AN INVESTIGATION OF PROSPECTIVE TEACHERS' 21st CENTURY SKILLS EFFECT ABOUT DIGITAL STORYTELLING EVENTS[*]

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Abstract

The aim of the study was to investigate prospective teachers' views about digital storytelling event on the effect of 21st century skills. This study was designed with descriptive models. The sample was selected by using appropriate sampling of non-random sampling method. 58 prospective teachers (31 female and 27 male) who study at Fırat University Faculty of Sport Science in first semester participated in this study. Prospective teachers from instructional technology and material design course were wanted create "digital stories". Following the steps necessary for prospective teachers to create a digital story process has been completed. Data was collected in the first half of 2015- 2016 academic year through 21st century skills survey (21CSS) (Karakoyun, 2014). Cronbach's alpha coefficient survey consists of 41 items about 21CSS is originally calculated as 0.96 but it was calculated as 0.98 in this study. There are three Sub-Dimensions in 21CSS which are learning and innovation skills (B1), information, media and technology skills (B2), life and professional skills (B3). Data was analyzed by descriptive statistics, t-test and ANOVA.

According to the findings, mean based on the teachers' candidates of physical education towards the learning and innovation skills 3.33; mean based on the information, the media and technology skills 3,86; mean based on the life and professional skills 3,94; mean based on the total score of 21CSS (T) was calculated as the 3.86. According to variable of gender, the prospective teachers' scores about B1, B2, B3 and T has been found no effect. However, it is observed that female prospective teachers' mean scores were higher than mean score of male teachers about all of Sub-Dimensions. According to level of internet usage, the prospective teachers' scores about B1, B2, B3 and T has been found no effect. According to level of computer usage, the prospective teachers' scores about B1, B2, B3 and T has been found no effect.

Keywords: 21st century skills, digital storytelling events, prospective teachers

Öz

Bu çalışmanın amacı dijital öyküleme etkinliklerinin öğretmen adaylarının 21. yüzyıl becerilerine etkisini incelemektir. Çalışma betimsel model ile desenlenmiştir. Örneklem, seçkisiz olmayan örnekleme yöntemlerinden uygun örnekleme yöntemi kullanılarak seçilmiştir. Bu çalışmaya Fırat Üniversitesi Spor Bilimleri Fakültesi 3. sınıfta Öğretim Teknolojileri ve Materyal Tasarımı dersini alan 31'i kadın (%53,4), 27'si erkek (%46,6) olmak üzere 58 öğretmen adayı katılmıştır. Öğretmen adaylarından ders kapsamında materyal olarak "dijital öykü" oluşturmaları istenmiştir. Bu bağlamda dijital öykü oluşturmaları için gerekli adımlar takip edilerek süreç tamamlanmıştır. Veriler 2015- 2016 akademik yılının ilk yarısında "21. yüzyıl becerileri anketi (21BYA)" (Karakoyun, 2014) kullanılarak toplanmıştır. Orijinal anketin güvenirliğinin hesaplamasında kullanılan 41 madde için

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[*] Bu çalışma 24-26 Mayıs 2017 tarihinde Malatya'da düzenlenen 11. Uluslararası Bilgisayar ve Öğretim Teknolojileri Sempozyumu'nda sözlü bildiri olarak sunulmuştur.

Cronbach's Alpha değeri .96 olarak bulunurken; bu çalışma da ise .98 olarak hesaplanmıştır. Öğretmen adaylarının 21BYA, Öğrenme ve yenilik becerileri (B1), Bilgi, medya ve teknolojileri becerileri (B2), Yaşam ve meslek becerileri (B3) olmak üzere üç alt boyuttan oluşmaktadır. Dijital öykülemeye etkinliklerine katılan öğrencilerin anket maddelerine verdikleri cevaplar betimsel değerler, t-testi ve ANOVA ile analiz edilmiştir.

Araştırma bulgularına göre, beden eğitimi öğretmen adaylarının öğrenme ve yenilik becerileri boyutuna ilişkin aritmetik ortalamaları 3,77; bilgi, medya ve teknolojileri becerileri boyutuna ilişkin aritmetik ortalamaları ise 3,86; yaşam ve meslek becerileri boyutuna ilişkin aritmetik ortalamaları 3,94; anketin tümüne (T) ilişkin aritmetik ortalamaları ise 3,86 olarak hesaplanmıştır. Cinsiyet değişkenine göre öğretmen adaylarının B1, B2, B3 ve T puanları üzerinde istatistiksel bir etkiye sahip olmadığı tespit edilmiştir. Ancak tüm boyutlarda kadın öğretmen adaylarının puan ortalamalarının erkek öğretmen adaylarının puan ortalamalarından yüksek olduğu görülmektedir. İnternet kullanma düzeylerine göre öğrencilerin beceri puan ortalamaları arasında B1, B2, B3 ve T boyutlarında anlamlı bir fark bulunamamıştır. Bilgisayar kullanma düzeylerine göre öğrencilerin beceri puan ortalamaları arasında B1, B2, B3 ve T boyutlarında anlamlı bir fark bulunamamıştır.

Anahtar Kelimeler: 21. yüzyıl becerileri, dijital öyküleme etkinlikleri, öğretmen adayları

1. Introduction

Technology, whose effects are seen in all areas of education, especially affects teaching-learning environments and students. Because, preparing the students for real life as individuals who can use technology actively is among the necessities of teaching-learning environments (Karakoyun, 2014: 1). Earle (2002: 7) states that technology integration can come true on the condition that it is designed in a way that focuses on fostering learning and as a modern process that meets teaching needs. Technology integration in teaching-learning environments enables the students to gain several skills. These skills are usually named as "21st century skills" in our time (Ananiadou and Claro, 2009: 5).

There is not an agreement on what these 21st century skills are. In this study, 21st century skills are handled as 13 skills in three major topics (Partnership For 21st Century Skills, 2003). These are: 1. Learning and Innovation skills (Creative Thinking, Critical Thinking, Problem Solving, Communication, Collaboration) 2. Information, media and technology skills (Information literacy, Information and Communication literacy, Media literacy) 3. Life and Career Skills (Flexibility and Compliance, Self-Organizing, Social Skills, Productivity and Accountability, Leadership).

Storytelling is one of the effective teaching methods. Technology-supported definition of storytelling is digital storytelling. Digital storytelling is generally a storytelling process that occurs as a result of gathering multimedia in digital environments (Figa, 2004: 34-36; Menezes, 2012: 299). The digital storytelling which has been occurred recently is an approach which makes the user active by giving the control of the interactive digital environment, enables the user to create the information in his/her mind significantly in his/her own way while proceeding through the story, provides the opportunity to discover his/her own

knowledge, to reinforce this knowledge with exercises and practices, apply the obtained information in the real life situations, that is, reflect his/her stories in the digital environments (Menezes, 2012: 299; Ayvaz Tunç & Karadağ, 2013: 311).

Digital stories maintain a strong basis for development of the students' skills that are called 21st century skills of the students (Brown, Bryan & Brown, 2005: 3; Malita & Martin, 2010: 3060- 3061; Partnership for 21st Century Skills, 2003; Robin, 2008: 220). In this sense, the students can gain the necessary skills with digital storytelling to train students who meet the expectations of the society in 21st century (Jakes & Brennan, 2005: 1). North Central Regional Educational Laboratory (NCREL) states that digital storytelling contributes to the students' 21st century skills with visual literacy, information literacy, technological literacy, creative thinking and creativeness, higher-order thinking skills, interactive communication, group work and collaboration, effective using of the real world tools (Lemke, Coughlin, Thadani & Martin, 2007: 12). Kajder (2004: 64-65) states that while creating digital stories, not only the technological literacy of the digital storytellers is developed but also they act like a designer, listener, interpreter, reader, writer, artist, communicator and philosopher. Expert of Digital storytelling, Lambert (2010) determined seven items for creating digital stories. These are: point of view, dramatic question, emotional content, the gift of your voice, the power of the soundtrack, economy and pacing. These items for creating digital stories can be described as follows:

- Point of view: Students creat their own perspectives about stories. At this stage, the students try to contact to their own story (Lambert, 2010).

- Dramatic question: While creating digital stories, there should be a question which is thought-provoking and which is expected to be answered at the very end (Robin, 2008: 223).

- Emotional Content: In digital stories, there should be a content that attracts readers' attention, and that the readers feel emotionally close to (Bull & Kajder, 2004: 48).

- The Gift of Your Voice: Digital storytelling enables its creators to recite their own scenario. At this stage, storytellers recite their scenarios (Bull & Kajder, 2004: 49).

- The Power of the Soundtrack: Proper music or sound make stories more interesting, emphaticical and emotional (Lambert, 2010).

- Economy: Economy is usually the item that the storytellers have the most difficulty with. While creating stories, a storyteller is expected to decide on what factors he will use in order to clarify the story's perspective. Several stories can be created with fewer pictures or videos (Bull & Kajder, 2004: 48).

- Pacing: This is related to the rhythm or the speed of the story.

In the light of all these, it is thought that the students' creating their stories as a material would increase their 21st century skills and would gain the future-teachers a different perspective.

1.1. Purpose

The purpose of this study is to investigate the effects of digital storytelling on the 21st century skills of the prospective teachers. Within this context, answers to the questions below are sought:

Related to the effect of digital storytelling activities on 21st century skills

1. Which level is the views of the prospective teachers?

2. Is there any significant difference between views of the prospective teachers, having been received by gender?

3. Is there any significant difference between views of the prospective teachers, having been received by their computer-using levels?

4. Is there any significant difference between views of the prospective teachers, having been received by their internet-using levels?

2. Method

The study is designed in the descriptive survey method, one of the quantitative research methods.

2.1. Population and Sample

The sample is determined using appropriate sampling method among the random sampling methods. 58 prospective teachers, 31 females (%53,4) and 27 males (%46,6), who studies Learning Technologies and Material Design course in the Faculty of Sport Sciences of Fırat University participated in this study.

2.2. Data Collection Tools

The prospective teachers are asked to create a "digital story" within the course. In this sense, necessary steps are followed in order to create digital story and the process is completed. The data has been collected with "21st century skills survey (21CSS)" (Karakoyun, 2014) in the fall term of 2015-2016 academic years. The Cronbach's Alpha value is .96 for the 41 item used in the calculation of the reliability of the original survey, and it has been calculated as .98 in this study. The survey which has been prepared to determine the 21st century skills of the prospective teachers consists of three sub-dimensions as Learning and innovation skills (B1), Information, media and technology skills (B2), and Life and occupation skills (B3).

2.3. Analysis of the Data

Means for the views of the prospective teachers related to effect of digital storytelling on the 21st century skills are calculated with the collected data. Determined whether the views of the teachers related to effect of digital storytelling on the 21st century skills significant difference in terms of gender via by t-test. One-way analysis of variance (ANOVA) is used to determine whether the views of the teachers related to effect of digital storytelling on the 21st century skills significant difference in terms of computer-use levels and internet-use levels.

3. Findings

In this section, the views of the prospective teachers related to effect of digital storytelling on the 21st century skills are compared separately in terms of gender, computer-use levels and internet-use levels

Table 1 indicates the means and standard deviations related to effect of digital storytelling activities on the 21st century levels of the prospective teachers.

Table 1. Scores Related to the 21st Century Skills Sub-Dimensions

Sub-Dimensions	N	$\overline{X}$	SS
B1	58	3.77	.73517
B2	58	3.86	.78245
B3	58	3.94	.92530
T	58	3.86	.79054

The mean of the physical education prospective teachers related to learning and innovation skills dimension is 3,77; the mean related to information, media and technology skills is 3,86; and the mean related to life and occupation skills is 3.94; the mean related to the total score of the survey (T) is 3.86. Considering the five-Likert type survey used in the study, it is seen that the effect of the digital storytelling activities is at high levels on the 21st century skills of the prospective teachers.

Determined whether the views of the teachers related to effect of digital storytelling on the 21st century skills significant difference in terms of gender via by t-test, and the results are indicated in Table 2.

Table 2. The Comparison of the 21st Century Skills Sub-Dimensions According to Gender Variable

Sub Dimensions	Gender	N	$\overline{X}$	SS	p	t
B1	Female	31	3.89	.73098	.183	1,350
	Male	27	3.63	.72872		
B2	Female	31	3.99	.80984	.180	1,357
	Male	27	3.71	.73670		
B3	Female	31	4.14	.88873	.079	1,787
	Male	27	3.71	.92972		
T	Female	31	4.01	.78472	.124	1,563
	Male	27	3.69	.77606		

It is seen that the effect of digital storytelling activities on the 21st century skills of the prospective teachers does not significant difference in B1, B2, B3 and T dimensions in terms of gender. Although there is no significant difference, it is seen that the means of the female prospective teachers are higher than those of male prospective teachers in all these dimensions.

One-way analysis of variance (ANOVA) is used to compare whether the effect of digital storytelling activities on the 21st century skills of the prospective teachers significant difference in terms of computer-use levels, and the results are indicated in Table 3.

Table 3. The Comparison of the 21st Century Skills Sub-Dimensions According To Computer-Use Levels

Sub-Dimensions		Sum of square	df	Mean square	F	p
B1	Between groups	3.976	4	.994	1.963	.114
	Within groups	26.831	53	.506		
	Total	30.807	57			
B2	Between groups	4.714	4	1.179	2.070	.098
	Within groups	30.182	53	.569		
	Total	34.897	57			
B3	Between groups	4.289	4	1.072	1.277	.291
	Within groups	44.514	53	.840		
	Total	48.802	57			
T	Between groups	4.238	4	1.060	1.789	.145
	Within groups	31.384	53	.592		
	Total	35.622	57			

It is seen that the effect of digital storytelling activities on the 21st century skills of the prospective teachers do not significant difference in terms of computer-use levels in B1 (F= 1,963; p= ,114), B2 (F= 2,070; p= ,098), B3 (F= 1,277; p= ,291) and T (F= 1,789; p= ,269) dimensions. It is seen that the highest mean is ($\overline{X}$=4.12) in B1 dimension in which the prospective teachers have stated "good" for computer-use, and the lowest is ($\overline{X}$=3.41) stated "none" for computer-use. It is seen that the highest mean is ($\overline{X}$=4.20) in B2 dimension in which the prospective teachers have stated "good" for computer-use, and the lowest is ($\overline{X}$

=3.34) stated "none" for computer-use. It is seen that the highest mean is ($\overline{X}$=4.30) in B3 dimension in which the prospective teachers have stated "very good" for computer-use, and the lowest is ($\overline{X}$=3.50) stated "none" for computer-use. It is seen that the highest mean is ($\overline{X}$=4.19) in T dimension in which the prospective teachers have stated "good" for computer-use, and the lowest is ($\overline{X}$=3.42) stated "none" for computer-use.

One-way analysis of variance (ANOVA) is used to compare whether the effect of digital storytelling activities on the 21st century skills of the prospective teachers differentiates in terms of internet-use levels, and the results are indicated in Table 4.

Table 4. The Comparison of 21st the 21st Century Skills Sub-Dimensions According To Internet-Use Levels

Sub-Dimensions		Sum of square	df	Mean square	F	p
B1	Between groups	1.987	4	.497	.913	.463
	Within groups	28.820	53	.544		
	Total	30.807	57			
B2	Between groups	2.866	4	.716	1.186	.328
	Within groups	32.031	53	.604		
	Total	34.897	57			
B3	Between groups	2.278	4	.569	.649	.630
	Within groups	46.524	53	.878		
	Total	48.802	57			
T	Between groups	2.294	4	.574	.912	.464
	Within groups	33.328	53	.629		
	Total	35.622	57			

It is seen that the effect of digital storytelling activities on the 21st century skills of the prospective teachers does not differentiate significantly in terms of computer-use levels in B1 (F= ,913; p= ,463), B2 (F= 1,186; p= ,328), B3 (F= ,649; p= ,630) and T (F= ,912; p= ,464) dimensions. It is seen that the highest mean is ($\overline{X}$=4.00) in B1 dimension in which the prospective teachers have stated "very good" for internet-use, and the lowest is ($\overline{X}$=3.29) stated "none" for internet-use. It is seen that the highest mean is ($\overline{X}$=4.27) in B2 dimension in which the prospective teachers have stated "very good" for internet-use, and the lowest is ($\overline{X}$=3.32) stated "none" for internet-use. It is seen that the highest mean is ($\overline{X}$=4.37) in B3 dimension in which the prospective teachers have stated "very good" for internet-use, and the lowest is ($\overline{X}$=3.47) stated "none" for internet-use. It is seen that the highest mean is ($\overline{X}$=4.22) in T dimension in which the prospective teachers have stated "very good" for internet-use, and the lowest is ($\overline{X}$=3.36) stated "none" for internet-use.

4. Results and Discussion

According to results obtained from research, effects of digital storytelling on the 21st century skills of the prospective teachers seem to be a high level. Dearing (1997) expressed key skills in higher education as manage their own learning, collaboration, communication, problem solving, information technology and mathematics skills. If digital storytelling is thought to contribute to the individual in terms of collaboration and use of information technology, it can be a normal result that the effects of digital lecture activities on prospective teachers' 21st century skills are high. Günüç, Odabaşı and Kuzu (2013) have emphasized that todays' students express individuals that are intertwined with technology in their daily life, use technology effectively and have knowledge and skills in technology. Karakoyun (2014) and Yang and Wu (2012) are in line with the findings of this study work in all dimensions.

Although there is not significant difference in gender, it is seen that effects of digital storytelling events to female prospective teachers' skills in the 21th Century have higher means than male prospective teachers' skills in the 21th Century. Some studies have also been seen not significant difference according to gender impact of digital story (Sever, 2014; Tatum, 2009), Sever (2015) is concluded that male students have higher motivation than female students. According to these results, this can be said that difference in these results on gender to create a digital story has originated from the difference of technology skills of men and women in the sampling group.

Effectiveness of digital storytelling to prospective teachers' skills in the 21th Century does not significant difference according to the level of impact on the ability to use computer. It has been seen that average of the prospective teachers who indicate they use computer "good" level is highest and average of the prospective teachers who indicate they use computer "never" level seems to be lowest at B1, B2 and T dimensions and again it has been seen that average of the prospective teachers who indicate they use computer "good" level is highest and average of the prospective teachers who indicate they use computer "never" level seems to be lowest at B3 dimension. Sever (2014) didn't find significant difference according to skills of using computer for the digital story and the average of individuals who have high skills to use computer is higher. Hence, using computer skills that require the use of digital media to create digital stories can be considered sub-dimensions of the skills to use technology. In this context, this can be said that being effective to create digital stories in the 21st century skills increases with increasing the levels of using computer.

Effectiveness of digital storytelling to prospective teachers' skills in the 21th Century does not appear to differ in a significant difference according to the level of impact on the ability to use

internet. It has been seen that average of the prospective teachers who indicate they use computer "very good" level is highest and average of the prospective teachers who indicate they use computer "never" level seems to be lowest at B1, B2 and T dimensions. In this study, students have carried out a site on the internet to create scenes of digital stories. In this context, this can be normal that the students who have high using internet level have higher skills.

5. Suggestions for Further Research

Several other research studies could be conducted with different participants in different settings or in different grades as university.

Several other research studies could be conducted with different independent variable about 21th Century Skills.

Several other research studies could be conducted with different research methods.

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