

**EDU WORLD 2022****Edu World International Conference Education Facing Contemporary World Issues****DIGITAL STORYTELLING - MULTIMEDIA TEACHING  
LEARNING STRATEGY OF CONTEMPORARY PRIMARY  
SCHOOL EDUCATION**

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**Abstract**

The present article is a contemporary approach to the need of implementing multimedia teaching and learning strategies in preschool and primary school, in order to develop certain competencies of pre-schoolers and pupils. Digital storytelling facilitates the cognitive processing of various information in virtual format. The goal of the research is to enhance the benefits of digital storytelling when used as a teaching learning strategy within formal educational activities. The main method used was the observation method, and the main instrument used in the research was the observation sheet. Also, in some stages of the research, we have used the questionnaire for primary school teachers, and also the method of digital storytelling as a multimedia strategy and tool was used, as the research contain sample. The results of the research that was applied in Arad County, in a number of 14 primary schools, show that digital storytelling is a useful multimedia teaching learning strategy with the main role of developing transversal competencies of pupils, develops motivation for learning, creativity, digital skills, developing communication competencies, helps the ability of collecting instruments and resources, creates better collaboration within groups and also the development of group reflection and self-reflection.

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## 1. Introduction

Social and technological development in the 21<sup>st</sup> Century, forces the educational systems to also be modernized, especially the growing popularity of e-learning processes and the spread of distance learning in education. The renewal of education can only be effective if the education system at all levels, uses the fastest growing informatics toolkits, in all its levels of planning and practice.

As a result of technological and social changes in education over the past decade the use of digital devices and applications is also becoming more widespread. Although technology has now become a widely used tool for coloring lesson explanations and illustrations and administering education, it is still commonplace at some levels. The use of tools in pedagogical-methodological renewal and digital competence would be at the service of developing. Apart from the teaching of informatics and digital culture, in the case of other subjects only in a narrower circle, they use digital solutions to perform knowledge transfer, measurement evaluation, differentiation and other pedagogical tasks (Fadel, 2010).

Interactive knowledge transfer in the teaching-learning process through electronic or IT tools can be achieved more effectively by supporting teachers in the e-environment. This is why a wide range of e-learning models have emerged, and that is why e-learning has become part of the strategy of educational institutions. Therefore, a very large number of e-learning models and strategies are continuously published for e-learning support (Bran, 2010).

It is recommended, to use all three types of learning within the educational process:

Face to face learning

Blended learning

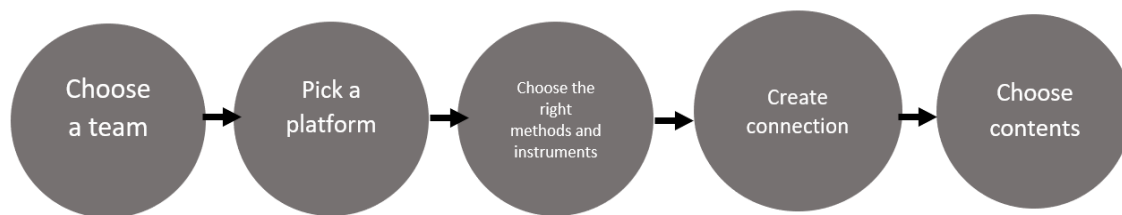
E-learning.

Of course, differences in the effectiveness of digitally supported education between individual institutions, as well as in attendance education, have developed, mainly due to the different digital competencies and digital teaching experiences of teachers, on the other hand, it is reflected in the students' family background and parental learning support due to differences (Lambert, 2013).

Ever since we can talk about teaching and school, supporting knowledge transfer through various means has always played an important role. In the traditional sense, aids were all designed to make the teaching-learning process effective. Nowadays, among many other support options, we call digital technology to help ensure the successful transfer of knowledge and the development of different competencies in line with 21st century expectations (Egerău, 2019).

The selection of the tools of digital pedagogy is the result of a planning process, during which the pedagogue lists the individual elements of the theorem highlighted before, and comes up with a complex solution that meets the goals of teaching and learning. We need to follow the same careful planning process and we can also choose the most effective solutions during special educational times and also possible alternatives to both the digital agenda and online education during its application. No matter which situation we talk about, it is recommended that teachers complete the teaching learning process with multimedia teaching learning and evaluation strategies. Organizing the processes of teaching and learning, like face-to-face education, is an institutional task of using a digital work order or solutions that use only its elements (Hossu, 2019).

The main steps of this kind of blended planning can be seen in Figure 1:



**Figure 1.** Steps in introducing multimedia strategies into the teaching learning process

A prerequisite for effective distance learning is the availability of appropriate technical and reliable tools for those on both sides of the process. The use of digital devices also presupposes the existence of software. The question rightly arises as to which device and with which software and application should be included in education. The answer is relatively simple. Always choose the tools that best serve our pedagogical goals, not focus on the use of tools, but on whether the use of that tool has added value to the teaching-learning process. Choose a tool for a pedagogical method, but also look at what new methods digital technology allows. Not only should we seek technological support for our old methods, but we should expand our methodological repertoire and find the right digital tool, software and application for new, innovative elements and working methods (Bull & Kajder, 2004).

## 2. Problem Statement

Digital storytelling, as a multimedia teaching learning strategy, especially in primary school, is a method that helps us focus on ourselves, our story, put it into words, dramatize it, and tell it to others through photographs. The workshop takes place in a group, with participants sharing their stories with each other, experiencing the experience of creating and sharing a story together. The shared experience forms a strong group cohesion between the participants. With digital storytelling, you process the narrator's personal experience with the help of your photos. The end result of the process is a short film based on personal images accompanied by your own sound (Lanszki, 2016).

Digital storytelling is a pedagogical tool that can be used in many subjects, with many ages, and with the necessary use of multiple digital tools in class or school projects. In addition to mentioning video production and editing applications, the videos will also cover the theoretical background of digital storytelling, telephone applications for storytelling, and the Sway online presentation tool (Lazăr et al., 2019).

The classic storytelling method is a method that revolves around making a story, the actors involved following a predetermined trajectory, which includes several main stages:

- i. documentation,
- ii. script design,
- iii. script creation,
- iv. development,
- v. revision and

- vi. presentation of the final form of the story for which was created.

The emotional messages associated with the story will generate emotions, positive or negative, that can influence human behaviour.

DST is an effective tool among innovative teaching methods as it can be used to support teaching in a number of ways. The first thing you need to do as an instructor is to decide whether to use the DST method or to ask students to do so in some form. In many cases abroad, educators create DSTs and use them as one of the possible examples of educational content, supplemented with rich multimedia content and web2.0 tools (Meadows, 2003).

Another version of DST in education is when students use it as an effective learning support tool that arouses their interest, motivates them, and also develops their creativity. Students who participate in the preparation of DST develop their communication skills during material collection, editing, and presentation, and learn to organize their own ideas and thereby develop their social skills. DST also has an impact on the development of a number of other areas of competence, including reading comprehension, digital literacy, media literacy, information literacy and creativity (Zaragoza & Brígido, 2011).

The process of digital storytelling is presented in three simple steps, (Figure 2), as it follows:

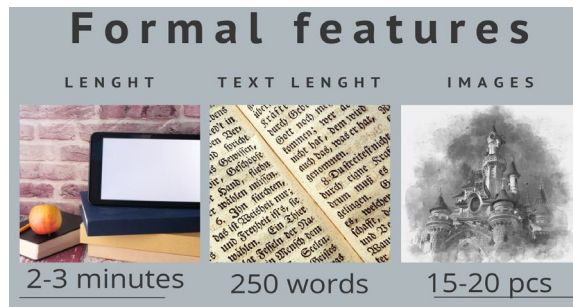
- i. Finding - the story that is important to us
- ii. Telling - with our own words and photos
- iii. Sharing - with each other or with anyone online.



**Figure 2.** The process of digital storytelling

Digital storytelling gives participants the opportunity to get to know themselves better, within the group. It develops creativity and self-expression. The further utilization of the knowledge acquired during the workshop (e.g., the management of the cutting program) is limited only by the imagination of the participants (Ohler, 2013).

In terms of formal features, the digital story is written in a 2–3-minute narration, mostly an individual multimedia narration, narrated in the pupil's own voice, illustrated with still images. (Figure 3) The underlying text is about 250 words, which, when digitally recorded, results in an audio file lasting two to three minutes, which requires an average of 15 still images to illustrate (Robin & McNeil, 2012).



**Figure 3.** Presentation of digital storytelling formal features to be used

Within the frame of formal education, it has the following advantages:

- i. competence development for digital, social, linguistic, aesthetic-artistic awareness and expressiveness
- ii. Art training, museum pedagogy
- iii. Community building
- iv. Local history, social research, memory research, "oral history"
- v. Health promotion
- vi. International development, business, social responsibility
- vii. Individual use, self-knowledge development
- viii. Developing creativity.

Teachers, by the programs used in the classrooms, can help pupils achieve the following:

- i. learn the method of digital storytelling
- ii. they get help finding and building their own stories
- iii. they will receive a technical introduction on how to make short films
- iv. they make their short films
- v. they share their digital stories with each other (Robin, 2009).

Digital storytelling has seven main elements that have to be respected by every organizer of the method, in order to get the maximal results:

- i. Perspective - What is the central idea of the story and the author's point of view?
- ii. Key Question - The central question that keeps the attention of the person interested and to which we get an answer at the end of the story.
- iii. Emotional charge
- iv. We use our own voice as a tool to make the story more personal.
- v. A music that fits well with the content can have a big impact on the recipients.
- vi. Economy - It is important not to overload the recipient with the content
- vii. The tempo and rhythm of the story should be neither too vibrant nor too slow, fit the content.

Technology has changed the way people tell their stories, which is closely linked to the implementation of virtual tools, a process that has intensified in recent years, making digital resources, that are accessible to many educators. The impact of virtual educational resources has been largely positive, as instructors have had the opportunity to develop their knowledge, skills and therefore increase their performance in education by improving learning outcomes. Pupils' involvement, achievement and

motivation are highlighted by the integration of such technologies, despite the fact that education systems still face many challenges in terms of technical infrastructure (Verdugo & Belmonte, 2007).

### **3. Research Questions**

The starting questions on which the research is based are presented as it follows:

- i. Is the Romanian educational system sufficiently concerned with the use of multimedia strategies within the formal educational process, as a completion to the face-to-face education?
- ii. To what extent do multimedia teaching learning strategies influence the development of certain competencies within primary school?
- iii. What are the real resources available in the current education system in Romania, and what could motivate the use of multimedia teaching-learning and evaluating strategies in the daily routine of primary school pupils?
- iv. Is it possible to successfully introduce an intervention program at primary school level, which is based on multimedia tools, models, instruments and strategies in a formative sense, thus supporting the formal curriculum?
- v. Which are the main competencies, abilities, attitudes that can be developed by the use of some multimedia strategies at primary school level, namely by the use of digital storytelling?

### **4. Purpose of the Study**

The objectives formulated for the present research are:

- i. Bibliographic documentation in order to obtain the information necessary to carry out the research.
- ii. Defining and describing multimedia teaching-learning strategies and highlighting them in children's work.
- iii. Presentation of an accurate picture of the current state of the situation of the use of digital storytelling as a multimedia strategy at the level of primary school.
- iv. Identifying the opinions of teachers on the importance and impact of using digital storytelling as a multimedia strategy and tool in educational activities.
- v. Analysis of the correlations between the development of specific competencies and the multimedia tools and strategies used in the teaching learning process.
- vi. Analysis of the results obtained in order to acquire the most suitable dissemination technique in Arad County primary schools.

### **5. Research Methods**

During the first stage of the research, the analysis of the real and objective situation of the knowledge and application of digital storytelling as a tool of multimedia strategies was carried out, at the level of primary school. At this stage, a questionnaire was applied for teachers, indicating the level of knowledge about the given topic, its degree of use, how to use it, teachers' opinions on some aspects of knowledge and application of activities. This stage was necessary because before applying any

intervention, it is necessary to know exactly the environment, style, interest, clear, correct and real situation of the educational environment, in order to prepare and develop tools perfectly adapted to the field to be worked with.

The results of the questionnaire show that most the respondents, a number of 72 primary school teachers from the participant institutions state that they are interested in personal training activities in the sense of multimedia strategies and tools, knowing so little about the topic, even less about the planning stage, the adaptation stage of curricular contents, the specific tools and resources needed. They are closely followed by almost 40% of teachers who say they are very interested in developing in this direction. This result should be a motivating factor for the inspectorates, who can use the most convenient way to approach the topic, under the auspices of pedagogical circles. This result also indicates that, indeed, teachers are eager to develop and bring something new to the classroom activity.

The main research method was the current observation of educational activities of children from 14 primary schools within Arad County. Observation is a method of knowing the human personality that consists in the methodical, faithful and intentional recording of different manifestations of individual or collective behavior, as they are presented in their natural flow of manifestation. In the evaluation process, it ensures the obtaining of detailed information regarding the analyzed individual / group, with a minimum intervention in its activity, so that the behavior can be analyzed mainly and not the interaction with the evaluation tool. The observation method, through the related tools used, provides information on emotional states and their effects on student performance, highlighting a number of characteristics that influence student performance, such as self-confidence, shyness, anxiety, lack of self-confidence, adaptability, etc. Being limited to visible behaviors, only behaviors are noted in the observation grid / observation protocol, without making value judgments. In the case of the present research, the observation protocol was created in such a way as to provide a framework for systematizing the objectives pursued. Thus, based on the observed behavior, we can form an opinion regarding the mental development of the child.

There were specific instruments created, such as observation sheets, based on three main types of elements that were followed:

- developed knowledge
- developed aptitudes
- developed attitudes.

The delimitation was made according to the following aspects, presented in the form of scales: the presence or absence of certain competences, the extent to which they are present at the level of each class, the economic level of each class, the educational space / environment, the students' activity, the level of knowledge, students' involvement in activities, the material basis of the research institutions, in order to obtain real data on the multimedia resources and tools that can or cannot be used, the motivation level of the teacher, the methods used in the educational instructional process, the variety of the sample of subjects as well as the ,ultimedia resources and educational tools used in the classes.

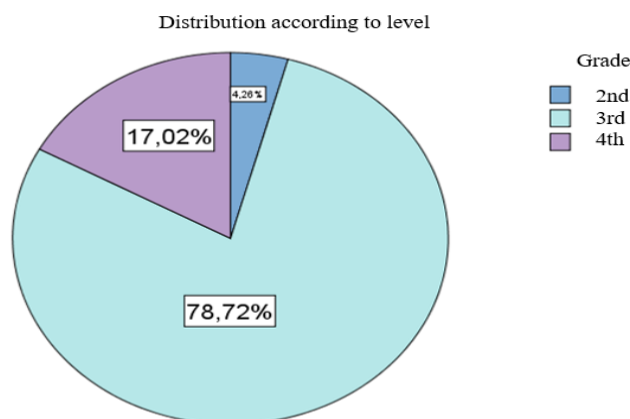
The collected results were analyzed, and their analysis facilitated the preparation of activities used during the digital storytelling strategy, according to the level of each class or group, according to the

material basis or space allocated by each institution, according to the openness of teachers regarding the training in the sense of multimedia strategy use in education.

The digital storytelling method was used during a semester in the 14 participant primary schools, respecting the steps, structures and characteristics of method mentioned above, in the theoretical frame of the present research.

## 6. Findings

The activities within the training program were applied during the courses, during the school program, being carried out through digital storytelling. The observation sheets were completed in real time, for each pupil, for all stages of the study. These were completed on paper, the anonymity of the students being maintained during the study, but comparisons could be made between the scores accumulated from one stage to another. Also, the scores received were transcribed electronically, then processed and analyzed in the statistical program. The data collection took place in a semester, and the completion of the assessment sheets took about 50 minutes for the pupils in the first phase of the study and around 5-6 hours for the last phase of the study. All data have been processed using SPSS version 17 and will be presented and analyzed in the following.



**Figure 4.** Distribution of participants by age level

According to the figure presented above, (Figure 4) we can see that the highest percentage is represented by students of 3rd grade ( $p = 78.72\%$ ), followed by pupils from 4th grade ( $p = 17.02\%$ ). There are only a few participants in the study from second grade ( $p = 4.1\%$ ). We considered the level factor important, because during the data analysis, we will observe to what extent the scores are influenced according to this criterion.

In order to verify the validity of the scales used, fidelity analyzes were performed for the three instruments used in the assessment of the observed competencies for each group level. This step was not mandatory, as the tools used in the approach are based on the curriculum and have a solid foundation in the curricula of each level. Even if they are valid given the considerations listed above, we performed a test to verify the validity of the scales in terms of statistical analysis. The tools were based on three criteria: cognitive, skills, and attitudes, using scores of two types: 1 to 5 and yes-no answers, scored with



1 and 5. This was important to specify, because for each student there will be a final score from a maximum score set for each activity.

The hypotheses of the research was as it is presented in the following:

There are significant differences in the results obtained in terms of scores that show the level of development of targeted competencies, (motivation for learning, creativity, digital skills, developing communication competencies, helps the ability of collecting instruments and resources, creates better collaboration within groups and also the development of group reflection and self-reflection), in the post-test stage, between the group of participant pupils from primary school.

In order to test this hypothesis we used the t test, having as variable the group of participants in the study, and as a dependent variable, the results obtained in the post-test, structured on the three criteria followed at the level each tool for measuring and analyzing the variables within the participant primary school classes: 2nd grade, 3rd grade and 4th grade from 14 primary schools within Arad County.

**Table 1.** Independent sample T test

	Stage	N	Mean	Std. Deviation	Std. Error Mean
TOTALcognitive	PRE	23	6,83	3,512	,732
	POST	24	5,17	2,632	,537
TOTALability	PRE	23	16,70	3,936	,821
	POST	24	9,33	4,958	1,012
TORALattitudes	PRE	23	9,83	,388	,081
	POST	24	4,04	1,805	,369

It can be observed in Table 1, (Table 1), that significant differences were obtained between the results obtained at the post-test stage. Thus, we obtained the coefficient  $t = 5.622$ , significant at  $p < 0.01$ , between the results obtained in the first phase ( $m = 9.33$ ;  $SD = 4.958$ ) and the results obtained in the last phase, after implementing the digital storytelling method ( $m = 16.70$ ;  $SD = 3,396$ ) on the size of skills. This can be interpreted as the fact that at the level of skills criteria, pupils who participated in the training program consisting of activities related to digital storytelling, show positive changes in the development of transversal skills that fall within the scope of skills.

As can be seen in the table, significant differences were obtained between the post-test results (in the third item, which measures the development of socio-affective attitudes). Thus, we obtained the coefficient  $t = 15.032$ , significant at  $p < 0.01$ , between the results obtained in the first stage of the study ( $m = 4.04$ ;  $SD = 0.388$ ) and the results obtained in the last stage of the study ( $m = 9.83$ ;  $SD = 1.68$ ) on the dimension of socio-affective attitudes / behaviors. This can be interpreted by the fact that at the level of attitude criteria, pupils who participated in the training program consisting of activities related digital storytelling, show positive changes in the development of transversal skills that fall within the scope of the criteria pursued. This means that by participating in outdoor education activities, the skills selected under this criterion can be significantly developed compared to those who do not use this kind of methods within the teaching-learning process. This may be mainly due to the freedom of expression and exploration but also to the possibilities of communication and inter-relationship between the members of the group.

**Table 2.** Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means							
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
TOTALcognpost	Equal variances assumed	,001	,975	1,838	45	,073	1,659	,903	-,159	3,477
	Equal variances not assumed			1,827	40,763	,075	1,659	,908	-,175	3,494
TOTALabilpost	Equal variances assumed	1,273	,265	5,622	45	,000	7,362	1,309	4,725	10,000
	Equal variances not assumed			5,650	43,522	,000	7,362	1,303	4,735	9,989
TORALattitpost	Equal variances assumed	22,250	,000	15,032	45	,000	5,784	,385	5,009	6,559
	Equal variances not assumed			15,333	25,204	,000	5,784	,377	5,008	6,561

As can be seen in Table 2, no significant differences were obtained in the results (in the first item, representing the measurement of knowledge-based competencies) between the two stages of the reaserch. Significant differences were obtained in the second item, which measures the skill criterion. Thus, we obtained the coefficient  $t = 3.771$ , significant at  $p < 0.01$ , between the results obtained by the control group ( $m = 1.86$ ;  $SD = 1.659$ ) and the results obtained in the post test stage ( $m = 3.78$ ;  $SD = 1,889$ ) on the size of skills. This can be interpreted by the fact that at the level of skills criteria, pupils who participated in the training program consisting digital storytelling activities, show positive changes in the development of: motivation for learning, creativity, digital skills, developing communication competencies, helps the ability of collecting instruments and resources, creates better collaboration within groups and also the development of group reflection and self-reflection. This shows that pupils from the participant groups developed those skills significantly compared to the same group of participants in the pre test stage of the study (Table 2).

## 7. Conclusions

The impact of the information society on education in terms of multimedia teaching-learning strategies is based on the experience of a decade, but it has not lived up to its promise. There is a lack of comprehensive and revolutionary innovation in all aspects of education era, as did the ubiquitous technical means to end its impact on teaching and learning based on personal presence. In the integration of education and multimedia tools for organized education access to information has never been an option before, has risen to an unseen level. Gradually spreading online devices, mobile applications, online communities are now a pragmatic way to share information. and occasionally offer solutions that are fun or even addictive for users. Technology that is becoming simpler and more accessible through the experience of productivity, it unobtrusively increases user engagement the process of producing and sharing information (Roman, 2014).

All these transformations have created a serious opportunity and at the same time challenge for formal educational institutions, because trends are most prevalent through everyday life management phenomena which are often completely independent of school, education, and learning. This transformation of information management has perhaps never been seen before. However, the focus on innovation has not focused on this and the resulting transformable methodology and organization of learning, but on the spectacular impact of technological change, have caught the attention of developers and users (Dughi & Cotra, 2014; Roman & Coşarbă, 2020).

It is not multimedia based education that states what can we undertake with innovative solutions, but also the pedagogical one, which motivates to solve the tasks formulated in order to achieve its educational goals seek and find opportunity in educational innovations. Digital storytelling as an innovation does not take on the role of going through it institutionalized education is transforming, but we can be sure that for decades to come effective for the purposes of education and training formulated through many good practices and generalizable methodologies can be outlined for its application. Although DST allows students to use digital tools, however, it offers much more than that. Educators soon discovered that not only a deeper understanding of their students, but also the processing of subject content can also serve the procedure.

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