FACTORS INFLUENCING PHYSICAL EDUCATION TEACHERS' SATISFACTION IN E-LEARNING VOLLEYBALL COURSES

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Original scientific paper

Abstract
The purpose of this study was to identify and confirm factors affecting the satisfaction of physical education teachers at Greece. An online satisfaction survey was administered to all teachers who had attended a series of e-learning courses in volleyball. One hundred and thirty-two individuals completed the web-based questionnaire. The sampling frame used for this study was self-selected sampling. A stepwise multiple regression analysis was used to prove the significance of the factors on perceived satisfaction of the learners. Results confirm that two factors affected satisfaction of the teachers in the e-learning environment: learner Internet self-efficacy, and instructor attitude toward e-Learning.

Key words: *e-learning, educational software, physical education, attitudes, perceived satisfaction.*

Introduction

E-learning is a relatively recent innovation, yet it has attracted substantial attention and research not only in education but also in other fields. Generally, research on e-learning has revolved around two areas: research on the impact of e-learning on the educational process or its effectiveness and comparing it to the traditional face-to-face mode of education (Giannousi, Vernadakis, Derri, Antoniou, & Kioumourtzoglou, 2014; Piccoli, Ahmad, & Ives, 2001; Vernadakis, Kouli, Tsitskari, Gioftsidou, & Antoniou, 2014) and research on e-learning environment design issues including human computer interaction, usability and design principles (Chang & Wang, 2008). Research on the factors influencing e-learning related variables such as adoption, acceptance, usage, satisfaction and continuance of use remains far less than on other research trends involving e-learning (Goulimaris, 2015; Vernadakis, Antoniou, Giannousi, Zetou, & Kioumourtzoglou, 2011). Pituch and Lee (2006) noted that although e-learning systems are increasingly being used, only little theory-driven research examining the antecedents of e-learning adoption, use and satisfaction is available. The available literature offers merely rudimentary information about the teachers' experiences and their personalities (Veletsianos, Doering & Henrickson, 2012). Moreover, studies concerning Greek physical education teachers are even more difficult to locate. Considering how important is the way each physical education teacher designs and implements their daily practice plan in traditional instruction, and how it directly affecting the learning process, as well as the likelihood of injury and consequently the performance of the athletes (Beneka, Malliou, Gioftsidou, Tsigganos, Zetou, & Godolias, 2009; Zetou, Malliou, Lola, Tsigganos, & Godolias, 2006), this process should also be very important when integrated in e-learning. Referring to learning via the Internet, e-learning has been widely adopted as a promising solution to offering learning-on-demand opportunities to individuals to reduce training time and costs, as well as to reduce the gap between needs and preferences and regional, national, and international distances (Dominici, & Palumbo, 2013; Goulimaris, Koutsouba, & Giosos, 2008; Wang, Wang, & Shee, 2007). Indeed, the utilization of Information Technology and the Internet have had a positive influence on learning and education (Vernadakis, Zetou, Antoniou, & Kioumourtzoglou, 2002; Vernadakis, Zetou, Avgerinos, Giannousi, & Kioumourtzoglou, 2006; Vernadakis, Papastergiou, Zetou, Antoniou, 2015; Vernadakis, Antoniou, Zetou, & Kioumourtzoglou, 2004).The great advantage of e-learning is that learners interact with instructors or other learners, without the restriction of space and time. These liberating interactions are implemented through asynchronous and synchronous learning model using the Internet (Vernadakis, Giannousi, Tsitskari, Antoniou, & Kioumourtzoglou, 2012). The characteristics of e-learning meet the requirements for learning in a modern society and they have created great demands from companies and higher education institutes. However, despite the great impact of this educational method (Arbaugh & Duray, 2002; Wu, Tsai, Chen, & Wu, 2006), it is found that many users stop e-learning after their initial experience. Research literature showed that user satisfaction is a very important factor in evaluating the success of e-learning implementation (Sun, Tsai, Finger, Chen, & Yeh, 2008; Dominici, & Palumbo, 2013; Vernadakis et al., 2012). Many different factors affect user's satisfaction in an e-learning environment. These factors can be categorized into six dimensions: the learner, the instructor, the course, the technology, the design and the environment. (Arbaugh, 2002; Arbaugh & Duray, 2002; Bhuasiri,

Xaymoungkhoun, Zo, Rho, & Ciganek, 2012; Piccoli, Ahmad, & Ives, 2001; Selim, 2007; Sun et al., 2008; Thurmond, Wambach, & Connors, 2002). These factors discussed by previous researchers cover nearly every aspect of e-learning environments. In this theoretical framework there are compound correlations among the above six dimensions. However, since this study is a part of a larger three-year program which is in progress, the interest focused only on the dimensions of "learner and instructor". Thus, the aim of the present study was to identify the significant prediction factors of the learner dimension, and the instructor dimension as far as the satisfaction of the physical education teachers is concerned through a series of e-learning courses in volleyball. Presumably, the awareness of the role and the importance of these factors may help educators and learning administrators to understand why there are differences between learners' satisfaction and consequently in the acceptance and the attendance of e-learning programs.

Methods

Participants

In this study participated one hundred thirty-two (*n* = 132) Physical Education teachers of primary education from the prefectures of Attica and Thessaloniki. Their teaching experience at school ranged from 2.63 to 17.34 years (*M* = 9,98, *SD* = 3,45), while 72 of them were male (54.5%) and 60 were women (45.5%). The learners agreed to participate in the study voluntarily, while they initially informed about its purpose, its methodology and its content. The email address with the web application of the distance education and the instructions were sent to the learners. The teachers specialized on volleyball excluded from the study.

Instrumentation

Twenty-seven (27) questions from Sun et al. (2008) questionnaire were used to identify the significant prediction factors of satisfaction of physical education teachers through an e-learning courses in volleyball. This scale was designed to identify the different factors that affect user's satisfaction in an e-learning environment. It was consisted of 63 questions and it was composed of 6 dimensions (learner, instructor, courses, technology, design and environment).

In the present study 3 factors of the dimension "learner" were selected a) the "learner's attitude towards computers", b) the "learner'scomputer anxiety", c) the " learner internet self-efficacy" and 2 factors of the dimension "instructor" a) the "instructor response timeliness", b) the "instructor attitude toward e-learning". The answers were given in a 7th point Likert type scale range from 1 = Strongly Disagree to 7 = Strongly Agree. The validity and the reliability of the specific questionnaire has been validated by several studies with the use of the whole questionnaire (Sun et al., 2008), or of some factors (Arbaugh & Duray, 2002; Lin, Wu, & Tsai, 2005; Piccoli, Ahmad, & Ives, 2001; Thurmond, Wambach, & Connors, 2002; Wu et al., 2006,). The Arbaugh (2002) questionnaire was used to evaluate the learners' satisfaction from the e-learning education using the web volleyball application. The scale had a high indicator of reliability (a = .93), it was consisted of 9 questions and the answers were given in a 7th point Likert type scale range from 1 = Strongly Disagree to 7 = Strongly Agree.

Procedure

At the beginning of the experimental process a team meeting took place for two hours, where the physical education teachers were informed about the purpose of the study, the time table and how the educational material had been organized. Particularly, emphasis was given on the fact that the educational material should be actively studied and in the integration process of browsing, reading and evaluation of the application. Moreover, the physical education teachers were assured that throughout the study of the course material they could communicate with the responsible of the study process (by telephone or e-mail), for any clarifications, answers of questions etc.

For the same reason an interactive «Forum» was added in the application whereby the learners and the educator could exchange views, ideas, could ask and answer possible questions. The total content of the digital material was divided into eight units. The time that the learners would visit the website was set and the completion of the three units was followed by a meeting with the purpose of further clarifying possible questions, queries. The participants in the study had at their disposal 8 weeks to study the educational material (it was indicative proposed to study three times in a week) and a week to answer about the suitability of the questionnaire.

After the completion of the study material a meeting took place again with them, where instructions were given about the study evaluation through an online questionnaire. Participants completed the online questionnaire in a section-by-section manner, via a dedicated link. It was determined that participants would need approximately 30 minutes to complete all sections of this instrument.

Design

The research design used in this study was non-experimental and correlational in nature, having as independent variables the factors of the learner's dimension (learner's attitude towards computers, learner's computer anxiety, learner Internet self-efficacy, instructor response timeliness and instructor attitude toward e-learning) and as dependent variable the physical education teachers' performance in the perceived satisfaction questionnaire.

The statistical package SPSS version 21 was used for the statistical analyses of the study.

The level of significance was set at $p<.05$. The hypotheses of this study were:

H1. The learner's attitude towards computers will positively influence his perceived satisfaction from e-learning.
H2. The learner Internet self-efficacy will positively influence his perceived satisfaction by the e-learning education.
H3. The learner's computer anxiety will negatively affect his perceived satisfaction from e-learning education.
H4. The instructor response timeliness will positively influence learners' perceived satisfaction from e-learning.
H5. The instructor attitude toward e-learning will positively influence learners' perceived satisfaction from e-learning.

Results

Reliability of the Scales

The alpha reliability analysis was used to determine the internal consistency of the questions of the "learner" dimension and of the questionnaire of the learner's perceived satisfaction. The reliability of each factor of the "learner" and "instructor" dimension was as follows: the learner's attitude towards computers = .86, the learner's computer anxiety = .96, the learner Internet self-efficacy = .97, the instructor response timeliness = .89, and the instructor attitude toward e-learning = .88. The reliability factor of the learner's perceived satisfaction was .90. According to Green &Salkind (2013), a reliability coefficient alpha value equal to .70 or higher is considered satisfactory. Therefore, the questionnaire of the learner's perceived satisfaction and the factors of the "learner" and "instructor" dimensions were reliable measurement instruments.

Hypothesis Testing

A stepwise multiple regression analysis was used to predict the learner's perceived satisfaction (dependent variable) initially from his internet self-efficacy. In the second step the learner's computer anxiety was added so as to test whether this variable contributes to the increase of prediction. In the third step the learner's attitude towards computers was added and in the fourth step the instructor response timeliness. Finally, at the fifth step the instructor attitude toward e-learning was used to investigate whether this variable improves the percentage of prediction of the learner's perceived satisfaction over that the previous independent variables explained. In the first step, the learner's internet self-efficacy explained the 43.7% of the variance, providing a significant percentage of the variance in the learner's perceived satisfaction, R2 change = .437, F (1, 130) = 72.28, p <.001. Instead, the learner's computer anxiety and the learners' attitude towards computers in the second and third step interpreted the 0.7% and 0.4% of the variance, providing a non-significant percentage of the variance in learner's perceived satisfaction, R2 change = .007, F (1, 129) = 1.14, p = .289 and R2 change = .004, F (1, 128) = .62, p = .432, respectively. In the fourth step the instructor response timeliness explained the 0.12% of the variance, providing a non-significant percentage of the variance in learner's perceived satisfaction, R2 change = .012, F (1, 127) = 1.98, p = .163. Finally, the instructor attitude toward e-learning explained the 11.2% of the variance, providing a significant percentage of the variance in the learner's perceived satisfaction, R2 change = .112, F (1, 126) = 23.37, p <.001. Overall, all five variables explained the 57.2% of the total variance in learner's perceived satisfaction, R2 = .572, adjusted R2 = .548. Therefore, the most significant factor which influenced the perceived satisfaction of the learner from e-learning education were the learner's self-efficacy on the Internet and the instructor attitude toward e-learning. The multiple regression model equation for predicting the learner's satisfaction score from the five predictors is Y1=2.647 + .124X1 + -.064X2 + .043X3 + .063X4 + .417X5; whereas X1 is the score for the learner's internet self-efficacy scale, X2 is the score for the learner's computer anxiety scale, X3 is the score for the learners' attitude towards computers scale, X4 is the score for the instructor response timeliness scale, and X5 is the score for the instructor attitude toward e-learning scale.

Table 1. Coefficients table of the stepwise multiple regression analysis.

Model	B	Std. error	Beta	t	Correlation part
Constant	2.647*	.802		3.3*	
Learner's internet self-efficacy	.124	.109	.187	1.136*	.079
Learner's computer anxiety	-.064	.098	-.069	-.648	-.045
Learners' attitude towards computers	.043	.104	.052	.411	.029
Instructor response timeliness	.063	.078	.113	.802	.056
Instructor attitude toward e-learning	.417	.086	.462	4.835*	.335

*p < 0.05

Discussion

From the five assumptions that were mentioned in the beginning, two (H2 and H5) was confirmed by the results. Specifically, the most important factors which influenced the learner's perceived satisfaction from e-learning education was the learner's internet self-efficacy and the instructor attitude toward e-learning. The significant effect of the learner's internet self-efficacy is confirmed by other relevant studies in bibliography (Chen & Tseng, 2012; Liaw & Huang, 2013). The nature of the system may be a possible explanation as to why

physical education teachers consider the learner's internet self-efficacy an important predictor factor of their satisfaction through an e-learning course in volleyball. The learners need to use the system, at least at a basic level so as to download the educational material, to keep the time table teaching, to place questions to the instructor, to discuss with their co learners etc. Therefore, the learners with high self-efficacy are more capable to complete activities from a distance, more willing to adopt the web-based learning and to get more satisfied. The effect of the learner's attitude towards computers and the learner's computer anxiety did not affect the learner's perceived satisfaction from e-learning education. Thus, the first hypothesis (H1) and the third hypothesis (H3) were not confirmed by the results. The absence of a significant effect of the learner's attitude towards computers and computer anxiety with their perceived satisfaction from the e-learning education was consistent with the results of Hong, Hwang, Hsu, &Chen (2012), but inconsistent with the findings of Liaw, & Huang, (2013) and Sun et al., (2008). The learner's computer anxiety and their positive attitude help them handle with ease web educational applications in e-learning programs (Vernadakis, Zetou, Tsitskari, Giannousi, & Kioumourtzoglou, 2008). However, this fact does not directly affect their satisfaction by their use.

The controversial results may be explained by the fact that the use of new technologies, particularly of computers consists a daily pastime of learners who belong to the school community. Therefore, it is possible that their systematic involvement with computers allow them not feeling anxious with their use, and their satisfaction not be affected by their negative or positive attitude. However, more studies are needed to see if the daily pastime with the computers can restrict the relationship among the learner's attitude towards computers and his anxiety with the perceived satisfaction in e-learning education. Regarding the instructor dimension, the findings of this study corroborate those of Bhuasiri et al, (2012); Piccoli et al. (2001) and Liaw, Huang & Chen, (2007). Instructors' attitudes toward e-Learning have a significant effect on e-Learners' satisfaction. Instructors play key roles in students' learning processes in either traditional face-to-face teaching environments or in remote learning environments. The effects of learning activities and learner's perceived satisfaction are influenced by instructors' attitudes in handling learning activities. For example, a less enthusiastic instructor or one with a negative view of e-Learning education shall not expect to have learners with high satisfaction or motivation. The effectiveness of e-Learning will be discounted according to the instructor's attitude. Since not every instructor is interested in teaching online, institutions should select instructors carefully. Teaching online differs from face-to-face education. Professional expertise should not be the sole criterion in selecting online instructors. Attitude toward using computer and network technology in delivering education and training will impact learners' attitudes and affect their performance. Although response timeliness from instructor did not prove to be statistically significant, no-response or unreasonable delays in responding to students' requests definitely will not contribute to learner success. In an e-Learning environment, learners, especially those with part time or full time jobs, may be either too busy to watch response timeliness or are more considerate of instructors' busy schedules. In contrast, the type of feedback and the response timeliness from the instructor in the traditional instruction are crucial (Giatsis, Zetou, & Tzetzis, 2015; Zetou, Amprasi, Michalopoulou, & Aggelousis, 2011; Zetou, Vernadakis, & Bebetsos, 2014; Zetou, Vernadakis, Bebetsos, & Makraki, 2012). However, a timely response to learners' questions or requests is certainly beneficial to learners.

Conclusion

In conclusion, researchers deduce that the introduction of a web based educational application, such as volleyball, in the learning procedure, possibly consist an important and powerful learning tool which is at physical education teachers' disposal. The Physical Education teachers can benefit from the features of the web application and the capabilities which provide so learners be motivated to participate in such educational programs, which will allow them to choose the time, the place and the pace of learning that meets with their personal needs and requirements.

However, the use of the web based educational applications has much fertile ground to cover until a full experience and a methodology for their application in educational programs and their adaption to the specificity of each case should be formed. Nevertheless, based on the existing data an ascertainment can be done that web based educational applications are an essential alternative for people dealing with programs that promote the learning of sports subjects, taking into account that the learner's internet self-efficacy and the instructor attitude toward e-learning are two important parts of their success.

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FAKTORI KOJI UTJEČU NA ZADOVOLJSTVO NASTAVNIKA TJELESNOG ODGOJA U VEZI E-UČENJA TEČAJEVA ODBOJKE

Sažetak
Svrha ovog istraživanja bila je utvrditi i potvrditi čimbenike koji utječu na zadovoljstvo nastavnika tjelesnog odgoja u Grčkoj. On-line istraživanje zadovoljstva se primjenjuje na sve nastavnike koji su pohađali niz e-learning tečajeva u odbojci. Stotinu i trideset i dvije osobe ispunile su web-based upitnik. Okvir za uzorkovanje koji se koristio za potrebe ovog rada bio je samostalno odabran za uzorkovanje. Korak-po-korak višestruka regresijska analiza je korištena za dokazivanje značaja faktora na percipirano zadovoljstvo polaznika. Rezultati potvrđuju da su dva faktora utjecala na zadovoljstvo nastavnika u e-learning okruženju: samoučinkovitost učenika u vezi interneta i stav instruktora prema e-učenju.

Ključne riječi: *e-učenje, obrazovni softver, tjelesni odgoj, stavovi, percipirano zadovoljstvo.*

Received: January 03, 2017
Accepted: February 18, 2017
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