A Review of Available Literature for Use in Development of an Undergraduate Esports Certificate Program

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Key Words:  
Esports, literature review

http://dx.doi.org/10.13140/RG.2.2.14872.88323

Abstract

Esports are growing as a viable academic endeavor. As part of an undergraduate credential, literature was collected and reviewed for use as part of a new certificate program in esports at Boise State University. This review focuses on topics of research available for reading assignments in an online program based on the esports ecosystem as defined by Anderson et al. (2018). It contains an examination of current major trends in research as considered for inclusion in an undergraduate esports program. Gaps in literature and directions for future study are discussed as well as adding a new category to the esports ecosystem titled scholars.

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With growing interest and legitimacy of competitive video gaming at the collegiate level, there has been an increased desire for colleges to provide programs preparing students for careers and study within the field of esports. Esports has long been considered a valid topic of academic study (Wagner, 2006) and existing research has argued that the relevance of esports is increasing as its popularity grows (Jenny et al, 2017; Kauwelona, 2019; Keiper et al., 2017). Existing literature reviews in esports have focused on sources of esports research (Reitman et al., 2020), psychology (Bányai et al., 2019; Pedraza-Ramirez et al., 2020), gender (Rogstad, 2021), and business opportunities (Gawrysiak et al., 2020). No single review has focused on available literature for the purposes of developing esports professionals across the numerous areas of involvement in the field of esports. This review seeks to address the need by examining literature from the perspective of suitability for educating and training new professionals and scholars in the field of esports.

Literature corpus was curated from available journal articles, conference papers, dissertations, books, and internet articles for the purposes of creating a ten credit undergraduate certification program in esports at a major public university in the Pacific Northwest. The program is intended to focus on developing an understanding of the vast field of esports including varsity programs, content creation, business, analytics, and social analysis. The intent of the program is to offer a series of one-credit online courses, each focusing on a specific
element of the wider field of esports. These courses, as well as the specific topics of them, are in continued development at this time.

Much of the existing research in esports has been developed from a sports management, business, and media studies perspective (Reitman et al., 2020). Regular esports publications are made in the journals historically focused on field sports: *Sports Management, Sports Management Review*, and the *Journal of Applied Sport Management*. The other dominant strain of research examines sociological perspectives of esports like the definition (Jenny et al., 2017; Kane & Spradley, 2017), impact of esports on society (Holden et al., 2017; Lee & Schoenstedt, 2011), and the psychology of players and viewers (Hamari & Sjoblom, 2017). Additionally, articles proposing esports as a potential business opportunity in an era of significant growth are frequent (Gawrysiak et al., 2020; Jenny et al., 2018). However, fewer articles are found that examine the impact of esports programs on participants’ academic performance (Reitman, 2018; Schaeperkoetter et al., 2017); team and league management (Cho et al., 2019); and content creation or broadcasting best practices (Anderson et al., 2018; Lee & Steinkuehler, 2019). This emphasis has led to literature that primarily focuses on the cultural impact of esports while leaving gaps regarding the training of professionals within the esports ecosystem and the development of successful esports programs.

Books published in the esports field tend to track individual players’ stories documenting their rise--and sometimes fall--as a top player in a particular sport. Most of these books are aimed to fuel interest in eager individuals seeking to become superstar players rather than involving them in the many non-player roles within esports. Those that include the history of esports have done so in a disjointed manner (Li, 2017; Collis, 2020). Other books are largely designed for the promotion and legitimacy of esports (Shelton & Haskell, 2018). There is a clear need for established academic resources that focus on the origins of esports and roles beyond players and coaches.

This literature review uses the esports ecosystem as described by Anderson et al. (2018) as a framework for understanding the topics of available literature (see Figure 1). The undergraduate esports courses created at Boise State University aim to build necessary skills for future strategists, organizers, content creators, and entrepreneurs for careers in esports and this review examines the presence or absence of literature that specifically relates to these roles. Universities offering degrees and certifications need access to quality training material to prepare the next generation of esports players, coaches, broadcasters, content creators, journalists, community managers, designers, analysts, and tournament officials. Available literature is examined for suitability in undergraduate courses and organized according to potential roles in the esports ecosystem. Gaps in available literature and potential needed texts can subsequently be addressed.
A descriptive review (Pare et al., 2015) was chosen to examine literature in order to represent the state of the art within esports research as it pertains to the roles described in the esports ecosystem (Anderson et al., 2018). Descriptive reviews aim to analyze any decipherable patterns or trends in order to reveal existing topics and any gaps within available literature (Pare et al., 2015). Because esports is a newer domain, sources beyond journal articles were considered for inclusion in this review of literature if they were deemed appropriate for use in the curriculum by the researcher. Sources were gathered between January of 2021 and October of 2022 as the curriculum was being designed, developed, and deployed for its first run during the summer semester of 2022. Copies of relevant sources were stored on a Google Drive to be examined for inclusion in the curriculum.

A total of 68 sources were stored for review. The majority of sources were journal articles or conference papers but a small number of books, website articles, and news articles were also included for review. The literature corpus is not intended to include all available esports literature but only those that were considered for inclusion in the curriculum being developed. Sources were then labeled using provisional coding (Miles et al, 2020) according to the particular role in the esports ecosystem (Anderson et al., 2018) that they worked to inform. Just under half, 32, of the sources did not fit neatly into one of the roles in the esports ecosystem and received a label of general (see figure 2).
Figure 2. Histogram of sources reviewed by roles in the esports ecosystem.

![Histogram of Sources by Esports Ecosystem Category (Anderson et al., 2018)](image)

**Esports Ecosystem Coding**

Coding articles for roles in the esports ecosystem was done according to the four highest level roles: organizers, entrepreneurs, content creators, and strategists. The player role was not included as almost all of the literature was applicable to players and competitors in esports to one degree or another. Sources were defined as fitting a specific role if the article primarily focused on content useful to one or more of the sub-roles defined by Anderson et al. (2018). For example, sources that focused on podcasters or shoutcasters were coded under content creators while sources discussing marketing and business opportunities were coded as entrepreneurs.

**Coding Additional Sources**

The number of sources that fell into the general code resulted in the need for additional coding. Descriptive coding (Miles et al., 2020) was used to understand what topics were being covered that were not directly represented in the esports ecosystem. Descriptive coding is used for creating an inventory of topics for indexing and categorizing (Miles et al, 2020) and was first applied to sources labeled general but was expanded to cover all sources as there was sufficient cross-over to do so. These additional codes cover the topics of toxicity, health, culture, research and education, spectator, legal and labor, strategy and skills, non-gaming, and definition. Not all sources fit into one of these codes but other codes with only a single article were not examined further.

**Results**

The esports ecosystem (Anderson et al., 2018) was moderately effective at providing provisional codes as each of the categories within the esports ecosystem contained between six and twelve sources with organizers being the least numerous and entrepreneurs being the most numerous. However, a large number of sources fell outside of the categories in the esports
ecosystem indicating a need for either additional categories to be added to the ecosystem or broader categorization. Descriptive coding provided for a more detailed breakdown that showed what topics were discussed in sources labeled general. A description of the sources coded in each category of the esports ecosystem is followed by an examination of several of the descriptive codes and commonalities between their content.

**Content Creators**

Suitable sources that focused on content creation were frequently not esports based or even rooted in gaming, indicating a significant lack of research in esports content creation. A number of sources coded as spectator, were not generally appropriate for content creators as they tended to look at consumption motives (Hamari & Sjoblom, 2017; Yu et al., 2022) for individuals watching high level esports competition and examining the impact from a mass media perspective. Articles about podcasting in esports were largely absent from searches and available information about podcasting tended to come from non-gaming perspectives (Fernandez et al., 2015; Kuklo, 2018; Wolpaw & Harvey, 2020). Only one article gave a perspective on the role of shoutcasting, commentating an esports event, with insight on the complexities of the role (Kempe-Cook et al., 2019) but articles covering topics surrounding written content for esports were extremely limited. In place of esports specific literature, information on creating written content were generally taken from the field of game studies such as Zagal et al. (2009) which prescribes how to write high quality game reviews.

The overall lack of focus on the huge market of esports content creators is one of the most significant gaps in literature. Anderson et al. (2018) mentions broadcasters, streamers, independent app developers, fan art creators, and journalists, all of whom have been largely ignored by esports researchers save for a few focusing on streamers (Taylor, 2015; Wohn & Freeman, 2019). Even as universities scramble to put together broadcasting programming for their esports team, there is little research available for individuals pursuing this broad field that is creating a large need for creative and technically skilled workers.

**Strategists**

Strategists as described by Anderson et al. (2018) include roles such as coaches, analysts, and a unique form of data statisticians called theory-crafters. A quick search on hiring sites shows that esports teams are hiring for analysts and theory-crafters in attempts to calculate ideal builds, plays, and strategies for their teams. However, many of the best resources for understanding the skills and strategies of esports games are found, not in academic researcher, but on public forums such as Reddit, such as the Rocket League's Skill Book (MiracleWiff & Tomdovodo, 2019) or are available as strategy guides and videos produced by content creators found on game specific websites. Reitman & Steinkuehler (2021) specifically discuss the lack of theoretical taxonomies and practical intervention methods to train esports players for high level play. Some basic attempts have been made to create a framework for esports training (Nagorsky & Weimeyer, 2020), examine strategy at high level tournaments (Castellanos & Corps, 2021), and use behavioral pattern mining to examine player skills (Monthonat et al., 2020) but models for analyzing data for esports, effective coaching methods, and the actual process of theory-crafting are more likely to be found among players and enthusiasts than academic researchers.

One important point brought up by Hanghol & Nielson (2019) is that communication is a core mechanic in team based esports. From coaches to players, being able to effectively communicate with one’s team is vital in an environment where the entire field of play is not necessarily visible to each player as is found in traditional sports. While in traditional sports, each player is capable of surveying the entire landscape of the game in a quick glance, team
based esports requires players share more information about the game as it develops. Additional research into developing effective teams, both on a technical play and strategic level, as well as developing clear communication and teamwork systems, is sorely needed.

**Entrepreneurs**

The most prolific part of the ecosystem discussed in articles was the role of the entrepreneur as many articles have focused on esports as a business opportunity (Jenny et al., 2018; Seo, 2013). Considerable time and effort in sources was spent discussing the potential growth in esports, especially during the mid-2010s as esports began its rise in prominence (Reitman et al., 2020). While numerous sources attempted to justify esports as a legitimate enterprise or compare it to traditional sports, few of these did so from the lens of entrepreneurs. Anderson et al. (2018) labeled the group as entrepreneurs, however, the actual roles he defines sync more with positions at large gaming companies such as Riot or Blizzard than those of scrappy startups or industry disruptors. Even as late as 2021 researchers were still defining and redefining esports from a business perspective (Bosquet & Ertz, 2021; Scholz, 2020). There are sources which provide meaningful contributions to esports businesses discussing the role of gender in spectatorship (Yu et al., 2022), using esports to improve brand perceptions (Gawrysiak et al., 2020), discussing sponsorship benefits (Freitas et al, 2020), and discussing the specific skills needed among esports specialists (Shunkaruk, 2021).

While the role of esports in culture continues to grow and it becomes more of a mainstream activity, a greater understanding of the role gaming companies play will be required. Already, discussions about potential litigation (Holden & Kaburakis, 2017), issues and inequalities among the esports labor system (Johnson & Woodcock, 2021), antitrust concerns and the role of publishers and team owners (Miroff, 2019) have been introduced by legal scholars. Unlike traditional sports in which no one owns the rules, competitive video games are owned and controlled by a single publisher. There have already been crackdowns on teams, players, and content creators that go against the corporate image a publisher is projecting. Numerous issues in the labor economy, league ownership, international relations, and team relations have not yet been explored but are likely to be important in the future of esports.

**Organizers**

The role of organizers in research has largely been monopolized by those focusing on organizing teams at the secondary and collegiate levels. While only six sources were identified as targeted towards organizers, four of them focused on high school or college leagues and teams (Cho et al., 2019; Pizzo et al., 2019; Reitman et al., 2019; Shelton & Haskell, 2019). These sources were primarily focused on overcoming the challenges of legitimizing esports as an activity beneficial for students and establishing funding for a program. Other sources that discussed the impact of prize structure (Coates & Parshakav, 2016) and social perspectives on doping in esports (Jansy, 2020) provided very specific information on running teams, tournaments and leagues but do not provide a clear picture of the skillbase required of esports organizers.

Sources that discussed the wide skillbase required of esports directors and general managers, as well as the technical requirements of running an esports program were absent from available research. Even as hundreds—if not thousands—of esports tournaments of various sizes are being run every week in the US alone, there is little research on how these are being managed and virtually no best practices for creating a stable, fair, and fun tournament for competitors. If esports are to continue to grow at the expected pace, considerable guidance will need to be available for already overworked and overstressed IT professionals, directors, and organizers.
who are scrambling to set up their own esports arena, tournaments, play schedules, and broadcasts.

**Beyond the Esports Ecosystem**

As nearly a half of the total sources reviewed fell outside of the roles defined in the esports ecosystem, a further understanding of additional roles within the esports ecosystem may need to be considered for inclusion. The following are the results of identifying themes found within the sources that fell outside of the four primary categories in the esports ecosystem.

**Definitions**

Sources defining esports were frequently too broad to fall into a specific category in the esports ecosystem unless they were looking at definitions from a business point of view in which case they were coded under the *entrepreneur* category. Even sources that were not focused on the definition of esports spent considerable time attempting to define esports, or to either include or disclude it from accepted athletic sports sometimes referred to as “traditional sports”, or more pejoratively as “real sports” or “professional sports”. Traditional sports have generally required a significant degree of gross motor skill, something that many esports currently lack (Hilvoorde & Pot, 2016; Kane & Spradley, 2017; Jenny et al., 2017; Marelić & Vukušić, 2019). However, there is little argument that physical skill is highly necessary for success in esports. Yet, there continues to be resistance to accepting esports as a sport which, in turn, has specific legal and labor implications (Bousquet & Ertz, 2021; Holden & Kaburakis, 2017; Scholz, 2020). One common feeling held in common by esports enthusiasts is that esports resembles traditional sports in most ways, yet the contestants hardly move (Segal, 2016).

Along with the discussion of definition comes a dizzying array of spelling options for esports including “e-sports”, “eSports”, “Esports” and “esports” with some authors swapping between spelling during the same article. This paper has chosen to use “esports” as that became its designated spelling according to the Associated Press in 2017 (Pacetti-Donnelson, 2019), however, many researchers have yet to accept this with publications as late as 2021 still using alternative spellings. Similarly, no consensus seems to have formed regarding what to call players with options such as “e-athletes”, “competitive gamers”, “esports athletes”, “competitors”, or just “athletes” while individual games tend to provide alternate terms such as “summoners”, “agents”, “champions”, or “operatives”. Standardized language for many elements of esports seem to still be in flux as the exact place of esports in academia is still being explored.

**Research and Education**

Perhaps the largest gap in the esports ecosystem deals with those either extolling the potential virtues of esports or warning of its inherent dangers, as well as a few cautious commentators who are simply aiming to understand the impact of esports on society. While it may be possible to lump academia in with other the existing categories, many researchers would likely chafe at their role being defined as a *content creator*. Almost half (14), of the sources outside the esports ecosystem received *research and education* code, as well as the majority of the sources coded for *organizers* and a few coded for *entrepreneurs*.

Several of the sources were literature reviews covering topics such as business (Frietas et al., 2020; Gawrysiak et al., 2020); specific game genres (Mora-Cantallops & Sicilia, 2018); esports psychology (Bányai et al., 2019), gender (Rogstad, 2021) or esports in general (Reitman et al, 2020). These provide important foundational information on the development of research of specific aspects of esports but other than the business topics are generally not applicable to a specific role within the esports ecosystem. Other sources, like Anderson et al. (2018), investigate
potential positive impact of esports on students (Cho et al., 2019; Lee & Steinkuehler, 2019; Sauce et al., 2022; Schaeperkoetter et al., 2017) and schools (Funk et al., 2018; Keiper et al., 2017; Kauweloa & Winter, 2019; Wagner, 2006). Other sources took approaches borrowed from game studies to define esports genres (Choi & Kim, 2018; Crawford, 2015; Mora-Cantallops & Sicilia, 2018).

The number and depth of sources that clearly fell into this category yet failed to fit into the existing roles within the esports ecosystem indicates a need for an expanded picture of what the esports ecosystem includes. There is a clear need to add space for educators and academic researchers from fields such as sports management, psychology, sociology, game studies, and media studies. This need could be expanded to include some of the research that was not specifically coded as belonging to research and education but that examines esports from health and cultural perspectives.

**Health**

Concerns about esports player’s health is often mirrored with concerns regarding the nature of video games in general. Beyond discussion about video game addiction (Turner, 2008; Wood, 2008) or video game violence in general (Ferguson, 2018), esports tends to include a very high amount of sedentary activity. Regardless of these concerns, esports athletes do not tend to become obese (Gaikoni-Ramirez, 2021). In fact, esports athletes tend to display healthy overall living habits even while health management remains an important concern (DiFrancisco-Donoghue et al., 2019). Competitors still need to monitor their health as long competitions with continual mental engagement can be quite draining indicating a need for some basic health considerations for esports players (Jansy & Sodomirski, 2021).

Even with limited movement, there are still concerns about injury as well as competitor mental health that need to be considered. DiFrancisco-Donoghue et al. (2018) recommended regular involvement of an assigned health professional, however there are few established protocols for dealing with issues that may arise among competitors. Research on potential injuries including retinal damage, musculoskeletal issues, and ideal ergonomic positions is recommended and could help esports teams take better care of their athletes. Also it is suggested that leagues begin to require certain physical and mental health screenings for players.

**Toxicity**

Toxicity is a major topic in gaming in general but the online nature of esports games bring it consistently to the forefront in many research articles. The interactive nature of online gaming and a history of accepting toxic behavior (Irwin et al., 2021; Irwin & Naweed, 2020) is a continued struggle for companies as they try to manage their communities through roles like community managers (Robles, 2017). Additionally, the false meritocracy of video games has prompted a number of studies examining uneven treatment of minority groups in online gaming (Davin et al., 2020; Fletcher, 2020; Paul, 2018). Studies have shown that heterosexuals and males perpetrated the majority of the bullying in online games while female and LGTBQ participants received the majority of the attacks (Ballard & Welch, 2015). A number of attempts have been made by gaming companies to mitigate issues of toxicity but these have generally been met with limited success (Blackburn & Kwak, 2014).

While study of toxicity has been a large part of esports culture, few prescriptions exist to combat it. Ongoing research indicates that the presence of female leadership in esports positions may help curb toxicity targeting female players but the majority of research appears to be focused on bringing awareness to the problems. Future research looking at effective policies, procedures, and best practices to create inclusive gaming spaces and inclusive teams is necessary.
as esports tends to be a very white and asian male dominated space (Fletcher, 2020). Research is needed to understand how we can promote more marginalized populations taking a larger role in esports as well as decrease the general toxicity of esports communities.

**Culture**

Differing cultural norms surrounding esports has been an area of discussion and study as several asian countries have risen to prominence as a dominant force in esports. Since the time of Starcraft, Korea’s role as a major player in esports has been undisputed (Li, 2017), though different games tend to see a higher level of performance from different countries. Unlike in the US, esports in Korea is thought to be a pathway to excel as a player rather than a pathway to engage students with a general or STEM education (DeArmond et al., 2020). In China, representing the world’s largest esports market (Yu, 2018), playing games has been marginalized in favor of high level esports creating a divide between competitive and casual players (Zhang & Recktenwald, 2016). Cultural understanding of esports, especially in underrepresented areas like Latin America, is an area where empirical research is needed.

**Spectator**

A small group of sources focused on the growing number of spectators of esports in an attempt to understand viewer motivations. Hamari & Sjoblom (2017) described how viewers are more likely to be active players of games and that viewer motivations tend to include improving one’s own play of an esports game by watching professional level matches. Differences were seen in viewer behavior based on the types of live streaming formats impacting viewers, donations, and subscribers. However, the impact was varied across different genres of esports (Ma et al., 2021). The way in which a streamer interacted with the camera was an important factor in streaming success (Taylor, 2015). Gender differences were also found in viewer behavior with males preferring higher levels of aggression and women being more likely to follow specific attractive players (Yu et al., 2022).

Unlike traditional sports, the majority of esports fans are recent players of the game leading to different consumption motives. However, the viewership of esports is very broad and little research has been done to delineate between esports viewers of large tournament leagues and those who prefer to watch individual streamers. Also, comparisons across various broadcasting formats are largely unexplored as most viewer studies tend to focus on one title, or in some cases, fans of a single team. As esports continue to grow in popularity, production teams will continue to expand their repertoire of best practices. Little is published to inform those seeking to develop a broadcasting channel for their team or even a personal esports stream.

**Labor and Legal**

There are many concerns about the developing legal quagmire of esports as it differentiates from traditional sports models. Many issues similar to traditional sports are present such as the young age of professional players and questions about collegiate versus professional play. Johnson and Woodcock (2021) describe esports as defined by organizing game competitions yet note the significant role that third parties play in providing services, sponsorship, and commentary. They state that the many professional player positions are in a precarious balance requiring complete commitment to the game. This commitment presents a number of legal issues considering the power in the hands of game publishers to control potential business partners, players and teams from even accessing their game (Holden & Kaburakis, 2017; Miroff, 2017). Esports’ unclear definition as a sport has led to a loss of protections in some countries and is likely to lead to inevitable litigation, returning back to the question seen under
the *definitions* section of whether esports are a sport or an entertainment activity. It may be that this question will be answered by the courts over the coming years.

**Discussion**

One of the clearest outcomes from the literature reviewed in this article is that the overall ecosystem described by Anderson et al. (2018) may be too limited. With almost half of the overall sources being ascribed to the general category, it seems necessary to either expand the categories within the existing esports ecosystem or add new ones. The additional coding indicated that the topics of education, research, health, and psychology were all important topics to be included in the esports ecosystem, yet they currently lack a fitting category. Rather than attempting to force these roles into the existing ecosystem categories, we advise the addition of a new esports category to the ecosystem labeled “scholars” (see figure 3).

The esports scholars category is intended to include the many roles presently existing outside of the esports ecosystem yet playing an important role in shaping the landscape of esports and the world’s perceptions of it. Within the scholars category we suggest the following roles: researchers, educators, psychologists, and clinicians. Researchers include those examining esports from a sociological, economic, behavioral, health, and game or media studies perspective. Educators include those teaching about esports, teaching digital citizenship in online gaming, or educating new esports developers. Psychologists include both those examining broad impacts of gaming on society as well as working with the mental health of players, coaches, and other professionals. Finally, clinicians at all levels attend to the physical health of esports players including doctors, nurses, and physical therapists. This new category would include a large section of available research as it accounts for approximately half of the sources included in this literature review.

As to the categories that are found within the existing esports ecosystem model, there is much work to be done. Content creation, specifically in esports, is one of the most under-researched category. While not entirely surprising, as content creation as an individual enterprise is fairly new, the ability for pro players and amateur players to create their own career in content creation differentiates it significantly from traditional sports. Many top earning content creators in esports are retired professional players or individuals who never reached the top levels of play. Additionally, research on how to recruit, train, and develop a successful esports team is absent from available research.

Specific to the needs for undergraduate education, a textbook including a clearly written history of esports is very much needed. Existing books tend to take a sporadic approach to esports history (Li, 2017; Collis, 2020), are designed to promote the legitimacy of esports (Shelton & Haskell, 2018), or are written as self help style books for kids interested in esports. As the language and culture around esports settles out, common language—and spelling—is needed that bridges the gap between academic sources and internet guides.
Limitations

The selection of literature from this review is not considered to be inclusive of all available esports research. Literature selected was primarily chosen for suitability in the first six topics of undergraduate esports courses that were created, therefore topics such as esports technology, analytics, and event management may be under represented. Additionally, the esports ecosystem lists software developers as a sub-category under content creators. At Boise State University there are already separate programs that support software development, so this area was not included in the research gathered.
References


