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Digital Drama versus Digital Story: Do They Really Affect Pre-Service EFL Teachers' Attitudes towards Instructional Technologies and Material Developing Skills

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Abstract

Instructional technologies and material designing are two important factors in English as a foreign language (EFL) learning. There are several applications which support the attitudes and skills of pre-service teachers in their undergraduate education. Digital drama and digital story are among them. While there is a satisfactory number of studies on digital story, there are a very few of them on digital drama. Actually, this paper has two main purposes. The first one is to raise an awareness of digital drama. The second one is to reveal the impact of these two digital applications on pre-service EFL teachers' attitudes towards instructional technologies and material designing skills. The results indicated that, while the digital story application had a significant effect, the digital drama application had a liminal significant effect on their attitudes towards instructional technologies. On the other hand, both applications had an effect on the material designing skills of the target participants. Finally, the results suggested that using digital materials in class enhances pre-service teachers' motivation to use instructional technologies and develop their material designing skills.

Key words: *digital drama; digital story; instructional technologies.*

Introduction

The integration of digital technologies in educational settings has not been a simple process. While technologies themselves are often credited with the potential for

increasing student engagement in learning, the integration of technologies with teaching practices continues to be problematic in certain settings (Edwards & Nuttall, 2015, p. 375). Most research suggests that simply providing teachers with professional development opportunities related to technology integration does not turn into the higher levels of integration in the classroom. Professional development must be refined to focus on improving teacher attitudes towards technology by providing specific and practical ways in which technology will enhance student learning (Pittman & Gaines, 2015, p. 541). Thus, the vital process is not only improving the attitudes of teachers towards instructional technologies, but also the necessity of improving the attitudes of pre-service teachers. Improving teachers' attitudes is associated with how well their attitudes can be developed during their pre-service period. Regardless of the subject field, attitudes and knowledge towards instructional technologies help teachers create rich environments for designing instruction that will facilitate students' learning. One of these subject fields is the foreign language learning and English stands out as a prominent language taught all around the world.

Developments in technology eventually find their way into educational institutions, albeit with some delay; however, language teachers and learners clearly have an increasing number of possible tools for teaching and learning (Levy & Stockwell, 2006, p. 4). On the other hand, the growth of the internet and the proliferation of computers in school and home settings have led to a significant expansion in the use of technology in the foreign and second language instruction. Increasingly, both pre-service and in-service language teachers find themselves at a disadvantage if they are not adequately proficient in computer-assisted language learning (CALL) (Hubbard & Levy, 2006). Computer technology has promised to revolutionize both teaching and learning in higher education (Lowerison et al., 2004). As technologies are increasingly developed and adapted for foreign language (FL) pedagogy, technological innovations can increase learners' interest and motivation; enable students an increased access to the target language (TL) input, interaction opportunities, and feedback; and provide instructors with an efficient means for organizing the course content (Golonka et al., 2012). Therefore, it may be proposed that instructional technologies are nowadays widely used in FL classes. Computer-assisted applications, in particular, help instructors provide rich learning environments for students. For this reason, CALL is a key factor in English as a foreign language (EFL) teaching. CALL is a technique of using technology in the field of language learning. A common approach to CALL in the current language teacher education programs is to concentrate on the hardware and software issues rather than on pedagogy (Compton, 2009), while researchers mainly focus on the positive effects of CALL on the student learning and language competency in EFL (Almekhlafi, 2006; Chapelle, 2016; Ghani, 2014; Stickler & Shi, 2016).

The teachers' effective use of CALL applications in language teaching is related to their learning of CALL supported applications, use of digital materials and attitudes towards teaching technologies prior to their teaching career. In order to use instructional technologies and CALL applications effectively in the future, it is

important for pre-service teachers to create instructional designs with digital materials and be able to use these materials in their future classes. CALL contains a large number of digital tools, such as digital drama, digital story, comic maker programs, blogs, videos, presentation tools, and virtual and augmented reality applications. This paper mainly focuses on digital drama and digital story.

Literature Review

In recent years, the educational application of drama and theatre has expanded beyond the classroom and the age range (children or the youth), which roughly corresponds with the period from kindergarten to high school (Landy, 1982). The past century witnessed a long and established tradition of presenting schoolchildren with opportunities to engage in drama playing activities (Taylor, 2003). Education has not escaped the influence of the familiar distinction we like to make between what we think we can know and what we might happen to feel about it (Hornbrook, 2002).

Music and visual art, however, have been part of the education system at all levels since at least the beginning of the twentieth century all over the world (McCullough, 2002). On the other hand, drama is often regarded as a somewhat new subject in school curriculum, despite the fact that its use in education goes at least as far back as the sixteenth century (Kitson & Spiby, 2002). However, there is a range of competing and, at times, contradictory discourses at play about the use of digital media, and the use of information and communication technology, especially in school settings (Davis, 2012). Online and mobile communication have developed into a range of what are increasingly being labelled 'rich media' platforms – a term that describes the levels of interactivity and engagement beyond the traditional forms (Carroll & Cameron, 2009). The impact of merging the use of digital technologies within a drama-based approach to language learning has received scant attention in the literature (Dunn et al., 2012).

Since there are scarcely any studies on the principles and features of digital drama and its educational application steps, an attempt to develop a definition for this concept was made by the researcher. The main purpose of the concept, by its very definition, is to combine the digital world with drama activities. Actually, the digital drama is not an activity different from the linear drama. It follows the same stages of activity in class; planning, playing, evaluation and replaying (Smith & Harring, 1993). Moreover, it should not be also accepted as an interactive drama. According to Lombardi (2016), since Laurel's 1986 pioneering work, the interactive drama has been defined as a virtual world inhabited by fictional and computer-controlled characters, within which the player experiences a story from the first person perspective – that is, through the simulacrum's 'eyes', and the player mirrors his or her avatars. The digital drama concept itself involves supporting with digital agents the processes in which the emotional characteristics of students are used for reaching educational goals, and in which students have interactions with other students. In the digital drama, the goal is not to give technology a priority; instead, it is to support drama activities to be presented in richer environments in which enacting is practiced. In other words, it refers to receiving technological support, especially to enrich drama environments.

Digital agents can provide support with sounds, background images or videos, etc. For example, regarding the topic of "illegal animal hunting" in the English classes, let us imagine that the teacher would like to make a drama activity in the classroom. He/ She asks the students to perform illegal hunters and animals in the forest, and to vocalize animals' ideas of a free life in the forest. While the students perform their roles, the computer provides a forest image on the classroom wall to give them the feeling that they are in the forest, while also providing sounds from the forest, such as blowing wind, rifle shooting, running river, etc. Thus, with this visual and audio support, the story setting represents a more realistic environment in the class. Hence, the students taking part in the drama activity can feel as though they were in a real forest.

As seen in Table 1 below, the steps of digital drama application in classes are indicated with the linear drama application. The linear drama in education is based on four stages (Smith & Harring, 1993).

Table 1

Digital drama stages

Stages	Linear drama in education	Digital drama in education
1. Planning	The first stage begins with selecting a theme or concept for students to explore through drama.	Students search for digital agents on the internet, such as photos, images, videos, sounds, etc. related to the theme or concept they will explore. If they cannot find any related images or sounds, they may record them on their own.
2. Playing	The selected drama material is brought to life as students develop the theme through their drama actions.	While students perform their roles, another student from the group adjusts the images and sounds or videos adapted for the theme by the computer. E.g. when a student enacts an alligator, a river image will be on the wall and the sound of a running river will be heard. If a student enacts a monkey, the background image will turn to a tree crown and the sound of a blowing wind.
3. Evaluation	During this reflective evaluation, students discuss their personal reactions, the content and the theme, and how they can extend the experience or skills to other situations often including the real-world circumstances.	In this stage, the performing students and the audience students discuss the productivity of digital agents. They decide whether the audio-visual digital agents may be changed or should be improved for the drama activity theme.
4. Replaying	A linear session may employ a replay stage following the evaluation stage. This can be a second enactment of the first dramatization or a new drama with other materials.	Students may re-enact their drama activities with the new or improved digital agents.

Digital storytelling has emerged over the last few years as a powerful teaching and learning tool that engages both teachers and their students (Robin, 2008). The

digital story has largely come to refer to a form of short narrative, usually a personal narrative told in the first person, presented as a short movie for display on a television or computer monitor, or projected onto a screen (Davis, 2005). At its core, digital storytelling allows computer users to become creative storytellers via the traditional processes of selecting a topic, conducting research, writing a script, and developing an interesting story (Robin, 2008). With the addition of audio and visual materials to traditional storytelling, it becomes much easier for students to focus on stories and enter into a created fictional world (Erdoğan, 2016).

Simply by including digital storytelling in the learning process, learning becomes not only personal, enjoyable, attractive and creative, but it helps students get motivated to use their writing, reading, listening and speaking skills to express opinions and to construct digital narratives for an audience (Razmi et al., 2014). Besides, it is a widespread digital application in the EFL teaching and other subject fields (Christiansen & Koelzer, 2016; Hwang et al., 2016; Konokman & Yelken, 2016; Verdugo, 2007; Yelken et al., 2015).

In this research, the steps indicated below are used to create digital stories. These were inspired by other studies on digital storytelling (Derek & Wakefield, 2011; Valkanova & Watts, 2007).

Step 1: The teacher introduces the program (Microsoft Photo Story Program, particularly chosen because it was a free program).
Step 2: Students narrate the scenario.
Step 3: The images appropriate for the scenario (photos, videos, etc.) are identified.
Step 4: Story cards are created by using the program.
Step 5: Adequate texts (subtitles, writings, etc.) are added.
Step 6: The sound is added.
Step 7: The digital story is presented in the class.

Research Gap and Aim

Nowadays, it is insufficient for teachers to have only content knowledge and pedagogical knowledge. In the context of Technological-Pedagogical and Content Knowledge (TPACK), teachers are expected to interrelate their knowledge of content and pedagogy to their knowledge of technology, and also to be competent in technology-based applications which students may also use in the learning process. The technological-pedagogical knowledge is "knowledge of the existence, components, and capabilities of various technologies as they are used in teaching and learning settings, and conversely, knowing how teaching might change as a result of using particular technologies" (Mishra & Koehler, 2006, p. 1028). Robin (2008, p. 227) also indicates that, "combining the convergence of digital storytelling in education as earlier described with the theoretical framework of TPCK, researchers will arrive at a deeper understanding of the different and more powerful roles that digital media can play in both teaching and learning." The use of digital tools in the CALL-supported EFL

classes is activated in the process in which TPACK is applied effectively during the learning/teaching process. In the literature, there are a very few studies on the digital drama, while there is a satisfactory number of studies conducted on the digital story. However, it can be observed that there is a lack of studies about the use of digital drama in the classroom, its application by pre-service EFL teachers, and problems encountered during the application. In addition, there is no study taking the digital drama or digital story as an independent variable, nor is there research examining the attitudes towards instructional technologies and "practical instructional technologies and material designing" skills. In constructivist classroom environments, rich learning environments, the effective use of technology, as well as learning facilitation with materials are important. In this light, the aim of the current study is to examine the effects of digital drama application, which is a new area of research in the world, on the instructional technologies and pre-service EFL teachers' skills of using instructional technologies in practice and designing materials.

The main hypothesis of this research is: the digital drama and digital story have an effect on the attitudes towards instructional technologies and material designing skills of pre-service EFL teachers. The sub-hypotheses are indicated as follows.

1. Digital story application will contribute to a significant difference in the control group's attitudes towards instructional technologies and material designing skills.
2. Digital drama application will contribute to a significant difference in the experimental group's attitudes towards instructional technologies and material designing skills.
3. Digital drama application will contribute to a significant difference in the experimental group's attitudes towards instructional technologies and material designing skills when the access scores are compared.

Methods

This research was conducted as an experimental research. "Of all the research methodologies, experimental research is unique in two very important respects: It is the only type of research that directly attempts to influence a particular variable, and when properly applied, it is the best type for testing hypotheses about cause-and-effect relationships" (Fraenkel & Wallen, 2009, p. 268). Experimental design refers to how participants are allocated to different conditions in an experiment (McLeod, 2007). In other words, the key feature common to all experiments is still to deliberately vary something so as to discover what happens to something else later – to discover the effects of presumed causes (William et al., 2002). This method was applied here in order to discover the effectiveness of two digital applications: digital drama and digital story.

Study Group

Randomized pre-test post-test control group design was used in this research. Randomized design provides the researcher with a means of checking whether the two groups are really similar. This is particularly desirable if the number in each

group is relatively small (less than 30) (Fraenkel & Wallen, 2009). Each group in this study included 23 pre-service EFL teachers, so 64 students participated in total. The population of EFL pre-service teachers is 253, and the sample size stands for 39.53% of the population.

Table 2
Group design

	R	Pre-Test	Treatment	Post-Test
Control group	Random assignment of 23 pre-service teachers	-Scale 1 -Scale 2	Digital story	-Scale 1 -Scale 2
Experimental group	Random assignment of 23 pre-service teachers	-Scale 1 -Scale 2	Digital drama	-Scale 1 -Scale 2

Data Collection Tools

Two scales were used as quantitative data collection tools in the research. In order to measure the pre-service teachers' attitudes towards teaching technologies, the *Instructional Technologies Attitude Scale (ITAS),* developed by Metin et al. (2011), was used. The researchers calculated the reliability coefficient of this 37-item attitude scale (Cronbach-alpha) as .94. In order to measure the pre-service teachers' practical instructional technologies and material designing skills, the *Practical Instructional Technologies and Material Designing Skills Scale (PIT-MDS)*, developed by Varank and Ergün (2009), was used. The researchers calculated the reliability coefficient of this 39-item attitude scale (Cronbach-alpha) as .95.

Reliability and Validity

Regarding the reliability of the current data collection tools, the Cronbach's Alpha reliability coefficient, found by the researchers who developed the scale, has been taken into account. However, the Cronbach's Alpha internal consistency coefficients of the existing scales were calculated one more time particular to this research.

Table 3
Cronbach's Alpha coefficients

	Cronbach's Alpha coefficient	Current Cronbach's Alpha coefficient
ITAS	.94	.87
PIT-MDS	.95	.79

α >.70

Table 3 shows that, if the control and the experimental groups are considered as a whole, the Cronbach's Alpha internal-consistency coefficients are over 0.70 and the data collection tools are reliable. Considering the complete reliability, the following points were taken into consideration: a single researcher conducted the digital educational activity in both groups, the researcher has been teaching for many years and has a sufficient background in EFL teaching, which proves that he is qualified to teach English. The validity of the data collection tools was ensured

during the scale development process by the researchers who developed the tools. However, the appropriateness of these data collection tools for the current purpose was determined after conducting the interviews with 6 field experts. While the four of them were the curriculum and instructional technologies experts, the other two were the measurement and evaluation department experts.

Data Analysis

Prior to analysis, the data were subjected to the normality test. All of the analyses were made with the SPSS.21 program. During the data entry process, the negative items were reversely coded. For the data normality test, the data for both dependent variables were divided into pre-test/post-test and control/experimental groups. The normality test was made for 8 different data sets. As it is stated in the literature, there are different types of methods to check the data normality. These are Shapiro Wilk (if the sample size is <30), standardized skewness and kurtosis values, then descriptive statistics and the coefficient of variability values as supportive data. In this research, skewness and kurtosis values were taken into account to test normality, while descriptive statistics and the coefficient of variability values were presented to support the normality test values. The normality test values are given below.

Table 4

Normality test of distribution for ITAS data

		Experimental group				Control group		
		Statistics	Standard Error	Values		Statistics	Standard Error	Values
Pre-ITAS	Skewness	-.065	.481	*-.135*	Skewness	.527	.481	*-1.095*
	Kurtosis	-1.202	.935	*-1.285*	Kurtosis	-.70	.935	*-.748*
Post-ITAS	Skewness	-.663	.481	*-1.378*	Skewness	-1.348	.481	*-2.802*
	Kurtosis	.061	.935	*.0652*	Kurtosis	1.134	.935	*1.212*

Table 5

Normality test of distribution for PIT-MDS data

		Experimental group				Control group		
		Statistics	Standard Error	Values		Statistics	Standard Error	Values
Pre-PIT-MDS	Skewness	-.836	.481	-1.738	Skewness	.723	.481	1.503
	Kurtosis	.405	.935	.433	Kurtosis	-.531	.935	-.567
Post-PIT-MDS	Skewness	-.828	.481	-1.721	Skewness	-.987	.481	-2.051
	Kurtosis	1.341	.935	1.434	Kurtosis	.969	.935	1.036

Both Table 4 and Table 5 reveal that the skewness value for 8 data sets is between ± 3 values and the kurtosis values are between ± 10 values. Considering the literature, Kline (2011) has stated that normality tests can be applied if the normal distribution has a skewness value of ± 3 and a kurtosis value of ± 10 (Zhang et al., 2014).

Table 6

Descriptive statistics and coefficient of variability values for ITAS data

	Experimental group					Control group				
	Mean	Median	Mode	SD	V	Mean	Median	Mode	SD	V
Pre-ITAS	142.52	146.00	124	17.54	12.30	137.60	138.00	139.00	17.51	12.72
Post-ITAS	151.86	153.00	146	17.37	11.43	149.30	155.00	155.00	16.13	10.80

Table 7

Descriptive statistics and coefficient of variability values for PIT-MDS data

	Experimental group					Control group				
	Mean	Median	Mode	SD	V	Mean	Median	Mode	SD	V
Pre-PIT-MDS	106.73	109.00	109.00	17.47	16.36	99.60	96.00	96.00	15.38	15.44
Post-PIT-MDS	125.26	126.00	126.00	14.30	11.41	124.34	126.00	121.00	13.65	10.97

The coefficients of variability values presented in Table 6 and in Table 7 were taken into consideration for the homogeneity of the group data and the V value was determined <20 for each data set. If the V value is <20, it means that the group is homogeneous (Keklik et al., 2010, p. 640). Besides, other factors which support the normal distribution are the close values of mean, median and mode. The proximity of these values is indicated in Table 6 and in Table 7; this proximity enhances the distribution normality.

In this case, since the data were normally distributed, it was decided to conduct the parametric tests. Moreover, according to Winter (2013), should the researcher conduct research with an extremely small sample size ($N \leq 5$), the t-test can be applied, as long as the effect size is expected to be large. In other words, Winter states that a parametric test can be applied to a sample even when it is <5, but the important thing is the expectation of the effect size being large. The paired sample t-test analysis revealed that the effect size values were large in this research. The independent sample t-test was used to compare the pre-test scores to determine whether the control group and the experimental group were mutually equal in terms of the dependent variables prior to the study. The homogeneity of variances was investigated for this test application.

Table 8

Independent samples t-test and variance homogeneity of groups

		Group statistics			Independent samples test				
					Levene's test for equality of variances		t-test for equality of means		
		N	*X*	SD	F	Sig.	t	df	Sig.(2-tailed)
Pre ITAS	Control group	23	137.60	17.51	.424	.518	.950	44	.347
	Experimental group	23	142.57	17.54					
Pre PIT-MDS	Control group	23	99.60	3.20	.360	.552	1.469	44	.149
	Experimental group	23	106.73	3.64					

*p>.05

Table 8 reveals the homogeneity of variance, and it was examined with the use of Levene's test, and the value of F =. 518; p>.05 was obtained for ITAS, while the value of F =.552; p>.05 was obtained for PIT-MDS. The Ho hypothesis was, thus, accepted. In other words, the hypothesis about the variances, being unevenly distributed, was rejected, while the homogeneity of the variances was confirmed. The independent sample t-test analysis shows that there is no significant difference between the pre-test averages of the control and experimental group on both ITAS (t =.950, p>.05) and PIT-MDS (t = 1.469, p> .05) scales.

For the first and second research sub-problems, the paired samples t-test was used. In the third sub-problem for both scales, a two-way ANOVA with repeated measures was conducted in mixed measures instead of the independent samples t-test. The most important reason for preferring this analysis is the idea that the independent samples t-test would reduce the reliability coefficient due to the Type I error.

Research Procedure

The experimental procedure lasted 7 weeks. The researcher conducted the research in a second year class of *Teaching technology and material design* course at the Department of Foreign Language Education at the Faculty of Education. Since the researcher conducted an experimental research, he divided the students into digital drama and digital story groups by random assignment - by drawing lots - rather than by class. The groups were taught 4 hours a week by the researcher. Table 9 shows the 7-week flow chart.

Table 9

Seven-Week flow chart

weeks	Digital story application flow chart for 7 weeks	Digital drama application flow chart for 7 weeks
1	The preliminary tests of the study were administered to the students. The theoretical knowledge of instructional technologies in education was explained. The designing principles of hands-on and digital materials were presented.	
2	The information about narrative technique and digital narration was shared. The information was given about creating a digital story application and using the Microsoft Photo Story program. The students determined the subject of the digital story by reviewing the English Instructional Programme, developed by the Ministry of National Education.	The students were informed about drama in education and digital drama. The information was given about the creation of digital drama application. The student groups consisted of 3-4 students. The students determined the subject of the application by reviewing the English Instructional Programme developed by the Ministry of National Education.
3	The scenario of the story was created.	What the general outline of the simulation effects would be regarding the subject of the drama application (for visual and auditory support) was decided.

weeks	Digital story application flow chart for 7 weeks	Digital drama application flow chart for 7 weeks
4	In order to create story cards about the selected topic, the students explored the internet, scanned their own photo files or drew by themselves in the classroom on their personal computers. They uploaded these cards to the program and prepared the stories in a digital format. They added the relevant sound to the story cards.	They selected audiovisual instruments appropriate for the learning outcomes of the drama activity. They modified the selected digital support agents according to the theme of the activity. They decided on the casting.
5-6	The prepared digital narratives were presented in the class; the comments and recommendations made by the class were discussed.	The prepared digital drama activities were presented in the class; the comments and recommendations made by the class were discussed.
7	The students expressed their views on the prepared digital materials, their attitudes towards instructional technologies and their ability to prepare digital materials. The post-tests of the research were distributed among the students.	

Results

The paired-samples t-test analysis was used to determine whether there was a significant statistical difference between the averages of the pre-test and post-tests of the control group students on the attitudes towards instructional technologies and practical instructional technologies and material designing skills.

Table 10

Paired-Samples t-test analysis output

Control group	Measurement	N	X^2	SD	t	P
ITAS	Pre- ITAS	23	137.60	17.51	-2.85	.009
	Post- ITAS	23	149.30	16.13		
PIT-MDS	Pre- PIT-MDS	23	99.60	15.38	-5.44	.000
	Post- PIT-MDS	23	124.34	13.65		

*p<.05

According to the paired-samples t-test analysis, a significant difference (t=-2.852, p<.05) between the pre-test ($\overline{X}_{pre}$=137.60) and the post-test scores ($\overline{X}_{post}$=149.3043) can be observed for ITAS. A significant difference (t=-5.440, p<.05) was also found between the pre-test ($\overline{X}_{pre}$=99.6087) and the post-test scores ($\overline{X}_{post}$=124.34) for PIT-MDS. The analysis shows that the effect size of the digital story application on the control group's attitudes towards the instructional technology is at a moderate level (d=-0.59), whereas the calculated effect size on the practical instructional technologies and material designing skills is at a high level (d=-1.13). In other words, the digital story application has a significant effect on the control group's attitudes towards instructional technologies and the practical instructional technologies and material designing skills.

The paired-samples t-test analysis was used to determine whether there was a significant statistical difference between the averages of the pre-tests and post-tests

of the experimental group on the attitudes towards instructional technologies and practical instructional technologies and material designing skills.

Table 11

Paired-Samples t- test analysis output

Experimental group	Measurement	N	$\overline{X}$	SD	t	P
ITAS	Pre- ITAS	23	142.52	17.54		
	Post- ITAS	23	151.86	17.37	-2.04	0.053
PIT-MDS	Pre- PIT-MDS	23	106.73	17.47	-4.87	0.000
	Post- PIT-MDS	23	125.26	14.30		

*p<.05

According to the paired-samples t-test analysis, a liminal significant difference (t=-2.042, p=.053>.05) between the mean scores of the pre-test ($\overline{X}_{pre}$=142.5217) and the post-test ($\overline{X}_{post}$= 151.8696) was found for ITAS. Kul (2014) has stated that, when the p-value is between 0.05<p<0.10, it has the significance tendency, which means it has a liminal significance. For PIT-MDS, a significant difference (t=-4.872, p<.05) between the pre-test ($\overline{X}_{pre}$=106.7391) and the post-test ($\overline{X}_{post}$=125.2609) averages was reached. The analysis reveals that the effect size of the digital drama application (d=-0.42) on the attitudes of the students in the experimental group towards instructional technology is close to a medium level, while the calculated effect size (d=-1.01) on the practical instructional technologies and material designing skills is at a high level. In other words, digital drama application had a liminal significant influence on the attitudes of the students in the experimental group towards instructional technology, and a significant influence on their practical instructional technologies and material designing skills.

A two-way ANOVA with repeated measures analysis was conducted to determine whether there is a significant difference between the averages of the ITAS and PIT-MDS access scores of the students in the experimental and control groups. In order to carry out this analysis, three conditions must be fulfilled (Can, 2014):

1. The data should have the normal distribution feature. The result showing that the data has the normal distribution for all measurements is given above.
2. The variances of the groups must be homogeneous for each measurement. The homogeneity of the variances for the pre-test and the post-test variables was analyzed by Levene's Test.

Table 12

Output of variance homogeneity of groups

	Measurement	Levene's test of equality of error variances[a]			
		F	df1	df2	P
ITAS	Pre-Test	.424	1	44	.518
	Post-Test	.325	1	44	.571
PIT-MDS	Pre-Test	.360	1	44	.552
	Post-Test	.084	1	44	.773

*p>.05

According to Levene's test analysis, the value of F=.518; p>.05 was obtained for the ITAS pre-test, while the value of F=.552; p>.05 was obtained for the PIT-MDS pre-test; the value of F=.571; p>.05 was obtained for the ITAS post-test, while the value of F=.773; p>.05 was obtained for the PIT-MDS post-test. Ho hypothesis was accordingly accepted. In other words, there is no difference between the variances, and the equality of variances was ensured.

3. Whether there is a significant difference between the dual combinations of the measurement groups was checked by Box's Test of Equality of Covariance Matrices.

Table 13

Box's test of equality of covariance matrices

ITAS - Box's test of equality of covariance matrices[a]		PIT-MDS Box's test of equality of covariance matrices[a]	
Box's M	.33	Box's M	2.90
F	.10	F	.92
df1	3	df1	3
df2	348480.00	df2	348480.00
Sig.	.95	Sig.	.429

*p>.05

For ITAS the value of Sig=.956; p>.05, and for PIT-MDS the value of Sig=.429; p>.05 was reached, and Ho hypothesis was accepted. In other words, no significant difference was found between the co-variances. Since all the assumptions of the two-way ANOVA with repeated measures analysis were met, the analysis was made and the following findings were obtained.

Table 14

Descriptive statistics output for ITAS

		Pre-			Post-	
Groups	N	$\overline{X}$	SD	N	$\overline{X}$	SD
Control	23	137.60	17.51	23	149.30	16.13
Experimental	23	142.52	17.54	23	151.86	17.37

Table 15

Tests of within-subjects contrasts

Source	Type III Sum of squares	df	Mean square	F	P	R2
measurement	2546.26	1	2546.26	11.73	.001	.21
measurement * GROUP	31.69	1	31.69	.146	.704	.00
Error(measurement)	9548.04	44	217.00			

*p<.05

The two-way ANOVA with repeated measures analysis indicated that the measure*group common effect revealed that the access score increase of the group using the digital drama was not significant compared to the group using the digital

story (F=.146, p>.05). In other words, the use of digital drama may not have a significant effect on the attitudes of pre-service teachers towards teaching technologies when compared with the use of digital story.

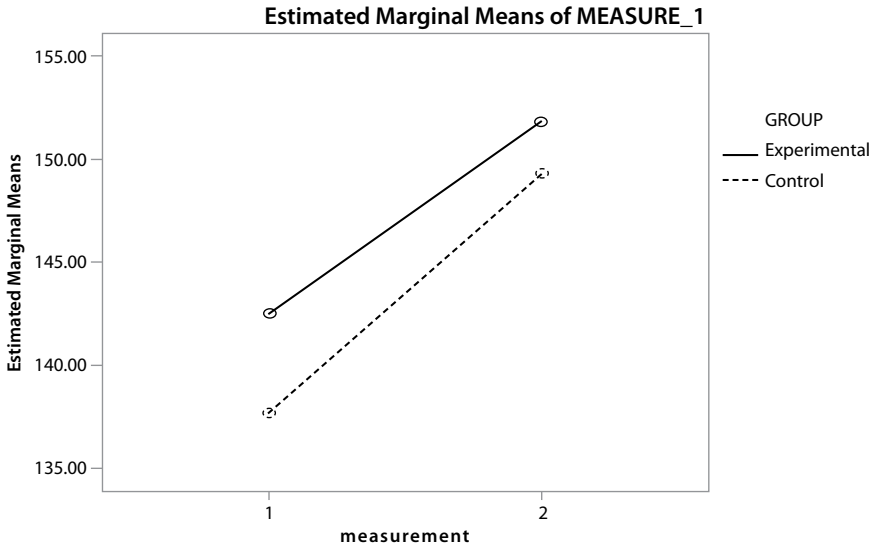

Figure 1. Estimated Marginal Means of Measure

Table 16

Descriptive statistics output for PIT-MDS

	Pre-Test			Post-Test		
Groups	N	$\overline{X}$	SD	N	$\overline{X}$	SD
Control	23	99.60	15.38	23	124.34	13.65
Experimental	23	106.73	17.47	23	125.26	14.30

Table 17

Tests of within-subjects contrasts

Source	Type III Sum of squares	df	Mean square	F	P	R2
measurement	10761.14	1	10761.14	53,26	.000	.54
measurement * GROUP	222.27	1	222.27	1.10	.300	.02
Error (measurement)	8889.08	44	202.02			

*p<.05

The two-way ANOVA with repeated measures analysis indicated that the measure*group common effect revealed that the access score increase of the group using the digital drama was not significant compared to the group using the digital story (F=1.100; p>.05). In other words, it can be concluded that the use of digital drama does not have a significant effect on the pre-service teachers' practical instructional technologies and material design skills when compared with the use of digital story.

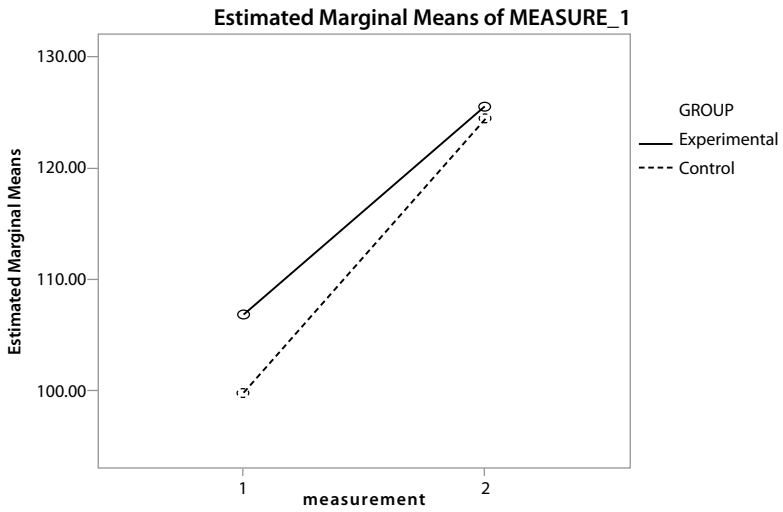

Figure 2. Estimated Marginal Means of Measure

Discussion and Conclusions

The study points to the conclusion that the digital story applications of pre-service English teachers in the control group created a significant difference in their attitudes towards instructional technologies. By its very nature, the digital story application is a computer-assisted application. For instance, creating story cards with a computer, drawing in digital media, studying with the programs supported by different software systems, using the internet are all activities which support attitudes towards instructional technologies. It is especially expected that language teachers use technology effectively. The findings of Sadik (2008) in his research support the discussion of the researcher. He indicated that digital storytelling provides a unique opportunity for students to acquire new media literacy and IT skills including capturing and editing digital photos, recognizing different image formats, recording and using audio clips, searching the Web for text and images, and using Photo Story to edit, produce and save their stories for playback on their computers or VCD/DVD players. Yelken et al. (2015) have concluded that prospective teachers' experience in designing a digital story contributes to self-confidence when it comes to their technological-pedagogical and content knowledge. On the other hand, Yu Chih (2000) focuses on the internet that simply offers too much potentially useful and authentic spoken English for any EFL teacher to ignore it. The present and other studies suggest that, in the language learning and teaching process, the digital story is an effective tool in the context of CALL and TPACK, supporting the idea that, in language education, it can help students, especially today's children who are digital natives, to acquire language skills more easily.

Based on the presented results, it may be concluded that the digital drama application has a liminal significant difference on the attitudes of pre-service teachers in the

experimental group towards instructional technologies. For this reason, the researcher considers that the most important factors in terms of developing an attitude towards instructional technologies in drama activities are the difficulty they have in overlapping the drama method in education with technology in the process of application and the number of digital steps they have, which is lower than in the digital story group students. On the other hand, the researcher made interviews with the students from the experimental group while conducting the research. He wrote down their opinions in the diary. According to them, the researcher has reached the conclusion that the pre-service teachers did not fully internalize the combining process with digital agents when using the drama method, they believe that a drama is entirely to be made in the classroom free from technology, and they may resist this process. For this reason, the researcher suggests that the digital story is more effective than the digital drama in terms of the attitudes towards instructional technology. However, since the digital drama application is a new application, it can be assumed that these results were achieved due to the fact that technology was not used in classroom drama activities till recently.

In terms of practical instructional technologies and material designing skills, the research showed no significant difference between the pre-tests and post-tests in both groups. Since the activity in both groups was recorded and turned into an instructional material, it positively contributed to the material designing skills. Especially in EFL, the importance of material designing is a clear fact. In addition, it can be stated that the following points positively contributed to the practical instructional technologies and designing material skills in the pre-service teachers: preparing materials in the digital environment, taking into account the principles of designing materials, and using instructional technologies to develop them.

When the access scores of the two groups were compared, it was concluded that the pre-service teachers' attitudes towards instructional technologies and material designing skills did not cause a significant difference in the digital drama activities of the experimental group students compared to the digital story activities. From these findings, it can be considered that the pre-service teachers overlap the digital story application with the instructional technology more easily compared to the digital drama, because the preliminary stages of the digital story are suitable for the computer-based preparation, and the use of technology enriches the learning environment.

As a result, the pre-service teachers were not really eager to combine drama activities with the digital world because of their technology-neutral drama habits till today. Generally speaking, pre-service teachers perform drama activities without using technology in classes. Especially in the acquisition of speaking and listening skills in EFL, drama is a tool which needs to be used as a supporting technique, and should be enriched with digital agents, so as to make the teaching process more effective for teachers, and the learning process more understandable for students. However, it is an inevitable process when pre-service teachers begin their teaching career to plan

activities that will lead their digital native students to using technology even in drama activities. And, the necessity of overlapping the drama method with technology is an emerging factor. Besides, enabling the integration of instructional technologies with drama is significant, but it should be applied without disturbing the nature of drama and without losing its soul.

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Digitalna drama nasuprot digitalnoj priči: jesu li uopće važne za stajališta budućih učitelja engleskog jezika o vještinama potrebnim za primjenu nastavnih tehnologija i izradu materijala

Sažetak

Primjena nastavnih tehnologija i izrada materijala dva su važna čimbenika u učenju engleskog kao stranog jezika. Postoji nekoliko aplikacija koje pridonose razvoju stajališta i vještina dodiplomskih studenata, budućih učitelja. Među njima su digitalna drama i digitalna priča. Broj istraživanja o digitalnoj priči je zadovoljavajuć, ali samo je nekoliko istraživanja o digitalnoj drami. Ovaj rad zapravo ima dva glavna cilja. Prvi se odnosi na pokušaj razvijanja svjesnosti o digitalnoj drami, a drugi ukazuje na učinkovitost tih dviju digitalnih aplikacija kada su u pitanju stajališta budućih učitelja engleskog kao stranog jezika o vještinama potrebnim za primjenu tehnologija u nastavi i izradu materijala. Rezultati su pokazali da primjena digitalne priče ima značajan učinak, a da digitalna drama ima ograničeno značajan učinak na stajališta o nastavnim tehnologijama. S druge strane, obje su aplikacije za buduće učitelje učinkovite u pogledu vještina za izradu materijala. Na kraju, rezultati ukazuju na to da uporaba digitalnih materijala u nastavi poboljšava motivaciju budućih učitelja za primjenu nastavne tehnologije i razvija njihove vještine izrade materijala.

Ključne riječi: *digitalna drama; digitalna priča; nastavne tehnologije.*

Uvod

Integracija digitalnih tehnologija u obrazovanje nije jednostavan proces. Dok se samim tehnologijama nerijetko priznaje mogućnost većeg angažmana učenika u učenju, primjena tehnologija u nastavnoj praksi i dalje je u određenim situacijama problematična (Edwards i Nuttall, 2015, str. 375). U većini se istraživanja ukazuje

na to da omogućiti učiteljima profesionalni razvoj u smislu primjene tehnologija, ne podrazumijeva jednostavno njihovu veću integraciju u učionici. Profesionalni razvoj mora biti složeniji da bi se usredotočio na poboljšanje stajališta nastavnika o tehnologiji, pokazujući im specifične i praktične načine kako tehnološki unaprijediti učenje kod učenika (Pittman i Gaines, 2015, str. 541). Dakle, nije ključno samo unaprijediti stajališta nastavnika-praktičara o tehnologijama u nastavi, nego je nužno unaprijediti i stajališta budućih učitelja. Poboljšanje stajališta nastavnika povezano je s tim koliko se dobro njihova stajališta mogu razvijati za vrijeme studija. Neovisno o njihovu studijskom profilu, stajališta i znanje o tehnologijama u nastavi omogućavaju učiteljima da lakše stvaraju bogata okruženja u kojima će planirati nastavu koja će učenicima olakšati učenje. Jedno od takvih područja jest strani jezik, a engleski se ističe kao iznimno važan jezik koji se uči širom svijeta.

Tehnološki je razvoj napokon pronašao put do obrazovnih institucija iako s određenim zakašnjenjem; međutim, jasno je da oni koji poučavaju i oni koji uče jezik imaju na raspolaganju sve veći broj mogućih alata za nastavu (Levy i Stockwell, 2006, str. 4). No, razvoj interneta i sve veći broj računala u školskom i kućnom okruženju doveli su do značajne ekspanzije kada je riječ o primjeni tehnologije u nastavi stranog i drugog jezika. I budući učitelji i učitelji-praktičari sve više osjećaju nedostatak ako nisu na odgovarajući način kompetentni za računalno potpomognuto učenje jezika (eng. CALL) (Hubbard i Levy, 2006). Računalna je tehnologija pozvana revolucionirati također visokoškolsku nastavu (Lowerison i sur., 2004). Budući da se tehnologije usavršavaju i prilagođavaju metodici nastave stranog jezika, tehnološke inovacije mogu povećati zanimanje i motivaciju učenika; osigurati im veći pristup ciljnom jeziku, više mogućnosti za interakciju i povratnu informaciju; a nastavnicima pružiti učinkovito sredstvo za organizaciju nastavnog sadržaja (Golonka i sur., 2012). Kao što se može zaključiti, tehnologije se danas intenzivno koriste u nastavi stranog jezika, a nastavnicima osobito pomažu računalne aplikacije kako bi učenicima omogućili bogato okruženje za učenje. Stoga je računalno potpomognuto učenje ključan čimbenik u nastavi engleskog kao stranog jezika. Riječ je o primjeni tehnologije u području učenja jezika. U tom je smislu u studijskim programima za učitelje jezika trenutno uobičajeno usredotočiti se na pitanja računalne opreme i programa radije nego na metodiku (Compton, 2009), a istraživači se uglavnom usredotočuju na pozitivan učinak koji računala imaju na učenje i jezičnu kompetenciju učenika engleskog kao stranog jezika (Almekhlafi, 2006; Chapelle, 2016; Ghani, 2014; Stickler i Shi, 2016).

Njihova učinkovita primjena u nastavi jezika obuhvaća usvajanje takvih aplikacija s pomoću digitalnih materijala i stajališta o nastavnim tehnologijama i prije nego učitelj uopće započne svoju profesionalnu karijeru. Da bi se u budućnosti uspješno koristili spomenutim tehnologijama i računalnim aplikacijama, budućim je učiteljima važno kreirati nastavu s pomoću digitalnih materijala i znati ih primjenjivati u budućoj nastavi. Računalno potpomognuto učenje jezika obuhvaća velik broj digitalnih alata, kao što su digitalna drama, digitalna priča, programi za izradu stripova, blogovi,

videomaterijali, prezentacijski alati, virtualne i aplikacije za uvećane prikaze realnosti. U ovom je radu fokus uglavnom na digitalnoj drami i digitalnoj priči.

Pregled literature

U novije se vrijeme primjena drame i kazališta u obrazovne svrhe proširila izvan učionice i dobne granice za djecu ili mlade, koja otprilike odgovara razdoblju od vrtića pa sve do srednje škole (Landy, 1982). Drama je reprezentacijska umjetnost, vizualno-auditivni narativ koji predstavlja virtualne, fiktivne likove unutar virtualnog, fiktivnog svijeta (Hamilton, 2008). U prošlom smo stoljeću svjedočili dugoj i utemeljenoj tradiciji sudjelovanja školske djece u dramskim aktivnostima (Taylor, 2003). Obrazovanje nije izbjeglo utjecaju poznate podjele koju rado činimo između onog što mislimo da možemo znati i onog što bismo mogli o tome osjećati (Hornbrook, 2002).

Glazbena i likovna umjetnost su, međutim, dio obrazovnog sustava na svim razinama posvuda u svijetu barem od početka dvadesetog stoljeća (McCullough, 2002). No, drama se često smatra donekle novim predmetom u školskom kurikulu, unatoč činjenici da se javlja u obrazovanju još od šesnaestog stoljeća (Kitson i Spiby, 2002). Postoji, međutim, niz konkurentskih i katkad kontradiktornih diskursa o uporabi digitalnih medija i primjeni informacijsko-komunikacijske tehnologije, osobito u školskim sredinama (Davis, 2012). Internetske i mobilne komunikacije razvile su se do takvih razmjera da se sve više obilježavaju kao 'bogate medijske' platforme – termin koji opisuje razine interaktivnosti i angažmana daleko iznad tradicionalnih oblika (Carroll i Cameron, 2009). Utjecaj povezivanja digitalnih tehnologija s dramskim pristupom učenju jezika slabo je zapažen u literaturi (Dunn i sur., 2012).

Budući da jedva postoje ikakva istraživanja o načelima, značajkama i postupcima primjene digitalne drame u obrazovne svrhe, autor je nastojao razraditi definiciju navedenog koncepta. Njegova je glavna svrha, prema samoj definiciji, kombinirati digitalni svijet s dramskim aktivnostima. Digitalna drama u biti nije različita od linearne drame. Prati iste etape dramske aktivnosti u razredu; planiranje, igranje, vrednovanje i ponovno igranje (Smith i Harring, 1993). Štoviše, ne bi je trebalo prihvatiti ni kao interaktivnu dramu. Prema Lombardi (2016), od Laurelova pionirskog rada iz 1986. godine, interaktivna se drama definira kao virtualni svijet koji nastanjuju fiktivni i računalom kontrolirani likovi, u kojem izvođač doživljava priču iz perspektive prvog lica – to jest kroz 'oči' simulakruma, dok zrcali svoja utjelovljenja. Sam koncept digitalne drame podrazumijeva digitalnu potporu procesima u kojima se koriste emocionalne karakteristike učenika za ostvarenje obrazovnih ciljeva i u kojima učenici ostvaruju međusobnu interakciju. U digitalnoj drami cilj nije dati prednost tehnologiji, nego pružiti potporu dramskim aktivnostima koje će se realizirati u bogatijim okruženjima u kojima se prakticira gluma. Drugim riječima, odnosi se na primanje digitalne potpore, osobito radi postizanja bogatijeg dramskog okruženja. Digitalna sredstva mogu pružiti potporu s pomoću zvuka, slike u pozadini ili videa i dr. U kontekstu, primjerice, teme 'ilegalnog lova na životinje' u nastavi engleskog jezika

zamislimo da bi učitelj rado proveo dramsku aktivnost u učionici. Zamoli učenike da odigraju ilegalni lov na šumske životinje i daju ideje o slobodnom obitavanju u šumi. Dok učenici igraju svoje uloge, na zidu se s pomoću računala prikazuje slika šume kako bi učenici imali osjećaj da su doista u šumi, a još im se emitiraju i zvukovi iz šume, kao što su puhanje vjetra, pucanj iz puške, šum rijeke i dr. Dakle, zahvaljujući vizualnoj i slušnoj potpori u učionici, šuma kao mjesto radnje postaje realističnije okruženje tako da se učenici koji sudjeluju u toj dramskoj aktivnosti mogu osjećati kao da su u pravoj šumi.

Kao što prikazuje donja Tablica 1, koraci za primjenu digitalne drame u nastavi prikazani su s pomoću koraka za primjenu linearne drame. Linearna se drama u nastavi temelji na četiri etape (Smith i Harring, 1993).

Tablica 1

Etape digitalne drame

Etape	Linearna drama u nastavi	Digitalna drama u nastavi
1. Planiranje	Prvi korak počinje odabirom teme ili koncepta koji će učenici istražiti u drami.	Učenici traže digitalna sredstva na internetu, kao što su fotografije, slike, videosnimke, zvukovi i sl. u vezi s temom ili konceptom koje će istraživati. Ako ne mogu naći povezane slike ili zvukove, mogu ih sami snimiti.
2. Izvedba	Odabrani dramski materijal biva oživljen kako učenici razvijaju temu u svojim dramskim postupcima.	Dok učenici igraju svoje uloge, drugi učenik iz grupe s pomoću računala prilagođuje slike i zvukove ili videosnimke prilagođene temi. Primjerice, kada neki učenik glumi aligatora, na zidu je prikazana slika rijeke i čuje se zvuk njezina toka. Ako pak glumi majmuna, u pozadini se vidi krošnja i čuje zvuk vjetra koji puše.
3. Vrednovanje	Za vrijeme refleksije učenici razgovaraju o osobnoj reakciji, sadržaju i temi, te kako mogu proširiti to iskustvo ili vještine na druge situacije koje nerijetko obuhvaćaju stvarne okolnosti.	U ovoj etapi učenici-glumci i učenici-gledatelji raspravljaju o produktivnosti digitalnih pomagala. Odlučuju o tome mogu li se audio-vizualna digitalna sredstva mijenjati ili ih treba poboljšati za dramsku aktivnost na odabranu temu.
4.Ponovna izvedba	Linearni dio može uključiti ponovnu izvedbu nakon etape vrednovanja. To može biti drugo igranje prve dramatizacije ili nova drama s drugim materijalima.	Učenici mogu ponoviti svoje dramske aktivnosti koristeći se novim ili boljim digitalnim sredstvima.

Digitalno se pripovijedanje posljednjih nekoliko godina pojavljuje kao snažno nastavno sredstvo koje angažira i učitelje i njihove učenike (Robin, 2008). Digitalna se priča uvelike odnosi na formu kratkog narativa, obično osobnog u prvom licu, prikazanog kao kratki film za tv ili ekran računala ili projiciranje na platnu (Davis, 2005). Digitalno pripovijedanje u biti omogućuje računalnim korisnicima da postanu kreativni

pripovjedači putem tradicionalnih postupaka odabira teme, provedbe istraživanja, pisanja scenarija i razvijanja zanimljive priče (Robin, 2008). Zahvaljujući audio i vizualnim materijalima koji se pridodaju tradicionalnom pripovijedanju, učenicima je lakše usredotočiti se na priče i ući u tako stvoren fiktivni svijet (Erdoğan, 2016).

Jednostavnim uključivanjem digitalnog pripovijedanja u proces učenja, učenje ne samo da postaje osobno, privlačno i kreativno, nešto u čemu se uživa, nego pridonosi motivaciji učenika za primjenom vlastitih vještina pisanja, čitanja, slušanja i govorenja pri učenju kako bi izrazili mišljenja i oblikovali digitalne narative za publiku (Razmi i sur., 2014). Osim toga, to je raširena digitalna aplikacija koja se primjenjuje u nastavi engleskog kao stranog jezika, ali i drugih predmeta (Christiansen i Koelzer, 2016; Hwang i sur., 2016; Konokman i Yelken, 2016; Verdugo, 2007; Yelken i sur., 2015).

U ovom se istraživanju koraci koji slijede koriste za stvaranje digitalnih priča, a potaknuti su drugim istraživanjima u području pripovijedanja digitalnih priča (Derek i Wakefield, 2011; Valkanova i Watts, 2007).

Korak 1: Učitelj uvodi program (eng. *Microsoft Photo Story Program*, odabran jer je besplatan)
Korak 2: Učenici pripovijedaju scenarij.
Korak 3: Pronalaženje slika koje odgovaraju scenariju (fotografije, videosnimke i sl.)
Korak 4: Izrada kartica za priču s pomoću programa.
Korak 5: Dodavanje odgovarajućih tekstova (prijevodi, tekstovi i sl.)
Korak 6: Dodavanje zvuka.
Korak 7: Predstavljanje digitalne priče na satu.

Istraživačka praznina i cilj

Danas učiteljima nije dovoljno samo referentno i metodičko znanje. U kontekstu tehnološko-metodičkog i referentnog znanja od učitelja se očekuje da s pomoću tehnološkog znanja povežu znanje o predmetu (referentno) i znanje o njegovoj primjeni u nastavi (metodičko), te se pokažu kompetentnima za tehnološke aplikacije kojima se učenici također mogu koristiti pri učenju. Tehnološko-metodičko znanje jest „znanje o postojanju, komponentama i mogućnostima primjene raznih tehnologija u nastavnim okruženjima, te, obrnuto, znanje o tome kako bi se poučavanje moglo mijenjati kao rezultat primjene određenih tehnologija“ (Mishra i Koehler, 2006, str. 1028). Robin (2008, str. 227) također ukazuje na to da će „istraživači, kombinirajući digitalno pripovijedanje u nastavi prema prethodnom opisu s teorijskim okvirom tehnološko-metodičkog i referentnog znanja, dublje spoznati različite i vrlo snažne uloge koje digitalni mediji mogu imati i pri poučavanju i pri učenju“. Primjena digitalnih alata u računalno potpomognutoj nastavi engleskog jezika aktivira se onda kada se tehnološko-metodičko i referentno znanje učinkovito primjenjuju u nastavi. U literaturi se navodi tek nekoliko istraživanja u području digitalne drame, a broj je istraživanja u domeni digitalne priče zadovoljavajuć. No, primijećeno je da nedostaju istraživanja o primjeni digitalne drame u učionici, njezinoj primjeni od budućih

učitelja engleskog kao stranog jezika i problemima koji nastaju tijekom te primjene. Osim toga, ne postoji nijedno istraživanje u kojem je digitalna drama ili digitalna priča neovisna varijabla, kao što ne postoji ni istraživanje o stajalištima koja se odnose na nastavne tehnologije i na vještine potrebne za „nastavne tehnologije i izradu materijala u praksi". U konstruktivističkom razrednom okruženju važni su bogati uvjeti za učenje, učinkovita primjena tehnologije i lakše učenje s pomoću materijala. U tom je smislu cilj ovog istraživanja ispitati učinke primjene digitalne drame, što je novo istraživačko područje u svijetu, na nastavne tehnologije i na vještine povezane s nastavnim tehnologijama i izradom materijala u praksi u skupini budućih učitelja engleskog kao stranog jezika.

Glavna je hipoteza u ovom istraživanju sljedeća: digitalna drama i digitalna priča imaju učinak na stajališta budućih učitelja engleskog kao stranog jezika o vještinama potrebnim za nastavne tehnologije i izradu materijala. Iz tog proizlaze sljedeće dodatne hipoteze:

1. Primjena digitalne priče činit će značajnu razliku u stajalištima budućih učitelja engleskog kao stranog jezika u kontrolnoj grupi o vještinama potrebnim za nastavne tehnologije i izradu materijala.
2. Primjena digitalne priče činit će značajnu razliku u stajalištima budućih učitelja engleskog kao stranog jezika u eksperimentalnoj grupi o vještinama potrebnim za nastavne tehnologije i izradu materijala.
3. Primjena digitalne priče činit će značajnu razliku u stajalištima budućih učitelja engleskog kao stranog jezika u eksperimentalnoj grupi o vještinama potrebnim za nastavne tehnologije i izradu materijala kada se usporede rezultati pristupa studenata.

Metode

Ovo je istraživanje provedeno eksperimentalno. „Od svih je metoda eksperimentalno istraživanje jedinstveno s obzirom na dva vrlo bitna aspekta: to je jedina vrsta istraživanja u kojem se izravno nastoji utjecati na određenu varijablu, a kada se primjenjuje na odgovarajući način, najbolje je za testiranje hipoteza o uzročno-posljedičnim vezama" (Fraenkel i Wallen, 2009, str. 268). Eksperimentalni se nacrt odnosi na to kako su ispitanici klasificirani prema različitim uvjetima (ili IV grupama) u eksperimentu (McLeod, 2007). Drugim riječima, ključno zajedničko obilježje svih eksperimenata podrazumijeva da se nešto još uvijek svjesno mijenja da bi se otkrilo što se poslije događa s nečim drugim, to jest otkriti učinke pretpostavljenih uzroka (William i sur., 2002) U ovom se istraživanju koristila upravo ta metoda da bi se utvrdila učinkovitost digitalnih aplikacija, digitalne drame i digitalne priče.

Istraživačka grupa

U ovom je istraživanju slučajnim odabirom formirana pred-test i post-test kontrolna grupa, što istraživaču omogućuje da provjeri jesu li dvije grupe doista slične. To je

osobito poželjno ako je broj ispitanika u svakoj grupi relativno malen (manji od 30) (Fraenkel i Wallen, 2009). U ovom je istraživanju svaka grupa brojala 23 buduća učitelja engleskog kao stranog jezika; ukupno su sudjelovala 64 studenta. Populacija obuhvaća 253 buduća učitelja engleskog kao stranog jezika, pa uzorak čini 39,53% te populacije.

Tablica 2

Prikupljanje podataka

Kao alati za prikupljanje podataka služile su dvije ljestvice (kvantitativni podatci). Da bi se izmjerila stajališta budućih učitelja o nastavnim tehnologijama, primijenjena je Ljestvica za stajališta o nastavnim tehnologijama (eng. ITAS), koju je izradio Metin sa suradnicima (2011), a koja se odlikuje valjanošću i pouzdanošću. Istraživači su izračunali da koeficijent pouzdanosti ljestvice s ukupno 37 čestica (Cronbach-alpha) iznosi ,94. Da bi izračunali stajališta budućih učitelja o vještinama potrebnim za nastavne tehnologije u praksi i izradu materijala, koristili su ljestvicu upravo za takva stajališta s 39 čestica *(*eng. *PIT-MDS)*, čiji su autori Varank i Ergün (2009), a odlikuje se potrebnom valjanošću i pouzdanošću. Njezin je koeficijent pouzdanosti (Cronbach-alpha) ,95.

Pouzdanost i valjanost

Kada je u pitanju pouzdanost alata za prikupljanje podataka u ovom istraživanju, u obzir je uzet Cronbach-alpha koeficijent pouzdanosti do čijeg su izračuna došli istraživači koji su razvili ljestvicu. Međutim, Cronbach-alpha koeficijenti unutarnje konzistencije postojećih ljestvica izračunati su još jednom, posebno za potrebe ovog istraživanja.

Tablica 3

Tablica 3 pokazuje da su Cronbach-alpha koeficijenti unutarnje konzistencije iznad 0,70 ako se kontrolna i eksperimentalna grupa promatraju kao cjelina, odnosno da su alati za prikupljanje podataka pouzdani. S obzirom na pouzdanost kompletnog istraživanja u obzir je uzeto sljedeće: jedan je istraživač proveo digitalnu aktivnost u nastavi s objema grupama; godinama zadovoljavajuće poučava, što dokazuje da je kvalificiran poučavati engleski jezik. Kada je riječ o valjanosti alata za prikupljanje podataka, ona je osigurana dok su istraživači koji su izradili alate razrađivali ljestvicu. No, adekvatnost tih alata za prikupljanje podataka u ovom istraživanju utvrđena je nakon provedbe intervjua sa 6 relevantnih stručnjaka. Dok su četiri stručnjaka dolazila iz područja kurikula i nastavnih tehnologija, dva su bila stručna za mjerenje i vrednovanje.

Analiza podataka

Prije analize podatci su podvrgnuti testu normalnosti. Za sve se analize koristio računalni program SPSS. 21. Pri unosu podataka negativne su čestice obrnuto

kodirane. U slučaju testa normalnosti, podatci za obje ovisne varijable podijeljeni su na grupe: pred-test/post-test i kontrolna/eksperimentalna. Test normalnosti proveden je za 8 različitih nizova podataka. Kao što se navodi u literaturi, postoje metode kojima se provjerava normalnost podataka. To su Shapiro Wilk (ako je uzorak <30), standardizirane vrijednosti mjerenja asimetrije i spljoštenosti, te vrijednosti deskriptivne statistike i koeficijent varijabilnosti kao potporni podatci. U ovom su istraživanju uzete u obzir vrijednosti mjerenja asimetrije i spljoštenosti da bi se testirala normalnost, a vrijednosti su deskriptivne statistike i koeficijent varijabilnosti predstavljeni kao dodatak vrijednostima testa normalnosti. Vrijednosti testa normalnosti prikazane su dolje.

Tablica 4 i 5

Obje tablice otkrivaju da je vrijednost mjerenja asimetrije za 8 nizova podataka između ± 3 vrijednosti, a vrijednost mjerenja spljoštenosti između ± 10 vrijednosti. S obzirom na literaturu Kline (2011) smatra da se testovi normalnosti mogu koristiti ako normalna distribucija ima vrijednost mjerenja asimetrije ± 3, a vrijednost mjerenja spljoštenosti ± 10 (Citat prema: Zhang i sur., 2014).

Tablica 6 i 7

Koeficijenti za vrijednosti varijabilnosti, prikazani u tablicama 6 i 7, uzeti su u obzir radi homogenosti grupnih podataka i V vrijednost je iznosila <20 za svaki niz podataka. Ako je V vrijednost <20, to znači da je grupa homogena sama po sebi (Keklik i sur., 2010, str. 640). Drugi čimbenik koji ide u prilog normalnoj distribuciji jesu bliske vrijednosti aritmetičke sredine, medijana i moda. Blizina tih vrijednosti prikazana je u tablicama 6 i 7, a poboljšava normalnost distribucije.

U ovom slučaju, budući da su podatci bili normalno distribuirani, odlučeno je provesti parametrijske testove. Štoviše, Winter (2013) smatra da se t-test može uključiti sve dok se očekuje znatna veličina učinka, ako treba provesti istraživanje s iznimno malim uzorkom ispitanika (N ≤ 5). Drugim riječima, on tvrdi da je moguće primijeniti parametrijski test na uzorak čak i kada iznosi <5, ali je važno očekivati da veličina učinka bude velika. Analiza uparenog uzorka t-testa otkrila je da su vrijednosti veličine uzorka velike u ovom istraživanju. Koristio se neovisni uzorak za t-test za usporedbu s rezultatima pred-testa da bi se utvrdilo jesu li kontrolna i eksperimentalna grupa jednake s obzirom na ovisne varijable prije istraživanja. Ispitana je homogenost varijanci da bi se taj test primijenio.

Tablica 8

Tablica 8 ukazuje na homogenost varijance, a ona je ispitana s pomoću Leveneova testa, za ljestvicu ITAS dobivena je vrijednost (F =, 518; p>,05), a za ljestvicu PIT-MDS (F =,552; p>,05). Ho hipoteza je, dakle, odbačena. Drugim riječima, hipoteza o neujednačenoj distribuciji varijanci odbačena je, a homogenost varijanci je potvrđena.

Analiza neovisnog uzorka t-testa pokazuje da nema značajne razlike između prosječnih vrijednosti pred-testa za kontrolnu i eksperimentalnu grupu kada su u pitanju ljestvice ITAS (t =,950; p>,05) i PIT-MDS (t = 1,469, p> ,05).

Za prvi i drugi istraživački problem koristio se upareni uzorak t-test. U slučaju trećeg problema za obje je ljestvice pri mješovitim mjerenjima provedena dvosmjerna ANOVA s ponovljenim mjerenjima umjesto neovisnog uzorka t-testa. Najvažniji razlog zbog kojeg je odabrana takva analiza povezan je s idejom o tome da bi neovisni uzorak t-testa smanjio koeficijent pouzdanosti zbog pogreške tipa I.

Istraživački postupak

Eksperimentalni je postupak trajao 7 tjedana. Istraživač je proveo istraživanje sa studentima druge godine Odsjeka za strani jezik, Fakulteta za odgoj i obrazovanje, u sklopu kolegija *nastavna tehnologija i izrada materijala*. S obzirom na to da ga je proveo eksperimentalno, podijelio je ispitanike na grupu za digitalnu dramu i grupu za digitalnu priču prema slučajnom uzorku – ždrijebom. On ih je ujedno poučavao 4 sata tjedno. Tablica 9 pokazuje kako je tih 7 tjedana bilo organizirano.

Tablica 9

Rezultati

Koristila se analiza uparenog uzorka t-testa da bi se utvrdilo je li postojala značajna statistička razlika između prosjeka pred-testova i post-testova u kontrolnoj grupi kada su u pitanju stajališta o nastavnim tehnologijama te vještinama potrebnim za njihovu praktičnu primjenu i izradu materijala.

Tablica 10

Prema analizi uparenog uzorka t-testa, moguće je uočiti značajnu razliku (t=-2,852, p <,05) između rezultata pred-testa ($\overline{X}_{pre}$=137,60) i post-testa ($\overline{X}_{post}$=149,3043) za ljestvicu ITAS, kao i značajnu razliku (t=-5,440, p<,05) između rezultata pred-testa ($\overline{X}_{pre}$=99,6087) i post-testa ($\overline{X}_{post}$=124,34) za ljestvicu PIT-MDS. Analiza pokazuje da je veličina učinka digitalne priče na stajališta kontrolne grupe o nastavnim tehnologijama na umjerenoj razini (d=-0,59), a da izračun veličine učinka na vještine potrebne za praktične nastavne tehnologije i izradu materijala ukazuje na visoku razinu (d=-1,13). Drugim riječima, primjena digitalne priče ima značajan učinak na stajališta kontrolne grupe o nastavnim tehnologijama i vještinama nužnim za nastavne tehnologije u praksi i izradu materijala.

Analiza uparenog uzorka t-testa koristila se radi utvrđivanja statistički značajne razlike između prosjeka pred-testa i post-testa u eksperimentalnoj grupi kada su u pitanju stajališta o nastavnim tehnologijama i vještinama potrebnim za nastavne tehnologije u praksi i izradu materijala.

Tablica 11

Prema analizi uparenog uzorka t-testa, ograničavajuće značajna razlika (t=2.042, p=,053>,05) između srednjih vrijednosti pred-testa ($\overline{X}_{pre}$=142,5217) i post-testa ($\overline{X}_{post}$= 151,8696) utvrđena je za ljestvicu ITAS. Kul (2014) tvrdi da, kada je p-vrijednost između 0,05<p<0,10, to ima značajnu tendenciju, što znači da ima ograničenu značajnost. Za ljestvicu PIT-MDS dostignuta je značajna razlika (t=-4,872, p<,05) između srednjih vrijednosti pred-testa ($\overline{X}_{pre}$=106,7391) i post-testa ($\overline{X}_{post}$=125,2609). Analizom je otkriveno da je veličina učinka primjene digitalne drame (d=-0,42) na stajališta ispitanika u eksperimentalnoj grupi o nastavnim tehnologijama blizu srednje razine, a da je izračun veličine učinka (d=-1,01) na nastavne tehnologije u praksi i vještine izrade materijala na visokoj razini. Drugim riječima, primjena digitalne drame ima ograničeno značajan utjecaj na stajališta ispitanika u eksperimentalnoj grupi o nastavnim tehnologijama, kao i značajan utjecaj na vještine uporabe nastavnih tehnologija u praksi i izrade materijala.

Provedena je analiza dvosmjerne ANOVA s ponovljenim mjerenjima da bi se utvrdilo postoji li značajna razlika između prosjeka za ljestvice ITAS i PIT-MDS u eksperimentalnoj i kontrolnoj grupi. Za potrebe spomenute analize morala su biti ispunjena tri uvjeta (Can, 2014).

1. Podatci trebaju imati normalnu distribuciju. Gore je naveden rezultat o normalnoj distribuciji podataka za sva mjerenja.
2. Grupne varijance moraju biti homogene za svako mjerenje. Homogenost varijanci za varijable pred-testa i post-testa analizirana je Leveneovim testom.

Tablica 12

Prema analizi Leveneova testa dobivena je vrijednost (F=,518; p>,05) za ITAS pred-test, a dobivena je vrijednost iznosila (F=,552; p>,05) za PIT-MDS pred-test; vrijednost (F=,571; p>,05) za ITAS post-test, a (F=,773; p>,05) za PIT-MDS post-test. Ho hipoteza je pritom odbačena. Drugim riječima, ne postoji razlika između varijanci, pa je osigurana njihova jednakost.

3. Postoji li značajna razlika između dvojnih kombinacija mjerenja u grupi, provjereno je Boxovim testom jednakosti matrica kovarijance.

Tablica 13

Za ljestvicu ITAS dostignuta je vrijednost (Sig=,956; p>,05), a za ljestvicu PIT-MDS (Sig=,429; p>,05), pa je hipoteza Ho odbačena, odnosno nije pronađena značajna razlika između kovarijanci. Budući da su sve pretpostavke dvosmjerne ANOVA s ponovljenim mjerenjima potvrđene, provedena je analiza i dobiveni su sljedeći rezultati.

Tablica 14 i 15
Slika 1

Analizom dvosmjerne ANOVA s ponovljenim mjerenjima utvrđeno je da mjera *grupni zajednički učinak otkriva kako veći pristup u grupi koja se koristila digitalnom

dramom nije bio značajan u usporedbi s grupom koja se koristila digitalnom pričom (F=,146, p>,05). Drugim riječima, primjena digitalne drame možda nema značajan učinak na stajališta budućih učitelja o nastavnim tehnologijama kada se usporedi s primjenom digitalne priče.

Tablica 16 i 17

Slika 2

Analizom dvosmjerne ANOVA s ponovljenim mjerenjima utvrđeno je da mjera *grupni zajednički učinak otkriva kako veći pristup u grupi koja se koristila digitalnom dramom nije bio značajan u usporedbi s grupom koja se koristila digitalnom pričom (F=1,100, p>,05). Drugim riječima, primjena digitalne drame nema značajan učinak na stajališta budućih učitelja o vještinama primjene nastavnih tehnologija i izrade materijala kada se usporedi s primjenom digitalne priče.

Rasprava i zaključci

Istraživanje vodi k zaključku da primjena digitalne priče, kada su u pitanju budući učitelji engleskog jezika u kontrolnoj skupini, čini značajnu razliku u njihovim stajalištima o nastavnim tehnologijama. Po samoj svojoj prirodi digitalna je priča računalna aplikacija, kao što izrada kartica s pričom s pomoću računala, crtanje s pomoću digitalnih medija, učenje s pomoću programa utemeljenih na različitim softverskim sustavima i primjena interneta predstavljaju aktivnosti koje podupiru stajališta o nastavnim tehnologijama. Osobito se od učitelja stranog jezika očekuje da se učinkovito koriste tehnologijom. Rezultati Sadikova (2008) istraživanja idu u prilog raspravi istraživača. On je, naime, pokazao da digitalno pripovijedanje učenicima daje jedinstvenu mogućnost da usvoje novu medijsku pismenost i informatičke vještine, kao što su snimanje i uređivanje digitalnih fotografija, prepoznavanje različitih vizualnih formata, snimanje i primjena audioklipova, pretraživanje interneta u potrazi za tekstom i slikama, kao i primjena programa Photo Story za uređivanje, proizvodnju i pohranu priča za emitiranje na osobnom računalu ili VCD/DVD uređaju. Yelken i suradnici (2015) su zaključili da iskustvo u kreiranju digitalne priče očekivano pridonosi samopouzdanju učitelja kada je u pitanju tehnološko-metodičko i referentno znanje. S druge strane, Yu Chih (2000) se usredotočuje na internet koji svakom učitelju jednostavno nudi obilje primjera potencijalno korisnog i autentičnog govornog engleskog jezika, što se ne može ignorirati. Ovo istraživanje, kao i neka druga, ukazuje na to da je u nastavi jezika digitalna priča učinkovit alat u kontekstu računalno potpomognutog učenja jezika, odnosno tehnološko-metodičkog i referentnog znanja, te podržava ideju o tome kako učenicima treba pomoći da što lakše usvoje jezične vještine, osobito današnjoj djeci koja su rođena s tehnologijom.

Zaključak je ovog istraživanja da primjena digitalne drame čini ograničavajuće značajnu razliku u stajalištima budućih učitelja u eksperimentalnoj grupi o tehnologijama u nastavi. Autor stoga smatra da najvažnije čimbenike razvoja stajališta o nastavnim

tehnologijama u dramskim aktivnostima čine teškoća s kojom povezuju dramsku metodu i tehnologiju u procesu nastavne primjene i broj digitalnih koraka koje imaju, što je manje u usporedbi s onima zabilježenim u grupi koja je primjenjivala digitalnu priču. No, autor je intervjuirao ispitanike u eksperimentalnoj grupi tijekom istraživanja i zabilježio njihova mišljenja u dnevnik. Polazeći od njih, došao je do zaključka da budući učitelji nisu potpuno usvojili proces u kojem se digitalna sredstva kombiniraju s dramskom metodom, uvjereni su da se drama u učionici treba stvarati potpuno neovisno o tehnologiji i nisu skloni tom procesu. Stoga autor sugerira kako je digitalna priča učinkovitija od digitalne drame s obzirom na stajališta o nastavnim tehnologijama. Međutim, budući da je digitalna drama nova aplikacija, može se pretpostaviti da su takvi rezultati dobiveni zbog činjenice da se tehnologija sve donedavno nije koristila u dramskim aktivnostima u nastavi.

Kada su u pitanju vještine potrebne za primjenu tehnologija u nastavnoj praksi i izradu materijala, istraživanje je pokazalo da se obje grupe značajno razlikuju u pred-testovima i post-testovima. Budući da je aktivnost u objema grupama snimana i pretvorena u nastavni materijal, pozitivno je pridonijela vještinama izrade materijala. Važnost izrade materijala jasna je činjenica, osobito u kontekstu engleskog kao stranog jezika. Osim toga, može se tvrditi da su sljedeći elementi pozitivno utjecali na vještine potrebne budućim učiteljima za uporabu nastavnih tehnologija i izradu materijala: pripremanje materijala u digitalnom okruženju, uvažavanje načela izrade materijala, primjena nastavnih tehnologija za njihov razvoj.

Kada su uspoređene dvije grupe prema rezultatima pristupa, došlo se do zaključka kako stajališta budućih učitelja o nastavnim tehnologijama i vještinama izrade materijala ne čine značajnu razliku u aktivnostima povezanim s digitalnom dramom unutar eksperimentalne grupe u odnosu na aktivnosti povezane s digitalnom pričom. Polazeći od tih rezultata, može se smatrati da budući učitelji povezuju digitalnu priču s nastavnom tehnologijom lakše nego što je to slučaj s digitalnom dramom jer su preliminarne etape digitalne priče prikladne za računalnu pripremu, a uporaba tehnologije čini okruženje za učenje bogatijim.

Budući su učitelji stoga nerado kombinirali dramske aktivnosti i digitalni svijet zbog svojih tehnološki neutralnih dramskih navika. Budući učitelji uglavnom provode dramske aktivnosti na satu bez primjene tehnologije. Pri usvajanju osobito vještina slušanja i govorenja na engleskom kao stranom jeziku drama je alat kojim se treba koristiti kao dodatnom tehnikom i treba je obogatiti digitalnim sredstvima tako da nastavni proces učiteljima bude učinkovitiji, a učenicima razumljiviji. Međutim, na početku karijere učitelji trebaju planirati aktivnosti koje će navesti učenike rođene s tehnologijom da se njom koriste čak i u dramskim aktivnostima. Iz toga je na vidjelo izašla nužnost povezivanja dramske metode s tehnologijom kao bitnim čimbenikom. Osim toga, važno je omogućiti integraciju nastavnih tehnologija i drame, ali da se pritom ne poremeti sama priroda drame i da drama ne izgubi dušu.