom, 2017), the ease of access to technologies and of access to elite competitions (Jenny et al., 2017).

However, the conceptualization of esports is still not well defined and concrete, being sometimes contradictory among researchers. This creates fragmented interpretations of its definition, positioning, and core components (Cranmer et al., 2021). This confusion can lead to the redundancy of opportunities that these emerging technologies can promote (Hamari & Sjöblom, 2017). Many people assume that esports and gaming are synonymous, but this is not so. Not all video games become esports titles, but all esports titles are video games (Panhans et al., 2021).

This confusion of concept is also accompanied by the battle of comparing esports to sports. Although this comparison is much debated, competitive video games, compared to traditional sports, also feature professional players as well as a passionate and dedicated audience (Johnson & Woodcock, 2021). In turn, those who watch esports do so for many of the same reasons as traditional sports viewers (Cheung & Huang, 2011). So, there is the world of spectators, who function as a kind of customer for the esports market. YouTube and Twitch are the most widely used online streaming platforms for media in this market. These types of initiatives not only allow viewers to follow the tournaments, but also help influencers and gaming personalities grow their fame, somewhat like television or sports celebrities (Allenstein et al., 2020). Most esports events are always streamed online, free, and

secure, giving the public the opportunity to always be connected to the events. This has allowed the industry, during the pandemic, to exponentially increase its market, both in terms of players and viewers.

Therefore, this study aims to understand the inclusion of esports in the global market, especially assessing how its insertion in education is an added value for the industry and for schools. A quantitative analysis of the impact of esports on the education sector is made through a questionnaire designed for teachers only (Appendix 1). The research questions were evaluated through a descriptive analysis of all variables in question: Technological Adoption, Popularity of Esports, Esports vs. Sports, Insertion in Education, Perception of Esports Community, and Pandemic Impact. After that, key correlations were made to understand the relationship that may exist between the variables, and how this may promote/retard their insertion into education methods. The research objectives, the research questions and the structure of the report are described below.

1.1. Research objectives

The following objectives have been set for this report:

- Understand the emergence of esports and its influence on today's society.
- See if esports is increasingly compared to a sport.
- Demonstrate the main opportunities/barriers of the esports industry.
- Point out ideas for schools/teachers who wish to implement innovative ideas within the classroom related to esports.

1.2. Question of Investigation

The following questions were the basis for the methodology of this report (see Table 1):

- Is technology a vital element in teaching methods nowadays?
- Will esports be an increasingly popular topic?
- Within schools, is it a growing subject?
- Are esports increasingly associated with a traditional sport?
- Are the professors already aware of the effects that can bring?
- Are esports an added value for students and schools?
- Are esports positively related to STEAM activities?
- Do schools have the capacity to develop esports practices?

- Is the social viewpoint about people who practice esports good?
- Do parents' ways of thinking influence the decision making of schools and students?
- Around esports, does the gender difference influence access to them?
- Has the pandemic boosted the world of esports?

This set of questions, try to answer the main question of investigation to be analyzed:

- Is the insertion of esports in education a good strategic procedure to adopt?

1.3.   Structure of the report

The dissertation will be structured as the following:

In the first chapter, the Introduction is conducted, where there is also a brief introduction of the problematic of study, the objectives and questions of investigation, and the structure of the report.

In the second chapter, a Literature Review shall be demonstrated, wherein base concepts of esports are gathered, in its relationship with sports, in the description of theories gathered on inherent innovative practices, their penetration in other economic activities and finally, the impact that the pandemic and community had on the industry. It aims to synthesise what is already written in the literature.

Then, in the third and fourth chapters, the Methodology and Results Analysis, respectively. In the Methodology, the appropriate review of concepts, the procedures of the questionnaire, based on the stipulated research questions, and its treatment of the data have been described. After that, the analysis of results is performed. The representativeness of the sample, the reliability test (Cronbach's Alpha) for the set of statements, the appropriate descriptive analyses for each variable in question, and the proper correlations (Spearman's rho Test) for the research at hand will be presented. This section has allowed to draw the necessary conclusions that will be presented and discussed in the next chapter.

In chapter 5, the Discussion, where what was taken from the statistical analysis of the questionnaire is exposed, combining its information with that advocated in the literature. This section also summarizes the answers to the research questions.

In chapter 6, Conclusions will be drawn, bearing in mind everything that has been studied, reported, and experienced. Finally, in chapter 7 there are the bibliographical references of the articles used for the elaboration of this report and in chapter 8 the Appendices.

2. Literature review

2.1. Defining esports

Even though esports is a rapidly rising business zone, its conceptual awareness is still limited (Block & Haack, 2021; Kailash & Pabalkar, 2021). Esports began to be communicated in the late 20th century, more precisely in 1980, in arcade games, where players challenged each other to compete (Smith et al., 2013). In 1999, the Online Gamers Association (OGA) used the word esports in its press releases in an attempt to recognize competitive gaming as an official sport (Wagner, 2006). Since then, it has been growing at extraordinary levels, creating profitable points and strategic business bases for many investors (Mangeloja, 2019).

There are many "different definitions of what esports comprise, although there are some similar characteristics" (Bányai et al., 2019). Generally defined, esports is the term used to describe high-level games and digital game spectators in a competitive atmosphere (Hamilton et al., 2012). For Hamari and Sjöblom (2017), it is possible to define esports, simply as a competitive video game phenomenon. Wagner (2006) was more extensive and defined esports as "an area of sport activities in which people develop and train mental or physical abilities in the use of information and communication technologies". However, this is criticized to not truly represent sports, which can be both a mental and physical activity (Cranmer et al., 2021). Scholz (2019), on the other hand, stated that esports could be seen as an evolution of sports, media, entertainment, and culture in a digitized society. Furthermore, García and Murillo (2020) argued that in order to have an official or definitive concept of esports, it is first necessary and relevant for researchers to define esports as a sports activity.

One point to note is that esports is not only competitive gaming at the professional level, but also at the amateur level, and this is a key factor in addressing the status of for-profit and non-profit gaming in esports (Scholz, 2019) . This new trend about gaming was designed and built around competitive games and served as platforms that were challenging for players and exciting for viewers (Cranmer et al., 2021). Over the years, accompanied by a wave of continuous digital innovations, the esports community has grown considerably (Cranmer et al., 2021). The gaming industry is already considered larger than the music and movie industries combined (Mangeloja, 2019).

Nowadays there are professional leagues and tournaments in a wide variety of games, which has been providing a more attractive market, presenting more and more profitable

business opportunities, with salaries and sports attendance already close to traditional professional sports figures (Steinkuehler, 2020). As the industry continues to grow, it is likely that even typically non-competitive sports games will introduce leagues and become increasingly competitive in line with growing demand, technological advances, and continue to be a competitor in the growing market (Cranmer et al., 2021). Looking at the context of esports, it is a phenomenon that has become a key element in today's digital youth culture (Wagner, 2006). Factors such as technological progression and the values and customs of society have contributed to the momentum of this phenomenon (Jenny et al., 2017; Smith et al., 2013). Generation Z, or Gen Zers, are the first digital natives, born between 1997 and 2012, into a world of vast technological advances and innovations (Seymour, 2019). Seymour (2019) stated that these years, of continuous technological progression, provided increased connectivity with the outside world, but on the negative side, there has been an increase in cases related to depression and suicide, transforming the way this generation thinks. The steady growth and increasing popularity of esports represents a new area in gaming culture, and has increasingly become one of the most essential and popular parts of video game communities, especially among teens and emerging adults (Bányai et al., 2019).

For the economic analysis of games, esports is an important subject for understanding both the relationships between gameplay and consumption, as well as broader issues of labour, political economy, employment, and marketing (Johnson & Woodcock, 2021). Most esports teams, derive their revenue primarily through sponsorships and advertising (Mangeloja, 2019). Furthermore, with the increase in the size of esports events, there has been a sponsors' interest for the game, which has allowed teams or players to compete on the ability to make a living from sponsorships and prize money (Seo, 2013). Another source of revenue is through creating content on platforms such as YouTube and Twitch, which are considered the leading applications for live streaming (Smith et al., 2013). In this context, the entry of other major players such as Facebook increases the short-term growth prospects of the gaming industry (Mangeloja, 2019).

Most esports consumption takes place online (Seo, 2016). The emergence of new technologies and competitors in this market has given rise to a variety of new platforms for delivering multimedia content to a wide range of traditional online audiences (Joseph Macey, 2022). Generation Z is known for watching less television and listening to less radio, increasing the importance of marketing on other platforms, such as social media (Seymour, 2019). Most professional teams have professionals in marketing working with the team's social

media accounts, and graphic design staff to make content (Filchenko, 2018). In the profitability paradigm, the importance of content creation is almost equal to team performance, as this is how the team can try to build fan bases (Mangeloja, 2019). In fact, esports are a major entertainment phenomenon that is making a mark on the world at large, attracting players and viewers in many ways (Cranmer et al., 2021).

2.1.1. Comparison of esports to traditional sports

As esports has progressed, new definitions have emerged that approach esports as a form of sport, a special way to use or engage with gameplay (Bányai et al., 2019). Esports began to be put in the same bag as traditional sports in 1999, when Online Gamers Association (OGA) founder Mat Bettison argued that esports would make the same contribution as traditional sports (Cranmer et al., 2021). However, one of the main issues debated in the literature is whether esports are part of a traditional sport.

Hamari and Sjöblom (2017) stated that the main difference between a sport and esports comes down to where the player or team activities that determine the outcome of the sport/game take place. Parshakov and Zavertiaeva (2018) stated that in contrast to traditional sports, esports do not depend on the physical abilities of the players. In addition to the physical activity barrier, Jenny et al. (2017) have argued that the need for institutionalization, with official government bodies and standardization, is also considered necessary to define esports as a sport. Therefore, for Jenny et al. (2017) an activity is considered a sport when it exhibits play and competition, rules, demands and skills, a broad following, physicality, and institutionalization. Esports not being considered a sport may entail some obstacles to their progress and development. Furthermore, Cranmer et al. (2021), felt that esports may offer new expansion opportunities for traditional sports, such as increasing the potential to incorporate and exploit emerging technologies to create play, participation, and spectator experiences, reaching new global audiences.

On the other hand, Hallmann and Giel (2018) have questioned whether esports is really a competitive sporting activity or a recreational activity. This image of esports is compounded by the assumption that society, in general, views video game players as being lazy and/or overweight people (Filchenko, 2018). Traditional sports fans usually dispute the fact that esports is considered a sport, arguing that players' skills are not measured through their physical prowess, as the athlete seems to be simply meant for their seats (Hamari & Sjöblom,

2017). Interaction with technologies, such as esports, mostly reproduce the physicality of playing traditional sports (Witkowski, 2012). In the future, the development and introduction of emerging technologies such as AR (Augmented Reality) and VR (Virtual Reality) will further promote the physicality of esports (Filchenko, 2018).

The universe of the typical sport generates an atmosphere by which a community is generated where, through their words and deeds, dedicated supporters will show respect for their team (Kailash & Pabalkar, 2021). As far as sportsmen are concerned, they can gain celebrity status through social media, such as Instagram or Twitter (Li & Huang, 2014). For example, in a study done on NBA players, the more Twitter followers a player has, the more likely they are to gain more recognition and financial rewards[1]. Esports will be no exception, with professional teams creating team identities (such as jerseys or scarves) that both they and fans wear throughout tournaments and other functions (Thompson & Cake, 2016). On the other hand, as it is a market with huge growth potential, they also serve as forums for popular companies near conventional sports, such as Monster and Red Bull, for example (Kailash & Pabalkar, 2021).

Nowadays the biggest esports teams feature several coaches, analysts, and even scouts who are always looking for new athletes to recruit (Filchenko, 2018). Many esports players define themselves as professional gamers and that playing esports is their job (Bányai et al., 2019). Although already beginning to be more common, esports should encompass behaviours and practices like traditional sports, such as interpersonal competitions and training for skill development (Crawford & Gosling, 2009).

Indeed, with all these developments in recent times, the gap between esports and traditional sports is narrowing, and they are already very similar in most respects, with the esports market showing great promise for the near future. While this misunderstanding of the classification of esports as a sport prevails, Jenny et al. (2017), stated that esports has been an increasingly accepted topic as a sport and that in today's society, players are already beginning to be identified as athletes.

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[1] A 2014 study by Zhuolun Li and Ke-Wei Huang on the monetary value of Twitter followers, with evidence from NBA players.

2.1.2. Esports in Education

The huge size of the esports industry has led prominent business leaders to argue that commercial activities in the sector are not yet studied to an adequate degree (Natalia et al., 2018). Although this trend is changing, Natalia et al. (2018) stated that only a few education providers, in esports, target roles and domains that are aligned with industry needs, with many focusing on the broader esports business. It seems unimaginable to relate esports to the education sector, but the truth is that it may already be a case study. As it is a very recent and rapidly rising topic worldwide, in terms of empirical research, content on the relationship of esports to education is still scarce (Jenny et al., 2021).

Schools play a central role in people's lives, helping to develop habits and skills that will foster students' social and academic abilities (Scott et al., 2022). High schools and post-secondary schools are adopting esports at an increasing rate, which reflects the increased demand for the activity (Rothwell & Shaffer, 2019). On a basis of integrating technology in schools and making learning more engaging for the student, game modes have been implemented as a basis for learning in classrooms (Cicchino, 2015). Not only are students more motivated to learn, but they are also more comfortable working with their peers in discussions to solve issues (Groff et al., 2012). South Korean universities are an example of this, classifying competitive players as traditional athletes (Cranmer et al., 2021). On the same path are American colleges and universities, which offer scholarships to participants (Funk et al., 2017), just as they do in some other activity, such as soccer, covering much of the college tuition (Filchenko, 2018).

Like traditional sports, esports have established a presence on college campuses, which translates into increased and promoted institutional status (Funk et al., 2017). The International esports Federation (IeSF) is the main organization that provides regulation and stability, supporting esports games (Bányai et al., 2019). The question is how can esports intertwine with the field of education? Esports do not take place physically like sports such as soccer and tennis, yet they require some of the same skill sets that exist within successful sports teams: teamwork, coordination, communication, and cohesion (Rothwell & Shaffer, 2019). This demonstrates the increased institutionalization of esports and a greater acceptance of esports as a sporting activity (Cranmer et al., 2021).

However, the careers of professional esports players tend to be very short (Salo, 2017). Strategies to support the movement into other more sustainable careers is needed, although

many of these professionals want to stay in something sports-related or embedded in the video game realm, with a proportion emerging who see STEM as their career path (Scott et al., 2022). One reason for spreading eSports in STEM education is for the development of soft skills (Rothwell & Shaffer, 2019). Soft skills can be conceptualized as intra and interpersonal skills essential for human development, social participation, and success in the workplace (Kechagias, 2011). The training and education could cover many areas, including game development, computer and technology disciplines, event and community management, psychological research, sports science, marketing, public relations, video (livestream) production, in addition to training and communication (Scott et al., 2022).

As K-12 schools support STEM initiatives, they are adopting eSports teams, showing very positive results, with benefits among students (Rothwell & Shaffer, 2019). As Rothwell and Shaffer (2019) said, since successes are recorded in K-12 settings, universities should consider such investments in order to attract learners with desirable skills, since the educational, professional, and economic opportunities associated with esports outweigh any objections to its diffusion in educational programs.

2.1.2.1. Theoretical Framework: Diffusion of Innovations Theory

The construct of innovation adoption within Rogers Diffusion of Innovations Theory can help explain and categorize this growth in global esports degree programming (Jenny et al., 2021). This theory helps illuminate how innovations are adopted within populations. Rogers defined innovation as "an innovation is an idea, practice, or project that is perceived as new by an individual or other unit of adoption"[2].

Innovations are adopted at different rates by varying segments of the population (Jenny et al., 2021). According to Rogers, this adoption rate follows a bell-shaped adoption curve that classifies innovation adopters into five ordered categories, the innovators, the early adopters, the early majority, the late majority, and the laggards (Turner, 2007). Within each category of adopters, individuals are similar in terms of their innovativeness, as Rogers defined it as the degree to which a person or other adoption unit is relatively earlier in adopting new ideas than other members of a system (Sahin, 2006). For Rogers, innovation helped to understand the desired behaviour in the innovation decision process, thus characterizing

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[2] Concept used by Roger in his book Diffusion of innovations (5th ed.), page 12.

adopters based on innovation. As Figure shows, the distribution of adopters is a normal distribution (Turner, 2007).

Rogers noted that incomplete adoption and non-adoption do not form this classification of adopters, with only successful innovations generating this curve over time (Sahin, 2006).

According to Rogers, Innovators are those who want to be the first to announce innovation ("first to move") being classified as adventurous and independent, with interest in new ideas, being known for their risk aversion, usually with financial resources to cover eventual losses. Early Adopters are people who play leadership roles, and embrace opportunities for change, since they are already aware of the need and feel very comfortable adopting new ideas. Early Majority are opinion leaders and need external motivation. That said, they can adopt new ideas before the average person, needing only to see proof that the innovation works before they are willing to adopt it. As for the Late Majority they are sceptical of change and will only adopt an innovation after it has been tried by the majority or has become an economic necessity. They have modest financial resources and are influenced by their peers. Finally, the Laggards are those who relate to tradition and are very conservative. They are very sceptical of change and are very isolated from the social environment, with lower self-esteem and less educated.

Within this categorization, Diffusion of Innovations Theory also estimates the following percentages of the population adopting an innovation over time: <3% innovators, 14% early adopters, 34% early majority, 34% late majority, and 16% laggards (Jenny et al., 2021). In this case, the innovative idea of implementing esports within educational institutions can be analysed based on this theory. This adoption, as expected, did not happen simultaneously in a social system, being a process by which only some institutions are more apt to adopt the innovation than others (Jenny et al., 2021).

2.2. Scope of penetration of esports in different activities

Esports is a fast-growing emerging industry, featuring a wide range of platforms that can generate significant revenue (Hamari & Sjöblom, 2017). The video games industry has become one of the largest entertainment businesses and its significance continues to grow (Joseph Macey, 2022).

The continued professionalization and legitimization of esports is expected for the future, continuing to improve perception globally, and attracting investment and sponsorship

from within and outside the industry (Panhans et al., 2021). As Panhans et al. (2021) said, the role of Publishers and Organizers in the esports ecosystem will continue to evolve as well. But as the industry grows, so too does the role of the Organizers, involving the development of rules, regulations, processes, and behind-the-scenes operations[3].

Several businesses started to emerge with the increase in consumption and popularity of esports, boosting the market and the surrounding industry to other use cases, such as live streaming and marketing strategies, like advertising (Smith et al., 2013).

2.2.1. Live Streaming

Over the past few years, esports and streaming video games have become fast-growing forms of new media on the Internet, driven by the increasing provenance of online gaming and online streaming technologies, leading these days to hundreds of millions of people watching esports events (Hamari & Sjöblom, 2017).

Live streaming is a phenomenon that has been around for many years, but recently, with the advances in technology and new web services, it has democratized, allowing anyone to stream or watch whatever they want (Smith et al., 2013). The reasons why people or organizations experience different experiences is that agents watch and look for what they want to see, giving rise to incentives for hundreds of thousands of unique viewers (Tassi, 2013). The community and various organizations live stream for different reasons, with the example of wildlife organizations being able to see the bird's nest live from a hidden camera or an artist being able to live stream an interactive horror show (Smith et al., 2013).

Most often esports are consumed through live internet broadcasts, where in addition to watching the event, viewers can participate in the surrounding social interaction, for example in the form of chat (Hamari & Sjöblom, 2017). Regardless of the incentive behind it, all these acts of watching an online broadcast are accomplished with platforms that allow live streaming of their content to users, such as YouTube or Twitch TV (Edge, 2013). Significant disruptions were experienced in the population's leisure activities and the sports industry with the Covid-19 pandemic, with many events having to be cancelled or postponed (Kriglstein et al., 2022). However, these types of platforms have allowed passionate esports fans to be spectators of sporting events in a highly interactive way, with live streaming data (Kokkinakis

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[3] Blum B. (2016), in a news article published by the *ESPN* (Entertainment and Sports Programming Network) channel.

et al., 2020). In this respect, reactions may begin to emerge from traditional TV broadcasting, to respond to these new trends of the population, such as *ESPN* (Entertainment and Sports Programming Network), which is dedicated to broadcasting and producing sports programmes daily (Rothwell & Shaffer, 2019).

Nowadays, Twitch TV is the leading video streaming platform dominating the gaming market, attracting millions of unique viewers daily (Edge, 2013), managing to capture about 75% of the total content hours watched across all major platforms (Panhans et al., 2021). Much of this success is related to the ease of use of the platform (Smith et al., 2013). Without the need for any additional software or hardware, Twitch has successfully removed all the barriers that previously prevented the community from streaming their gameplay (Tassi, 2013).

The video game community has always been significantly considerable, and with the introduction of live game streams, it has transformed its popularity, not only in the experience of the players, but also in the experience of the viewers (Smith et al., 2013). The viewer is the most valuable asset of live broadcasts (Edge, 2013). The viewer is defined as the person who follows the in-game experience but does not directly participate in the game (Cheung & Huang, 2011). It may sound strange, but a recent study was done which found that players prefer to watch professional players compete and play rather than play themselves (Kaytoue et al., 2012). In fact, the trend towards streaming game content as a form of entertainment is growing, as it covers a wide range of content and attracts various consumer segments, whether watching a esports competition or gamers looking for tips and tricks to improve their game (Panhans et al., 2021).

Streaming can consist of large tournaments and events, but it usually consists of a single player or team broadcasting their games, explaining their playing style and strategies, and listening and giving advice to viewers (Edge, 2013). This relationship between streamers and their viewers fosters a unique relationship (Kaytoue et al., 2012). Effects such as globalization, IoT (Internet of Things), and communication technologies have implemented a complex interface in sports and media and have also influenced the context of video games (Hutchins, 2008).

Based on personal experience, the most important thing about online streaming is the entertainment value the streamer offers the audience and/or the enjoyment of the game itself being streamed. Features such as interactive chat and user-generated content provide a unique social community that builds social capital among its participants (Edge, 2013).

2.2.2. Advertiser and Sponsorship

Sponsorship can be defined as "an investment, in cash or in kind, in an activity, in exchange for access to the exploitable commercial potential associated with that activity" (Meenaghan, 1991). It is considered a popular marketing communication tool within sports, causes, and the arts (Cornwell et al., 2005).

As already mentioned, esports have a significant lucrative base because it has a huge popularity, with many fans, who are mostly young and passionate (Gonçalves, 2021). One concept that marks the esports market is its diversification in terms of the product offered (Mangeloja, 2019). This will allow it to create greater value for its sponsorships and helps protect against the risk of any game losing its value due to poor team performance, or reduced support from the promoter (Deloitte, 2019).

As companies begin to realize the public's connection with esports, there has been an increased willingness to sponsor teams and events. These types of sponsorships come from both endemic and non-endemic brands (Gonçalves, 2021). When a brand's products or services are directly linked to esports, they are considered endemic brands, whereas non-endemic brands do not have a direct association with the market (Huettermann et al., 2020). Historically, the endemic sponsors of the video game industry, such as Nvidia and Intel as well, have been big advocates and supporters of esports (Panhans et al., 2021). However, Panhans et al. (2021) cited that as the popularity of esports has grown, other sponsors and advertisers are joining the fray, investing in both teams and events. Cases in point are Red Bull, Coca-Cola, Mercedes-Benz, Audi, Mastercard, and even Louis Vuitton that have already entered esports events, and the number of brands is expected to increase (Finch et al., 2020).

Both endemic and non-endemic brands will be increasingly captivated to these dynamics (Deloitte, 2019). Sponsorships are the segment that accounts for the largest share in esports revenues. During the year 2022, the sponsorship segment of the global esports market generated USD 837.3 million in revenue (Statista, 2022). Esports have become a global market, attracting thousands of people, providing captivating financial opportunities, whether in prizes or sponsorships (Cranmer et al., 2021).

2.3. Esports Community

Analysing the esports community and its viewers is a good context to study how they have grown and what led them to follow this path. Economically, one can translate this growth as an increase in market share, resulting from a larger number of producers (the players and teams), who have implemented new ideas and business models, resulting in an increase in customers (viewers). This increase, beyond personal reasons and passions, resulted from a long process of marketing strategies and the development of digital platforms, boosting the live streams of these video games (Smith et al., 2013).

However, based on a study by PMG, it was found that the older generations in particular do not know or understand eSports well, with the average age of eSports fans being only 26 years old (Long et al., 2018). A study of UK population found that video game content is increasingly becoming a mainstream activity, with estimates suggesting that 10%-15% watch it regularly, with almost 50% of 18–25-year-olds doing so[4]. On the other hand, in a study by Lee and Schoenstedt (2011), it was shown that 65% of families play games.

The rise of online streaming and esports has gone hand in hand with an increased interest in supporting and creating solutions for a positive spectatorship experience (Kriglstein et al., 2022). The esports community and its spectators are in constant connectivity, be it online streaming or through social media platforms. The act of connection between individuals, social networks, and the norms of a community and the trust that derives from them can be defined as social capital (Lee & Lee, 2010). Studies have shown that esports and active community participants, such as team members, promote online and offline social capital and social support (Edge, 2013). Regarding online community, "social networks, which were based in physical space before the introduction of the web, are now also located and reshape social relationships between individuals" (Lee & Lee, 2010).

People who watch not only want to watch the game, but also talk about the games with their followers, becoming part of their community in a somewhat unconscious way (Smith et al., 2013). The social and interactive atmospheres surrounding online broadcasts have led to a community-based content generating community, which dominates traditional streaming methods (Edge, 2013).

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[4] Study published in OC&C Strategy Consultants, based on *Growth in the Video Gaming Ecosystem: the new role of games as media*

2.3.1. ESC Model

Through personal gaming experiences, individuals are more likely to be potential consumers of esports events, a key factor in understanding esports consumption behaviour (Jang, Byon, et al., 2020). To examine the consumption perceptions of esports fans, Jang, Kim, et al. (2020) developed a study known as the *ESC* model. This model includes six variables that are critical predictors of esports gaming intention, which are effort expectancy (*EE*), social influence (*SI*), hedonic motivation (*HM*), price value (*PV*), habit (*H*), and flow (*F*). *EE* is related to the level of learning difficulty in playing esports games. The SI factor is related to the influences of friends or family on the intention to play. *HM* can be defined as the pleasure the person gets from playing esports games. *PV* is the consumers' thoughts on how worthwhile it is to spend their money on esports. *H* addresses the perception of future personal behaviours regarding esports gameplay. Finally, *F* is related as a state absorbed in the esports game, where the real world can be forgotten. The authors in their study found that *HM, PV, EE*, and *F* have a significant impact on esports gameplay intention. In order to expand the utility of the *ESC* model, relationships between the six determinants and the playability of the sports the intention was analysed under the boundary conditions of esports and gender (Jang & Byon, 2020).

However, although the *ESC* model includes media consumption as an outcome variable, this means of consumption includes only esports event broadcast via various media outlets rather than streamers' live esports streams (Jang, Byon, et al., 2020). In fact, consumers who have gaming experience can consume live esports content before watching the esports event broadcast, and streamers can communicate with their community and present a much more flexible schedule (Edge, 2013). Therefore, Jang, Byon, et al. (2020) they determined that predicting sports media consumption can be biased without considering live streaming content due to its relationship to gameplay and event broadcasting. Nevertheless, this model was not possible evaluation method in the results analysis, due to the lack of a study directed at esports players.

2.4. Impact of Covid-19

In the middle of late 2019, one of the biggest disasters in in human history, the COVID-19 virus, emerged in China, in Wuhan. To address this virus, governments around the world have implemented social distancing measures, resulting in billions of people being confined to their homes for long periods of time (Hammami et al., 2022). The outbreak of COVID-19 had significant social and economic impacts throughout the global community, as well as in the sports world, with sporting events and leagues being cancelled or suspended (Pu et al., 2021).

The pandemic increased the consumption of esports and traditional video games because many national sports were cancelled and the fan community was forced to stay at home, increasing their availability to play video games in general and esports in particular (Ke & Wagner, 2022). On the other hand, since traditional sports teams had no choice but to temporarily stop their operations due to the regulations of their respective leagues, many ventured into esports during these times. For example, the German Bundesliga, a soccer league, has decided to organize a virtual TV channel for a tournament in the FIFA 2020 game (Block & Haack, 2021).

Although in the short term many events were cancelled, thanks to technological advances, these activities were able to be carried out through online platforms, which would revolutionize the competitions and the way spectators watched the events (Cranmer et al., 2021). A case in point was one of the biggest eSports events, held in Germany, where it had to be cancelled due to the pandemic and had to be held online (Rosinski, 2020). In the US, in a New York Times analysis, gamers increased their gaming spending by more than 75% during the pandemic (Panhans et al., 2021). The digital features of esports have been a great advantage during this time, as most events can also be held online, and there has been an increase during the first wave of the virus of both streaming and gaming (Block & Haack, 2021).

The popularity of Esports grew rapidly, with a big boost at the time of the confinements due to the pandemic, as people could not leave their homes and had to entertain themselves with some activity (Cranmer et al., 2021). Many traditional sports brands began to invest heavily in esports properties, especially after the COVID-19 pandemic, as there was no governmental barrier to esports (Kim et al., 2020).

3. Methodology

The methodology was developed after a literature review on the main issues concerning the study objects of the insertion of esports in education and the relationship within them. The main objective was to understand teachers' perspectives on this emerging topic and how video game-related companies can develop strategic plans to promote their products. The main question to be answered will be if the insertion of esports in education a good strategic procedure to adopt.

A quantitative approach was used for the investigation. Quantitative research is a research strategy that emphasizes quantification in data collection and analysis (Bryman, 2012). For Bryman (2012) this implies a deductive approach to the relationship between theory and research, in which the emphasis is on testing theories, incorporates practices and norms from the natural science model and positivism, and embodies a view of social reality as an external, objective reality. Therefore, this method of research follows three main steps, which are conceptualizing reality in terms of variables, measuring the variables, and studying the relationship of those variables (Punch, 2005).

Following this research strategy, a questionnaire was developed, to be able to answer the main research question and test it through the sample answers (Samuels, 2019). It was composed of a collection of questions given to different people in the same form and was organized in groups. Of the initial data collection methods, the questionnaire is the one that ensures comparability, accuracy, and ease of data processing (Malhotra, 2010). When a questionnaire is applied to an investigation, the research questions are evaluated through elaborate questions. Thus, this instrument has developed a central role in the quality and quantity of the data obtained.

This chapter encompasses the procedure used for data collection, how the data was manipulated and how the research questions were arrived at, the profile of the sample, and the reliability test among the twelve statements developed in the last part of the questionnaire.

3.1. Procedure

An online questionnaire, addressed exclusively to teachers or school principals, was designed through the Google Forms platform with the thematic of "Insertion of Esports in Education". The questionnaire was conducted anonymously, and the data collected was

used only for academic purposes and treated confidentially. In addition, word-of-mouth strategies were used by sharing the questionnaire with professors known to me and from my course, urging them to share it. Although there is a lack of literature on the insertion of esports in education, this tool was very useful not only to help reach an insight on the influence that esports presents in the field of education, but also to help draw the proper conclusions.

The survey, which can be found in Appendix 1, was divided in three sections.

The first one consists of a short introduction that was prepared to explain the cause of the work and the theme. According to Hill and Hil (1998), a short introduction, the purpose of the questionnaire, and the estimated time to complete it, are necessary factors for its completion, not forgetting to ensure anonymity to improve response rates. It is then followed by a small set of questions aimed at describing the survey sample, such as age (single text box), gender (multiple choice with three possible answers, male, female, or prefer not to say), a question about which was the highest level of education taught in the last school year (multiple choice, Kindergarten/ Primary Scholl, 2nd or 3rd cycle/ Middle School, Secondary School, and Higher Education).

In section two, four questions were asked to try to understand how familiar respondents are with the use of technologies and esports in classrooms. In this part, the main objective is to try to understand what the relationship is with technological evolution, whether or not they follow the increasing levels of innovation, and if esports is something new or if they had already seen it being used in the educational world.

Lastly, the section three began with a brief definition of esports, for the sample set that is not within the topic to begin minimally on equal footing with the rest. A group of 12 statements was taken from the research done on the subject, with the purpose of analysing the ways of thinking and the points of view that the respondents present about esports in education. The answers were given through a 5-point Likert-type scale (1=strongly disagree to 5=strongly agree) to understand the level of agreement with the statements.

3.2. Data Treatment

To develop a well-structured and coherent analysis, it was necessary to identify the correct type of variable for each item under evaluation. Gender and level of education taught in the last year were entered as nominal variables and age as a scale variable since the question was open-ended and therefore the distance between values is appropriate. In the

question, "Have you ever heard of esports" of Yes/No response a nominal variable was used. For the remaining items, in which a 5-point Likert scale of three types was used (1-Never to 5-Always; 1-Not at all familiar to 5-Extremely familiar; 1-Strictly Disagree to 5 Strongly Agree) a scale variable was used as interval data, since the sample is significant (Sullivan & Artino, 2013).

From the analysis of the scales, several questions were formulated using the Positivism paradigm. The logic of this paradigm is that actual events can be empirically served and explained with logical analysis (Kaboub, 2008). The criterion for assessing validity is then whether the theory-based questions and statements formulated are consistent with the data analysis obtained.

The scale gathered the main aspects, based on the teachers' responses, that were factors driving esports within education. Technology Adoption, Esports Popularity, Esports vs. Sports, Esports in Education, Perception of Esports Community, and Pandemic Impact were the factors of analysis (see table 1), which allowed the appropriate conclusions to be reached on the research questions, supported by the literature, as described in the discussion of the results.

The data were first all imported into Excel for data processing and then were used in IBM SPSS Statistics 27 software to do the test calculations. Using this software, was able to do the Descriptive Statistics for each variable, evaluating the average responses with 95 % confidence interval for mean (Lower bound and Upper bound) to draw conclusion.

In addition, the correlation between the variables Technology Adoption and Popularity of Esports was tested, to find out if familiarity with technology was a factor driving knowledge about esports (Jenny et al., 2017; Joseph Macey, 2022). It also allowed to see the correlation that exists between the variables Esports vs. Sports and the Insertion in the Education Sector, as it may be one of the points that will facilitate their insertion in the education industry (Cranmer et al., 2021). On the other hand, a correlation was also made between the variables Esports in Education and Perceptions of Esports, to test the influence that the way teachers think influences their insertion within schools. To validate this test Spearman's test was performed, since the type of responses represent an ordinal scale. Through its significance level, one can conclude if there is correlation between the variables when the value is less than 0.05, representing a 95 % degree of confidence. When the value is greater than 0.05, it is concluded that the relationship between the variables is not statistically significant.

Table 1 - Questions of investigation based on literature and in questionnaire developed

Analysis		Question of Investigation	Literature
Technology Adoption	**Q1** **Q2**	Is technology a vital element in teaching methods nowadays?	(Jenny et al., 2017); (Cranmer et al., 2021); (Joseph Macey, 2022)
Popularity of Esports	**Q2** **Q3**	Will esports be an increasingly popular topic? Within schools, is it a growing subject?	(Rothwell & Shaffer, 2019); (Joseph Macey, 2022); (Jenny et al., 2021)
Esports vs. Sports	**S1**	Are esports increasingly associated with a traditional sport?	(Hamari & Sjöblom, 2017); (Jenny et al., 2017); (Parshakov & Zavertiaeva, 2018)
Esports in Education	**S2** **S3** **S4** **S5** **S6**	Are the professors already aware of the effects that esport can bring? Are esports(Rothwell & Shaffer, 2019) an added value for students and schools? Are esports positively related to STEAM activities? Do schools and universities have the capacity to develop esports practices?	(Jenny et al., 2017); (Groff et al., 2012); (Rothwell & Shaffer, 2019); (Funk et al., 2017)
Perceptions of Esports Community	**S7** **S8** **S9** **S10** **S11**	What is the social viewpoint on people who practice esports? How are parents' ways of thinking influential in decision making? What is the thinking around esports and gender equality in accessing it?	(Filchenko, 2018); (Cranmer et al., 2021)
Pandemic Impact	**S12**	Has the pandemic boosted the world of esports?	(Kim et al., 2020); (Cranmer et al., 2021); (Block & Haack, 2021)

4. Results and Data Analysis

4.1. Respondent Profile

A total of 120 valid questionnaires were collected. Starting with the sample data it is possible to see that 75 % of the respondents are women and only 25 % are men. From the educational point of view, the answers are relatively well distributed, with the secondary level appearing as the largest share of the sample, with 32.8%, which equals 39 answers.

As for the age of the teachers, the data show that three main segments, when grouped together make up 84.35% of the sample. These segments are people between the ages of 41-50 (35.04%), people between the ages of 51-60 (29.06%), and people between the ages of 31-40 (20.51%). Overall, this study sample mostly represents people who are female and between the ages of 41 and 50.

Table 2 - Descriptive data population (N=120)- Gender, Level of education taught in the last year and Age

Variable	Category	Frequency (#)	Percent (%)
Gender	Male	30	25.0
	Female	90	75.0
Level of education taught in the last year	Kindergarten/Primary School	27	22.5
	2nd or 3rd cycle/ Middle School	30	25.0
	Secondary School	39	32.5
	Higher Education	24	20.0
Age	<=30	7	5.83
	31-40	25	20.83
	41-50	43	35.84
	51-60	34	28.33
	>60	11	9.17

4.2. Reliability of Statements

In this section, tests will be performed to evaluate the reliability of the parameter under study. If the test has a high reliability, the evaluation and the results will be more credible and will improve. Fulfilling a good reliability between parameters means that regardless of people, times, circumstances, and even instruments measuring the same thing, the measurement taken will have the same consistency and the same result (Drost, 2011).

Since technology adoption and connection with esports use sets of questions with different Likert scales, it was not possible to test their reliability. Therefore, the set of statements were combined into a single question, Q5 (see appendix 1), to assess the internal reliability.

The analysis of internal reliability was performed using Cronbach's alpha. According to Tavakol and Dennick (2011) internal reliability is "the extent to which all items of a test measure the same concept or construct and is therefore linked to the interrelatedness of the items within the test."

Therefore, to be better understood of the measurement reliability, Cronbach's Alpha was done for the group of statements. The alpha varies between 0 and 1, with a value above 0.7 being acceptable, and greater than 0.8 being preferred (Cortina, 1993). This reliability test serves to assess internal validity. As can be seen in table 3, it has been proven that the reliability value of the parameter in question is acceptable (0.753>0.7).

In addition, the impact that the exclusion of certain variables could have on the reliability of the main research question was tested (see Appendix 3). As was observed, only the exclusion of four variables would improve the reliability of the issue. S1, S5, S6 and S7 are the only statements that, when excluded, improve the reliability index, especially S7, which would improve the statistic to 0.775. However, the value does not very much, assuming that the result obtained in Table 3 is sufficient to guarantee the reliability of the study.

Table 3 - Cronbach's Alpha for Q5

Source: SPSS Statistics output

Reliability Statistics	
Cronbach's Alpha	Number of items
0,753	12

4.3. Descriptive Analysis

The next section provides the analyses of the results by frequency analysis, based on IBM SPSS Statistics 27. The Mean and Standard Deviation study was also done for each of the items. The list of questions and statements can be found in Appendix 1 and the list of the total analysis can be found in Appendix 2.

4.3.1. Technology Adoption

The personal relationship with technology was one of the starting questions, in order not only to understand the level of adoption of technologies by the sample, but also to make further relationships with other variables.

Therefore, an analysis was made of how often technologies are used within the classroom. As shown in table 4, the first and second questions show very identical averages and as a value that represents the basis of total agreement, since they are a value greater than 4.20. This means that most of the sample uses technology frequently within the classroom. An expected result, since nowadays technology is an increasingly characteristic element in people's lives, and there is a tendency among teachers to adopt technological bases in the learning process.

Table 4 - Technology Adoption Analysis

Source: SPSS Statistics output

Item	Mean	95 % Confident Interval for Mean		Std. Deviation
		Lower Bound	Upper Bound	
Q1	4,32	4,19	4,45	0,722
Q2	4,30	4,17	4,43	0,705
Technology Adoption	4,3083	4,1983	4,4184	0.6087

4.3.2. Popularity of Esports

The popularity of esports also encompassed two questions, Q3 and Q4. The purpose is to assess the sample's relationship with the term esports, to understand its popularity and knowledge of its application in the educational sector.

One of the questions is directed to esports in general (Q3) and the other to its insertion

in education (Q4). Q3 shows that there is an average that indicates "somewhat familiar" with the theme of esports, since its average is close to 3, showing it to be an increasingly popular topic. On the other hand, in Q4, where the answer was No (0) or Yes (1), there is a higher percentage, albeit small, that has not yet heard about the insertion of esports in education. In the next set of statements, related to the theme of esports in education, their relations with other variables will be tested in greater depth.

Table 5 - Popularity of Esports Analysis

Source: SPSS Statistics output

Item	Mean	95 % Confident Interval for Mean		Std. Deviation
		Lower Bound	Upper Bound	
Q3	2,79	2,56	3,03	1,302
Q4	0,48	0,38	0,57	0,501

4.3.3. Esports vs. Sports

Moving on to the last part of the questionnaire, which represents the set of statements, it is important to start by looking at how esports are classified. As is observable, Table 6 there is a significant portion of the sample, who neither agree nor disagree, showing a little confusion with the topic at hand. Even in the literature there is quite a bit of this debate, showing that it depends on the sample. So, with these values it is not possible to come to a precise conclusion.

Table 6 - Esports vs. Sports Analysis

Source: SPSS Statistics output

Item	Mean	95 % Confident Interval for Mean		Std. Deviation
		Lower Bound	Upper Bound	
S1	2,71	2,51	2,91	1,095

4.3.4. Esports in Education

In this subject of analysis, five statements were analysed, testing the influence of esports on teamwork, the opportunity to develop STEAM activities, the enrichment of students' curriculum, their application in university or K-12 schools and the ability of schools to develop these practices, as can be seen in Table 7.

The first statement presented (S2) was related to the fact that esports develops transversal skills through its practice. Teachers showed that they meet this development, with an average of answers indicating their agreement. An important element of evaluation for the question that studies the consequences that the practice of esports presents.

Regarding the next statement (S3) the average of the answers is very similar to the previous point. Table 7 shows that there is agreement among the sample that esports helps in the development of STEAM activities. It can be drawn that there is a positive association between esports and STEAM activities.

Then, the value that esports can bring to students' personal curriculum (S4) was also analysed. The average response indicates that teachers believe that esports develops benefits for their own curriculum. The sample believes that esports can generate benefits in the students' professional future, being an added value and opening more opportunities in the job market. This indicates that it is a factor that will positively influence the insertion of esports in education.

Furthermore, in this parameter, it was analysed whether esports made more sense to be applied in higher education than in K-12 schools (S5). The table shows that teachers mostly disagree with this relationship. The fact that the sample mean indicates that esports makes more sense in higher education than in K-12 schools is a good key factor, opening doors for new educational institutions to apply esports concepts within schools.

Finally, in the last statement (S8) it was tried to understand the financial availability of educational institutions to invest in these practices, which involve a certain level of technological development. Through the responses of the sample, it was conclusive that, on average, teachers do not believe that national schools have the financial capacity to invest in these practices, as an obstacle to their implementation within the schools.

Regarding the average response within the variable, it is remarkable the notion that teachers have about the development and utilization of students' abilities in the practice of esports, however, there is the part of the financial capacity of schools that delays its application.

Table 7 - Esports inside Education Sector Analysis

Source: SPSS Statistics output

Item	Mean	95 % Confident Interval for Mean		Std. Deviation
		Lower Bound	**Upper Bound**	
S2	3,93	3,74	4,11	1,030
S3	3,92	3,74	4.09	0,975
S4	3,64	3,46	3,83	1,019
S5	2,38	2,18	2,57	1,062
S6	2,33	2,13	2,52	1,055
Esports inside Education Sector	3,238	3,1241	3,2870	0.623

4.3.5. Perception of Esports Community

In this point, also 5 statements were also analysed, using the analysis of the general view about the esports players, the influence of parents in the promotion of these practices, the impact of family income on decision making, and how the gender of the student can affect his or her presence in esports.

Based on Table 8, the average opinion about the fact that esports is associated with people being lazy and addicted to gambling (S7) shows some confusion, with people on average neither agreeing nor disagreeing about that fact, thus becoming indefinite based on the sample for the unfolding conclusions.

Parents, in most cases, are the ones who transmit to their children their values and better decision-making. Therefore, the influence that parents can exert on the practice of esports was analysed. In relation to this point, the opinion of teachers about the influence of parents on the progress of esports in schools (S8) and whether they think that parents agree in general with the implementation of esports in schools (S9) was tested. As for the first statement (S8), the average value is based on neither agree nor disagree, an expected result, since there is still no esports practice at school level in Portugal, restricting their opinion about this factor. On the other hand, the analysis of teachers' perceptions of parents regarding the implementation of esports practices within schools (S9) also did not represent a significant average value, indicating it was of little relevance to drawing conclusions for this study.

Another point of analysis is the influence that family income may cause on the practices of esports (S10). Table 8 also shows that there is a tendency toward the answer that relates indecision, and it is also inconclusive, based on the sample, that family income affects the practice of esports.

Finally, regarding personal perception about esports, the influence that one's gender has was also a topic of analysis. The teachers on average agreed that gender does not influence with the practice of esports, going in agreement with the literature. This is a good statistic for the generalization of the activity. Despite this, the average responses on the perception variable, were mostly inconclusive.

Table 8 - Perceptions of Esports Community Analysis

Source: SPSS Statistics output

Item	Mean	95 % Confident Interval for Mean		Std. Deviation
		Lower Bound	Upper Bound	
S7	2,77	2,55	2,98	1,186
S8	3,23	3,03	3,42	1,104
S9	2,73	2,58	2,89	0,857
S10	2,90	2,70	3,10	1,095
S11	3,45	3,23	3,67	1,236
Perceptions of Esports Community	3,015	2,902	3,1281	0,625

4.3.6. Impact of Pandemic

To conclude this frequency analysis, the pandemic impact was analysed as a factor helping the promotion and growth of esports. As Table 9 shows, the teachers in the sample on average agree that COVID-19 promotes the growth of esports.

Based on this, there is evidence in the pandemic factor as a factor that promoted esports, going in line with what is written in the literature about the influence of this issue.

Table 9 - Impact of Pandemic Analysis

Source: SPSS Statistics output

Item	Mean	95 % Confident Interval for Mean		Std. Deviation
		Lower Bound	**Upper Bound**	
S12	3,79	3,61	3,98	1,020

4.4. Correlation Analysis

After analysing the teachers' average responses for each of the questions, it was decided to test possible relationships that are in line with the literature. To this purpose, the Spearman rho test was used between the following variables: Technology Adoption and Popularity of Esports, Esports vs. Sports, and Esports in Educational Sector and Perceptions of Esports.

4.4.1. Technology Adoption and Popularity of Esports

The calculation of correlation between Technology Adoption, based on Q2, and Popularity of Esports, based on Q3 is done, to understand if there is relationship of the sample with the literature. Only these questions were analysis questions because they are the only ones with the same scale, in other words, the same answer hypothesis. The Spearman correlation calculation method is used, as shown in Table 18, because it is a statistical method most often used for Likert-scale answers.

Table 10 - Spearman's Test: Technology Adoption and Popularity of Esports

Source: SPSS Statistics output

			Q2	Q3
Spearman´s rho	Q2	Correlation Coefficient	1,000	,427**
		Sig. (2-tailed)	.	,000
		N	120	120
	Q3	Correlation Coefficient	,427**	1,000
		Sig. (2-tailed)	,000	.
		N	120	120

**. Correlation is significant at the 0.05 level (2-tailed).

Table 10 shows that Q2 has significant positive correlation with Q3. As the p-value is less than 0.05 (significance=0.00), means that the relationship between the analysis points is statistically significant, and with a positive sign, as can be seen from the correlation coefficient. This result is in line with the literature, suggesting that those who have greater relationships with technological innovation have a greater tendency to have closer links with the topic of esports.

4.4.2. Esports vs. Sport and Esports in Education

A further point of analysis is the impact that classifying esports as a sport may have on the variable related to the insertion of esports in education. The variable Esports vs. Sports comprises the average of responses to the first statement (S1) and the variable Esports in Education considers the average of the set of responses between S2 and S7 (see set of questions and statements in Appendix 1).

Table 11 shows that it is statistically significant the relationship between the responses of the two variables, since significance value is equal to 0.19, showing to be less than 0.05. It can also be seen that their correlation is positive with a significance level of 0.05. These results are in line with what is discussed in the literature for its insertion in education, since esports are associated with sports, there will be a greater acceptance and possibility of its integration into education.

Table 11 - Spearman's Test: Esports vs. Sports and Esports in Education

Source: SPSS Statistics output

			Esports vs. Sports	Esports in Education
Spearman´s rho	Esports vs. Sports	Correlation Coefficient	1,000	,215*
		Sig. (2-tailed)	.	,019
		N	120	120
	Esports in Education	Correlation Coefficient	,215*	1,000
		Sig. (2-tailed)	,019	.
		N	120	120

**. Correlation is significant at the 0.05 level (2-tailed).

4.4.3. Esports in Education and Perceptions of Esports Community

Assessing the relationship of esports within education to perceptions about esports is another reason for analysis. The same method as the last correlation was used for this one, which involves adjusting a mean value to each variable, being calculated through the average of the set of statements, both Esports in Education and the Perception of Esports.

Therefore, the aim is to see if there is evidence that the influence of people's perception varies the insertion of esports in education. As can be seen in Table 12, the correlation between the remaining variables is statistically significant, showing to meet the literature, since the way people think about esports influences its insertion and practice within schools. This can be concluded, since the significance level of Spearman's rho test is less than 0.05, indicating an association between both variables.

Table 12 - Spearman's Test: Perceptions of Esports and Pandemic Impact

Source: SPSS Statistics output

			Perception of Esports Community	Esports in Education
Spearman´s rho	Perceptipns of Esports Community	Correlation Coefficient	1,000	,391**
		Sig. (2-tailed)	.	<,001
		N	120	120
	Esporst in Education	Correlation Coefficient	,391**	1,000
		Sig. (2-tailed)	<,001	.
		N	120	120

**. Correlation is significant at the 0.05 level (2-tailed).

5. Discussion

As previously stated, the entry of esports into the education sector is a very recent topic, making its research very scarce (Jenny et al., 2021). As a result, this report attempts to captivate attention to identify and understand the relevant factors that esports can present within classrooms. The development of this research helped to understand the way teachers act and think about the topic of esports, both in a generalized way and within schools. Through the sample answers and the analysis previously performed, it was possible to draw the appropriate answers to the research questions and to relate their concept to the literature reviewed.

Given its innovative and promising characteristics, a quantitative analysis of the education sector (who will put these services into practice) is made, addressing how this market becomes viable within schools. The analysis made of the questionnaire aims to explore how sample look at the subject of esports and how its insertion in education is strategically feasible. The research method mainly adopts statistical methods to verify the research questions developed through the literature (Table 1). Based on the results, the goal is to answer the research questions (Table 13). The questionnaire was then grouped into six key points of analysis: Adoption of Technology, Popularity of Esports, Esports vs. Sports, Insertion in Education, society's perception of its practice, and the impact the pandemic had on its activity.

Firstly, it was intended to assess the demand for technological means within classrooms, since the ease of access to technologies is associated with the promotion of esports (Jenny et al., 2017) (Joseph Macey, 2022). Based on the collected set of responses, it was observable that technology is an increasingly sought-after element as a support to teaching methods, presenting an average of responses above 4 ("Agree"). Another point would be to evaluate how technologies have influenced this industry, trying to understand the weight that live broadcasts have played in the development of the strategic plans of esports teams. However, since the research was directed towards the opinion of teachers, it was not possible to assess the impact of live streaming on esports teams.

The next step was to test the sample's knowledge of esports and its insertion in the field of education by answering questions Q3 and Q4 respectively, and the evaluative parameters for this variable were considered. The aim here is to assess its popularity (Cranmer et al., 2021) and what teachers' knowledge of its application in the educational

sector is (Jenny et al., 2021). Both questions showed that esports is a slightly known topic both generally and within schools for professors. However, the distribution of responses was well divided. Regarding Q3 the average was around the answer "Somewhat familiar", which indicates that the esports theme has gained some fame, although not representative. As for Q4 the answers are also well divided, with emphasis on the negative answer, since the average answer is below 0.5, where 1 is "Yes" and 0 is "No". Although not representative, this is in line with what the literature says, since it argues that esports has been gaining popularity and that its insertion in education is a subject still little explored (Jenny et al., 2017).

The relationship with the variables Technology Adoption and Popularity of Esports was then tested by correlating two questions (Q2 and Q3), one of each variable respectively. The Spearman's rho test showed a significant correlation between the questions, providing a valid result for the topic at hand, going in agreement with the literature (Cicchino, 2015), which argues that access to technology will promote esports practices within the classroom.

After the analysis of the second part of the questionnaire, the evaluation of the teachers' opinion about some statements based on the literature is done. This section looked at the teachers' level of agreement with some sentences based on the objects of study (see Table 1), based on a 5-Likert scale of agreement, where 1 corresponds to "Strongly disagree" and 5 to "Strongly agree". Within this section it was possible to divide the statements into 4 variables, evaluating the relationship between esports and sports, its insertion in the education sector, the way teachers think and look at the esports theme, and the impact that the pandemic caused in its evolution.

Being known as one of the biggest debates in the literature the classification of esports as a sport is still not at all concretely established due to its characteristics (Hamari & Sjöblom, 2017; Jenny et al., 2017; Parshakov & Zavertiaeva, 2018). Therefore, the perception of the sample on the definition of esports as a sport was studied, showing that there is a small majority who disagree with esports being a sport. With this, despite esports being increasingly compared to traditional sports (Filchenko, 2018; Jenny et al., 2017), it was shown based on the sample that the battle between esports and sports is still a topic that raises many issues. However, since their average response is close to the number 3 ("Neither agree or disagree") there is no evidence, based on the sample, that esports is increasingly compared to sports, thus remaining undefined.

Another variable under analysis, with greater relevance to the study, was their insertion within the educational institutions. This variable encompassed a set of five statements (S2 to S6). The main objective in this variable was to analyse how teachers view this practice and understanding how feasible it is to apply esports in the classroom.

As a starting point, the teachers' thoughts about the development of personal skills in the practice of activities related to esports were tested, revealing an agreement on the development of skills such as collaboration and problem solving (Groff et al., 2012). Thus, it is in accordance with what the literature advocates, showing an average positive response regarding the development of soft skills through the practice of esports.

Rothwell and Shaffer (2019) stated that esports was an aid to STEAM education in developing activities. Based on this, the teachers' opinion of this statement was measured, showing an average equivalent to the previous point. This means that the sample generally believes in its relationship with STEAM activities, which is in line with the literature. Another point that also presents a similar average to these two statements is about the added value that practicing esports can generate in the students' curriculum, being representative that teachers really believe that their insertion will help to improve.

Esports have been making a presence on college and university campus (Funk et al., 2017), and there are also high schools that are already adopting esports within the classroom (Rothwell & Shaffer, 2019). The same authors stated that K-12 schools, by supporting STEAM initiatives, have been investing in esports activities, showing good results. It was then tested whether this application makes more sense in higher education than in K-12 schools, with an average response of neither agree nor disagree, which makes the answer to the question indefinite. One thing to expect since there is weak proximity to the topic of esports and its application. The last element analysed was the ability of schools and teachers to develop these types of activities internally, showing that most teachers believe that there is no capacity, both on the side of schools and teachers, representing a serious obstacle to its insertion in the sector.

For these two variables, Esports vs. Sport and Esports in Education, a correlation analysis was prepared, with the purpose of testing whether their classification as a sport influences the sample in the way they view their insertion in educational institutions. Based on the result of Spearman's test, it was noticed that there is a positive association between the variables, indicating that its classification as a sport influences its insertion in education.

After that, the assessment on teachers' perceptions on some parameters related to

esports was tested. The variable also comprises a set of five statements (S7 to S11). The main purpose of this variable was to understand how the sample looks at issues related to esports, namely players' habits, the influence that parents have, and how disposable income or gender influence the insertion in esports at school.

Society's poor image of esports (Filchenko, 2018) delays its development in schools. Associating the practice of esports with bad habits, such as addiction and mental problems, was tested. The sample's opinion was relatively well distributed, showing no representativeness on either the agree or disagree side, showing no relevance to the answer to the ninth research question (see Table 13).

Parental support and their financial availability are also a tool for analysis in this section, since they are the ones who make the final decision and motivate the students. Therefore, it is part of the schools to captivate not only the students but also the parents in this parameter. These themes were evaluated based on statements S8 and S9 for the relationship with parents, and S10 for the influence of family income on the practice of esports. Regarding these points, it was visible that for the teachers, parents are a fundamental element for the students' participation in the practice of esports. However, it is not conclusive that parents in general agree that esports should be implemented in schools. Furthermore, whether family income influences passion and level of participation in esports also did not register relevance in the average response of the sample, making the evaluation inconclusive. Moreover, the influence that gender may have on the relationship with esports was analysed, showing that the sample believes that gender does not affect access to your practice.

A correlation analysis was also performed for the variables of Esports in Education and Perceptions of Esports Community. It was noted, based on the result of Spearman's test, that there is a positive association between the variables. This shows that the way teachers look at the subject of esports influences their opinion about its insertion in education.

The last point was the impact that the pandemic had on the magnitude of esports. COVID-19 provided an increase in both society's demand for esports and spectators as well as to play (Cranmer et al., 2021) (Ke & Wagner, 2022). Thanks to technological advances, there was a brutal increase during the first wave of the virus (Block & Haack, 2021). The main goal was to test whether the sample really felt the effect that the pandemic brought on a digital level, in this case for esports. Based on the respondents' answers, it was possible to show that teachers relate the pandemic as a factor that positively influenced the

esports industry.

The results concerning the research questions can be found in Table 13. As can be seen, only questions 3,4, 9 and 10 failed to get answers that showed significant evidence for the answer to the investigation, deciding to present it as undefined. Causes such as the small number of people surveyed and the weak relationship with the subject of analysis may be related to these results.

Table 13 - Question of investigation results

N	Question of Investigation	Response
1	Is technology a vital element in teaching methods nowadays?	Yes
2	Will esports be an increasingly popular topic?	Yes
3	Within schools, is it a growing subject?	Undefined
4	Are esports increasingly associated with a traditional sport?	Undefined
5	Are the professors already aware of the effects that can bring?	Yes
6	Are esports an added value for students and schools?	Yes
7	Are esports positively related to STEAM activities?	Yes
8	Do schools have the capacity to develop esports practices?	No
9	Is the social viewpoint about people who practice esports good?	Undefined
10	Do parents' ways of thinking influence the decision making of schools and students?	Undefined
11	Around esports, does the gender difference influence access to them?	No
12	Has the pandemic boosted the world of esports?	Yes

However, the main requirement is to be able to assess whether the insertion of esports in education is a good strategic procedure to adopt. As there are few relevant studies on this topic, the adoption and practice of them in education is still a bit limited. Rothwell and Shaffer (2019) argued that despite the lack of physical ability, esports also has some advantages that traditional esports provide, namely teamwork and communication. Although practitioners' careers are not very long (Salo, 2017), this trend has been reversing.

The study carried out is relatively short to be able to draw a proper conclusion about the main variable in question, however, based on the free response of each respondent it

was possible to highlight that teachers have knowledge about the potential opportunities that their insertion in education can cause. However, it was revealed that there is little knowledge about this concept, which makes it impossible to reach a valid and reasoned answer to the main question.

6. Conclusion

This study aimed to investigate and identify the factors that influence esports, namely its insertion in the education sector. Given its emergent factor, there are still not many academic investigations that address this theme. This entry of esports into the educational field is based on the integration of technology in schools, which will revolutionise the teaching method for students (Cicchino, 2015).

Through the research, based on the questionnaire developed for the teachers, it was possible to observe that technology within the classroom is an increasingly relevant factor. On the other hand, it was visible to note that there is a relationship between technology and the theme of esports, which is in line with the literature, given that access to technology promotes the relationship with esports (Cranmer et al., 2021; Jenny et al., 2017). The characteristics of the technology influenced the rate and speed of adoption (Lahm & Sizemore, 2001). Based on the results, teachers with a greater relationship with new technologies are more likely to have a greater understanding of the subject of esports.

Although the popularity of esports has been increasing (Joseph Macey, 2022), there is still a fragile notion as to its concept and its insertion in the educational field (Jenny et al., 2017). On this point, the main strategy was to give respondents, less related to esports, an opportunity to become more informed on the subject and, perhaps, to go looking for more information.

The classification of esports as a sport is one of the main debates in the gaming literature (Hamari & Sjöblom, 2017; Parshakov & Zavertiaeva, 2018). This type of question has its relevant factor, since if esports were once considered a sport, there will be a greater acceptance of its practice and possibly of its insertion in education. However, even for the sample it is a very limited topic, needing to be taken in depth to reach a finality at concept level (Jenny et al., 2017).

In contrast, teachers mostly related the practice of esports to the development of soft skills (Rothwell & Shaffer, 2019), such as collaboration in work, communication, and increased reasoning. This is a good factor to promote its practice, thus improving students' resumes for the job market. In addition, it was found that the sample believes it is a good opportunity to develop STEAM activities, which in general are good starting points to make their insertion more reliable. The ability of schools and teachers to develop esports practices and the parents' way of thinking were parameters that teachers considered to

negatively influence the adoption of esports activities within the classroom.

It is representative of the impact that the pandemic has had on its development, mostly due to society's increased demand for digital media, going in line with what the literature advocates (Kim et al., 2020). Online game streaming applications, such as Twitch, worked as a distraction for people who had to stay indoors because of the confinement.

Therefore, it was possible to collect relevant information about the proper opportunities and threats that esports can result in. However, there are still many barriers to its development in the education sector. Both parents' ways of thinking and the support for its practice from governmental instruments are factors that still need further study on this topic.

The present study presented some limitations that need to be discussed for a better comprehension of the results, which can also be inferred as recommendations for further research. Firstly, in addition to the sample being relatively small, there is a large divergence in gender, since 75% of the sample is female. It would be interesting to have a greater equivalence among the sample, which would also allow us to study if there are differences between genders for the evaluation of the different variables for the insertion of esports in education. Second, this study was limited to teachers with roots in Portugal. Conducting a replication of this study for foreign teachers would be a great factor for analysis, eliminating the bias of the sample opinion being entirely related to personal culture patterns. Fourth, the insertion of esports in education is a factor that needs to be further studied. In fact, it is observable that the practice of esports promotes the development of skills in students, however, there is a relative misperception about esports players. It is therefore necessary to test the academic performance of students who practice esports and how esports is inserted in school subjects. As a final point, one could frame this topic with a qualitative analysis. Several companies could be interviewed, with open questions, to assess the impact that education has on their business models and the way their strategic planning is defined. This would allow the creation of clusters and would open the door to possible internal and external analyses of video game companies, such as Microsoft or Acer, that develop school activities in some countries.

In conclusion, technology was characterized as an element present in society's daily life. The teachers considered that the inclusion of esports in education provides a set of opportunities for students' achievement, developing and opening doors to new careers, both academic and professional.

There being little literature on this subject, this dissertation allowed the conclusion that in general, the perception that exists about the esports community is still limited, delaying its development and progress in the field of education. Its insertion is feasible, although very restricted, given that there are still few countries that support the insertion of esports in school contents. The advantages that its practice may bring to practitioners are evident, however, there are still many uncertainties as to its application and practice.

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8. Appendix

8.1. Appendix 1. Survey Questionnaire Framework

Subject	Questions (Likert-Scale)
Technology Adoption	**Q1-** In the classroom, how often do you use the technology? (Frequency)
	Q2- How familiar are you with the subject of technology in education? (Level of familiarity)
Popularity of Esports	**Q3-** How familiar are you with the subject of esports? (Level of familiarity)
	Q4- Have you ever heard about esports applications within schools? (Yes/No)
	Statement (5-point Likert-scale- Level of agreement)
Esports vs. Sport	**S1-** Esports is without a question a sport
Esports in Education	**S2-** Esports helps foster teamwork skills such as collaboration, problem solving and communication.
	S3- Esports is a good opportunity to develop STEAM activities
	S4- Esports enriches the students' curriculums and helps in the job market
	S5- Esports makes more sense in the university than in K-12 schools
	S6- Educational institutions have the financial capacity and the (necessary) qualified teachers to develop esports
Q5	**S7-** Esports is associated with addictions and certain mental problems
Perception of Esports Community	**S8-** Parents are decisive in the decision making of schools to move forward with strategic esports projects
	S9- Parents in general agree that esports should be implemented in schools
	S10- Family income does not affect passion for esports and its level of participation.
	S11- Gender does not affect the passion for esports and its level of participation.
Pandemic Impact	**S12-** The lockdown has increased the power and community of esports.

8.2. Appendix 2. Descriptive Statistics for all Variables

Descriptive Statistics

		N	Minimum	Maximum	Mean	Standard Deviation
Age		120	27	67	47,08	9,664
Gender		120	0 (Female)	1 (Male)	,75	,435
Level of education taught in the last year		120	1	4	2,50	1,053
Q1		120	2	5	4,32	,722
Q2		120	2	5	4,30	,705
Q3		120	1	5	2,79	1,302
Q4		120	0 (No)	1 (Yes)	,48	,501
Q5	S1	120	1	5	2,71	1,095
	S2	120	1	5	3,93	1,030
	S3	120	1	5	3,92	,975
	S4	120	1	5	3,64	1,019
	S5	120	1	5	2,37	S11
	S6	120	1	5	2,33	1,055
	S7	120	1	5	2,77	1,186
	S8	120	1	5	3,23	1,104
	S9	120	1	4	2,73	,857
	S10	120	1	5	2,90	1,095
	S11	120	1	5	3,45	1,236
	S12	120	1	5	3,79	1,020
Valid N (listwise)		120				

8.3. Appendix 3 – Cronbach's Alpha for Reliability Test

Item-total statistics

	Alfa de Cronbach		Alfa de Cronbach se o item for excluído
Q5	,753	S1	,754
		S2	,711
		S3	,708
		S4	,711
		S5	,767
		S6	,759
		S7	,775
		S8	,724
		S9	,736
		S10	,730
		S11	,732
		S12	,720

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