# ARE PRE-SERVICE TEACHERS READY FOR E-LEARNING? A CASE OF ARTVIN CORUH UNIVERSITY

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## ABSTRACT

The integration of electronic learning into education and training has been promoted by a variety of benefits, despite some obstacles. However, to date, there is a lack of research examining the understanding of the practices of pre-service teachers in developing countries to adopt e-learning. Therefore, the authors of this paper investigated the extent to which pre-service teachers are prepared to embark on e-learning. With this aim in mind, the authors examine several factors that affect e-learning, such as technology, experience, and confidence. To deal with these issues, the announcement of an Internet-based survey was made through the notice-board of programs related to pre-service teachers in Artvin Coruh University in Turkey. In response to this invitation, 233 pre-service teachers expressed an interest in being involved in the survey with 174 answering all questions. The readiness of pre-service teachers was analyzed through the computation of descriptive and inferential statistics. The findings revealed that several factors need to be considered by the stakeholders of Turkish universities before integrating electronic learning into primary teacher education programs. In particular, issues affecting the access to the Internet, the prior experiences of pre-service teachers with various ICT and personalized learning materials should be evaluated. Overall, we believe the study indicates that the preparedness of pre-service teachers for e-learning may have a significant impact on the education and training of students in the future, as e-learning becomes increasingly prevalent.

## STRUCTURED ABSTRACT

The ability to use information and communications technology (ICT) is considered a fundamental part of the education of pre-service teachers because approaches and materials in education have been changed especially with the appearance of new technologies. Therefore,

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it is important to ensure prospective teachers to gain the information, skills, and attitudes they need to keep pace with the developments and innovations in the field of education especially through the diffusion of ICT via the inclusion of e-learning. However, the use of e-learning by prospective teachers could be affected by several factors such as their experiences and confidences with the use of ICT. Hence, it is essential to assess the electronic learning preparedness of pre-service teachers by considering their cultural characteristics. In this study, the authors of this study aims at analysing the e-learning readiness of pre-service teachers to understand (i) what factors might influence their e-learning readiness, (ii) which of them believe e-learning would be easy to use and beneficial to their studies, and (iii) what kind of support might they need before embarking on e-learning. Several factors have been identified and used for evaluating the readiness of organizations and individuals in many studies such as technology, innovation, people, sociology, environment, finance and so on. However, those factors do not fully fit the readiness of individuals and organizations because e-learning comes in different configurations in in higher education due to its increased scope, higher interdependence, and visibility. Therefore, Akaslan and Law (2011a, 2011b) designed and used a model with the purpose of evaluating electronic learning readiness of students and teachers in higher education institutions in Turkey by considering their cultural characteristics.

In this study, Akaslan and Law's model has been adopted to understand the e-learning readiness of pre-service teachers by considering seven factors namely (1) technology, (2) individual, (3) context, (4) institution, (5) perceived usefulness, (6) perceived ease of use, and (7) training. A two-section survey has been developed to assess the e-learning readiness of pre-service teachers in Artvin Coruh University. The first section was used to gather data regarding demographic characteristics of respondents such as gender and age. The second section included 73 items for the assessment of pre-service teachers' self-report perceptions on different aspects of e-learning. The majority of the items in the second section in the survey were evaluated with a 5-point Likert scale with the purpose of measuring pre-service teachers' self-perceptions in terms of the extent to which they agree with the leftmost and rightmost anchors being "Strongly Agree" and "Strongly Disagree" respectively. Additionally, the 5-point Likert scale was coded as 1, 2, 3, 4 and 5 where 1 indicates the lowest readiness while 5 the highest. Moreover, 3.40 on the 5-point Likert scale was accepted as the expected level of e-learning readiness ($M_{elr}$) with the purpose of evaluating whether the readiness of pre-service teachers is commensurate with e-learning. The open-source Lime-survey software, with the survey questionnaire ready, was used to convert the questionnaire items into a web-based format based on the assumption that an Internet-based survey can be widely distributed to respondents in an effective and efficient way.

A general invitation using snowball sampling was made to pre-service teachers to participate in the survey from 21 March 2015 to 20 April 2015. In response to this invitation, 233 learners expressed an interest in being involved in the survey. However, the responses of 174 pre-service teachers were valid until the deadline for the completion of

the survey. The descriptive and inferential statistics among the feedback of the items provided by the participant pre-service teachers were computed to be able to answer the research questions of the study. The feedback given by the participants on the first 60 items were used to determine what factors might influence the electronic learning readiness of the participant pre-service teachers. The findings obtained from the results of the 60 items indicate the mean score of the 39 items is higher than the expected level of readiness, which is stated as 3.40 ($M_{elr}$). The responses of the participants on the items between 61-68 were also used to find out which pre-service teachers believe the easy use and benefits of e-learning. The findings illustrate that all participants believe that e-learning can enhance their education and can be implemented without effort based on the responses. Finally, the responses of the participants on the items between 69-73 were also used to determine what kind of support pre-service teachers might need for e-learning. The mean score of the items indicates that the participants highly need training for themselves, for their teachers and for their peers to ensure they can use the facility of their university in the future and enhance their attitudes regarding e-learning. In conclusion, it can be referred that pre-service teachers, within the limit of the participants surveyed, are overall ready for e-learning although they need a few improvements, especially those related to the stability and speed of the Internet at their home and university and the connection of their traditional skills with the use of relevant ICT. Moreover, we can infer that personalized learning might be an important concept in the integration of e-learning in Artvin Coruh University because since the gender difference on the readiness for e-learning for some of the items appeared. We assume that the findings of our research may be used by researchers in the discipline of primary education, especially those who recommend the use of electronic learning in the faculty of education and related departments.

**Keywords**: e-Learning, Readiness, Pre-service Teachers, Higher Education

## ÖĞRETMEN ADAYLARI E-ÖĞRENMEYE HAZIR MI? ARTVİN ÇORUH ÜNİVERSİTESİ ÖRNEĞİ

### ÖZET

E-öğrenmenin eğitim ve öğretime entegrasyonu bazı engellere rağmen çeşitli faydaları nedeniyle teşvik edilmektedir. Ancak bugüne kadar yapılan çalışmalar göstermektedir ki gelişmekte olan ülkelerde öğretmen adaylarının e-öğrenmeyi kendi çalışmalarına nasıl adapte edecekleri konusunda araştırma eksikliği bulunmaktadır. Bu nedenle, bu çalışma öğretmen adaylarının e-öğrenmeyi çalışmalarında uygulamaya ne derecede hazır olduklarını tespit etmeyi amaçlamıştır. Bu amaç doğrultusunda, öğretmen adaylarının e-öğrenmeye hazırbulunuşluğunu etkileyen teknoloji, deneyim ve güven gibi birçok faktör incelenmiştir. Bu araştırmada Artvin Çoruh Üniversitesi Eğitim Fakültesi farklı bölümlerde farklı sınıflarda öğrenim gören öğretmen adaylarına web-tabanlı bir anket uygulanmıştır. Bu davete yanıt olarak

233 öğretmen adayı ankete katılım için ilgi göstermesine rağmen 174 öğretmen adayı tüm soruları yanıtlamıştır. Öğretmen adaylarının hazırlık durumlarını analiz etmek için betimsel ve çıkarımsal istatistikler kullanılmıştır. Bulgular ortaya çıkarmaktadır ki Türk üniversitelerinin ilgili paydaşları e-öğrenmeyi öğretmenlik programlarına entegre etmeden önce çeşitli faktörleri dikkate alması gerekmektedir. Özellikle, internete erişimi etkileyen sorunlar, öğretmen adaylarının çeşitli bilişim teknolojileri ile ilgili daha önceki deneyimleri ve kişileştirilmiş öğrenme materyallerinin kullanımı göz önünde bulundurulmalıdır. Genel olarak, e-öğrenmenin gittikçe yaygınlaşması nedeni ile öğretmen adaylarının e-öğrenmeye hazırbulunuşluk durumları gelecekteki sınıflarında yapacakları etkinliklere ve öğretimlerine önemli bir etkisi olabilecektir.

**Anahtar Kelimeler**: e-Öğrenme, Hazırbulunuşluk, Öğretmen Adayları, Yüksek Öğretim

## INTRODUCTION

There have been changes in education especially in terms of approaches, and materials with the appearance of new technologies (Huey, Foong, & Mat, 2007). In contemporary learning settings, the ability to use information and communications technology (ICT) is considered an important part of teacher education programs, as it enables prospective teachers to gain the information, skills, and attitudes they need to keep pace with the innovations and developments in the field of education (Odabasi & Kabakci, 2007). The discovery, articulation, and dissemination of knowledge are also being affected by the burgeoning use of ICT (Akaslan, Law & Taskin, 2011). In order to support the process of integrating technology in education and training, researchers in many countries have already designed their own models for diffusing ICT via the inclusion of e-learning (also terms technology-enhanced or technology-supported learning) in their curricula (Schneiderheinze, 2005; Awidi, 2008; Andersson & Grönlund, 2009; Bass & Heeks, 2011). The integration of e-learning has been also affected by various drivers (e.g. widening access, developing information skills, reducing cost, and increasing flexibility) and barriers (e.g. financial support, lack of infrastructure, and lack of operational skills (Khan, Hasan, & Clement, 2012; Tarus, Gichoya, & Muumbo, 2015).

The education of pre-service teachers is crucial because they play a fundamental role in primary education. The level of readiness of pre-service teachers in various disciplines has already been investigated for the purpose of developing and utilizing e-learning strategies (Yakin & Tınmaz, 2013). However, the use of e-learning by prospective teachers has not been fully evaluated, as the barriers to their use of e-learning have not been analyzed in detail. As a result, we believe that it is important to assess the e-learning preparedness of pre-service teachers by examining factors that could affect their e-learning readiness. On the other hand, it is important to note that the use of a standard model to assess the electronic learning readiness of prospective teachers might not be ideal, as e-learning readiness can be affected by a number of factors (Akaslan, Law & Taskin, 2011). Hence, it is essential to use a model with factors that focus on the characteristics of prospective teachers. Therefore, it is important to understand whether prospective teachers have a tendency to embrace or reject e-learning, to determine if they will be successful at integrating technology into education and training. E-learning readiness is considered as an important part of distance education because of its relation to the success of e-learning initiatives (Kaur & Abas, 2004). Borotis and Poulymenakou (2004) point out that e-learning readiness plays a critical role in the design of e-learning strategies and experiences comprehensively and also helps lecturers in the delivery of learning experiences to students effectively. This is particularly true with regard to pre-service teachers in order to improve the quality of the education system in any country. In addition, Mosa,

et al. (2016) emphasize that a coherent and achievable strategy may not be developed until all aspects of e-learning is not "ready".

The aim of this study is to analyze the electronic learning readiness of future teachers on primary education programs at Artvin Coruh University, in order to understand their likelihood of accepting or rejecting electronic learning for their own studies. The research questions of the study have been formulated as:

- Firstly, what factors might influence the electronic readiness of pre-service teachers in the Department of Primary Education of Artvin Coruh University?

- Secondly, which pre-service teachers believe electronic learning would be easy to use and beneficial to their own studies.

- Thirdly, what kind of support might pre-service teachers need for e-learning prior to undertaking it at their university?

In this study, the evaluation of pre-service teachers' readiness for e-learning will be specifically investigated. This study is important since it helps us understand the specific use of ICT in the studies of pre-service teachers. It is true that ICT is used in various fields, such as education, the military, and the health sector and many studies already implemented to understand the use of ICT.

Moreover, huge investments were made in Turkey in order to improve the quality of education through enriching the learning environment with the integration of ICT for many decades (Gulbahar & Guven, 2008).  However, the use of ICT for a specific purpose is not frequently examined. Throughout the study, participants were asked specific, rather than general, questions, in order to determine their level of readiness.   For instance, instead of analyzing the use of the email among participants, we chose to ask participants about their use of email to communicate with their peers, because individuals use email for many purposes, such as entertainment, billing, and social media membership. Additionally, the differences in e-learning readiness between men and women is usually a contentious area, as the findings are not consistent. With such variables, differences between males and females were also analyzed in the study.

### INSTRUMENTATION

An instrument should clearly indicate what it is the researchers want to measure (DeVellis, 2003). The researchers of this study want to measure the e-learning readiness of pre-service teachers. Therefore, it is important to identify the factors that might influence the readiness of pre-service teachers after detailed analyses of the available e-learning readiness assessment instruments. However, as Aydin and Tasci (2006) emphasized, the cultural characteristics of pre-services teachers in Turkey and the personal experiences of researchers in this study should be combined with the available instrument. As a result, the development of an instrumentation for measuring the e-learning readiness of pre-service teachers is divided into two sections. First, we want to analyze the available instruments with the purpose of ensuring that they match with the cultural characteristics of pre-service teachers in Turkey. Second, we want to adopt the available instruments to the measurement of e-learning readiness of pre-service teachers.

#### *Investigating Assessment Instruments*

The term "readiness" for e-learning is described as the mental or physical readiness of people for gaining some e-learning experience or action (Borotis & Poulymenakou, 2004). Moreover, Kaur and Abas (2004) note the importance of self-directed learning as a key component in the design of e-learning curriculum. Several models for evaluating the readiness of organizations and individuals

to embark on electronic learning have already been designed and used in many studies especially for fifteen years (Omoda-Onyait G., 2011; Gay, 2016). Chapnick (2000), in her often cited model, note that it is important to understand the depth of a needs assessment because e-learning comes in different configurations due to its increased scope, higher interdependence, and visibility. She considers several factors to assess readiness namely: psychology, sociology, environment, resource, finance, technology, and content. Aydin and Tasci (2005) also identified several factors and constructs to assess e-learning readiness of organizations namely technology, innovation, people, and self-development. Akaslan and Law (2011a) criticize that those models do not fully fit the readiness of individuals and organizations in higher education. Akaslan and Law designed a model with 41 items to evaluate the readiness of teachers to adopt electronic learning in Higher Education Institutions, focusing on electrical engineering courses across Turkey (Akaslan & Law, 2011a). The same authors also developed a model with 73 items that can be used to evaluate students' readiness for e-learning (Akaslan & Law, 2011b). In addition, the model designed by Akaslan and Law (2011b) for assessing students' e-learning readiness has been further enhanced by introducing various elements associated with students' traditional skills such as time-management skills, and self-motivation. The models have been adopted and used in many well-rounded studies on the electronic learning readiness of university teachers and learners in the territory of Turkey (Soydal, Alir & Unal, 2011; Unal, Alir & Soydal, 2013; Demir & Yurdugul, 2014; Demir & Yurdugul, 2015a). The model was first used by Soydal, Alir and Unal (2011) to analyze different aspects of e-learning. This study sought to determine deficiencies in this area, in order to be able to close those gaps and successfully implement e-learning at Hacettepe University.

In their study, the researchers found the readiness of the majority of HUFL staff was not commensurate with expectations; this was particularly true for staff in the departments of Philosophy, Anthropology and French Language and Literature. The study also found that academic staff who participated in the study expressed an interest in receiving training on e-learning. Moreover, the model has been also used by researchers in other countries (Setati, 2012; Buhari & Halim, 2014; Moftakhari, 2013; Ouma, Awuor & Kyambo, 2013; Anter, Abdulkishik & Mashhadany, 2014; Nisperos, 2014; Pathiratne, 2014; Ayebi-Arthur, 2015; Mosa, Mahrin & İbrahim, 2016). Ouma, Awuor and Kyambo (2013) used the same model to measure the preparedness of e-learning of different stakeholders at public secondary schools in Kenya. They issued a survey to 223 stakeholders, including teachers, students, and principals; 170 students, 10 principals, and 72 teachers responded to all the questions. Their findings indicated that the majority of the participant teachers could confidently operate computers with minimal time loss, frustration, or confusion. However, they found the technical experience and computer literacy of the participants were very low because most had no prior experience with computers. The responses given by the participants indicated a strategic commitment to impose a policy framework on e-learning implementation pillars was needed in order to implement e-learning successfully in public secondary schools in Kenya. More importantly for our study, the models developed by Akaslan and Law (2011a, 2011b) was used to understand what factors might influence the electronic learning readiness of students and teachers in Turkish higher education institutions. As they emphasized in their study, the cultural characteristics of institutions were also reflected into the instrument that they developed. As a result, we believe that the assessment instrument developed by Akaslan and Law (2011b) could be adopted for our study.

### Adopting Assessment Instruments

The variables or factors that the researchers of this study want to measure are based on the instrument designed by Akaslan and Law (2011b) as illustrated in Figure 1. As illustrated, the first stage, *Readiness*, was designed to measure how pre-service teachers in Artvin Coruh University are ready for e-learning by considering four major components. The second stage, *Acceptance*, was

designed to understand the degree to which pre-service teachers believe that e-learning would be free of effort and enhance their teaching. The last stage, "*Training*" was designed to evaluate whether pre-service teachers in Artvin Coruh University need training for e-learning before embarking on it.
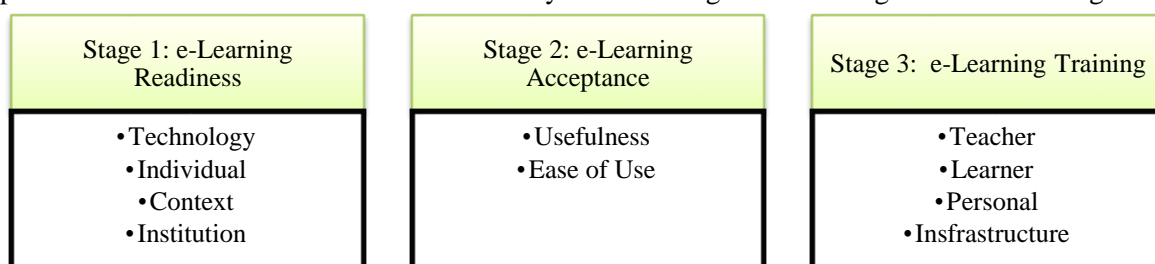
| Stage 1: e-Learning Readiness | Stage 2: e-Learning Acceptance | Stage 3: e-Learning Training |
|---|---|---|
| • Technology<br>• Individual<br>• Context<br>• Institution | • Usefulness<br>• Ease of Use | • Teacher<br>• Learner<br>• Personal<br>• Insfrastructure |

**Figure 1.** A model proposed for the evaluation of e-learning readiness

### Stage 1: E-Learning Readiness

The first stage focusses on the measurement of factors that might influence the electronic readiness of prospective teachers in the Department of Primary Education of Artvin Coruh University as illustrated in Figure 1. This stage consists of 4 main factors namely technological, individual, contextual and institutional readiness.

The factor called "*Technology*" is one of the important factors that are able to affect the adoption of pre-service teachers into e-learning. According to Rogers (2003), it is effectively used to adapt a technological innovation in an organization. Akaslan and Law (2011a) emphasize the fundamentality of technology since e-learning is essentially based on the utilization of computers connected to the Internet regardless of whether a computer is portable or not. Additionally, Rogers (2003) classifies the technology into two components namely hardware and software.

The factor called "*Individual*" is used to refer to the characteristics of individuals namely experiences, confidences, attitudes and traditional skills in Artvin Coruh University since their skills play a critical role in the implementation of e-learning in a successful way. Akaslan and Law (2011a) point out the relevant skills of individuals might have an effect on the integration of e-learning. Park et. al. (2009) also note the importance of similar technologies during the adoption of an innovation due to their similar functionalities.

The factor called "*Context*" is associated with the usability and accessibility of content. Lopes (2007) believes that the properties of content are critical in the integration of e-learning regardless of whether it is theoretical or practical. These properties are counted as availability, interactivity, reusability, and interoperability. Therefore, the quality of learning and teaching is highly dependent on the enhancement of content in terms of both theory and practice.

The factor called "*Institution*" is used to understand the readiness of universities in addition to their faculties and departments. This factor helps us understand the current strategy of universities about the utilization of e-learning in their units. Akaslan and Law (2011a) emphasizes that an institution should offer a good infrastructure, a supportive culture, incentives, models and resources for e-learning.

### Stage 2: E-Learning Acceptance

The second stage was designed to understand the degree to which students believe that e-learning would be free of effort and enhance their teaching. The degree to which a student believes that e-learning would be free of effort and enhance his or her learning should be measured to understand whether a student accepts or reject e-learning for their studies. The often-cited related

work to understand user acceptance of new initiatives is known as technology acceptance model (TAM), which was introduced by Davis (1989) in terms of two factors: perceived usefulness and perceived ease of use.

The factor called "*Perceived Usefulness*" is used to measure the extent which an individual believes that using a system can support the attainment of his or her specific goal or need (Akaslan and Law, 2011a). Davis (1989) emphasizes the measurement of perceived usefulness since it indicates the tendency of individuals to understand whether an innovation will help them perform their work better.

The factor called "*Perceived Ease of Use*" is used to measure the extent which an individual believes that using a system could be free of effort (Akaslan and Law, 2011a). According to Davis (1989), the belief of individuals about the usefulness of a given innovation may not be sufficient due to its difficulty to use because the potential benefits of the innovation might be outweighed by the effort of using it.

### Stage 3: E-Learning Training

The third stage was designed to evaluate whether pre-service teachers in the related departments need training for e-learning before embarking on it. Agboola (2006) points out the importance of training for e-learning since it affects the process of implementation of e-learning. In addition to training of pre-service teachers for e-learning, understanding whether their teachers and personnel need training should be also considered in terms of the angle view of those prospective teachers (Akaslan & Law, 2011a).

### METHODOLOGY

The method used for data collection in this study was a survey designed to find out information about pre-service teachers who are eligible to review their readiness for electronic learning. The information about the survey instrument and participants in the study was given as follows.

### Participants

Five departments in the Faculty of Education of Artvin Coruh University were selected for this study because e-learning has become an increasingly significant element of the pedagogy adopted in relevant courses. The participants were filtered according to whether or not they were following a program for prospective teachers at the above-mentioned university. The responses were all individuals studying for an undergraduate degree in one of the following five teacher education programs: (i) Primary Mathematics Education, (ii) Science Education, (iii) Social Science Education, (iv) Turkish Education (iv), and (v) Primary Education (also known as Elementary). These respondents were asked to evaluate their own readiness for e-learning and that of their departments. Table 1 indicates the distribution of the participants for each group in the demographic section of the survey.

**Table 1:** The Frequency and Percentage in Research Groups

| Research Groups | | N | % | Research Groups | | N | % |
|---|---|---|---|---|---|---|---|
| **Programs** | Primary Mathematics Education | 31 | 17.80 | **Age** | 20< | 87 | 50.00 |
| | Science Education | 17 | 09.80 | | 21> | 87 | 50.00 |
| | Primary Education | 48 | 27.60 | **Gender** | Female | 105 | 60.30 |
| | Social Science Education | 45 | 25.90 | | Male | 69 | 39.70 |
| | Turkish Education | 33 | 19.00 | | | | |

As shown in Table 1, the majority of the respondents were female (60.30%). The respondents were further divided into two age categories, namely 20 years old and under (50%), and 21 years old and over (50%). This indicates the same number of participants were present in each age group. Moreover, the type of program in which the respondents were enrolled was used as another criterion for classification.

**Items**

A two-section survey has been shaped to evaluate the electronic learning readiness of pre-service teachers in Artvin Coruh University. The first section consisted of several items to collect information regarding demographic characteristics of the participants such as the departments of individuals in the institutions, age, and gender (see Table 1). The second section included 73 items to assess pre-service teachers' self-report perceptions of their readiness for e-learning. The items used to assess pre-service teachers' self-report perceptions have been used from the instrument designed by Akaslan and Law (2011) for the purpose of assessing the extent to which the institutions are ready for e-learning based on the literature. However, some of the items used by Akaslan and Law (2011a) were adopted to assess the electronic readiness of pre-service teachers in Artvin Coruh University since they were not relevant to the electronic readiness of pre-service teachers. There are altogether 73 items in the questionnaire which gauge respondents' self-reported perceptions on different aspects of e-learning as illustrated in Table 2.

**Table 2:** Items used in the Survey

| | I | Factor 1: Technology |
|---|---|---|
| | 01 | I have an access to a Desktop or Laptop Computer connected to the Internet at the Residence. |
| | 02 | I am satisfied with the Stability of the Internet access at the place I live. |
| | 03 | I am satisfied with the Speed of the Internet access at the place I live. |
| | 04 | I have an access to a Desktop or Laptop Computer connected to the Internet at the University. |
| | 05 | I am satisfied with the Stability of the Internet access at university |
| | 06 | I am satisfied with the Speed of the Internet access at university |
| | I | Factor 2: Individual |
| | 07 | I use the Internet as information source |
| | 08 | I use email for the communication with my peers. |
| | 09 | I use office software (e.g. OpenOffice, Microsoft Office) for my coursework |
| | 10 | I use social network sites (e.g. Facebook, Orkut). |
| | 11 | I use instant messaging software (e.g WhatsApp, Yahoo, Skype). |
| | 12 | I use educational software (e.g. Mathematica). |
| | 13 | I use computers (e.g. notebooks, home PCs) confidently. |
| | 14 | I use web browsers (e.g. Internet Explorer, Firefox) confidently. |
| | 15 | I use search engines (e.g. Google, MSN Search) confidently. |
| | 16 | I use digital file management tools (e.g. deleting or renaming files on your computer) confidently. |
| | 17 | I use authoring tools to create learning materials (e.g. Movie Maker) confidently. |
| | 18 | I have enough information about e-learning. |
| | 19 | I have enough ICT competencies to prepare my coursework in electronic format. |
| **Stage 1: Readiness** | 20 | I feel ready for e-learning. |
| | 21 | I have enough time to prepare my coursework (or homework) in electronic format. |
| | 22 | I support the use of e-learning in my department/program. |
| | 23 | I will like e-learning. |
| | 24 | My teachers have enough information about e-learning. |
| | 25 | My peers have enough information about e-learning. |
| | 26 | My teachers support the use of e-learning in my department/program. |
| | 27 | My peers support the use of e-learning in my department/program. |

| | 28 | My teachers will like e-learning. |
|---|---|---|
| | 29 | My peers will like e-learning. |
| | 30 | I can start writing without feeling overwhelmed after receiving an assignment on a certain topic. |
| | 31 | I present the ideas clearly in my own words without simply reproducing what I have read and heard. |
| | 32 | I document, review and revise my writing of the topic with the use of a tool (e.g. MS Word). |
| | 33 | I take notes of lectures, books, seminars and other learning activities. |
| | 34 | I note the details of the learning activity, specifying its objectives, processes, and outcomes. |
| | 35 | In note taking, I identify relationships between the concepts with a tool (e.g. mind mapping). |
| | 36 | I can work well in groups to implement a given collaborative task. |
| | 37 | I am skillful in sharing and discussing knowledge with my teammates |
| | 38 | I manage my contribution to the group work professionally with the use of a tool (e.g. Google doc). |
| | 39 | I can remember what I have just read when I get to the end of a chapter. |
| | 40 | I know how to pick out what is important in the text and identify the main ideas. |
| | 41 | I annotate the text with the use of a tool to document my reflection on its content. |
| | 42 | I attend classes regularly |
| | 43 | I carefully prepare myself for most class sessions |
| | 44 | I discuss issues to clarify them and update my personal notes accordingly with the use of a tool. |
| | 45 | I make timetables and list of activities to organize my tasks. |
| | 46 | I have the discipline to plan and manage time during the study. |
| | 47 | I manage the integrity of my timetable efficiently with the use of a tool (e.g. Google calendar). |
| | 48 | I set my objectives and prioritize them when undertaking a task. |
| | 49 | I keep track of the progress of a task and adjust my strategies. |
| | 50 | I can evaluate my own performance and identify my strengths and weaknesses with the use of a tool. |
| | 51 | I can concentrate on studying without being easily distracted. |
| | 52 | My moods or personal problems seldom prevent me from completing my tasks. |
| | 53 | I know how to sustain my motivation and persist in accomplishing the task despite difficulties. |
| | **I** | **Factor 3: Institution** |
| | 54 | Is e-learning applied at the University in which I am studying? |
| | 55 | Is e-learning applied in your Faculty | High School | Institute in which I am studying? |
| | 56 | Is e-learning applied in your Department | Program in which I am studying? |
| | **I** | **Factor 4: Context** |
| | 57 | E-learning can be applied to the Theoretical Part of education in my department. |
| | 58 | E-learning can enhance the quality of the Theoretical Part of education in my department. |
| | 59 | E-learning can be applied to the Practical Part of education in my department. |
| | 60 | E-learning can enhance the quality of the Practical Part of education in my department. |
| **Acceptance** | **I** | **Factor 5: Perceived Usefulness** |
| | 61 | E-learning will improve the quality of my learning experience. |
| | 62 | E-learning will improve the quality of my outcomes. |
| | 63 | E-learning will increase my productivity. |
| | 64 | E-learning will be useful for my studies. |
| | 65 | E-learning will enable me to accomplish my studies more effectively than the traditional approach. |
| | **I** | **Factor 6: Perceived Ease of Use** |
| | 66 | E-learning tools will be easy to use for me. |
| | 67 | E-learning tools will be easy to use for my teachers. |
| | 68 | E-learning tools will be easy to use for my peers. |
| **Training** | **I** | **Factor 7: Training** |
| | 69 | I need training on e-learning. |
| | 70 | My teachers need training on e-learning. |
| | 71 | My peers need training on e-learning. |
| | 72 | Technical and administrative personals need training. |
| | 73 | The facilities of the university are not enough for e-learning. |

**Assessment Model**

The items in the second section of the survey were mainly evaluated with a 5-point Likert scale with the purpose of measuring pre-service teachers' self-perceptions in terms of the extent to which they agree with the leftmost and rightmost anchors being "Strongly Agree" and "Strongly Disagree" respectively. Additionally, the 5-point Likert scale was coded as 1, 2, 3, 4 and 5 where 1 indicates the lowest readiness while 5 the highest. Moreover, as illustrated in Figure 2, 3.40 on the 5-point Likert scale was accepted as the expected level of e-learning readiness ($M_{elr}$) with the purpose of evaluating whether the readiness of pre-service teachers is commensurate with e-learning as Aydin and Tasci (2005) suggested. Moreover, a new option "Not applicable / don't know /no idea" was also included because the history of e-learning in Turkey is relatively short,
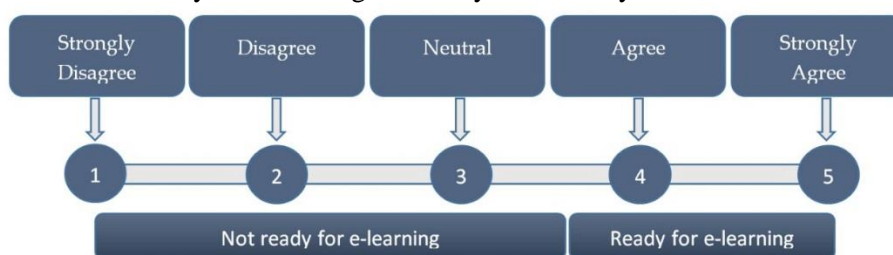


**Figure 2.** A model proposed for the assessment of e-learning readiness

**Procedure**

An Internet-based survey was designed and used in this study based on the assumption that it can be distributed to respondents in an effective and efficient way. Hence, we used the open-source Lime-survey to convert the survey items in Table 2 into the Internet-based format. With the survey questionnaire ready, to gather participants, snowball sampling was used in this study. A general invitation was made to students prior to the sessions that took place on 21 March 2015. Additionally, potential students were notified via the Faculty of Education's notice board. In response to this invitation, 233 learners expressed an interest in being involved in the survey. The feedback given by the 174 pre-service teachers was valid until the deadline for completion of the survey, which was stated as 20 April 2015.

**RESULTS AND DISCUSSION**

In this section, the feedback provided by the participants on the seven factors within three stages listed in Table 2 will be analyzed. The descriptive and inferential statistics among the feedback of the items provided by the participants in the study were computed to be able to answer the research questions of this study. The number and mean of the scores of the items in the study are presented in Table 4. Moreover, independent-sample t-test and chi-square tests were also used to verify statistical significance of differences in mean scores between male and female since the gender difference on the readiness for e-learning is always assumed to be a controversial topic due to its inconsistent observation.

The findings obtained from the results of factors in the first stage with 60 items (i.e. technology, individual, content & institution) will guide us to find out what factors might influence the electronic readiness of prospective teachers in the Department of Primary Education of Artvin Coruh University. After that, the findings of factors in stage 2 with 8 items (i.e. perceived usefulness & ease of use) will be analyzed to understand which prospective teachers believe electronic learning would be easy to use and beneficial to their own studies with the purpose. Finally, the authors of this study will examine the findings of factors in the third stage with 5 items in order to determine what

kind of support pre-service teachers might need for e-learning prior to undertaking it at their university.

### What factors might influence the electronic readiness of prospective teachers?

The instrument of our study indicates that there are four main factors that might influence the electronic learning readiness of pre-service teachers. These factors are called (i) technology, (ii) individual, (iii) context and (iv) institution. Table 3 illustrates the mean scores of participants' responses for each item related to each factor.

**Table 3:** The Descriptive and Inferential Statistics for the Items in the first stage

| I | OM | Male N | Male M | Female N | Female M | p | I | OM | Male N | Male M | Female N | Female M | p |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 01 | 3.97 | 105 | 4.09 | 69 | 3.78 | 0.264 | 31 | 3.58 | 105 | 3.54 | 68 | 3.65 | 0.463 |
| 02 | **3.21** | 81 | **3.16** | 48 | **3.29** | 0.944 | 32 | **3.14** | 105 | **3.13** | 66 | **3.15** | 0.924 |
| 03 | **2.85** | 80 | **2.85** | 48 | **2.85** | 0.360 | 33 | 3.78 | 105 | 3.90 | 68 | 3.59 | 0.037 |
| 04 | 4.56 | 105 | 4.62 | 69 | 4.48 | 0.466 | 34 | 3.55 | 105 | 3.68 | 66 | **3.35** | 0.169 |
| 05 | 3.41 | 95 | **3.31** | 60 | 3.57 | 0.124 | 35 | **2.69** | 104 | **2.61** | 66 | **2.82** | 0.397 |
| 06 | **3.13** | 95 | **3.02** | 60 | **3.30** | 0.144 | 36 | 3.93 | 104 | 4.00 | 67 | 3.82 | 0.158 |
| 07 | 4.03 | 105 | 4.06 | 69 | 3.99 | 0.381 | 37 | 3.94 | 103 | 3.98 | 68 | 3.88 | 0.473 |
| 08 | **3.33** | 105 | **3.23** | 69 | 3.48 | 0.194 | 38 | **3.25** | 103 | **3.27** | 67 | **3.22** | 0.198 |
| 09 | 3.52 | 104 | 3.54 | 69 | 3.49 | 0.799 | 39 | 3.72 | 105 | 3.77 | 68 | 3.65 | 0.637 |
| 10 | 4.03 | 105 | 3.92 | 68 | 4.19 | 0.068 | 40 | 3.89 | 105 | 3.89 | 66 | 3.89 | 0.773 |
| 11 | **3.19** | 105 | **3.12** | 68 | **3.29** | 0.761 | 41 | **3.19** | 103 | **3.14** | 66 | **3.27** | 0.375 |
| 12 | **1.82** | 103 | **1.79** | 65 | **1.88** | 0.691 | 42 | 4.09 | 105 | 4.15 | 68 | 3.99 | 0.829 |
| 13 | 3.50 | 104 | 3.43 | 69 | 3.61 | 0.234 | 43 | 3.58 | 104 | 3.57 | 68 | 3.59 | 0.881 |
| 14 | 3.48 | 103 | **3.36** | 69 | 3.67 | 0.052 | 44 | 3.44 | 105 | **3.34** | 65 | 3.58 | 0.390 |
| 15 | 3.84 | 105 | 3.82 | 69 | 3.88 | 0.496 | 45 | **3.25** | 103 | **3.22** | 69 | **3.29** | 0.990 |
| 16 | 3.67 | 105 | 3.56 | 68 | 3.84 | 0.076 | 46 | 3.62 | 105 | 3.63 | 67 | 3.60 | 0.840 |
| 17 | 3.45 | 104 | **3.38** | 69 | 3.55 | 0.290 | 47 | **3.39** | 103 | 3.50 | 66 | **3.23** | 0.338 |
| 18 | **2.84** | 100 | **2.82** | 66 | **2.86** | 0.770 | 48 | 4.06 | 105 | 4.12 | 67 | 3.97 | 0.404 |
| 19 | **3.06** | 104 | **3.05** | 66 | **3.08** | 0.867 | 49 | 4.01 | 105 | 4.10 | 68 | 3.87 | 0.045 |
| 20 | **3.30** | 102 | **3.31** | 69 | **3.28** | 0.804 | 50 | 3.70 | 102 | 3.68 | 65 | 3.74 | 0.634 |
| 21 | **3.24** | 105 | **3.08** | 68 | 3.50 | 0.012 | 51 | 3.59 | 104 | 3.63 | 67 | 3.54 | 0.565 |
| 22 | 3.75 | 103 | 3.82 | 68 | 3.66 | 0.229 | 52 | **3.09** | 104 | **3.10** | 68 | **3.07** | 0.835 |
| 23 | 3.64 | 99 | 3.67 | 65 | 3.60 | 0.663 | 53 | 3.84 | 104 | 3.76 | 67 | 3.96 | 0.153 |
| 24 | **3.29** | 100 | **3.37** | 62 | **3.16** | 0.178 | 54 | **2.13** | 105 | **2.14** | 69 | **2.10** | 0.882 |
| 25 | **2.71** | 96 | **2.68** | 58 | **2.76** | 0.571 | 55 | **2.03** | 105 | **2.10** | 69 | **1.93** | 0.514 |
| 26 | 3.64 | 100 | 3.70 | 64 | 3.55 | 0.245 | 56 | **2.06** | 105 | **2.10** | 69 | **1.99** | 0.663 |
| 27 | 3.46 | 92 | 3.50 | 60 | 3.40 | 0.441 | 57 | 3.63 | 95 | 3.81 | 68 | **3.38** | 0.035 |
| 28 | 3.72 | 96 | 3.72 | 66 | 3.71 | 0.305 | 58 | 3.79 | 97 | 3.91 | 68 | 3.63 | 0.319 |
| 29 | 3.61 | 95 | 3.60 | 63 | 3.62 | 0.126 | 59 | 3.68 | 96 | 3.80 | 67 | 3.51 | 0.055 |
| 30 | 3.43 | 105 | **3.37** | 68 | 3.53 | 0.282 | 60 | 3.67 | 97 | 3.76 | 66 | 3.55 | 0.168 |

**N**: Number; **M**: Mean; **OM:** Overall Mean; **I:** Items; **p**: Significancy

From the table, it can be observed the mean score of the majority of the items (i.e. 38 items) is higher than the expected level of readiness ($M_{elr}$ = 3.40). Based on this result, it can be referred that pre-service teachers in Artvin Coruh University, within the limits of the participants surveyed, are overall ready for e-learning, although they need a few improvements for the 22 items. Mean scores of the items can be used to identify the areas of improvements in the participants' readiness for e-learning. Moreover, Table 3 also indicates that mean score of male and female participants'

responses for each item. As illustrated, the mean score of the participants' response for each item shows that the female participants with 38 items show higher readiness than the male participants with 34 items as the mean score of those items is higher than the expected level of readiness.

### The influence of the technology factor

The first-factor technology (i.e. items I01 to I06 in Table 3) concerns the access of the pre-service teacher respondents to a computer with an Internet connection at their home and at their university in this study. First, the participants were asked about their ownership of a computer connected to the Internet at the residence and university because e-learning is facilitated by the access to a computer with the Internet. 75% of the participants reported that they have access to a computer connected to the Internet whereas 91.43% of them at the university. However, in learning environments, a range of technology tools and techniques are used. These include discussion boards, email, learning and content management systems (e.g. Moodle, Blackboard, Sakai, etc.), web chat, synchronous video conferencing, podcasts, audio, CDs, DVDs and virtual world (Moore, Dickson-Deane & Galyen, 2011).

However, the majority of these techniques or tools can only be used if the learning environment benefits from the Internet access. Moreover, access to the Internet enables learners to interact with their instructors and class mates using web chat, email, discussion boards, and face-to-face meetings. Without Internet access, it is only possible for learners to interact with their instructors and classmates using CDs or telephones (Muhirwa, 2009). Since not all of the participant pre-service teachers have access to the Internet at home and at university, it is important that e-learning is implemented by offering elective modules, rather than as part of compulsory modules, because the Internet access is a prerequisite for embarking on e-learning. If e-learning were to be a compulsory module, the limited availability of the necessary technology would have a negative impact on the learning experiences of the pre-service teachers (Buabeng-Andoh, 2012).

Moreover, Table 3 also shows that the satisfaction of the participants with the stability and speed of the Internet access at their home and university. Since the mean score of the items I02, I03 and I06 is not higher than the expected level of readiness, the variables related to the stability and speed of the Internet should be also considered because they also influence their e-learning readiness. A study conducted previously by Liaw (2008) demonstrated that many factors influence the quality of learning systems, namely e-learning functions, Internet speed, e-learning content, and e-learning interaction. Liaw's study determined that Internet speed is the most critical factor, receiving a mean score of 4.04 out of 5. Interestingly, we also found that the participants in our study cannot access reliable Internet with sufficient speed, especially in their homes. Therefore, offering online sessions using whiteboards or synchronous video conferencing (such as Adobe Connect) might not be effective, because students do not have the reliable and fast Internet connections these systems require. With regard to having access to a stable Internet connection at university, our findings revealed differences between the views of male and female participants.

### The influence of the individual factor

The second-factor individual (i.e. items I07 to I53 in Table 3) examines the characteristics of the pre-service teacher participants in the related departments. These characteristics include self-reported experiences, confidences, attitudes and traditional skills of participants using various types of ICT for their studies.

For the sub-factor experience (i.e. items I07 to I12), the pre-service teachers were also asked whether they use the Internet as information service (I07), email as a tool for communicating with their peers (I08), office software for their coursework (I09), social network sites (I10), instant

messaging software (I11) and educational software (I12). We discovered that male participants do not tend to use email for this purpose, but this was not the case for the female participants. The comments made by the participants suggest that the use of instant messaging applications, such as WhatsApp, and social media sites, such as Facebook, is commonplace. We believe that the prevalence of smartphones, alongside the low cost of Internet packages, has resulted in an increased use of instant messaging applications such as Skype, Google Hangout and WhatsApp and social media websites such as Facebook and Twitter.

For the sub-factor confidence (i.e. items I13 to I17), the pre-service teachers were asked whether they are confident in the use of computers (I13), web browsers (I14), search engines (I15), digital file management tools (17), and authoring tools for generating learning materials (17). The mean score of the items in the sub-factor confidence show that the participants in Arvin Coruh University have sufficient level of confidence in using particular ICTs since the mean score of all the related items is higher than the expected level of readiness. However, this is not the case for the male participants since their responses to the items I14 and I17 are lower than the expected level of readiness. Based on these results, it can be inferred that the male participants do not feel confident in the use of web browsers (M=3.36) and authoring tools for creating learning materials (M=3.38).

For the sub-factor attitude (i.e. items I18 to I29), the participants' perceptions of themselves, their teachers and peers towards e-learning examined. As can be seen from Table 3, the mean scores of the majority of the items were higher than the expected readiness level. However, the mean score of the items from I18 to I21 is lower than the expected level of readiness. These findings seem to imply that the participants do not believe that they have sufficient information and ICT competencies about e-learning. Additionally, they do not feel that they are ready and have time for e-learning. However, they believe that they will like and support the use of e-learning in their department. Similarly, the perceptions of the participants about their teachers and peers exactly match with themselves.

For the sub-factor traditional skills (i.e. items I30 to I53), the participants' traditional skills such as writing, reading, speaking and listening with the use of relevant ICT skills were investigated. For example, the participants were surveyed whether they start writing without feeling overwhelmed on a certain topic (I30), present the ideas clearly in their own words (I31), document, review and revise their writing with the use of a specific tool such as Microsoft Word (I32). Our findings indicate that teachers' integration of ICT with their traditional skills is insufficient whereas their traditional skills without the use of ICT is higher than expected level of readiness. From these results, we can note that the participants are not able to connect their traditional skills with the use of relevant ICTs. Akaslan (2014) points out that a lack of traditional skills might make the Internet particularly attractive, especially with the use of social settings, and this is one of the potential risks of e-learning.

**The influence of the institution factor**

The third-factor institution (i.e. items I54 to I56) focuses on the implementation of e-learning in institutions. The participant pre-service teachers were investigated for the fact whether e-learning is currently implemented in their institution in terms of three units: university, faculty, and department. As illustrated in Table 3, the mean score of the items from I54 to I57 shows that the participants do not believe that e-learning is implemented in their institution since the mean score is highly lower than the expected level of readiness. However, the mean score of the item I54 (i.e. the application of e-learning at the level of university, M=2.13), is slightly higher than the mean score of items I55 (i.e. application of e-learning at the level of faculty, M=2.03) and I56 (i.e. application of e-learning at the level of department, M=2.06). From these results, it can be inferred that the

participants believe that the possibility of applying e-learning at their university is slightly more than their faculties and departments.

### The influence of the context factor

The fourth-factor context (i.e. items I57 to I60) relates to the degree to which participants think that electronic learning could be implemented as both theoretical and practical part of education in their department. For this purpose, the participants were asked to what extent they agree that e-learning can be applied and enhance the quality of the theoretical and practical parts of their studies. Table 3 shows that the participants believe that e-learning can enhance the quality of their education in both theory and practice in addition to its applicability to those parts since the mean score of all the items is higher than the expected level of readiness. However, our findings also revealed that male participants do not think that electronic learning can be applied to the theoretical components of their education since the mean score of the item I57 (M=3.38) is slightly lower than our expected level of readiness. This can create problems when they start generating electronic content related to theory.

### Which prospective teachers believe electronic learning would be easy to use and beneficial to their own studies?

The instrument of our study indicates that there are two main factors that might be important to measure their acceptance which prospective teachers believe electronic learning would be easy to use and beneficial to their own studies. These factors are called (i) perceived usefulness and (ii) perceived ease of use. For the second stage of our study, the participants were asked to opine for 8 items to measure their acceptance for e-learning (i.e. items I61 to I68). The fifth and sixth factor in our survey analyses the extent to which the participant pre-service teachers think that e-learning will be easy to use and could enhance their own learning. Table 4 shows the descriptive (i.e. frequency and mean) and inferential statistics of responses for those items.

**Table 4:** The Descriptive and Inferential Statistics for the Items in the second stage

| I | OM | Male | | Female | | p | I | OM | Male | | Female | | p |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | M | N | M | | | | N | M | N | M | |
| **61** | 3.85 | 98 | 3.94 | 65 | 3.72 | 0.574 | **65** | 3.71 | 97 | 3.79 | 66 | 3.58 | 0.115 |
| **62** | 3.72 | 98 | 3.76 | 67 | 3.66 | 0.461 | **66** | 3.68 | 100 | 3.70 | 67 | 3.66 | 0.742 |
| **63** | 3.78 | 97 | 3.84 | 66 | 3.70 | 0.291 | **67** | 3.73 | 95 | 3.80 | 66 | 3.64 | 0.242 |
| **64** | 3.89 | 97 | 3.99 | 69 | 3.74 | 0.041 | **68** | 3.64 | 95 | 3.73 | 65 | 3.52 | 0.171 |

As illustrated in Table 4, the mean score of all the items is over than the expected readiness level. From these results, it can be easily interpreted that the participants hold positive attitudes towards e-learning. Moreover, a significant difference ($p < 0.05$) was found between male (M=3.99) and female (M=3.74) participants on the measure of whether e-learning will enable them to accomplish their studies more effectively than the traditional approach. As a result, we may conclude all participants believe that e-learning can enhance their education and can be implemented without effort based on the responses. However, the results in Table 4 also conclude that the belief of the male participants is stronger than the female ones in our study.

### What kind of support might pre-service teachers need for e-learning prior to undertaking it at their university

The instrument of our study indicates that the factor called training can be used to determine what kind of support might pre-service teachers might need for e-learning prior to undertaking it at

their university. The seventh factor (i.e. training) discusses whether pre-services teachers requested training for e-learning before undertaking it.

**Table 5:** The Descriptive and Inferential Statistics for the Items in the third stage

| I | OM | Male | | Female | | p | I | OM | Male | | Female | | p |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | N | M | N | M | | | | N | M | N | M | |
| **69** | 2.19 | 101 | 2.08 | 66 | 2.36 | 0.194 | **72** | 2.15 | 92 | 2.10 | 62 | 2.23 | 0.288 |
| **70** | 2.18 | 94 | 2.16 | 64 | 2.20 | 0.739 | **73** | 2.45 | 92 | 2.45 | 67 | 2.46 | 0.157 |
| **71** | 2.06 | 94 | 2.03 | 65 | 2.11 | 0.509 | | | | | | | |

The participants were required to answer four questions (i.e. I69 to I72) to find out whether there is a need of training for e-learning before it is implemented in their university, faculty, and department. Additionally, one question (i.e. I73) was directed to the participants to determine whether they believe that the facilities of their university are enough for e-learning. The mean scores of items from I69 to I73 in Table 5 indicate that the participants highly need training for themselves (M=2.19), for their teachers (M=2.18), for their peers (M=2.06) and for the technical and administrative personals (M=.210). Additionally, the mean score of the item I73 indicates that they do not think that their institutions have sufficient facilities to implement e-learning in their university, faculty, and department. From these results, we can interpret that the infrastructure of the participants' university should be operationalised for e-learning to ensure that the facilities of their university are capable of applying e-learning. Moreover, the participants should be trained for e-learning to make sure they can use the facility of their university in the future.

**CONCLUSION**

The main purpose of this study was to investigate pre-service teachers' readiness for e-learning by looking for answers to three questions: (i) what factors might influence the electronic readiness of prospective teachers, (ii) which prospective teachers believe electronic learning would be easy to use and beneficial to their own studies and what kind of support pre-service teachers might need for e-learning prior to undertaking it at their university. For this purpose, the e-learning readiness of pre-service teachers enrolled in various programs in the Department of Primary Education of Artvin Çoruh University was analyzed.

From our findings, we can infer that personalized learning might be an important concept in the integration of e-learning in Artvin Coruh University. Thus, it may be necessary to generate personalized learning materials on the Internet. Our findings also showed that pre-service teachers have limited experience with ICT, particularly regarding the use of educational software. This suggests pre-service teachers need better training in how to generate technology-based learning materials, because their lack of experience in this field may limit their activities related to e-learning when they start to work in primary schools. For example, academic studies show projects like FATIH mainly aim to integrate new technologies into classroom settings, but that the teachers in those settings do not have the ability and knowledge required to manage and provide the components associated with the e-content (Elmas & Geban, 2012; Erdemir, Bakirci & Eyduran, 2009).

Therefore, we suggest that assessing the readiness of pre-service teachers before embarking on e-learning is critical to the successful integration of technology into education, as it will provide stakeholders with information concerning the training needs of this group. Without sufficient training, there is a high risk that e-learning will result in failure. Additionally, providing individuals with training in the skills that they need for e-learning will improve pre-service teachers' attitudes toward e-learning, making it more likely that they will embrace the use of e-learning in their future classrooms.

Coklar, Kilicer, and Odabasi (2007) claim that modules on teacher education programs that aim to provide pre-service teachers with more experience of using technology do not result in sufficient numbers of teachers using technology in their teaching and learning in primary schools. Therefore, when e-learning is integrated into the departments of primary education, the "tutorial-led" approach should not be used on its own. Scenario-based, game-based, or assessment-driven approaches should be included when pre-service teachers are introduced to e-learning.

Furthermore, since the use of social media apps is very common among male students, the use of personalized, rather than standard, materials should be considered before embarking on e-learning, as self-motivation and time-management skills are critical in e-learning settings. In particular, issues affecting access to the Internet and the prior experiences of pre-service teachers with various ICT and personalized learning materials should be evaluated. In conclusion, based on the findings of this study, it can be referred that pre-service teachers in Artvin Coruh University, within the limits of the participants surveyed, are overall ready for e-learning, although they need a few improvements.

Despite the limited number of participants, the findings of this research could potentially make a significant contribution to the integration of e-learning in departments of primary education. We assume that the findings of our research may be used by researchers in the discipline of primary education, especially those who recommend the use of electronic learning in the faculty of education and related departments.

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