Construction of a Teacher's Tutorial: A Strategy for Technological Appropriation

Bir Öğretmenin Eğitim Programının Yapılanması: Teknolojik Uyarlama İçin Bir Strateji

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 Abstract

This study aimed at identifying how a tutorial with information about digital resources for education can contribute to the development of technology skills in teachers and improve their learning environment in Colombia's Higher Education system. A quantitative, non-experimental descriptive research design was adopted. Results show that participants had strong needs to strengthen and/or develop their skills in an autonomous way and that a tool to facilitate the process of continuous improvement in the integration of ICT and the teaching process was required. Hence, a tutorial would be the appropriate tool to promote, encourage and perform autonomous learning, aligned to the individual commitment of each teacher. The design for the construction of such a tutorial is presented as a supporting tool to develop digital skills on teachers, in addition to dedication and a training plan, allowing the development of digital literacy for the teaching staff.

Keywords: Technology in teacher education, using technology to enhance instruction, technological appropriation, teacher eucation, higher education.

Öz

Bu araştırma, öğretmenlerin teknolojik becerilerinin ve Kolombiya Yükseköğretim Sisteminin gelişmesine dijital kaynaklar ile ilgili bilgilerin yer aldığı bir eğitim programının nasıl katkıda bulunacağını belirlemeyi amaçlamıştır. Deneysel olmayan betimleyici araştırma deseni ile nitel araştırma yöntemi kullanılmıştır. Bulgular, katılımcıların becerilerini kendi kendilerine geliştirmeleri ve/veya güçlendirmelerine fazlaca ihtiyaç olduğunu ve bunun için öğretim süreci ve BİT'in bütünleştirilmesinde sürekli gelişimi sağlayacak olan süreci geliştirecek bir araç gerektiğini göstermektedir. Bu yüzden her bir öğretmenin bireysel bağlılığına göre tasarlanmış bir eğitim programı, kendi kendine öğrenmeyi ön plana çıkarmak, cesaretlendirmek ve uygulamak için uygun bir araç olabilir. Böyle bir eğitim programının yapılanması için gereken tasarım, öğretmenlerin dijital ortam becerilerini geliştirmeye yönelik destekleyici bir araç olarak sunulmuştur. Eğitim programı aynı zamanda adanmışlık ve eğitim planı ile öğretim kadrosu için dijital okuryazarlığın gelişimine izin veren bir araç olduğu belirlenmiştir.

Anahtar Kelimeler: Öğretmen eğitiminde teknoloji, öğretimi geliştirmek için teknolojiyi kullanma, teknolojik uyarlama, öğretmen yetiştirme, yükseköğretim.

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Introduction

Education takes a significant part in the global market. It guides the circumstances in which we live, as noted by Freire (2004, p. 4): "Education is an act of love, courage; it is a practice of freedom focused fearlessly to reality; it seeks to transform it, with solidarity and fraternal spirit." Teachers must concentrate efforts in designing a strategy to create a learning environment that supports the accomplishment of this plan. For this purpose, teachers can incorporate resources and recreational models in their practice, in order to develop the teaching process and setting, without distracting the focus of learners towards the primary objective, learning (Duarte, 2003).

The educational process is in constant renewal and seeks to guide the current practices to educate teachers to be "transformative intellectuals who combine reflection and academic practice to educate students to be reflective and active citizens" (Giroux, 2001, p.61). Through learning and training, teachers develop and improve their skills that allow them to enhance their context, participate in an exchange of experiences, and generate critical reflective thinking (Duarte, 2003).

The incorporation of Information and Communication Technologies (ICT) provides a vast range of opportunities to prepare the students for future professional and personal challenges. Teachers and schools have adapted to the technological advances and virtual environments, which demand new methodologies to facilitate the learning processes (Gros & Silva, 2005). The use of technologies within the educational environment has not only influenced the educator and the learner; it has also reached the teaching-learning process. Educational actors engage in a "safe and critical use of the Information Society Technologies for work, leisure and communication purposes" (Revuelta, 2011, p.3). The reality is that many teachers who have spent several years practicing traditional teaching methods have underdeveloped skills in comparison to students who have more advanced knowledge regarding technology (García, 2003). Another challenge that teachers and authorities must face is to achieve a successful integration of ICT in the curriculum.

Successfully overcoming these challenges is linked to the attitude and disposition of teachers to take on their role in virtual learning environments. Moreover, the new technologies as constructivist tools create different experiences for students (Hernández, 2008, p.34). However, we should not ignore the fact that technologies primarily function as support in the educational process, and must not replace the current practices: "Knowledge, intentions and practices of teachers, are more important than before and more important than technological support" (García, 2003, p.11).

The current research takes into account the challenges mentioned above in a university which has encountered the need for an efficient use of digital resources to meet the institution's vision. The primary goal of this research is to investigate the elements that must be considered while designing a tutorial for teachers of higher education, to strengthen their digital skills and improve the learning environment. More specifically, the objectives of the current study are to identify and describe the ICT tools that teachers use in their educational practice; to create a research instrument to determine the degree of ICT knowledge on teachers; and to collect information for the

construction of a tutorial. This study is oriented to answer the following question: How does a tutorial contribute to the teachers' development of digital skills in a classroom-based learning environment?

The educational institution of this study is a private university located in Bogotá, Colombia. It offers technical, technological and professional programs through a system where the programs are divided into the classroom-based and virtual classes. The institution´s principals have recommended the implementation of both the web platform and the university's technological resources, which means a new challenge for teachers to innovate on their current practices. Therefore, it is necessary to consider the teachers' competencies and to establish a strategy for a successful learning environment.

Theoretical Framework

The learning process has become one of the central issues for educational stakeholders, because it is recognized that learning allows humans to develop new and diverse skills consistently. Therefore, innovation is an essential factor for educational change, and the support of ICT enables the transformation of paradigms to adapt to the needs of students and society.

Society's transformation arose as a result of the global markets' demands, and the growth of ICT provides diverse opportunities for the educational field. The virtualization of education has generated new paradigms that have added value linked to innovation and knowledge. According to the National Association of Universities and Higher Education Institutions (ANUIES), it is essential to understand that innovation constitutes the structural base associated with change, and must combine "research, education and training" (ANUIES, 2003, p. 12).

From an educational perspective, innovation is an important and profitable process to improve the experiences for both teachers and students, to "improve teaching practice in its real context" (Rimari, 2011, p. 3). Through innovation, educational environments become a space to transform the teaching practice, to encourage participation, reflection and achieve the development of digital skills. The use of ICT permits to adopt a competency-based approach focused on training competent individuals so that they can be able to face the challenges posed by today's society (García, 2006). As Alemán, Gómez Zermeño, Parada, and Sainz (2011) state, innovative learning processes are driven by fundamental concepts such as science and technology, pursuing skill generation.

Regarding the role of the teacher, it is considered essential for innovation in the classroom. As the United Nations Educational, Scientific and Cultural Organization (UNESCO) (2008, in ANUIES, 2003), teachers must take actions, according to the following recommendations:
- To build innovative learning environments
- To act as an administrator in ICT-supported environments
- To promote competency-based curricula
- To be continually updated in their discipline and at technological level

− To be receptive to change and identify opportunities for improvement
− To provide spaces that foster students' critical and reflective thinking

The support of technological innovations can allow modifications from traditional into virtual learning environments, where technology encourages individuals to develop skills for information research and knowledge acquisition (Miranda, 2004).

Kaplún (2005), Duarte (2003) and Salinas (2008) remark that virtual learning environments are spaces that involve different elements to generate continuous learning and exchange of information. However, virtual learning environments do not replace traditional classrooms but constitute an alternative for students to receive an education regardless of space or time barriers.

The inclusion of ICT in learning environments has led to changes for educational stakeholders. Fuentes, Ortega, and Lorenzo (2005, cited in Mortis, Valdés, Angulo, García & Cuevas, 2013) indicate that teachers must be trained to perform the integration of education in an ICT environment, through the use of digital tools in classes. This will be achieved by "emerging ICT to the current pedagogy, promoting dynamic classes at the social level, and encouraging cooperative interaction, collaborative learning and teamwork" (UNESCO, 2008, p. 7).

As Herrera (2008) says, teachers must change their roles to "integrate ICT by adjusting and rethinking their teaching methods to create new learning contexts enriched by these tools, in line with the experiences of their students, and how they interact the modern world "(Alarcón, 2009, p.1).

According to Mapuva (2009) and Gedera (2014), the inclusion of ICT in Higher Education has become an essential learning and business tool. However, e-learning by itself does not mean immediate results; the academic staff and students share respon-sibilities and commitment to adapt successfully to new models and resources. For the present study, we focus on the tutorials, which are considered Learning Objects (LOs). Wiley (2000) describes LOs technology-based resources that can be reused, delivered over the Internet, consulted simultaneously. Morales (2011, cited in Poveda, 2011, p. 157) defines tutorials as "digital educational media, designed and created in small units to be used in successive learning sessions".

LOs, including tutorials, must provide functional information to meet the educational purpose for which they were designed, with efficient and understandable content for the users, and they must be accessible through the web, anytime and anywhere (Plan Ceibal, 2009; Rabajoli, 2012). A tutorial for teachers will represent an opportunity for continuous learning to contribute to their development. Additionally, it will serve as a strategy to optimize time and costs.

Methodology

To achieve the goal of designing a tutorial and promoting the development of dig-ital skills in teachers, it is important first to understand the professors' knowledge needs to incorporate ICT into their practice. We selected a quantitative methodology and collected the information to provide the guidelines to solve the research problem (Valenzuela & Flores, 2012). According to the quantitative approach, we adopted a descriptive design. The study sample was formed of 33 teachers (22 male, 11 female)

from the two private universities, located in Bogotá, Colombia. 20 of the participants were university lectures with fixed-term contract, 8 of them worked full-time, and 5 were part-time professors. Their ages ranged from 40 to 55 years old, and they were all from different academic areas and disciplines (see Table 1).

Table 1. Study participants according to discipline

Academic Area	Teachers
Engineering	6
Communications	4
Business Sciences	3
Education	4
Hotel and Tourism	4
International Trade	4
Marketing	4
Principals of the University	4
Total sample	33

As data collection instruments, we used a survey and a semi-structured interview. The semi-structured interview was conducted to obtain the teachers' perspective on ICT with 5 questions. The survey was designed to obtain information about six different categories, with 32 items. These items, shown in Table 2 were constructed from the literature review according to the competencies and skills from the Teacher Network of Latin America and the Caribbean (RedDOLAC, 2012) and the National Institute of Educational Technologies and Teacher Training (INTEF, 2014).

Table 2. Categories and items of the questionnaire

Categories	Items
Instrumental skills	Basic knowledge in computer systems and networks Use of digital tools for the creation of assessment instruments or evaluations Use of mobile devices (tablets, smartphones, etc.) Use of text processors, spreadsheets or data bases in pedagogical practices Use of electronic resources such as scanner, digital camera, screenshot, videos, etc. Use of audiovisual resources for educational purposes (video, television, smart board, projector, etc.)
ICT skills	Use of web research tools to consult information Use of bookmarks and RSS feed Collects web information to use in the classroom Understands copyrights and academic plagiarism Use of YouTube for academic purposes Identifies safe online resources for the students Shares web pages and information sources shared in class
Teamwork skills	Use of e-mail to promote communication Proposes teamwork resources such as Wikis and Google Docs Recognizes the difference between teamwork tools and social networks Promotes the use of discussion forums to promote students' participation Proposes teamwork meetings through communication software (Skype, TeamViewer, etc.) Use of web tools to share files and documents with students
Didactic skills	Integrates technological resources with curricular topics Applies didactic strategies based on ICT (research-based learning, self-learning, etc.) Use of digital tools to evaluate students' learning Adapts to new training and learning models and roles Use of technologies for orientation and guidance (tutorials)
Research skills	Permanent updating of knowledge regarding pedagogical and research use of ICT Research elaboration and dissemination through technological resources Development of research among networks and peers
Creation of educational material	Creation of personalized webpages (blog, wikis, digital portfolios) Design of multimedia resources Research of images, audio and videos of high quality and appropriate copyrights Design of Virtual Learning Objects Use of webinar for virtual instruction

It was constructed on a Likert scale, which consists of a set of statements or judgments, where the reaction of the subjects is valued (Author, 2012). The scale was established as follows: 1 (strongly disagree), 2 (disagree), 3 (Neither agree nor disagree), 4(Agree) to 5 (strongly agree). To determine the reliability of the instrument, a pilot test was carried out to validate its stability and to verify that the results are obtained under the same conditions. According to Author (2012) the validity is the degree to which an instrument measures what it is supposed to measure. Two teachers participated in this pilot test, and their answers were analyzed with Excel. Their input help to fine tune several items in order to make them clearer to the participants, and it was validated with them that their meaning, as well as the instructions were clear.

As a quantitative research, the information processing was done through the statistical software Statistical Package for the Social Sciences (SPSS), where the input of information was analyzed with descriptive statistics. The instruments' application process was conducted during the months of May and July of 2014.

Results

The data analysis was oriented to generate information regarding the categories established in the research instrument. The results are summarized in the following topics: 1) Development of Digital Skills, 2) Tutorials as a support tool for developing skills.

Development of Digital Skills

According to the research instrument, the first category regarding the use of digital tools, mobile devices and management of technological systems applied to education, 67% of the participants considered themselves as skilled in this area, while 3% expressed to be unfamiliar with those resources. According to Buzón-García and Barragán (2004), the instrumental competencies comprise the first level of skills because they are directly related to abilities' application.

Regarding the web skills or the ability to adequately incorporate internet resources to education, this section sought to determine to what extent teachers use research engines and other internet resources. We found that 37% strongly agreed with possessing these skills, 29% agreed, 12% were hesitant about this competency, 14% disagreed and 8% were in total disagreement. According to Escudero (1992, cited in Fernández, 2001), the essential element in developing ICT in the teaching process is the teacher's role, who encourages the development of proper abilities.

The next category of the use of tools for collaborative work aimed to establish if the teachers considered the application of instruments to promote teamwork and collaboration with students and among all the educational stakeholders. The results show that 56% agreed with possessing and using these competencies in complementary activities. However, the state of indecision of 19% of the participants creates an aura of concern because teachers must understand the potential offered by collaborative tools.

The following results correspond to didactic competencies. The instrument shows that 75% of teachers strongly agree on possessing the abilities to relate strategies with

the use of ICT resources. The indicate a positive participants' perspective about the benefits that technologies may offer to an educational context.

About research skills, meaning that teachers can search for adequate information to solve problems, we found that 82% considered themselves to possess this ability. According to Miranda (2004), technology in educational processes fosters the research aptitudes and propitiates that individuals not only collect information but they also contribute to their knowledge.

Teachers have faced new situations, where they must be responsive and adapt ICT to their pedagogical labor, however limitations are always present. The most frequent difficulties they have encountered are described in Table 3.

Table 3. Limitations factors

Description	Percentage
Infrastructure	24.24%
Training processes (including tutorials)	45.45%
Knowledge about ICT resources	30.30%

Regarding infrastructure, the teachers expressed that the bandwidth of the school is deficient, and web navigation is sometimes restricted due to the lack of equipment update. They also mentioned that, from the schools'. About 30.30% of the participants considered that their current knowledge on ICT resources does not allow them to incorporate these tools into their practice correctly. As stated by Jonassen, Kart, and Yueh (cited in Montes & Ochoa, 2006), learning from technology means learning with technology; it is not enough to identify the difficulties and limitations, it is necessary to confront and overcome them.

4.2 Tutorials as a support tool for developing skills

Once the difficulties had been identified, the interview sought to collect information about relevant aspects that intervene in the development of digital skills, such as motivation and learning preferences. First, motivation was considered as an important element to improve an ability or aptitude. According to Bueno (1993, cited in Heredia & Sánchez, 2012), motivation is related to the process of tasks regulation, and this aspect also relates to learning styles. We found that professors are inclined to self-directed learning (Table 4), because they consider it more convenient due to their other responsibilities and the cost that may arise from formal studies or training. As Crispin (2011, p.49) points out, learning is a "self-regulating process where the student learns and becomes aware of its own cognitive and socio-affective processes".

Table 4. Teachers' learning styles

Description	Percentage
Self-directed learning	66,67%
Learning in school	12,12%
Learning in school and self-learning	18,18%
Does not relate to a particular learning method	3,03%

From the educational aspect, ICT has brought significant achievements to distance education, among which stand fast in the flow of information, connectivity and access to large volumes of information (Moreira, 2009).

The teaching task requires the planning of structures, setting the objectives, guiding the path of knowledge and defining goals for educational institutions' curricula. One of the tools that support these activities are tutorials, which offer information on a particular topic, focused on how the individual works and meet concerns about a set of applications

According to the results, 96.97% of the teachers considered that a tutorial could be beneficial; they also stated that commitment and dedication are essential for learning. Furthermore, participants agreed that a tutorial would be of great support for autonomous training. It is critical to engage in activities that contribute to the development skills, which demonstrate a successful study process, including the following:

1. To take initiative to start new projects
2. To administrate time for activities
3. To establish goals by learning objectives
4. To continually evaluate and self-assess progress and achievements
5. To establish an organizational structure to accomplish learning
6. To monitor compliance with objectives

The results show that teachers were committed to continuing their growth in digital abilities, which has led to taking part of autonomous learning processes. However, they mentioned not having a tool to facilitate and support this activity. Therefore, it is shown that a tutorial could be a support that teachers need to strengthen further their digital skills and overcome the limitations of knowledge of educational tools.

As the results of the current study show, it is imperative that teachers develop the instrumental skills required to carry out the teaching process with ICT, to "seek, receive, process, produce and communicate information and transform it into knowledge; and a critical and thoughtful approach to assess both the information and the available technological tools" (Salinas, 2008, p.7).

Finally, there is evidence that an appropriate combination between the learning process with the technology enables new forms of communication both in virtual and classroom modality. Open environments that generate information exchange among students and teachers, by detaching face-to-face contexts to virtual environments with unlimited access and eliminating the physical borders (Moreira, 2009).

Discussion and Conclusions

After the development and application of the instruments, the results were focused to consider issues so that teachers are fully qualified to implement ICT to support their teaching work (Rodríguez, 2009).

It is relevant to create optimal spaces for the teachers' digital skills to develop and apply in their educational and professional practice. Moreover, it is important to have complete support of institutions and not limit educational progress, which are substantial for improvement in the teaching-learning process.

Both teaching and digital competencies should be developed together to create a learning environment, providing the necessary conditions for transmitting knowledge, but taking into account that the environment can be changed to the training process demands and is thus where the teacher should be aware that changes must be made to innovate learning and encourage motivation in the classroom (Iglesias, 2008).

The teacher must achieve synergy between technology and pedagogical processes, so that their teaching is not only technology supported or vice versa, it is important to remember that ICTs are supporting actors but the key factor is the professor and its pedagogical approach, in order to maintain the motivation of students and facilitate an environment for learning flow. A suitable combination of the educational process with the technological component allows new forms of communication (Moreira, 2009). Kaplún (2005) and Duarte (2003) indicate that teachers must generate virtual learning environments, in which different elements serve to produce a continuous learning.

Investigative skills are an essential part of the appropriation of ICTs. According to Jonassen, Kart and Yueh (cited in Montes & Ochoa, 2006), the use digital tools as supportive resources of traditional teaching and learning processes, allow the collective construction of knowledge.

The proposal for the development and construction of a tutorial, which will allow the teacher to be updated on the ICT scheme, is shown in Table 5.

Table 5. Topics proposal for the development and construction of a tutorial

• Information and Communication Technologies
– How they are created
– How to apply them
– Variety of digital tools for education
– Progress of ICT in education
• Digital tools and learning
– Collaborative work
– Asynchronous communication
– Virtual Learning Environment
– Blended Learning Environment
– Effective Finding Information
• Step-by-Step Videos
– Moodle Platform
– Blackboard Platform
– Epic Platform
– Creation of a Virtual Learning Object
• Tips, concerns, and questions forum

With the completion of the implementation of the instruments it was identified that the essential elements that must be taken into account in the design of a tutorial lay mainly in innovation and educational technology and the quality with which a way that leads to successful learning can be established, and this is reflected in the development of the teaching-learning process.

Through innovation, technology and quality, the tutorial can provide the necessary information on knowledge and obtain information about a specific digital tool, thus becoming a significant process that supports the improvement related to the diversity of situations, about technological aspects, that are experienced daily by teachers in the educational environment. If the acquired knowledge can be attained, it can also be applied independently in the learning process, in order to progress and create new learning scenarios.

This study originated from the research question: How does a tutorial contributes to the development of teacher's digital competencies? As Tobón (2004) notes, the development of digital skills not only involves the teacher's practice but also in their personal affairs and everyday life. For this reason, training provides the opportunity to build a better learning environment.

The implementation of the research instruments to a group of teachers provided information to solve the research question. With the results, it is concluded that participants have strong needs to strengthen and/or develop their skills, in an autonomous way and that it is required a tool to facilitate the process of continuous improvement in the integration of ICT and the teaching process.

From this point of view, a tutorial would be the appropriate tool to promote, encourage and perform autonomous learning, all of this aligned to the individual commitment of each teacher. As Fuentes, Ortega & Lorenzo manifest (2005 cited in Mortis et al., 2013), teachers must be trained to perform the integration between the educational environment and ICT, using digital tools that will provide them with the knowledge to empower education supported by ICT.

As Martín (2005) noted, teaching practice has been revolutionized by having to adjust learning environments to places of social interaction with changes in how to relate and communicate. Because the available information is always changing, individuals are consistently in continuous training.

Through the completion of the instruments' implementation, we identified the elements to consider in the design of a tutorial must relate to innovation, educational technology, and quality. A tutorial can provide the necessary information on the knowledge that supports the improvement associated with the diversity of situations experienced by teachers in the educational environmental with technological aspects.

This mode of learning encourages the generation of new paradigms associated with developing renewed approaches that offer an optimized educational process with positive results for the teaching-learning process. Thus, innovation is seen as a key enabler to support the improvement of the teaching practice in its real context (Rimari, 2011).

The importance of the role of ICT, as a fundamental tool for promoting globalization and consolidation of the knowledge, society to the professional growth of teachers is confirmed. With the use of the tutorial, the teacher becomes a promoter of physical and technological tools to increase the students' interest.

The main findings that occurred after the instrument´s implementation include:
- Strengthening the digital skills of teachers has become a specific objective for each of the participants.

– Learning autonomously is the most used way of learning by teachers because it allows them to learn about a particular topic without restrictions of space, time and cost.
– A tutorial is an accepted tool that would support the work of learning autonomously, on the current and new digital tools that support education.
– The institutions are unaware of the need to develop digital skills of their teachers, so do not have a plan to help teachers in this objective.
– There is no design or implementation of evaluation action plans on the development of the digital competence of teachers.
– There are many limitations at the level of infrastructure, applications and support educational institutions.
– The generation of these skills required of the teachers, is accomplished with dedication and above all establishment of a teacher's training program, which allows the recognition of digital literacy for teaching staff.

To conclude, it is evident that the vast majority of the professors have begun to use digital tools when performing their educational practice, as noted by Alarcon (2009). From the development of this study, continuity could be given to the development of future research, based on the information that this study has provided, regarding the needs of teachers to strengthen their digital skills, in order to continue to seek improvement opportunities that foster professional development of teachers; and thus benefit the teaching-learning process. Additional research could focus on seeking advancement and improvement of technological support for independent learning in digital tools for education, in order to provide the teachers with spaces that allow strengthening the knowledge of ICT and the benefits they provide to the educational work. Also, new research that focuses on establishing the degree of motivation and rejection of teachers on self-learning and digital tools and the use of these in the teaching work is proposed.

Merging ICT with teaching and learning processes, creates a learning environment for each discipline, with the benefits of ICT and where the teacher attains a new role as learning environment manager, thus it is crucial to seek out a plan for the development of digital skills in teachers to promote proper balance between ICT and education, so that their pedagogical practice encourages innovation and quality in the classroom.

Özet
Giriş

Freire'nin (2004) belirttiğine göre, eğitim küresel piyasada önemli bir role sahiptir ve içinde yaşadığımız koşulları şekillendirmektedir. Bu bağlamda, öğretmenler kaynakları ve eğlenceye yönelik (*recreational*) modelleri öğretmen süreci ve ortamını geliştirmek için kullanabilirler. Bunu asıl hedef olan öğrenmeden saptırmadan, öğrenenlerin dikkatini dağıtmadan yaparlar (Duarte, 2003).

Eğitim süreci sürekli bir yenilenme içindedir ve öğretmenleri "öğrencileri aktif ve yansıtıcı düşünen vatandaşlar olarak eğitmek amacıyla yansıtmayı ve akademik uygu-

lamaları birleştiren dönüştürücü entelektüeller" olma yolunda yetiştiren mevcut uygulamaları yönlendirmeyi hedefler (Giroux, 2001, s. 61).

Bilgi ve İletişim Teknolojilerinin (BİT) dâhil edilmesi, öğrencilerin gelecekteki mesleki ve bireysel zorluklara hazırlanmaları için oldukça fazla fırsat sağlamaktadır. Öğretmenler ve okullar, öğrenme süreçlerini destekleyen yeni yöntemler gerektiren teknolojik gelişmeler ve sanal ortamlara uyum sağlamaktadır (Gros & Silva, 2005). Eğitim ortamında teknolojinin kullanılması sadece eğitimci ve öğreneni etkilemekle kalmayıp, aynı zamanda öğretme-öğrenme sürecini de etkilemektedir. Eğitim aktörleri "Bilgi Toplumu Teknolojilerini iş, boş zaman ve iletişim amacıyla güvenli ve hassas bir şekilde" kullanmaktadırlar (Revuelta, 2011, s. 3). Gerçek şu ki, geleneksel öğretim yöntemlerini kullanarak yıllarını harcamış öğretmenler teknolojiye ilişkin daha gelişmiş bilgiye sahip öğrencilere kıyasla daha az beceri geliştirmiştir (García, 2003). Yapılandırmacı araçlar gibi yeni teknoloji ürünleri öğrenciler için farklı deneyimler yaratmaktadır (Hernández, 2008). Buna rağmen teknolojinin eğitim sürecindeki ana rolünün desteklemek olduğu unutulmamalı ve mevcut temel uygulamalar yerine kullanılmamalıdır (García, 2003).

Bu araştırmanın temel amacı, yükseköğretim kademesinde çalışan öğretim üyelerinin dijital ortam becerilerini güçlendirmek ve öğrenme ortamlarını geliştirmek için oluşturulacak bir eğitim programı tasarlanırken göz önünde bulundurulması gereken unsurları incelemektir. Araştırmaya dahil edilen kurum Kolombiya Bogotá'da bulunan özel bir üniversitedir. Bu üniversitede teknik, teknolojik ve mesleki programlar, sınıf temelli ve sanal sınıflara bölünmüş programların yer aldığı bir sistem aracılığıyla sunulmaktadır.

Değişimin yapısal temelini yeniliğin oluşturduğunu ve "araştırma, eğitim ve yetiştirmeyi" birleştirmesi gerektiğini anlamak önem taşımaktadır (ANUIES, 2003, s. 12). Eğitimsel bir bakış açısıyla yenilik, "öğretim uygulamalarını gerçek ortamında geliştirmek" amacıyla, hem öğretmenlerin hem de öğrencilerin yaşantılarını geliştirmek için önemli ve kazançlı bir süreçtir (Rimari, 2011, s. 3).

BİT kullanımı, yeterli bireyler yetiştirmeye odaklanan yeterlik temelli bir yaklaşımın benimsenmesine olanak sağlar. Böylece bireyler günümüz toplumundan kaynaklanan zorluklar ile yüzleşebilir hale gelir (García, 2006). Alemán, Gómez Zermeño, Parada ve Sainz'in (2011) belirttiği gibi, yenilikçi öğrenme süreçleri bilim ve teknoloji, beceri geliştirme gibi temel kavramlardan yola çıkarak hareket etmektedir.

Teknolojik yeniliklerin desteğiyle gelenekselden sanal öğrenme ortamlarına doğru küçük değişiklikler yapılabilir. Sanal öğrenme ortamlarında teknoloji, bireyleri bilgi araştırması ve bilginin edinilmesi için becerilerini geliştirmeye cesaretlendirir (Miranda, 2004).

Kaplún (2005), Duarte (2003) ve Salinas (2008), sanal öğrenme ortamlarınının sürekli öğrenme ve bilgi alışverişinin gerçekleştiği, farklı unsurları içeren alanlar olduğununun altını çizmektedir. Ancak sanal öğrenme ortamları geleneksel sınıfların yerini almamakta fakat, zaman ve mekan engeli olmadan öğrencilerin alternatif bir eğitim almasını sağlamaktadır.

Fuentes, Ortega & Lorenzo (2005, akt. Mortis, Valdés, Angulo, García & Cuevas, 2013) sınıflarda dijital araçları kullanarak, eğitimi BİT ile bütünleştirmeyi gerçekleş-

tirmek için öğretmenlerin yetiştirilmesi gerektiğini belirtmektedir. Bu bütünleştirme, "güncel pedagojiye BİT ekleyerek, sosyal düzeyde dinamik sınıfları ön plana çıkararak ve işbirliğine dayalı etkileşim, işbirliğine dayalı öğrenme ve takım çalışmasını destekleyerek" başarılacaktır (UNESCO, 2008, s. 7).

Herrera'nın (2008) belirttiğine göre, öğretmen "öğrencilerinin yaşantıları ve modern dünya ile nasıl etkileşime girdikleri doğrultusunda, belirtilen araçlarla zenginleştirilmiş yeni öğrenme ortamları yaratmak için öğretim yöntemlerini yeniden düşünerek ve düzenleyerek BİT'i dâhil etmektedir." Öğretmen rolünü bu şekilde değiştirmektedir (Alarcón, 2009, s. 1).

Mapuva (2009) ve Gedera'ya göre (2014) teknolojinin Yükseköğretimde kullanılması vazgeçilmez bir öğrenme ve iş aracı olmuştur.

Bu araştırmada Öğrenme Nesneleri (ÖN) olarak düşünülen eğitim programlarına odaklanılmıştır. Wiley (2000) ÖN'leri tekrar kullanılabilen, internet üzerinde tekrar dağıtılabilen ve hemen tüketilebilen teknoloji temelli kaynaklar olarak tanımlamaktadır. Morales (2011, akt. Poveda, 2011, s. 157) eğitim programlarını "başarılı öğrenme oturumlarında kullanılmak üzere küçük ünitelerle tasarlanmış ve yaratılmış dijital eğitim ortamları" olarak tanımlamaktadır. Eğitim programlarıyla birlikte öğrenme nesneleri, kullanıcıları için yeterli ve anlaşılır içeriklere sahip olmalıdır. Tasarlandığı eğitimsel amaçlara uygun işlevsel bilgiler sunmalıdır ve her zaman, her yerden internet üzerinden ulaşılabilir olmalıdır (Plan Ceibal, 2009; Rabajoli, 2012).

Yöntem

Araştırma problemini çözmek için gereken kılavuzları oluşturmak amacıyla verilerin toplanmasında nicel araştırma yöntemi seçilmiştir (Valenzuela & Flores, 2012).

Veri toplama araçları, Latin Amerika ve Karayipler Öğretmen Ağı (RedDOLAC, 2012) ile Eğitim Teknolojileri ve Öğretmen Yetiştirme Ulusal Enstitüsünün (INTEF, 2014) belirlediği yeterlik ve becerilere dayanarak alan yazına dayalı bir şekilde hazırlanmıştır. Veri toplama araçlarının tasarlanması ve geçerlik aşamaların Author'un (2012) önerileri dikkate alınmıştır.

Bulgular

Ölçeklerin uygulanmasının ardından elde edilen bulgular şu şekildedir:

- Öğretmenlerin dijital ortam becerilerini güçlendirmek her bir katılımcının özgül bir hedefi haline gelmiştir (Buzón-García & Barragán, 2004; Fernández, 2001; Moreira, 2009).
- Öğretmenlerin en çok kullandığı öğretme yöntemi kendi kendine öğrenmedir çünkü zaman, mekan ve maliyetin getirdiği kısıtlamalar olmadan belirli bir konuyu öğrenmelerine olanak sağlamaktadır (Crispin, 2011; Heredia & Sánchez, 2012).
- Bir eğitim programı, eğitimi destekleyen mevcut ve yeni araçlarla kendi kendine öğrenmeyi destekleyen kabul görmüş bir araçtır.
- Kurumlar öğretmenlerinin dijital ortam becerilerini geliştirme ihtiyaçlarının farkında değildir. Bu nedenle bu hedefe yönelik bir planları yoktur.

- Öğretmenlerin dijital yeterliklerini geliştirmeye yönelik değerlendirme eylem planı hazırlamak için bir plan ya da uygulama yoktur.
- Altyapı, uygulama ve eğitim kurumlarının desteklenmesi düzeyinde birçok sınırlılık bulunmaktadır (Montes & Ochoa, 2006).
- Öğretmenler için gereken bu beceriler adanmışlık ve her şeyden önce öğretim kadrosunun dijital okuryazarlığı konusunda farkındalık sağlayan bir öğretmen yetiştirme programı ile mümkündür (Iglesias, 2008; Rodríguez, 2009).

Tartışma ve Sonuç

Dijital ortam becerilerinin geliştirilmesi için öğretmenlerin yaptıkları uygulamalarla birlikte kişisel ilişkileri ve gündelik hayatları da etkilidir (Tobón, 2004). Bu nedenle, eğitim daha iyi bir öğrenme ortamı oluşturmak için iyi bir fırsat yaratmaktadır. Martin'in (2005) belirttiği gibi, öğretim öğrenme ortamlarının sosyal etkileşim alanları şeklinde düzenlenmesiyle devrim geçirmiştir çünkü ulaşılabilen bilgi sürekli değişmektedir ve bireyler sürekli bir eğitim içindedir.

Bulgular doğrultusunda, katılımcıların becerilerini kendi kendilerine geliştirmeleri ve/veya güçlendirmelerine fazlaca ihtiyaç vardır ve bunun için öğretim süreci ve BİT'in bütünleştirilmesinde sürekli gelişimi sağlayacak süreci geliştirecek bir araç gerekmektedir.

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