A systematic review on examination of e-learning platforms in sports education

Akin Çelik

Faculty of Sports Sciences, Trabzon University, Trabzon, Turkey.

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ABSTRACT

The purpose of this research is to evaluate e-learning platforms in sports education. For a very long time, sports have been practical. By practical, this means that all the participants of the sports are physically present. However, times are drastically changing, and the world is looking at learning sports through computer technology. The paper examines the countries where e-learning is used to learn and teach sports. The research’s focus is to investigate how the learning takes place, where it takes place, and, most importantly, the impact it has on the people using e-learning. Besides, the research tries to investigate the circumstances that allow for e-learning of sports and sports education to take place. Finally, e-learning in sports education has its challenges. Therefore, the paper will also look at the challenges faced by the people who take part in e-learning in sports and sports education. The article begins with an introduction, which is an in-depth look into the background of e-learning in sports. Furthermore, the unexplored areas of this phenomenon will also be addressed. The paper ends with a recommendation section on the topic and a conclusion on the research. Essentially, this paper is a critical analysis of how e-learning are affecting the world of sports. As a result, 30 papers were included, totaling 150 participants. It has been determined that coaching training is more prone than other fields (sports teacher, sports management, recreation leadership) in online sports training.

Keywords: Education technology, e-learning, sports education, apps.

E-mail: akincelik@ trabzon.edu.tr. Tel: +90 532 3434410. Fax: +90 462 2481072.

INTRODUCTION

The twenty-first century is the era of technology. This period, which is also accepted as the age of communication, has made people accept that technology and education are two inseparable phenomena. These two concepts feed from each other. This century has provided us with important opportunities in terms of accessibility of education. One of these areas, which is becoming increasingly widespread, is the field of sports education. The demand for sports education has been increasing in recent years, and this increasing demand creates many opportunities (Wang and Lv, 2019; Hall et al., 2019; Ozkara, 2018; Alemdag et al., 2016). Sport is no longer just a phenomenon performed by its professionals. Appealing to individuals of all ages, professions and social groups, it has become a profession for some, a passion for some, a hobby for some, and an indispensable part of life for some (Özbay and Ulupınar, 2018; Kirkbir, 2017). According to the oxford dictionary, sports are a group of athletic activities, governed by some rules that inhibit a sense of competition for entertainment, physical wellness, or awards. Whereas, sports education, according to Siedentop (1994) is an instructional model, which links the sport, taught in physical education to the wider sporting culture. Hence, sports education is the curriculum for sports (Baca, 2014). E-learning is short for electronic learning. By definition, electronic learning is the study of a course or subject while utilizing electronic media and various types of communication technologies. Examples of electronic media include televisions, mobile phones, tablets, radios, the internet, and many more. The different types of e-learning, including interactive online
learning, computer-managed learning, adaptive e-learning, fixed e-learning, computer-assisted instruction, and many more.

The word e-learning dates back to the year 1999. However, the fundamentals of e-learning can be traced back to the 19th century (Nicholson, 2007). However, in 1960 is when the computer-based training program was first introduced to the world (Davis et al., 2000). Since then, electronic education has advanced from computer-based training (CBT) to web-based training (WBT) and so many more (Nicholson, 2007). The use of computers in sports dates back to the 1960s when computers were mainly used to accumulate and store information on sports. During this period, databases were established for pure documentation of publications like newspapers and articles that had any information on sports (Nicholson, 2007). During the 1970s, the International Association for Sports Information was created to advance this sector of computers in sports. These were also the years when computer experts were improving on computer models. Hence, this was the era of the real history of sports informatics (Barakhsanov et al., 2018). With more development of faster microprocessors, new scientific paradigms were introduced. These include sports data mining, simulation, and many others. By 2004, sports science was a recognisable word in the English dictionary (Barakhsanov et al., 2018)

Considering the researchers’ interest, sports can be considered as a new field. Some of the major sports of the world include Olympics, football, indoor games, and even boxing. Another part of the sport that is a major part of this study is sport education. When studies on creating curriculum in sports education are started compared to other courses, interest in sports education has started to increase. Courses in this area include fitness training, coaching courses and leadership coaching courses. As a matter of general knowledge, the world has a lot of sports, and for anyone who wants to learn any sport in the world, the first place they would consider looking it up is the internet (Urbánková et al., 2013). That is where e-learning comes into play.

E-learning has its advantages. To begin with, it makes information easily accessible to everyone in the world, provided there is an electronic device. Secondly, as compared to other methods, it is cheaper because many sportspeople travel all around the world to seek expert coaching (Stănescu and Muşat, 2015). From an academic perspective, most of the resources are now available online. Especially universities are connected to each other with highly developed virtual libraries. While education through sports is used as a communication tool, sports itself has now begun to be taught through communication tools (Özkara, 2018; Yanga and Yenb, 2016). With e-learning, athletes get expert teaching at the moment. Another advantage attached to e-learning is the ability to learn someone’s own pace (Stănescu and Muşat, 2015). Traditional sports education involves learning with a team, and most of the time, the coaches go with the speed of the fast learners. With e-learning, the situation is very different. The main disadvantage of e-learning in sports education is accessibility to the internet and electronic devices (Leser et al., 2011). Inasmuch as the world has advanced, there are still very many places in the world with no access to the internet or a small computer like a mobile phone. Furthermore, e-learning does not give much room for learners’ feedback (Leser et al., 2011). Most of the time, teaching is one-sided.

The main aim of this systematic review is to look into scholarly studies that have researched the topic of e-learning in sports education around the world. The expected result is to understand the use and adoption of e-learning in the world of sports. These scholarly articles are mainly research papers and articles that address this issue while referring to some countries in the world. This study serves to answer the following questions:

1. What research types, methods and theoretical frameworks have been used in the scholarly studies?
2. What are the devices and platforms mainly used for e-learning in sports education?
3. What challenges face e-learning in sports education?

MATERIALS AND METHODS

The requirement for this research is a systematic review of the question. A systematic review is the orderly review of literature relevant to a formulated question. It involves collecting secondary data, carefully appraising research studies, and analysing findings. This method needs a lot of evidence; thus, the research ought to be comprehensive, reliable, transparent, and orderly (Uman, 2011). Therefore, after identifying research articles, an inclusion criterion was developed. A critical study followed. Finally, the results were put into a considerable discussion that aims to answer the question of the study.

Search strategy

The literature for the study was mainly sought online. The articles and research papers were looked into after logging into various databases and online libraries. The internet search was an assurance of a broader scope of the research. Internet searches cover more countries that the local libraries might offer. For a faster search of the research papers, keywords including sports education, e-learning, electronic media were used.

Study selection

Initially, one hundred and fifty articles were found to be
very relevant to the question. Eventually, thirty articles were found to be relevant. Therefore, these thirty articles were the main sources of content in the research. These articles’ publications date varied from the early 2000s to 2019. The period focuses on the growth of e-learning from the very first-time e-learning was developed to the most recent cases.

**Inclusion criteria**

Relevant data were extracted from the thirty articles. In addition to the articles, several videos on the impact of e-learning were taken into consideration for the research. Some of these videos included personal interviews of several athletes who have experienced e-learning and how it had worked out for them (Iskandar et al., 2011).

**Data extraction and analysis**

In conclusion, all the articles chosen passed the criteria, and the next stage was applied. The next step involved analysing the data and drawing conclusions from them. The research in this final stage begot the results that were deemed as very relevant answers to the research question.

**RESULTS**

Using the systematic review, the following results were concluded. The results acted as answers to the questions given above will be answered. The studies reviewed are listed in the Appendix.

The thirty research studies employed three main types of research types. The most popular one was a mixed research approach, which involved combining qualitative and quantitative research. Twenty studies utilized mixed research, while seven used quantitative research. The last three were case studies (Figure 1). As for the research method, four main methods were applied. These were questionnaires, interviews, literature review, and observation. All of the studies gathered data using questionnaires and literature reviews. Ten of the studies applied observation and individual interviews. Not all the studies had theoretical frameworks backing them. Only ten of these studies used theories, which were based on the theory and background of computer science. These frameworks include the Social Learning Constructivist theory, Roger's Diffusion of Innovations Theory, Reeves, and Oliver's nine characteristics of authentic learning and Technology Acceptance Theory.

For conclusive research, the studies sought to identify the most used electronic devices in e-learning in sports education. Twenty-five of the research studies identified smartphones while the other five identified laptops and tablets (Figure 2). Moreover, the studies also investigated the availability of these devices in various countries.

According to most of the reviewed studies, the main challenge associated with e-learning in sports is poor technological infrastructure (Urbánková, 2013). This is mainly observed in countries in Africa and South America. Poor technology infrastructure leads to little to no internet access. Hence, coaches and teachers of different sports do not get to teach their students like in Germany or the United States (Barajas and Gannaway, 2007). In Kenya, for example, the government delivered tablets to their students. In as much as this was for a class, sports teachers also used the same. The problem was Kenya does not have electricity in all parts of the country (Hollings and Ritzdorf, 2003). Therefore, in as much as the tablets are available, power and the internet is a problem. In Brazil, the studies suggested that since football is part of their culture, teaching it practically is the way Brazilians believe. Therefore, the challenge of implanting e-learning in sports is that nobody believes in it. Consequently, they do not even try it out (Danylchuk et al., 2008).

**DISCUSSION**

According to Baca (2014), computer science and technology has planted its roots permanently into the sports world. In his opinion, e-learning is the best thing that ever happened to sports. He suggests that from the most remote areas, anyone can acquire knowledge and develop a passion for any sport.

Therefore, the conclusive result of this question is that
e-learning is making strides in the sports sector. However, the implementation of e-learning is just at its starting point. In general, much like any other field, the research concludes that e-learning in sports should grow, and constant development should be implemented (Lominé, 2002).

Inasmuch as e-learning is majorly about teaching athletes, the field covers many other sectors. These sectors include sports management, and in sport management, many roles have to be explored to fully understand the application of e-learning (Stănescu and Muşat, 2015). Tasks such as educating sportspeople on relevant sports information like ant doping and the likes is an essential avenue that e-learning can address.

E-learning could also create a world social communications media that could unite all the athletes and sportspeople of the world. This media could be like WhatsApp for sports. With such a platform, different people could interact with one another and educate one another (Ortiz and Cánovas, 2017). The world of sports could become smaller, and a child in Asia could get a chance to meet and interact with his favourite football player.

As already discussed, technological infrastructure is a problem for most developing countries. Therefore, as a recommendation, countries should strive to have well-developed technology in their schools and sports clubs. In conclusion, the examination of e-learning in sports is a broad area of study. This research paper has looked into the areas the e-learning takes place, the advantages of e-learning together with its disadvantages. Through extensive reading of scholarly material, the findings have signified that e-learning is a productive sector in sports education.

CONCLUSION AND FUTURE WORK

The concept of e-learning will continue to be a trend that is increasingly trending today. The covid-19 outbreak, which has recently become a common problem in the world, has increased interest in e-learning platforms in the field of education. Besides the benefits of e-learning environments becoming widespread, it also includes various negative possibilities. Since we are in a very new process, it can be considered to be based on in-depth research on the reliability of e-learning platforms. Until recently, studies on e-learning platforms have generally been on accessibility and functionality. However, we should not face the fact that e-learning platforms are a functional data acquisition tool. Particular emphasis can be placed on the industrial rights of scientific research ideas carried out in schools, the privacy of students and educators. When we look at e-learning platforms in the field of sports sciences, it is seen that technological developments are focused more on individual participants. However, considering the impact of the epidemic period, it can be suggested to focus on the technological researches that appeal to all segments of the society. It can focus on the work that can be used for providing public access to team sports.

REFERENCES


Li, K. F., Takanoe, K., and Johnson, M. G. (2011, October). Motion tracking and processing for multimedia sport e-learning. In 2011...
International Conference on Broadband and Wireless Computing, Communication and Applications (pp. 75-82). IEEE.


## Appendix

### Table 1. Characteristics of study population and studies.

<table>
<thead>
<tr>
<th>REFERENCES</th>
<th>COUNTRY</th>
<th>N</th>
<th>DESIGN</th>
<th>FOCUS</th>
<th>SUMMARY OF FINDINGS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aldrich (2005)</td>
<td>United States</td>
<td>50</td>
<td>Mixed</td>
<td>Pedagogy in e-learning in sports education</td>
<td>The results show the positive effects of e-learning teaching in sports education.</td>
</tr>
<tr>
<td>Allen (2011)</td>
<td>United States</td>
<td>11</td>
<td>Mixed</td>
<td>Designing successful e-learning platforms for sports education</td>
<td>With proper content in e-learning platforms, results show a positive impact.</td>
</tr>
<tr>
<td>Baca (2014)</td>
<td>United States</td>
<td>x</td>
<td>Qualitative</td>
<td>Computer science in sport</td>
<td>Computer-based coaching training is on a rising trend</td>
</tr>
<tr>
<td>Barajas and Gannaway (2007)</td>
<td>Europe</td>
<td>119</td>
<td>Mixed</td>
<td>Implementation of e-learning in sports education in higher education</td>
<td>Results show that over the years, e-learning has affected Europe positively.</td>
</tr>
<tr>
<td>Beard (2007)</td>
<td>China</td>
<td>44</td>
<td>Case study</td>
<td>Theory and experimenting on e-learning in sport, tourism education</td>
<td>In higher education institutions, several experiments of e-learning in sports education have yielded positive results.</td>
</tr>
<tr>
<td>Barakhsanov et al. (2018)</td>
<td>Germany</td>
<td>15</td>
<td>Case study</td>
<td>E-learning system application for physical education</td>
<td>Students are reacting positively to physical education through e-learning.</td>
</tr>
<tr>
<td>Cross et al. (2002)</td>
<td>United States</td>
<td>20</td>
<td>Mixed</td>
<td>Implementation of E-learning for training and development</td>
<td>Schools should be well equipped with the correct computer technology.</td>
</tr>
<tr>
<td>Cushion and Townsend (2019)</td>
<td>England</td>
<td>649</td>
<td>Mixed</td>
<td>E-learning in the coaching of sports</td>
<td>The results of this study suggested that most coaches prefer non-computer based training.</td>
</tr>
<tr>
<td>Danylchuk et al. (2008)</td>
<td>Worldwide Study</td>
<td>145</td>
<td>Mixed</td>
<td>International sports coaching and management using computer technology</td>
<td>Only developed countries have fully implemented coaching using computers.</td>
</tr>
<tr>
<td>Davis et al. (2000)</td>
<td>United States</td>
<td>20</td>
<td>Qualitative</td>
<td>Study of sport with computer technology</td>
<td>With the help of smartphones, e-learning in sports education has a positive impact on students.</td>
</tr>
<tr>
<td>Aras and Karakaya (2020)</td>
<td>Turkey</td>
<td>26</td>
<td>Qualitative</td>
<td>E-learning in sports education institutions</td>
<td>This study suggests that most e-learning in sports education takes place in higher education institutions.</td>
</tr>
<tr>
<td>Glang et al. (2010)</td>
<td>Worldwide</td>
<td>11</td>
<td>Qualitative</td>
<td>Online training in sports for youth coaches</td>
<td>Youth are open to the idea of e-learning of sports education</td>
</tr>
<tr>
<td>Hollings and Ritzdorf (2003)</td>
<td>Kenya</td>
<td>58</td>
<td>Mixed</td>
<td>Enhancing e-learning in sports education for coaching education</td>
<td>Governments are seriously investing in e-learning infrastructure</td>
</tr>
</tbody>
</table>
Table 1. Continues.

<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Sample Size</th>
<th>Study Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horton (2001)</td>
<td>United States</td>
<td>10</td>
<td>Qualitative</td>
<td>E-learning for training and development of sport professionals is well accepted.</td>
</tr>
<tr>
<td>Huang et al. (2010)</td>
<td>China</td>
<td>226</td>
<td>Case study</td>
<td>Sports e-learning platforms were well accepted in China.</td>
</tr>
<tr>
<td>Iskandar et al. (2011)</td>
<td>Worldwide</td>
<td>408</td>
<td>Mixed</td>
<td>Computer-based sports training was well accepted.</td>
</tr>
<tr>
<td>Khan (2012)</td>
<td>United States</td>
<td>184</td>
<td>Mixed</td>
<td>Information technology as an integral part of sports education was well accepted.</td>
</tr>
<tr>
<td>Leser et al. (2011)</td>
<td>Germany</td>
<td>Mixed</td>
<td>Effectiveness of multimedia supported education in sports was well accepted.</td>
<td></td>
</tr>
<tr>
<td>Li et al. (2011)</td>
<td>Asia-Not Specified</td>
<td>82</td>
<td>Qualitative</td>
<td>Impact of multimedia in sports e-learning was well accepted.</td>
</tr>
<tr>
<td>Lominé (2002)</td>
<td>United States</td>
<td>49</td>
<td>Qualitative</td>
<td>Online learning in sports, tourism, and hospitality was well accepted.</td>
</tr>
<tr>
<td>Ortiz and Cánovas (2017)</td>
<td>Europe-Not Specified</td>
<td>162</td>
<td>Mixed</td>
<td>Changes in e-training coaching was well accepted.</td>
</tr>
<tr>
<td>Stănescu and Mușat (2015)</td>
<td>Not Specified</td>
<td>135</td>
<td>Qualitative</td>
<td>E-learning training systems for sports was well accepted.</td>
</tr>
<tr>
<td>Stanescu et al. (2011)</td>
<td>Not Specified</td>
<td>56</td>
<td>Case study</td>
<td>Implementing e-learning for physical education and sports teachers was well accepted.</td>
</tr>
<tr>
<td>Stauff (2009)</td>
<td>Kenya</td>
<td>1</td>
<td>Mixed</td>
<td>Youtube-e-learning platform for sports education was well accepted.</td>
</tr>
<tr>
<td>Stoyanov (2014)</td>
<td>Japan</td>
<td>51</td>
<td>Mixed</td>
<td>Implementing competitions model characteristics through e-learning was well accepted.</td>
</tr>
<tr>
<td>Takahashi et al. (2014)</td>
<td>Europe-Not Specified</td>
<td>617</td>
<td>Case study</td>
<td>Coaching skills training for physical education for university students with e-learning was well accepted.</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Region</td>
<td>Sample Size</td>
<td>Study Design</td>
<td>Research Area</td>
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<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Uma (2010)</td>
<td>Worldwide</td>
<td>75</td>
<td>Qualitative</td>
<td>Web-based e-learning systems for sports education</td>
</tr>
<tr>
<td>Urbánková et al. (2013)</td>
<td>Asia-Not Specified</td>
<td>138</td>
<td>Mixed</td>
<td>Use of information technology in the learning of handball coaches</td>
</tr>
<tr>
<td>Vohle and Reinmann (2014)</td>
<td>Germany</td>
<td>11</td>
<td>Case study</td>
<td>Social video learning and social learning in sports trainer education</td>
</tr>
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</table>