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The Effectiveness of Implementing Digital Storytelling among Teenager Students

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INTRODUCTION

The goal of the thesis is to explore the positive influence of DST on achievement in different subjects (Biology and Civil Education Studies) and reveal the advantages of DST on students and teachers' development.

The dissertation is designed according to the following components: Chapter 1 provides a detailed review of the literature for the main conceptual framework of the research, such as student-centred learning theories, interactive video lectures, a flipped classroom, and teaching with videos (which delivers the setting for the current study). Chapter 2 represents Georgian reality, the initiatives of the Ministry of Education, Science, Culture and Sport of Georgia in terms of technology integration; and existing practice related to the DST in educational institutions. Chapter 3 shows the details of the study scheme and approaches. Chapter 4 reflects the results of experiment in public schools. In particular, the analysis of measurement instruments, variables, participants, and the analysis of procedures are defined. The outcomes of the current research are provided in chapter 3 and 4, a discussion about the results is specified in conclusion and recommendation.

The urgency of the research

The 21st century demands all the students and teachers be actively linked to the digital world, Digital Storytelling (DST) teaching method and tool gives teachers and students the opportunity to use the technology, proper content, and freedom of creativity in a contextualised way.

The research novelty

The research shows a modern method of teaching and learning using DST as a tool and a method to improve learners' performance, motivation and digital competences at schools. Planning and implementing the process of DST is new in Georgian educational context and the methodology developed during this research will help innovator teachers to enhance their diversity of activities and creativity in their classrooms.

Goals of the study

- To find out the advantages and disadvantages of DST at the secondary education level;
- To conduct the experiment to check how the students' performance has changed; and

- To conduct the questionnaire with students to check how the students' motivation has changed.

What to measure in the class:

- Interdisciplinary competencies such as creativity, critical thinking, media and digital literacy, semiotic competence;
- Competencies of teachers: necessary ICT skills, Didactic ICT competencies, learning strategies, digital competences;
- Competencies of students: content knowledge of Biology and Civil Education Studies, level of motivation.

Research questions of the thesis

Guided by theoretical concerns and methodological tools, this research pursues to respond the following study problems:

- Are Georgian schools ready for Digital Storytelling (DST)?
- How does the Digital Storytelling (DST) influence teachers' professional development?
- How does the Digital Storytelling (DST) influence students' development?
    - Will the Digital Storytelling (DST) increase the students' learning motivation?
    - Will the Digital Storytelling (DST) improve the students' academic achievement?

The hypothesis of the thesis

Using DST as a teaching/learning method and approach improves the performance, motivation, and digital literacy skills of the students and teachers in the classroom.

The practical value of the thesis

The study has a high practical value concerning the usage of DST at schools. Practical recommendations and useful training course for schoolteachers will be formulated, and optimal ways of using DST for improved teaching and learning results will be recommended. Practical implementation of creating digital stories will be demonstrated and proposed. Most of the materials and videos created by teachers and students will be recommended for further utilization.

This research will have a double positive consequence on the educational system in Georgia. After the training, the teachers will obtain the ICT tools, will learn what the purpose of DST,

and then will try to use this new concept in the classroom. Finally, students will create the product themselves - the most necessary and appreciated result in present-day educational systems.

The theoretical value of the study

Theoretical pedestals of the present study are the following:

- The concept of DST by different scholars and researchers (Lambert, 2010; McWilliam, 2009; Barrett, 2004; Robin, 2006; Couldry, 2008; McNeil, 2012)
- Research on DST, problem-based teaching, flipped classroom, Multiple Intelligences, learning strategies by different researchers: (Lambert, 2002; Pedersen, 1995; Bruner, 1990; Gils, 2005; Meadows, 2003; The DST Association, 2002; Robin and Pierson, 2005; Barrett, 2005)
- Exploring the efficiency of DST in the classroom (Lambert, 2002; Pedersen, 1995; Bruner, 1990; Gils, 2005; Meadows, 2003; The DST Association, 2002; Robin and Pierson, 2005; Barrett, 2006).
- Knowledge concerning teaching with the technologies was systematised, new approaches and methods and useful models were offered (Richards 1998; Griest 1996; Mergendollar 1997; Hoffman 1997).

The design of study in the research are:

Experimental Design:

- Review and analysis of the present literature on DST
- Experiment

Quantitative paradigm:

- Surveys of teachers, students, international DST project participants
- Pre-tests of teachers, students, international DST project participants
- Post-tests of teachers, students, international DST project participants
- Statistical data analysis of questionnaire results and data obtained through experimentation
- Statistical data analysis of data attained through experiments

Qualitative Paradigm:

- Surveys
- Observations
- Questionnaire

- Teachers' observation, local training observation, international training observation

This study is experimental, hence, quantitative as well as qualitative.

The design of the dissertation

The dissertation contains the following sections: Introduction, four chapters, conclusions, recommendations and 16 appendices. It also encloses 27 figures and 21 tables.

The Review and Conclusion to Chapter 1

This literature review was conducted to explore the prolonged use of Digital Storytelling (DST) in educational settings. This paper reviews the literature documenting the evolution of using DST in education and highlights the advantages and issues of it.

DST is used in different circumstances in different subjects as a motivator and stimulus for students. This chapter demonstrated theories connected to DST: constructivist, narrative paradigm theories, student-centred learning approach, project-based method, technology integration strategies and different learner types in order to underline the importance and effectiveness of DST in education, as well as to enhance students' engagement, motivation, and level of content knowledge.

Literature review in this chapter proves that DST is useful and one of the contemporary educational approach for students to demonstrate outstanding performance and learner's created products such as digital videos. DST teaching method can be considered as an effective way of teaching in the 21st century. It is real life integration into the learning process. The following chapter presents the model, process and implementation of DST in education.

The literature review proved the core role of teachers in the process of using DST method to every student. And there are essential elements together with the teacher pedagogical and content knowledge base that need to be considered in successful DST teaching and learning.

Chapter 1 has described many methods and discussions that confirm the effectiveness of DST in learning. There are given many definitions of this concept and has persuaded how valuable it is to take into account that in the 21st century DST can be one of the significant learning methods for students' and teachers' development. Chapter 1 introduces various approaches and theories to help teachers and students with a high quality of knowledge and motivation while they are learning. Teachers' awareness and knowledge of the DST method will benefit their

students to promote their motivation and content knowledge. The chapter represents how important are teachers ICT skills as well.

Chapter 1 is the essential part for the following chapter, where we could draw the frame of reality in Georgian Education System and technology development and readiness for technology integration into the classroom.

These all above-mentioned theories and methods will be crucial for Georgian educators to start and implement this new method of teaching in their classes.

The Review and Conclusion to Chapter 2

This chapter reviews the Georgian education system development. It underlines the progress and improvements of the School Curriculum and ICT standard development. Georgian education reforms shows that education system has significantly changed and improved last decade in Georgia. In this chapter, there are given examples of how technology integration is improved, and almost all the schools have the opportunity to use technology and specifically DST during their teaching and learning process. Teachers have an opportunity to participate in ICT training for their professional development organised by The Ministry of Education, Science, Culture and Sport of Georgia. After technology improvement, there is revealed the development of the ICT as a subject. ICT standard and its application to Georgian schools exposed that subject is developing gradually and has a positive impact on students' and teachers' development. ICT helps the students and teachers to understand the general means of technology and usability of it in their learning process and real life as well.

The education system in Georgia is changed and improved rapidly. There is described and reflected the reality of Georgian reforms and realities connected to general education in this chapter. This evidences such as the Georgian National Curriculum and ICT standard these are the major effects that were facilitated by the researcher to conduct the study and sort the experiment in public schools in Georgia. Ministry of Education, Science, Culture and Sport of Georgia has prepared the basis for the experiment during these recent years, without technological improvement, without teacher training and schools computer laboratories these research would not be implemented. Thus this chapter shows the background of technological readiness of schools, teachers and students that the infrastructure and the human resources of

Georgian schools are ready to improve their teaching and learning quality with the help of ICT and DST in their schools.

The Review to Chapter 3 - Preliminary Studies for DST Implementation

This chapter is dedicated to underline two different studies. Each of them is highly connected to the thesis and topic of DST in education. The overall purpose of these studies was to explore how to implement DST as a teaching tool and how it impacts on learners' development. The target audiences is teachers and educators. Based on the literature review it was hypothesised that implementing digital storytelling (DST) would result in increases the motivation and performance of the learners. Learners can be students, teachers and other educators as well.

To address this hypothesis, a mixed-methods approach was used combining both quantitative and qualitative methodologies (Fraenkel, Wallen, & Hyun, 2012). Qualitative data were obtained from two open-ended questions that accompanied the pre-and post-test survey.

Study 1- a preliminary study in Armenia. The study will display the effects of DS in teaching and learning at the international level. Target audience were 26 young educators from different countries. Study 1 helped the researcher to understand the methodology of DST. This programme gains the knowledge and understanding of practical and theoretical part of DST how it can consolidate and create the plan for other educators or learners. The purpose of the survey to identify the advantages and disadvantages of DST in the educational environment. The survey was built according to the DST storytelling cycle by Samantha Morra (2013).

In this chapter, the thesis provides the analysis of Erasmus + training course DST (Study 1) for intercultural dialogue directed to youth staff and young front-runners involved in discovering the creating of DST and its practice for operating with young people with the diverse cultural experiences. The research provides the survey with young educators before and after programme, and it was initiated from the researcher.

2. Study 2 – DST training for Georgian teachers. This training gives teachers, the theoretical knowledge about DST and its methodology. The training programme helps teachers to use digital stories in the classroom. The study shows the result of teachers' attitude of using DST in their teaching process. The study 2 demonstrates how teachers in Georgia can use ICT and DST in teaching and learning process, how they evaluate the importance of technology involvements in teaching to enhance the students' performance and motivation, whether they practice the

technological tools of DST and what kind of techniques they use for reaching their goals. This training involves the pre and post quantitative questionnaire to clarify the result of the training. And the survey was conducted by a researcher. It shows teachers' readiness for further study and the problems that teachers could face after the training when they start DST implementation in their classes.

Further, there will be presented the training programme (Appendix 13) and its implementation among school teachers in Georgia (Study 2) (Appendix 4 and 5). The training will give the teachers ICT skills and the ability to use DST in the classroom setting in the way the design research considers appropriately in an educational context.

Both studies helped the researcher to understand the nature of DST in different circumstances; how it is possible to teach students or adults and what can be a problem during this way.

The research intends to explore DST as an active and dynamic learning tool for learning and teaching, the areas of using DST in education and how DST can influence the development of teachers, students and educators. Multiple programs allow us to explore what is the potential and the type of practices that "belong to" DST can be sustained across programmes and to seek further the understanding of discursive activities as situated, mediated, and distributed. Guided by these methodological frameworks, the collected data of the research is presented in the form of:

Armenian Project:

- Survey for the preliminary study in Armenia (before and after survey) (Appendix 1);
- A corpus of archived digital stories done by educators, and other texts and artefacts (on http://digitalstorylab.com/youth-inclusion-in-armenia/)

Teacher training Programme in Georgia

- Teachers' questionnaire before and after training (Appendix);
- A corpus of archived digital stories done by teachers, and other texts and artefacts (Appendix 12).

Study 1

The findings emphasise the efficiency of DST to enhance the experience and knowledge of the learners and educators. Project participants were able to use new media to express their opinion connected to the topic what they have chosen. They were searching, identifying, selecting,

sorting and collecting the information confidently and creatively to describe and show their informational experiences with the video. DST created during this project was the core to strengthened links between participants' experiences. Positive findings demonstrated in the wealth of encouraging reports supported by the participants. The findings also contribute to the discussion about how DST fits into the learning process in formal education setting.

Participants in this study received plenty of technical support, 5 out of the 26 participants found the whole process technically challenging, and many talked about the time-consuming nature of the task. Such problems will hopefully diminish over time as new media software, and portfolio development software becomes more accessible to the users. Meanwhile, further strategies for mentoring and supporting students need development.

Although assessment issues did not emerge as a major theme from the data relevant to this research, it must be mentioned that some participants were challenged at times between meeting the assignment criteria and producing an original digital story.

This research in Armenia was essential for my further study. This project gave this dissertation opportunity to observe the international examples and individuals who are creating DST. And the training efficiency was the vital part for the development of the further teacher-training which will be described in the following study (Study - 2). And the used methodology, “seven component of the DST”, during this project was used as the already tested method for training for the dissertation’s further training programme.

Study 2

According to the data obtained from the study of DST training with teachers, the positive aspects of using the DST have arisen. Teachers were satisfied with the effectiveness and efficiency of DST and they mentioned their intention to use it in schools. As reported by the participants of the training, it is essential to use digital stories to teach and learn historical events, new topics, challenges, to cover the complex tasks and so forth.

Above mentioned and analysed questionnaire revealed that the teachers did not have information what DST was at the beginning. After the training, the answers showed that their thought was extensive and encouraged and tightly connected to the learning methodology what was the training purpose to arm the teachers from the idea of DST to the end of the training and feedback.

The teacher training has also revealed positive effects on teachers' professional development and all the participants mentioned the benefits and advantages of DST because they could see the perspective from the student's point of view and conclude that the technology integration in the process of learning is one of the primary keys to motivating students. Furthermore, the participants noted one more benefit of DST. According to them, DST enables those to create materials that can help them develop students' understanding connected to the subject curriculum. The teachers found out the three directions of video creation and the ways how they can use each type of the story in their classrooms. These types are the personal story, the story connected to the curriculum subject or the instructional story where the teacher can explain the new thing/event or give the instruction.

However, the teachers were also aware of the challenges and negative sides of using DST in the classroom, such as, a time-consuming process, workload, technological problems, and challenges of working in the group because it is significant for the teacher to give the students clear tasks so that all the students are involved in the procedure. Teachers are aware of the technical part of the creation of the DST but they do not feel confidence still, thus, it can be one of the challenges for the study as well.

After the training, the teachers are ready to inculcate the DST ideas in their classes. The trained teachers have collected enough skills and knowledge related to the new methodology of DST and its benefits for their learners. They got familiar with the challenges and issues connected to DST implementation in their classes. DST method for practical realization of different subject teaching which is offered in the above chapter will support teachers dispel the ambiguity of how to apply learnt information and skills into daily practices.

Conclusion to Chapter 3

The DST project in Armenia helped the thesis to develop a further teacher training programme in Georgia. During these Armenian Project and later in the teacher training programme, the methodology "Seven Steps of DST" (Robin, 2006) and the cycle of DST by Samantha Morra (2013) were used, experienced and verified. The analysis of the project in Armenia gave the opportunity to a researcher to develop the training programme for the Georgian teachers. After the Armenian project, there were developed a three-day training programme for Georgian teachers. The Georgian teacher training was developed in two directions: methodology and

technological skills. The teachers were given all materials, theoretical and practical knowledge and understanding of DST.

To sum up, study 1 and study 2 have prepared the ground for the trained teachers for further experimental research for this thesis.

The Review to Chapter 4 - Experimental Research Methodology of DST

This chapter is dedicated to the type of research used for this study - quantitative and qualitative with an experimental method and specifically "design research".
In this chapter, the experiment that was carried out in two different public schools in Georgia will be analysed. **Study 3** reflects Design Experiment in two schools in Georgia (Public School № 169, Tbilisi, Shashiani Public School, Gurjaani); The overall goal of the study is to explore the effects of DST on students' academic performance and motivation.

The research is intended to explore DST as an active and dynamic learning tool for learning and teaching, the areas of using DST in education and how DST can influence the development of teachers, students and educators. The research also observes how DST effects on the students' motivation while getting engaged in creating the DST. The research design provides a school experiment and a discourse analysis to explore the dynamic and the progress/regress of academic performance and motivation among students involved in the project. Guided by these methodological frameworks, the collected data of the research is presented in the form of:

- Pre-test and post-test (subject tests in Biology and Civil Education Studies)
- Pre-questionnaire and post-questionnaire (to check motivation level)
- A corpus of archived digital stories done by students and teachers, and other texts and artefacts.

Research Design

In this thesis, "design experiments" (Brown, 1992; Collins, 1992) is used as the method of study. The significant characteristics of "design experiments," as described by Brown (1992) and Collins (1992) are to label complex problems in real contexts in collaboration with teachers and students. The second characteristic is to integrate recognised and theoretical design principles with technological affordances to provide credible solutions to these complex challenges, and the last feature is to conduct a particular and thoughtful experiment to inquire and improve innovative learning environments as well as to set new design systems. There are

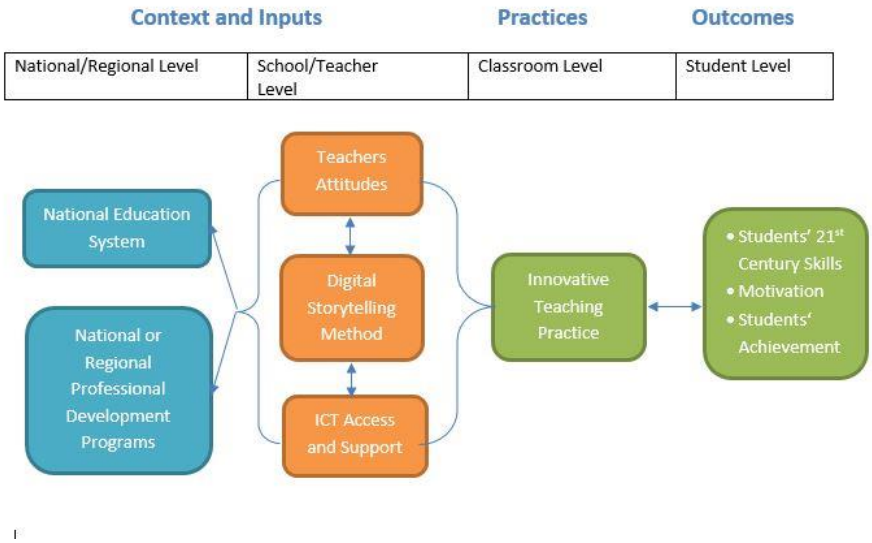
presented design-based investigations of DST based learning environments in which we employed a blend of quantitative and qualitative ways to study the messiness of innovation in authentic contexts. After the teacher training, trained teachers have started the experimented in their classes, one of the biology teacher was from Shashiani Public school and the other one was the Civil Education Studies teacher from N169 public school.

Pre-test and post-test studies are extensively used in Experimental Research Design and essentially for the idea of comparing groups and/or measuring difference resulting from experimental treatment. The analysis of change provides a means and a media for assessing the impact of students' performance and motivation.

First, the researcher investigated and explored the DST method on international level; observe the DST creation process done by the other educator and the researcher. The researcher has collected the methodology of DST itself to develop the further "teacher training programme", after that the researcher has created the teacher training programme how to use DST in schools and what kind of benefits exist to use this method in the classrooms.

Subsequently, the researcher has tested the model and technological products in multiple contexts, including international people, multicultural environment, and public schools with teachers and educators (Table 4-1). As this table shows this was the way of DST development in this research content input was from the international and local level and were participating Georgian teachers and international educators, then two Georgian teachers developed the programme at school and started experiment with their students.

Table 4-1 Study Design



Developed by the Researcher

The research was carried out from January 2018 until May 2018 (one semester).

The experiment was implemented in two different schools (Public School № 169, Tbilisi, Shashiani Public School, Gurjaani) in different subjects (Biology, Civil Education Studies) with different age groups (10th grade and 11th-grade students – aged 14-16). Experimental design is given for individual subjects particularly for Biology and Civil Education Studies. These subjects were selected because of interest from the teachers' side, however, the experiment would be interesting with other subjects as well, such as History, Literature and Art.

This experimental research tests DST with treatment groups. At the same time, the researcher observes the experimental groups to find out the result of students' performance and motivation while they are using DST in two different regions of Georgia during a semester, year 2017/18. The study involved in total four classes; two classes from Public School № 169, Tbilisi and two classes from Shashiani Public School, Gurjaani.

Participants from № 169 Public School, were 42 students, among them - 12-girls, 11-boys (experimental group), 11 – girls, 8 – boys (control group), total - 23 girls and 19 boys (Civil Education Studies).

Participants from Shashiani Public School were 34, 13-girls, 3-boys (experimental group), 10-girls, 8-boys (control group), in total 23 girls and 11 boys (Biology) (Table 4-2).

There were 37 students from the control groups and of 39 students from experimental classes from both schools.

The researcher collected the data through pre-test and post-test practices. The pre-test was carried out before giving the treatment to the students being followed by using DST method in treatment groups in two subjects (Biology and Civil Education Studies). After that, the teacher is giving the post-test to both control and treatment groups. As for the technique of analysing data, the scholar uses quantitative and qualitative inquiry as follows: finding the median, finding means, finding mode and finding standard deviations.

Table 4-2 Experimental Design of pre-test – post-test with control and treatment groups

Group	**Pre-test**	**Task**	**Post-test**
Experimental	Group 1	DST (p.77)	Group 1
Control	Group 2	Normal class activities (P 79)	Group 2

The research seeks to response the following study questions:

- How does DST influence the students' academic achievement and learning motivation?
    - Will the DST improve the students' academic achievement?
    - Will the DST increase the students' learning motivation?

The activities that were conducted during these experiments are described in details in table 4-3 and table 4-4, table 4-5. Table 4-3 shows the activities for Civil Education Studies. This topic has been led in the experimental and control groups. Table 4-4 shows the same details in Biology experimental and control groups. Both classes had the same teachers and the topics are explained and taught by one teacher in Biology and one teacher in Civil Education Studies.

Table 4-3, 4-4 demonstrate the information about the topics in both experimental and control groups before and after experimental time.

Table 4-3 Design of the Experiment (Civil Education Studies)

Civil Education Studies

Experimental group activities	Control group activities
Pre-test of Civil Education Studies Pre-questionnaire of Motivation Teacher's Observation of Involvement Digital Competencies	Pre-test of Civil Education Studies Teacher's Observation of Involvement Digital Competencies
Selected Main Topics: 1. What is the governance? 2. Types of state governance 3. State Territorial Arrangement 4. Democracy and its barometers 5. Participate in democratic governance.	Selected Main Topics: 1. What is the governance? 2. Types of state governance 3. State Territorial Arrangement 4. Democracy and its barometers 5. Participate in democratic governance.
Post-test of Social Studies Post-questionnaire of Motivation Teacher's observation of Involvement Digital Competencies	Post-test of Social Studies Teacher's observation of Involvement

Table 4-4 Design of the Experiment (Biology)

Experimental group activities	Control group activities
Pre-test of Biology Pre-questionnaire of Motivation Teacher's Observation of Involvement Digital Competencies	Pre-test of Biology Teacher's Observation of Involvement Digital Competencies

Main Topic: Nervous system and its coordinating function 1. Review of the nervous system. Types of nervous system 2. Neurons. Reflex, reflex arc 3. The brain structure and its functions 4. Memory. Sleep. 5. Substances that operate the nervous system: stimulators, depressants, drugs, hallucinogens 6. Receptors. Visual and hearing receptors	Main Topic: Nervous system and its coordinating function 1. Review of the nervous system. Types of nervous system 2. Neurons. Reflex, reflex arc 3. The brain structure and its functions 4. Memory. Sleep. 5. Substances that operate the nervous system: stimulators, depressants, drugs, hallucinogens 6. Receptors. Visual and hearing receptors
Post-test of Biology Post-questionnaire of Motivation Teacher's observation of Involvement Digital Competencies	Post-test of Biology Teacher's observation of Involvement

Biology (Nervous System)

Table 4-5 DST Plan Outline

DST Plan Outline		
Steps	**Lesson/time**	**Topic**
Step 1: Technology Skills	**Lesson 1**	Presenting Wevideo.com/Movie Maker

		Modelling. DT Steps, Cycle of DST
Step 2: Build the story	**Lesson 2** **Lesson 3** **Lesson 4**	Brainstorming for digital story Building the script Writing and creating a storyboard
Step 3: Visualizing the story and assembly of the media	**Lesson 5**	The group working to collect and create the media
Step 4: Producing the story	**Lesson 6** **Lesson 7** **Lesson 8**	Producing the first draft of DST Peer review of DST Finalize the DST
Step 5: Presenting the stories	**Lesson 9**	Demonstration of final version DST to the classroom, use rubrics for assessment
The predictable period for the whole project:		Roughly 9 hrs.

Developed by the researcher according to the Lambert's seven components of DST

Control group students have the usual lessons. The teachers (Biology, Civil Education Studies) were explaining the topics and students were doing exercises from the workbook. The same teachers were conducting the control and experimental groups' activities.

Conclusion to Chapter 4

According to the main conclusions of the quantitative and qualitative analysis we assume:

Implementing DST in Biology and Civil Education Studies in schools can be useful as it is a practical and contemporary approach that magnifies the teaching and learning process.

DST intensifies classroom management, group work and involves students in the process of active learning. This method helps students to research, collect and analyse the information and to maintain it. It also raises the awareness in the subjects, demonstrates the significance of various ideas and attitude towards the Biology and Civil Education Studies.

The conclusions of qualitative and qualitative study expose that DST considerably influenced the student's motivation. It was identified from the conclusions that the result of using DST in the classroom raises the students' interest, engagement, active involvement and participation in and out class activities and also strengthens positive classroom atmosphere.

Videos created by the teachers stimulate more engagement of students in the classroom and build the group feeling of students that is almost not available from students' books or from teachers who are lecturing.

Therefore, the DST method will be considered as a new, advantageous way for the Georgian schools, and it can be implemented in other cases in different subjects in the future.

The Limitations of the Research

While this research carried out under the experiment design for a semester of the dependent variables, some limitations must be considered. Firstly, because the subject teachers (Biology and Civil Education Studies) used the subject tests for their classes to measure the initial knowledge before and after experiment and find the difference of academic experience, this instrument cannot be generalised to use for more massive scale, it gives the limitation for external validity of this research findings.

To apply this limitation, the researcher did face-to-face interviews with the teachers and students. Future studies may consider adopting different strategies to make the academic achievement more specific and not only based on the subject test results. According to the academic performance in Biology and Civil Education Studies, teachers and future researchers could take advantages of this study and develop and implement DST in a different subject.

The research has particular limitations that have to be stated:

- The length of the experiment was restricted, this continued only one term. The consequences would have been more credible and worthwhile if the experiment had been carried out for an extended period.

- The study was taken by a small number of people (26 international educators, 19 Georgian teachers, two international teachers, four groups of students). These figures might not provide the characteristic of all students, educators and teachers in Georgia.
- According to the given studies, the conclusions of the existing research cannot be generalizable to all the teachers, students and communities.
- Leaping probability for open-ended questions in the motivation test questionnaire caused several opinions that hinder to find out the clear picture of students' motivation before and after the experiment
- The technical issues of computers, other devices and teachers' ICT skills
- The lack of Georgian Digital Stories
- The study could not cover all school subjects for which using DST method is considered useful.

These circumstances might have limited my conclusions so that they cannot be regarded as generalised conclusions. Weaknesses and flaws suggest the need for further studies. My advice and recommendations will be developed in further research in order to bring the precise and reliable evidence to generalise the consequences on a broader scale in Georgia.

Possible Directions for Further Study

According to our conclusions the following suggestions and recommendations are presented:

- Immersion of the DST method as an innovative and complementary teaching method in the curriculum of Biology and Civil Education Studies at school level in Georgia.
- Creating teaching and learning resources by students as well as teachers. Teachers use textbooks mostly, and DST will help them (students, teachers) make new materials and resources for the teaching and learning process. This investigation, consequently, suggests that school teachers should be revealed to the new teaching method such as DST to diverse their teaching/learning process.
- Providing 3-day training programme for school teachers of any subject to get familiarized with the efficient use of DST method in the teaching and learning process.
- School equipment should be adjusted to support the use of visual materials and videos in classrooms.
- Expanding the numbers of DST materials in Georgian schools for different subjects.

- The Ministry of Education and Sciences of Georgia and educational experts should be interested in this teacher training programme to help increase new educational materials, instructional videos and methodological guidebooks for teachers.
- Foster the use of ICT into education and social initiatives.
- Promote interaction, communication, collaboration and creativity
- Empower learning responsibility and autonomy
- Reinforce active citizenship
- Foster employability
- Improving self-image in case of problems of communication and/or self-expression.
- Chain-reading support
- Understand the instruction well

Group work and problem-solving

CONCLUSION and RECOMMENDATIONS

In accordance with the conclusions gathered from this study, the application of DST in Biology and Civil Education Studies is recommended, as it has a positive impact on students' academic achievement and motivation.

Digital Storytelling (DST) is the 21st century's new approach to learning where the learner can be **not only an information receiver** but **a giver at the same time**. DST creation is the process of collecting the information (video, photos, voice, music) connecting to the selected topic where the **teller has the main role, to design the video.**

In the process of creating DST students are doing the followings: the first get the idea for DST, next researching the selected topic, afterwards, they write a script that has already gathered, collecting the pictures and small videos if they are necessary and create a genuine story. This exciting process involves authentic learning activities and creativity of the students. In addition to it, they need to analyse the information and be critical towards the vast amount of information. This process, mentioned above, influence on students' motivation and academic performance in a positive way. Therefore, the method of combining DST into Biology and Civil Education Study lessons will promote active learning and meaningful education.

It is recommended by the study that DST can be implemented in schools at least for one year. It is also vital to continue the research and check the effect of DST on Biology and Civil Education Studies instructions. The next step of using DST can be the connection to different

contemporary learning and teaching methods. The result will be more reliable if the research will be conducted in the more significant amount of groups and students and schools. Overall, the implementation of this research was for one term, and digital stories were connected to selected topics from the curriculum "Nervous systems" in Biology and "Different types of Governance" in Civil Education Studies. Considering the result of DST research and its prospects the appropriation that the beneficial influence of useful elements demands significant time, it is recommended that the treatment time in further researchers should be planned and outlined for an extended period to firm more appropriate conclusions regarding the result of DST on practical aspects.

The research, literature investigation and experimental conclusions of the study showed the following essential outcomes:

1. All the outcomes from the data analysis, digital stories show a great way to support the students' academic achievement and motivation. DST has a meaningful effect on students' progress. The importance of given research reveals that there is a positive correlation between using DST in the classrooms and the transformations in students' performance and motivation. Students' motivation and academic achievement change to a comprehensive range in regard to different subjects (Biology and Civil Education Studies).

See more avidence connected to the academic achievemnts:

- **Mean** of Post-test Civil Education Studies Experimental Group was **11.3913**, while Post-test Civil Education Studies Control Group showed the following **9.4211** results. **Median** of Post-test Civil Education Studies Experimental Group - *12,* when Control Group showed **9.**
- And the second subject Biology had even higher results: **Mean** of Post-test Biology experimental Group was **14.6250**, while Control Group had **11.2778. Median** Post-test Biology Experimental Group had **14.5** but control group **12.**

2. Students gain more experience and knowledge in the processes of creating the digital stories that bring a more in-depth understanding of subjects. Proper use of DST method by the students and teachers makes complex ideas and difficult topics more understandable to students. They show the interest of doing digital stories in the classroom teaching and learning and expand their academic knowledge and

motivation. According to the experiment about 25% of students' motivation is significanlty raised. The rest of the results (75%) were the same, however, during the interview, they expressed their enthusiasm and positive attitude to use DST in the classroom in the future.

3. Doing and using digital stories link the subject topic and real-life contexts thereby providing students with real-life connections during the learning activities. This DST method interests and promotes students' understanding by researching new topics, collecting the data connected to the chosen topics, previous knowledge of students, life experiences and the process of doing their products. DST in the classroom enables students to think about research, collect, sort proper information, discuss or assess various issues from multiple perspectives. If teachers could use DST carefully, the understanding and motivation of schools would become more efficient and productive.
4. The research has concluded that using DST as a teaching approach enhances the learning conditions in a classroom. The method of DST improves efficient classroom management by engaging students in learning, renders the possibilities for students to work together, creates and supports a favourable classroom climate. Learning environment displays pleasant and interactive process using DST method in the classrooms; instead of being passive listeners, students take active participation in learning activities, thus the level of understanding and knowledge of the subjects are improved. The approach supports to build a vibrant learning ecosystem. The use of DST in the educational process develops meaningful academic education as well as raises time spent academically engaged. Furthermore, the DST teaching/learning method builds excellent teacher-student rapport as well as positive interactions among students and promotes the social and emotional extension of students.
5. Both teachers and students profit from DST in the school process. DST makes teaching and learning of Biology and Civil Education Studies more active, engaging and inspiring, and the stories motivate the students as well as improve teachers' teaching level, raise teachers' motivation to learn about new strategies and ways that will be enjoyable and beneficial for the students. The DST method gives teachers and educators an excuse to expand their expertise and knowledge beyond the fixed and settled school curriculum.
6. The DST method is an excellent parallel method together with traditional approaches in Biology and Civil Education Studies when the teacher uses the instructional videos and students work in a group to build a story around a new topic. The use of DST

reinforces effectively traditional teaching methods in schools. Digital videos created by the students, as well as the teachers, promote students' motivation and interest them in the content of the lesson and academic achievements. This process encourages them to achieve targeted education objectives and improve the level of education.

7. The research has also shown some weaknesses in the DST method. Every school does not have enough and appropriate technologies. In addition, the possibility to break down the technologies is high and teacher every time should be ready and have the lesson plan. Not every school is equipped with different technologies, and most of the students do not have the same opportunity. Also for the teachers, it is still problematic to feel comfortable when they are using the technology. ICT skills of the majority of teachers' are not ready to plan and implement DST in their classes. There are a restricted number of digital stories created by teachers or students with local Georgian context. Lastly, using the DST method is more time consuming for teachers and students, as they need to spend more time and energy on planning their videos and materials for the topic as well.
8. International practice of using DST pointed the large benefit and positive impact on the development of adults and educators. Most international and local interviewed participants, teachers and students expressed their high enthusiasm and motivation to use, test, and apply DST in their future classes or community.
9. A newly designed training programme for teachers with local and international experiences revealed that DST method is beneficial for teachers to improve their professional development and for students to improve their life skills and academic development.

List of Publications Related to the Doctoral Dissertation:

1. Bitskinashvili, N. (2015). Educational uses of digital storytelling in Georgian school education, IRCEELT - *2015 5th International Research Conference on Education, English Language, and Literature in English - Conference Proceedings* pages 84-89. - 2015; ISSN 2298-0180, Tbilisi, Georgia.
2. Bitskinashvili, N. (2016). The Theoretical Framework from Oral to Digital Narratives Development in School Education, *World in Dialogue – Intercultural Problems in the Religious, Economic, Communication and Educational Context – Humanistic and Interdisciplinary Research*

Group AMU, pages 151-160. ISBN 978-83-7980-016-2, ISSN 2353-1177, Poznan, Poland.

3. Bitskinashvili, N. (2017). Training course analysis and international youth's views concerning digital storytelling, *IRCEELT - 2017 7th International Research Conference on Education, English Language, and Literature in English - Conference Proceedings*, pages 637-647.; ISSN 2298-0180, Tbilisi, Georgia.
4. Bitskinashvili, N. (2018). The Role of Rubric for Evaluating Digital Stories and its Effect on Students' Performances, *Social Educational Project of Improving Knowledge in Economics Journal SEPIKE, Edition 19, Journal Association 1901 "SEPIKE"* Poitiers, Frankfurt, Los Angeles, den 31.03.2018, pages 19-24. p-ISSN: 2196-9531: Journal Association 1901 SEPIKE e-ISSN: 2372-7438: Journal Association 1901 SEPIKE, US Edition
5. Bitskinashvili, N. (2018). Integration of Education Technologies (Digital Storytelling) and Sociocultural Learning to Enhance Active Learning in Higher Education, *Journal of Education in Black Sea Region Vol 3, No 2 (2018)*, page 20-33, ISSN Print: 2346-8246, Tbilisi, Georgia