The Impact of the Underuse of Digital Games in Social Studies Education

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Abstract

Despite their popularity, versatility, and overall value, digital games continue to be underused in education. This tends to be more pronounced in Social Studies education, where digital games utilization in learning trails behind other disciplines. The purpose of this paper is to determine the root causes of this issue. To achieve that end, the author of this study reviewed some of the current literature surrounding this topic, including performing a comparative analysis of 15 peer-reviewed articles produced by educational and technology experts steeped in qualitative, quantitative, mixed-methods, and bibliometric research. This comparison revealed that four main obstacles are preventing fuller use of digital games in teaching Social Studies: the limited digital knowledge of certain educators; insufficient teacher preparation and training programs; an unequal distribution of resources and funding; and a perceived lack of disciplinary and instructional utility. Moreover, this research also revealed several significant gaps within the current literature, including inconsistencies in anecdotal and empirical research methods, which must be addressed to harness the full potential of digital games-based learning in today's Social Studies classrooms.

Keywords: constructivism, commercial-off-the-shelf game, digital games, educational data mining, edutainment, experiential learning, game-based learning, gamification, learning analytics, serious game, serious educational game, social cognitive theory

The Impact of the Underuse of Digital Games in Social Studies Education

Learning and playing are activities integral to everyday existence and striking a balance between the two is often viewed as the key to happiness and a fruitful life (Hutchison, 2007). Since the dawn of recorded history, many cultures even viewed the two as mutually exclusive. The Romans, for example, used the Latin word *ludus* to interchangeably describe education, sport, and entertainment (de Carvalho & Coelho, 2022). Such ubiquitous connections conform with decades of findings that playing games can have a positive influence on learning (de Carvalho & Coelho, 2022). Author Chris Crawford summed it up best in his book, *The Art of Computer Game Design*, when he observed that, "Games are… the most ancient and time-honored vehicle for education. They are the original educational technology… We don't see mother lions lecturing cubs at the chalkboard" (1997, p. 16).

Although many games started out as a means to teach younger generations how to survive, they have become much more complex and entertaining over the ages (Crawford, 1997). During the twentieth century, digital technology gave rise to computer games, which have grown in popularity over the past few decades (Hutchison, 2007). Today's tech-savvy generation of "digital natives" are literally immersed in computer games, especially those that they can play using mobile devices connected to online gaming services (Breuer, 2018, Chapter 13; de Carvalho & Coelho, 2022). Moreover, growth of this industry shows no signs of stopping. The World Economic Forum recently predicted that video game sales, which have already eclipsed movie and music revenues combined, are expected to reach an estimated $321 billion within a few short years (Read, 2022).

All of this would lead one to assume that modern pedagogy has kept pace with contemporary game development, particularly in light of the fact that education is an institution

usually receptive of and responsive to technological change (Huiqing & Rayne, 2022). Sadly, this is not the case. When it comes to digital games-based learning – specifically, regarding the use of digital games in the social sciences – education lags behind other major institutions, including government, business, and medicine (Breuer, 2018, Chapter 13; de Carvalho & Coelho, 2022). Although researchers, administrators, and educators have made many strides in the application and use of educational technology, advancements concerning digital games have been less consistent over the past 20 years (Altun & Gormez, 2021, Fokides et al., 2021, Chapter 9). Thus, the aim of this literature review is to determine the impact of the underuse of digital games in Social Studies education.

Definitions of Key Terms

1. *Digital games* – The pedagogical term that teachers, administrators, and researchers use when referring to video games, computer games, electronic games, or any game played using mobile devices or dedicated video game consoles (Daoudi, 2022; Huiqing & Rayne, 2022).

2. *Commercial-off-the-shelf (COTS) game* – Any digital game commercially produced, distributed, and sold for amusement or entertainment purposes (Huiqing & Rayne, 2022).

3. *Serious Game (SG)* – Any digital game professionally produced and played for purposes other than amusement, such as simulation-based training or education (Breuer, 2018, Chapter 13; de Carvalho & Coelho, 2022; Dreimane, 2021; Fokides et al., 2021, Chapter 9).

4. *Serious Educational Game (SEG)* – A specific type of SG developed and played to meet targeted educational needs or learning outcomes. Most SEGs are designed to align with existing curriculum or state educational standards (Daoudi, 2022).

5. *Edutainment* – A genre of computer games originally developed during the 1980s to simultaneously entertain and educate consumers. Unlike SEGs, digital games of this type emphasize amusement over instruction and normally do not conform to any educational standards. Although the term declined in popular use for a short while, it has enjoyed a recent comeback within certain circles of the video game industry and academia (Breuer, 2018, Chapter 13; Hutchison, 2007; Sale, 2022).

6. *Gamification* – The pedagogical process of introducing game-like elements into nongame situations, such as reinforcing behavior with achievement badges or building self-efficacy through the use of leaderboards (Dreimane, 2021; Hidalgo-Cajo et al., 2022).

7. *Game-Based Learning (GBL)* – An instructional strategy that calls for the introduction and use of games in the teaching and learning process. When used in conjunction with digital games, the process is referred to as *Digital Game-Based Learning (DGBL)* and can involve the use of either COTS games or SEGs (Breuer, 2018, Chapter 13; de Carvalho & Coelho, 2022; Dreimane, 2021).

8. *Learning Analytics (LA)* – An emerging area of advanced digital research that relies upon the use of computer analyses and artificial intelligence (AI) to better comprehend human learning and improve the learning process (Daoudi, 2022).

9. *Educational Data Mining (EDM)* – A relatively new discipline of pedagogical inquiry that focuses on developing techniques to facilitate the interpretation and analysis of meta-data gathered during computer-aided educational research (Daoudi, 2022).

10. *Experiential learning* – A learning approach, primarily based on the works of educational theorist David Kolb, which emphasizes the use of direct experiences and self-reflection to improve knowledge, acquire skills, and illustrate values (Sale, 2022) (Uzun & Uygun, 2022).

11. *Constructivism* – An influential philosophy that asserts learners take an active part in the learning process by building on their experiences, rather than passively absorbing information or reacting to exterior stimuli. (Sanz-Prieto & de Pablo Gonzalez, 2021, Chapter 7).

12. *Social cognitive theory* – A popular learning theory, developed by psychologist Albert Bandura, who posited the idea that learning is dependent on mutual interactions between learners, behavior, and their environment (Sanz-Prieto & de Pablo Gonzalez, 2021, Chapter 7).

Related Literature

Limited Digital Knowledge

One widespread factor preventing many Social Studies teachers from using DGBL, including the use of SEGs and gamification during instruction, is their limited digital knowledge or general lack of experience with edutainment and educational games (Altun & Gormez, 2021; Breuer, 2018, Chapter 13; Hidalgo-Cajo et al., 2022; Huiqing & Rayne, 2022). Simply put, today's educators do not know enough about playing video games or video game culture to effectively conceptualize their benefits or leverage their full potential in the classroom. Many

teachers, for example, limit the use of digital games to rewarding good behavior or as distractions to keep students occupied between classes (Altun & Gormez, 2021; Breuer, 2018, Chapter 13). What makes this especially perplexing is that many educators view the idea of teaching with digital games in a favorable light (Altun & Gormez, 2021; Huiqing, H., & Rayne, A. S., 2022).

Not all teachers, however, view DGBL strictly from a positive perspective; their limited digital knowledge sometimes contributes to indifference and ambivalence. One study, for instance, revealed that a significant portion of teachers were equally optimistic about the prospect of using DGBL as they were concerned about the potential negative implications of allowing students access to digital games during instruction (Altun & Gormez, 2021). A survey of more than 1,000 primary and secondary school teachers showed that demographic variables – including age, gender, level of education, and teaching seniority – held little to no influence over their perceptions of DGBL; rather, it was their personal experiences with edutainment and COTS games that influenced their opinions (Altun & Gormez, 2021). Johannes Breuer likewise concluded that many teachers have difficulty equating gaming with learning (2018, Chapter 13). Moreover, similar studies found that such sentiments are shared across a wide range of educators, including everyone from pre-service teachers to those working in higher education (Hidalgo-Cajo et al., 2022; Huiqing & Rayne, 2022). Regardless of the sector or level of education, it seems that familiarity with digital games is the driving factor behind their instructional use and application.

Insufficient Teacher Preparation and Training

Another issue that researchers point to when studying the underusage of DGBL and SEGs in classrooms, which is related to an overall lack of digital knowledge, concerns formal

deficiencies in educator preparation and professional development programs (Altun & Gormez, 2021; Daoudi, 2022; Hidalgo-Cajo et al., 2022; Huiqing & Rayne, 2022; Maguth et al., 2015; Musselman et al., 2018). In one study, researchers determined that although many Social Studies teachers were not opposed to using SEGs and COTS games in their classrooms, less than one-third of them received formal education or training about DGBL (Altun and Gomez, 2021). Two additional studies from 2022 likewise revealed that many universities and public schools excluded topics related to DGBL, SEGs, and the use of COTS games from their teacher preparation or in-service training programs (Hidalgo-Cajo et al., 2022; Huiqing & Rayne, 2022). Although most of today's formal and in-service teacher training programs address the use of instructional technology, few of them offer anything of substance pertaining to edutainment, SEGs, COTS games, or the use of mobile devices in learning (Maguth et al., 2015; Musselman et al., 2018). This is curious considering the immense popularity of online games and the rising use of SGs to train and educate people across a wide spectrum of vocations and industries (Daoudi, 2022; de Carvalho & Coelho, 2022).

Some experts believe that the lack of attention paid to DGBL, SEGs, and the use of COTS games in teacher preparatory and training programs can be attributed to inconsistencies at the academic level, where researchers have yet to make fuller use of advanced methodologies to better interpret and share compelling meta-data gathered during recent research (Daoudi, 2022; Hidalgo-Cajo et al., 2022). Other findings indicated that professors and instructors within higher education – that is to say, teachers instructing and mentoring future teachers – lacked sufficient experience with DGBL, SEGs and the use of COTS games in learning (Dreimane, 2021; Fokides et al., 2021, Chapter 9).

Inadequate Resources and Funding

Compounding and further complicating teacher preparation and training program issues are perennial concerns about resources and funding. Every school year, teachers and administrators must make careful decisions about their instructional plans based upon fiscal limitations. Several studies have revealed that despite growing budgets, many school systems lack the vision, guidance, or desire to prioritize DGBL when it comes to the equitable allocation of resources and funding (Altun & Gormez, 2021; Daoudi, 2022; Huiqing & Rayne, 2022; Maguth et al., 2015). One 2022 study showed that a lack of teacher advocacy led to digital games being excluded from public primary and secondary school curricula (Maguth et al.). Other experts concur that a lack of expertise with DGBL, SEGs, and COTS games at the teaching and administrative levels of public education contributed to schools underfunding or insufficiently equipping educators with the necessary tools and materials needed to regularly implement DGBL during instruction (Altun & Gormez, 2021; Huiqing & Rayne, 2022). Moreover, researchers pointed to the fact that teachers and administrators provided little feedback to stakeholders outside the classroom, such as families and school board members, about the efficacy of using SEGs and COTS games as part of their curricula (Huiqing & Rayne, 2022; Maguth et al., 2015). Consequently, educators interested in using DGBL in their classrooms were often left with little financial or material support outside of them (Maguth et al., 2015). Ultimately, internal resource and funding shortfalls forced determined teachers to purchase materials and lesson plans at their own expense, in an already time-restricted and materially limited environment (Altun & Gormez, 2021, Huiqing & Rayne, 2022; Maguth et al., 2015).

Disciplinary and Instructional Utility

A remaining pair of obstacles researchers frequently cite as hindering the greater use of digital games in Social Studies classrooms are the matters of disciplinary and instructional utility (Altun & Gormez, 2021; Breuer, 2018, Chapter 13; Daoudi, 2022; Fokides et al., 2021, Chapter 9; Hidalgo-Cajo et al., 2022; Huiqing & Rayne, 2022). In the case of the former, experts revealed that Social Studies teachers sometimes found it more challenging incorporating digital games in learning when compared to teachers of other disciplines (Altun & Gormez, 2021; Breuer, 2018, Chapter 13; Hidalgo-Cajo et al., 2022). This is especially true of primary and secondary Social Studies educators, who tend to use DGBL and SEGs less often than those teaching in other disciplines (Altun & Gormez, 2021; Breuer, 2018, Chapter 13). Furthermore, although virtual schools are turning more and more to DGBL and SEGs in remote learning, online Social Studies teachers continue to use digital games at a lower rate than their brick-and-mortar counterparts (Fokides et al., 2021, Chapter 9; Hidalgo-Cajo et al., 2022; Huiqing & Rayne, 2022). One encouraging note, however, is that research has shown that higher education Social Studies instructors are second only to Computer Science educators while using DGBL to teach undergraduate students (Hidalgo-Cajo et al., 2022). Experts attribute these disparities to the idea that many primary and secondary Social Studies educators limit their use of technology to a supplementary role; that is to say, most of these educators rely on traditional methods of teaching, such as didactic instruction and guided notes, to deliver material in subjects like History, Economics, and Geography (Altun & Gormez, 2021; Huiqing & Rayne, 2022).

Concerning the matter of overall utility, researchers likewise found that Social Studies teachers often encountered difficulties aligning content in digital games with learning outcomes and state educational standards (Altun & Gormez, 2021; Huiqing & Rayne, 2022). Only a

limited number of SEGs are available for Social Studies instruction, relative to other disciplines, which often forces tech-savvy teachers to turn to COTS games for use in DGBL (Breuer, 2018, Chapter 13; Fokides et al., 2021, Chapter 9). In one study, teachers surveyed about the potential uses and application of digital games often expressed only moderate interest in COTS games, when compared to SEGs, due to previously noted issues, such as limited instructional time and a lack of resources (Altun & Gormez, 2021).

Learning Theory Association

Although learning theory researchers point to several philosophies and methodologies when analyzing and interpreting the pedagogical use of digital games, most experts associate gamification and DGBL with experiential learning, constructivism, and Bandura's social cognitive theory (Breuer, 2018, Chapter 13; Daoudi, 2022; de Carvalho & Coelho, 2022; Dreimane, 2021, Chapter 10; Hidalgo-Cajo et al., 2022; Huiqing & Rayne, 2022; Hutchison, 2007; Maguth et al., 2015; Sale, 2022; Sanz-Prieto & de Pablo Gonzalez, 2021, Chapter 7; Uzun & Uygun, 2022). Please note that the explanation provided herein is not an exhaustive one. Instead, it is a representative summary of the many diverse ideas associated with DGBL that best fit within the limited scope and breadth of this paper.

With the above said, several learning theory experts agree that the underuse of digital games in Social Studies classrooms is primarily a consequence of two problems. The first is a result of teacher inexperience with using DGBL, SEGs, and COTS games as experiential learning tools during simulation-based instruction (de Carvalho & Coelho, 2022; Hutchison, 2007, Sale 2022; Uzun & Uygun, 2022). The second issue, which encompasses gaps in current meta-data research, is addressed in the following section (Daoudi, 2022; Huiqing & Rayne, 2022).

Digital games-based learning studies have revealed that the use of SEGs and COTS games during classroom instruction facilitate student learning, but some teachers are reluctant in their use due to their limited background knowledge, finite instructional time, and insufficient resources (de Carvalho & Coelho, 2022; Hutchison, 2007, Sale 2022; Uzun & Uygun, 2022). Nevertheless, experts have demonstrated that gamification and DGBL facilitate student interaction and collaboration, which are fundamental to the constructivist and cognitivist models of learning (Sanz-Prieto & de Pablo Gonzalez, 2021, Chapter 7; Uzun & Uygun, 2022). Moreover, Uzun and Uygun's work in the field of simulation-based education have contributed to a growing body of knowledge concerning the efficacy of DGBL in promoting experiential learning (2022). Central to their recent study, were Uzun and Uygun's anecdotal findings that "simulation-based experiential learning practices increased students' problem-solving skills" critical to learning in the social sciences (2022, p. 36). Additional studies have likewise pointed to the revelation that DGBL enhances self-efficacy, through discovery and experimentation, while learning with peers in digital environments featuring elements such as maps, virtual landscapes, and various historical themes (de Carvalho & Coelho, 2022; Hutchison, 2007, Sale 2022).

Gaps in Research

Despite growing academic interest in DGBL and the documented benefits of using digital games in learning, there are several significant gaps in the current literature. Experts tend to group these disparities into one of three general categories of concern: scope, methodology, and bibliometrics (Daoudi, 2022; Fokides et al., 2021, Chapter 9; Huiqing & Rayne, 2022; Musselman et al., 2018; Sale, 2022; Uzun & Uygun, 2022; Wardoyo et al., 2021; Yesiltas & Cevher, 2022). Issues related to the scope and methodology of emerging DGBL research

comprise the bulk of most experts' concerns (Huiqing & Rayne, 2022; Musselman et al., 2018; Sale, 2022; Uzun & Uygun, 2022; Wardoyo et al., 2021; Yesiltas & Cevher, 2022), whereas only a minority of researchers seemed worried about the anecdotal and bibliometric gaps within the current literature (Daoudi, 2022; Fokides et al., 2021, Chapter 9).

The most common criticism of qualitative studies concerned the present lack of research about the general awareness of and various attitudes toward DGBL. For example, Huiqing and Rayne (2022), Sale (2022), and Wardoyo et al. (2021) all noted that few targeted studies have been conducted regarding the viewpoints of pre-service teachers, in-service educators, and students about their perceived efficacy of specific DGBL tools, such as SEGs, COTS games, and mobile gaming. Quantitative and mixed-methods studies also had their fair share of critics. Commonly cited issues in this area concerned a lack of statistical research in the fields of mobile learning, simulation-based experiential learning, and the general use of digital games in public education (Musselman et al., 2018; Uzun & Uygun, 2022; Yesiltas & Cevher, 2022). Anecdotal studies likewise revealed bibliometric gaps in qualitative, quantitative, and mixed-methods research. Daoudi (2022), for example, highlighted several crucial inconsistencies concerning the ethical collection of meta-data related to LA and EDM research:

> Another important issue to consider is [the] critical ethical aspects of data protection like security, privacy, and anonymization… The question is whether LA has access to personal data about students… In fact, there is a considerable lack of studies that explore how learners' personal information is secured during gathering data from SEGs, a problem that requires further attention (p. 11259)

Fokides et al. (2021, Chapter 9) echoed Daudi's concerns while noting several bibliometric irregularities concerning DGBL and the use of SEGs. They attributed these shortfalls to factors

including the interdisciplinary nature of digital games, the myriad content contained within

SEGs, and a lack of agreement about to how to best measure the impact and efficacy of DGBL

amongst teachers and students (Fokides et al., 2021, Chapter 9).

Biblical World View

Just as the Bible says, "An intelligent heart acquires knowledge, and the ear of the wise

seeks knowledge," so should researchers, teachers, and administrators strive to gain knowledge

in the pursuit of educating others (*King James Bible*, 1769/n.d., Proverbs 18:15). Pedagogical

experts must push the very limits of DGBL research; educators must consistently update their

training and skills, even if doing so requires experimentation with unfamiliar aspects of

technology; and administrators must provide the tools, resources, and equipment necessary to

support and stimulate innovative teaching and learning. It is incumbent upon today's Social

Studies teachers to explore every avenue of learning in their chosen discipline, including the

appropriate use of digital games in their classrooms.

Conclusion

If ignored, the underuse of digital games in Social Studies education will not lead to a

great calamity. After all, educators have taught their students about subjects like History and

Psychology without the use of digital games for centuries (Crawford, 1997). Continuing to

overlook the tremendous value of DGBL in learning, however, would be to the detriment of

countless generations of future students (Hutchison, 2007). As is mentioned several times

throughout this paper, the documented benefits of using digital games during instruction are

virtually innumerable. In addition to improving learning and self-efficacy through discovery,

simulation, and collaboration, DGBL fosters unprecedented student engagement among today's

learners, who are irrevocably connected to mobile devices, digital games, and gaming culture

(Altun & Gormez, 2021; Breuer, 2018, Chapter 13; Hidalgo-Cajo et al., 2022; Huiqing & Rayne, 2022). In order to meet the growing needs these students, as well as future generations of "digital natives," researchers, educators, and administrators must overcome the limits of their own digital knowledge while addressing shortfalls in pedagogical preparatory programs, the equitable allocation of resources, and significant gaps within the current body of DGBL research (Altun & Gormez, 2021; Daoudi, 2022; Hidalgo-Cajo et al., 2022; Huiqing & Rayne, 2022; Maguth et al., 2015; Musselman et al., 2018). Nowhere is this more evident than in the social sciences where, at most levels of education, teachers underutilize digital games at a rate greater than educators in other areas of academia (Altun & Gormez, 2021; Breuer, 2018, Chapter 13; Hidalgo-Cajo et al., 2022). Games truly are one of the world's oldest instructional technologies and when used to their fullest potential, benefit students from nearly all walks of life (Hutchison, 2007).

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