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Using digital storytelling to develop foundational and new literacies

Χρησιμοποιώντας την ψηφιακή αφήγηση ιστοριών για την ανάπτυξη θεμελειωδών και νέων εγγραμματισμών

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This paper presents a research conducted in a Greek Primary school and studies the use of Digital Storytelling to develop Foundational and New Literacies as well as improve learners' writing skills through their engagement and collaboration. The researchers' aim was to promote young learners' 'learning to write', a learner-centered approach to the teaching of writing, through the development of Foundational as well as Information and Media literacies. The power of stories has been significant through the generations for thousands of years. Stories represent the oldest form of education and through them, learners are at the centre of the learning process and their experiences as well as their voices are valued (Reinders, 2011). Nowadays with the development of Information and Communication Technologies (ICTs), storytelling takes a new format through the use of different multimedia tools. By and large, through the use of myths, learners were involved in problem-solving and higher order thinking skills, critical and creative thinking and decision-making all of which meet the demand for 21st Century Skills.

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Η εργασία αυτή παρουσιάζει μια έρευνα που έγινε σε ένα Ελληνικό δημοτικό σχολείο και μελετά τη χρήση της Ψηφιακής κατασκευής ιστοριών για να αναπτυχθούν στους μαθητές Θεμελειώδεις και Νέοι Εγγραμματισμοί καθώς και να βελτιωθεί η δεξιότητα παραγωγής γραπτού λόγου μέσα από την ενεργή συμμετοχή και την συνεργατικότητα των μαθητών. Ο στόχος των ερευνητών ήταν να προάγουν στους μαθητές τη φιλοσοφία του 'μαθαίνω να γράφω', μια μαθητοκεντρική προσέγγιση στη διδασκαλία της παραγωγής γραπτού λόγου μέσα από την ανάπτυξη Θεμελειωδών Εγγραμματισμών καθώς και εκείνων του Πληροφοριακού και των Μέσων Επικοινωνίας (Μιντιακός Εγγραμματισμός). Η σημαντικότητα των ιστοριών είναι φανερή σε γενεές χιλιάδων ετών. Οι ιστορίες αντιπροσωπεύουν την παλαιότερη μορφή εκπαίδευσης και μέσω αυτών, οι μαθητές βρίσκονται στο κέντρο της μαθησιακής διαδικασίας και οι εμπειρίες τους καθώς και οι φωνές τους παίρνουν αξία (Reinders, 2011). Σήμερα με την ανάπτυξη της Τεχνολογίας της Πληροφορίας και της Επικοινωνίας, η αφήγηση ιστοριών λαμβάνει μια καινούργια μορφή

με τη χρήση διαφορετικών εργαλείων πολυμέσων. Γενικά, μέσα από τη χρήση μύθων, οι μαθητές ενεπλάκησαν σε δεξιότητες επίλυσης προβλημάτων και λήψης αποφάσεων, δεξιότητες υψηλής σκέψης, κριτική και δημιουργική σκέψη που αποτελούν μέρος των δεξιοτήτων του 21ου αιώνα.

Key words: Digital Storytelling, foundational literacies, new literacies, information literacy, media literacy, 21st century skills, write differently, learner engagement, collaboration

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1. Introduction

Educational Technology is very important in our contemporary world because it provides both teachers and learners with the opportunity to make language learning flexible, motivating, effective and enjoyable. Nowadays young learners use technology to play games. Thus, it is of utmost importance that especially Primary school teachers should help them view technology as a tool in order to use it for educational purposes. This can be achieved through making, doing and creating with technology (Schaffhauser, 2011).

All teachers have memories of stories being read in kindergarten and primary school or of writing stories in class. Therefore, young learners have an innate love for stories. Besides, they help learners develop understanding, respect and appreciation of other civilisations. Digital storytelling embraces the traditional storytelling and reconfigures it by combining different types of multimedia; computer-based graphics, recorded audio, computer-generated text, video clips and music. Since literacy is not something static, learners should be prepared to comprehend and communicate through traditional practices as well as emerging technology. From an early age, literacy education should focus on production and 'media making' and not merely on reading and writing.

The researchers involved in the endeavor presented in this paper, having taken all the above into consideration, used Digital Storytelling in Primary Education. The research project lasted seven months, from October 2012 till April 2013 and took place in a State Primary school in Athens. Two different grades, the 5th and the 6th, consisting of two classes each, participated with 69 learners who fell roughly into A2 of the Basic level (Common European Framework classification), the so-called, "Waystage" (Council of Europe, 2011 as cited in Sifakis, 2004).

The theoretical framework is thoroughly described in section 2 whereas the design of the research in section 3. Then the findings of the study are presented and discussed in section 4. Finally, limitations of the study and recommendations for further research are outlined in sections 5 and 6 respectively.

2. The emergence of digital storytelling

Digital Storytelling has not been a new concept in multimedia technology, thanks to Lambert and Atchley. They were the co-founders of the Center for Digital Storytelling (CDS), a non-profit, community arts organization at U.C. Berkley in Berkeley, California in 1993 (Bull &

Kajder, 2004; Chung, 2007; Robin, 2008). Since the early 1990s people, involved in creating and sharing their narratives, have been helped and trained by their centre.

Digital Storytelling is the practice of using ICT tools, Internet downloaded or hand-drawn images, photographs, graphics, texts, recorded audio, music, sound effects not to mention the learners' own voice in narrating to tell stories. Learners are considered creators and producers and not consumers since they pass through the traditional writing processes of brainstorming, selecting a topic, drafting, conducting research, writing a script and developing an engaging story (Robin, 2008, Educase Learning Initiative, 2007). Then they supplement them with multimedia tools. In the end, the digital stories can be played on a computer, uploaded on a web site, or burned on a DVD.

2.1 Types of Digital Stories and their elements

There are many different types of digital stories, the major ones being categorised into the following groups:

- personal narratives - stories that contain accounts of significant incidents in one's life,
- historical documentaries – stories that examine dramatic events that help us understand the past, and
- stories designed to inform or instruct the viewer on a particular concept or practice (Davidson and Porter, 2005, Eisner et al, 2007, Robin, 2006 and Robin, 2008).

Besides, the Center for Digital Storytelling is known for developing the Seven Elements of Digital Storytelling. Lambert (2007) addresses the following digital story traits:

1) Point of View – the author's perspective
2) A Dramatic Question – a question answered by the end of the story
3) Emotional Content – serious issues spoken in a personal and powerful way
4) The Gift of your Voice – how the story is told so that the audience can understand the context
5) The Power of the Soundtrack – music or sound effects to accompany the story
6) Economy – put as simply as possible so that the viewer is not overloaded with unnecessary information
7) Pacing – the slow or quick progress of the story (also cited in Barrett, 2006, Bull and Kajder, 2004, Dreon et al, 2011, Robin, 2006 and Satterfield, 2007).

Nevertheless, later, Houston University expanded and modified these traits into:

- the overall purpose of the story (instead of the Emotional Content),
- the choice of content,
- the quality of the Images and
- Good Grammar and Language Usage (Αποστολίδου, 2012 and Robin and Pierson, 2005).

This modified set of elements provides learners with a purpose and set of guidelines. Learners use them as they find, make or take pictures on their topic, prepare a storyboard consisting of their ideas, and complete an engaging digital story that manifests the understanding and point of view of the topic they have chosen (Robin and Pierson, 2005). However, a digital story may include many, if not all the elements.

2.2 Digital Storytelling as an effective Instructional tool

Figure 1. Adapted from Robin's (2008:223) article: Digital Storytelling: A Powerful Technology Tool for the 21st Century Classroom

Digital Storytelling has become a powerful instructional tool for both learners and teachers. First of all, learners of different learning styles can be engaged in their own learning process and develop both multimedia and communication skills. Additionally, it is motivating as it provides learners with authentic material and promotes their creativity (Karaoğlou, 2009). Apart from these, the integration of visual images with the written text improves learners' comprehension. Moreover, digital stories let learners "express themselves not only with their own words but also in their own voices, fostering a sense of individuality and of 'owning' their creations" (Educause Learning Initiative, 2007, p.12). Their impact on learners is also shown through the learners' critical thinking of which combinations of audio and visual elements will be effective.

Apart from the above, Figure 1 overtly presents the convergence of Digital Storytelling in education. It is evident that when learners take part in designing, creating and presenting their digital stories, they are engaged in the following skills:

- Research skills: locating and analysing necessary information;
- Writing Skills: going through planning, revising and giving or receiving feedback when learners develop a script;
- Organization Skills: managing the materials they want to use and the time to complete it;

- Technology Skills: using different types of tools like digital cameras, scanners, microphones and multimedia authoring software;
- Presentation Skills: coming up with the best presentation of the story;
- Interview Skills: deciding on which questions to use in an interview;
- Interpersonal Skills: the members of a group have different roles;
- Problem-Solving Skills: discussing and deciding how to avoid possible problems they may face throughout their work; and
- Assessment Skills: by evaluating their own and others' work and making suggestions for improvements (Robin, 2006).

2.3 The 21st century skills

Moreover, Robin (2008) asserts that learners can be benefited to a great extent when involved in creating their own digital stories since they are able to develop various types of literacy such as:

- Digital literacy — communicating with a community to discuss issues, gather information, and seek help;
- Global literacy — reading, interpreting, responding, and contextualizing messages globally;
- Computer or Technology literacy — using computers and other technology for the improvement of learning, productivity, and performance;
- Visual literacy — understanding, producing, and communicating through visual images;
- Information literacy — finding, evaluating, and synthesizing information (Robin, 2006, 2008:224) and
- Media literacy - recognizing, evaluating and applying "the persuasive techniques of media so that learners can tell their story and understand the true nature of the stories that others are telling them" (Ohler, 2008, p.12).

From the above we can deduce that Digital Storytelling provides learners with 21st Century Literacy, Digital Age Literacies, or 21st Century Skills (Brown, Bryan, & Brown, 2005; Jakes, 2006; Partnership for 21st Century Skills, 2004) as it is clearly presented in Figure 1 above. Thus, learners can become information seekers, interpreters, analyzers, organisers, synthesizers, assessors, higher-order thinkers, problem solvers, risk takers, effective communicators, collaborators and creators of knowledge (Porter, 2003, Tolisano, n.d.).

3. Developing literacy through digital storytelling

In continuation of literacy discussion, attention is drawn to both traditional and new literacy practices through Digital Storytelling. Traditionally, the literacy model is that of 'one medium, one mode, and one language' defined from a print-based world, a world of two dimensions: print and images. However, literacy definition has undergone a dramatic change brought by the rapid advancements in the world and especially the technological development. Therefore, nowadays there is a shift towards an ideological literacy model that sees literacy from a different perspective, not always appearing in a linear, from left-to-right format.

From the above we can deduce that in the 21st century, as far as literacy teaching and learning and, in particular, writing is concerned, learners should be equipped with not only Foundational but also New literacies in order to construct meaning. Concerning this research, the Foundational literacies of producing well-spelt, syntactically and grammatically correct texts and moving forwards and backwards in the stages of the writing process are mainly investigated. As for New literacies, this study focuses on Information and Media literacies.

3.1 Foundational literacies

Up to now, foundational literacies have been taught necessarily when reading or writing any type of text 'print or paper'. According to Leu et al (2004, p. 15) "'old literacies' refer to 'skill sets' that include phonemic awareness, word-recognition, decoding knowledge, vocabulary knowledge, comprehension, inferential reasoning, the writing process, spelling, response to literature", skills and knowledge taught in schools up to the present so that learners can use the monomodality of black ink on white paper effectively.

More specifically, concerning the writing skill, these can be outlined as: knowledge in grammar and syntax of the language, understanding the meaning of new words, producing well-spelt texts, moving forwards and backwards in the stages of the writing process, word recognition, vocabulary knowledge and inferential reasoning.

3.2 New literacies

New literacies build upon foundational literacies but "go beyond them to include new reading, writing, viewing and communication skills required by the many new ICTs that continue to appear in our lives" (Leu et al, 2004:496). Learners, nowadays, create texts, respond to and evaluate texts, comprehend and synthesize information from various multimedia tools; images, hyperlinked texts, sound effects, music, and use them to communicate ideas. In this paper, learners were engaged in tasks so as to practise Information and Media literacies.

3.2.1 Information Literacy

Information literacy entails the ability to access information and images in various forms such as old print media, graphics, photographs, audio and video materials. Additionally, it includes reading, writing, research and communication abilities to such an extent that one can critically access, interpret, process and store print as well as multimedia material (Kellner, 2000).

Moreover, it involves abilities to read, skim and scan hypertexts, websites and information, navigate between links, be aware of safety guidelines, combine different parts of information from various multimedia tools, construct meaning, synthesize and evaluate (Kellner, 1997). Besides, it demonstrates the skills to use search engines in order to organize information (store or retrieve it), cut and paste or reconstruct it for learners' purposes (Ba et al, 2002).

In addition, Information literacy is defined as the ability to:

a) evaluate information with regard to its quality, authenticity, credibility and usefulness, among different media,
b) comprehend when information is necessary; it serves as a filter to locate and avoid untrue, irrelevant or biased information (Gilster, 1997),
c) access, synthesize and use information appropriately,
d) carry out these practices by using technology and electronic resources effectively (American Library Association, 1989, North Central Regional Educational Laboratory, 2003).

According to Bawden (2008) the information literate learner actually goes through six different stages:

1) recognizing a need for searching information,
2) identifying exactly what kind of information is necessary,
3) accessing the information needed,
4) evaluating the located information,
5) organizing and
6) using this information appropriately.

3.2.2 Media literacy

Media literacy entails teaching with or through media as well as teaching about media. This may entail language, codes and conventions, the analysis of an author's stance and motives and the critical evaluation of the messages. Kellner (1997) states that this kind of literacy encompasses knowledge of how media work, how meanings are constructed, how cultural pedagogy is served through them or how they operate in everyday life.

Besides, media literacy requires not only traditional print literacy skills but also visual and aural literacy, the ability to analyse narratives and cultural forms. Also, it includes "reading images critically, interpreting sounds, and seeing how media texts produce meaning in a multiplicity of ways" (Kellner, 1989 & 1995).

By and large, media literate people can access, read, understand, evaluate, interpret and criticize media materials, create media products so as to use various media technologies as tools to create, communicate and express themselves (Hendricks et al, n.d., Kellner, 1997 & Semali, 2001). Thus, media creators are those who have created a wiki, stories online, synthesised or co-constructed and used online content into their own creations.

3.3 The development of writing skills

Through Digital storytelling, a 'writer' can go further than having a product containing a written text with graphics, photographs or images (Rowsell & Walsh, 2011) and become a 'producer' (Sheridan & Rowsell, 2011) by designing and producing a written text that combines images and graphics with sound and movement on screen.

The process of digital storytelling starts as the 'traditional' writing process including brainstorming, drafting, peer-editing and re-drafting and it is not a solitary act carried out by an author but a collaborative social effort that is continuous. However, the story is in the foreground and technology in the background, serving as a tool for the final publication and

sharing (Bull & Kajder, 2004); a story "should be remembered for its soul, not the bells and whistles of the technology tools" (Porter, 2006:31). Therefore, from the initial investigation to draft and through the editing and improvement of draft after draft, writing takes most of the lessons' time.

Moreover, Pennington's model (1996) of *Writing Differently* is promoted. According to her, writing is viewed in evolutionary terms and as requiring redrafting (cognitive/affective effects), learners are involved in drafting and revising cycles, generate and process content (process effects). In addition, they produce more intermediate drafts with more content and their creativity is demonstrated by the difference between their initial and final drafts (product effects), (Slaouti, 2005). Consequently, Digital Storytelling can serve as a way for learners to *Write Differently*, promoting Pennington's model and taking advantage of its potential.

4. The research data and design

Digital technology was embedded into writing lessons in order to create multimodal environments to enhance these lessons and activate a love for learning and creation of powerful stories resulting in a sharing with others. Thus, technology was used instrumentally to motivate Primary School learners to *Write Differently*, improve writing skills as well as develop foundational and new literacies.

Therefore, the purpose of this research was to explore the potential of Digital Storytelling in the 5th and the 6th grade of primary school learners by proposing an alternative way of teaching and learning writing in English. Particularly, the following research questions were investigated:

- In what ways can Digital Storytelling promote the Foundational literacies of moving forwards and backwards in the stages of the writing process and producing syntactically and grammatically correct, well-spelled texts?
- In what ways can Digital Storytelling promote New literacies and in particular, Information and Media literacies?
- What educational benefits can learners gain from Digital Storytelling convergence in Primary School Education?

4.1 The Teaching/Learning Framework

A series of lessons divided into three different stages were implemented. The first lessons (Stage A) started in mid-October and actually ended in March and aroused learners' interest in fables through reading a German fable, "The fisherman and his wife' on the computer screen and completing a comprehension worksheet. Thus, they were familiarised with a new form of literacy except the traditional one that on the computer-screen. Furthermore, the teacher built upon the learners' previous knowledge on writing stories and attempted to 'mold' the information to be acquired in such a way that they could comprehend it (realization of Bruner's (1960) *Spiral Curriculum*). Then, lessons on a fable in digital format (Stage B), 'The Stonecutter' with two ending variations, a Chinese and a Japanese one were carried out. While-viewing, learners completed worksheets and after-viewing they were engaged in a writing task.

By and large, learners were able to understand that digital storytelling can be used for educational purposes. By comparing and contrasting these example fables, learners' interest in creating such moving images themselves was generated. Meanwhile, Vygotsky's theory was realized through the scaffolding of tasks by being broken down into smaller steps, demonstrating an idealized version to copy, making learners interested in these tasks, giving them sufficient exposure to the text type (genre), structure and language of a fable before proceeding to the production stage (Stage C).

4.1.1 Implementing digital storytelling

The core stage of the research lasted longer than the previous ones; from January till March 2012. The researchers produced a five-Phase framework (**Figure 2**) after having taken into account, Barrett's (2007, 2009), Jakes and Brennan's (2005), Porter's (n.d.), Banaszewski's, Microsoft's and mainly Ohler's (2008) proposals of digital storytelling process. Throughout this process, learners had the opportunity to collaborate, make decisions, select, negotiate choice, meaning and relevance with their peers, classify, try out and compare different things (cf. Vygotsky's theory of scaffolding), develop their Foundational, Information and Media literacies, and peer-assess each other's' work.

PHASE I
Story planning and Development: 1. Pre-writing stage 2. Drafting stage
PHASE II
Pre-production: 1. Storyboarding 2. Search stage: (Gathering and preparing the media resources) a. Image planning b. Image search c. Music search
PHASE III
Production: Creating digital stories by using the completed storyboards
PHASE IV
Post-production: 1. Finalising stories 2. Peer-assessment
PHASE V
Performance and Distribution: Uploading the Digital Stories on a wiki, Presenting the stories at school

Figure 2. The Digital Storytelling five-Phase framework

Initially, after voting, the 6th grade decided to write about Aesop's fable of 'The goose or hen with the golden eggs' whereas the 5th grade that of 'The wind and the sun'. Then, learners

were led through a process of planning, drafting their script, revising, editing and storyboarding.

While storyboarding, learners were responsible to break their stories into components and place them on the storyboard page (Appendix I) by combining their script with their images and music before they began making their digital stories. By showing each scene and describing what happened there, they could visualize how their stories would be pulled together and if there were any defects that could be detected and corrected. Therefore, storyboarding was an essential management tool since learners could view what exactly they would be looking for in the next phase of locating the multimedia tools.

Then participants created or located their media elements including still-frame images, sound effects, music to communicate certain feelings and mood, and audio recordings; some supplemented their script by locating digital images and sound files from online resources while others composed and recorded their own music or drew their images by hand. After that, they selected the elements that best fitted their stories and conveyed the intended meaning and stored them in a file on the hard drives of the computers in the school laboratory.

As soon as the digital elements were saved and organized, learners, with the aid of a manual containing the steps of how to use Windows MovieMaker assembled their digital fables. Their end products ranged from 1 to 2 minutes and included still pictures, narration, music, sound effects and written text. Although narration and its recording were time-consuming, it was worthwhile since learners were able to express themselves not only with their own words but also in their own voices, fostering a sense of individuality and of 'owning' their creations. What is worthwhile noting is that all learners, even the weakest ones, willingly participated by selecting what they could actually narrate. After that, the two classes of the 5th grade assessed each other and so did the 6th grade classes by using the Digital Storytelling Rubric. This Rubric contained 9 criteria derived from the elements of digital stories in a four-Likert evaluation scale and was written in Greek, the mother tongue, so that everybody within groups could easily understand what exactly to assess.

Thus, they used constructive criticism adding another dimension to the learning experience. Besides, in these particular teaching sessions, peer-assessment helped each group critically evaluate their own products because by comparing the other digital stories, they could detect any possible defects in their own stories or any effective combinations they had made in contrast to the other stories.

By the time learners were aware of their stories being uploaded on a wiki (i.e., a webpage that is created by multiple authors and all types of media can be easily added including images, links, files and new pages), the quality of their work increased. Besides, by publishing their product, learners acquired ownership and responsibility since their stories became significant on the Internet and did not only exist on paper for the teacher's eyes. Apart from that, learners meticulously created an invitation for the whole school to watch their digital fables in the Assembly Hall.

4.2 The survey tools

The researchers combined a variety of data collection methods both qualitative and quantitative ones in order to collect the relevant data and cross-check the findings for validity reasons. A mixed methods research was conducted for triangulation purposes since it is an effective strategy to "validate conclusions by presenting converging results obtained through different methods" (Dörnyei, 2007, p. 164) and "contributes to the trustworthiness of the data" (Glesne & Peshkin, 1992, p. 24).

4.2.1 A case study approach

Taking into account the research context and its duration, a case study approach was implemented as the focus was on 'an instance' (Adelman et al, 1977), studied relatively in depth within an extended period of time (Bell, 1987). More specifically, it was an 'instrumental case study' since the researchers were not interested in the actual case but in understanding if Digital Storytelling being implemented in Primary Education could develop Foundational and New Literacies. Additionally, the case study approach was chosen since according to Adelman et al (1977), its findings are realistic because they are drawn from authentic situations, combining theory with practice.

4.2.2 Quantitative research tools

To start with, in October, learners were distributed an initial questionnaire gathering information concerning their attitudes towards technology integration in a writing class. Then in April, a post-meant questionnaire was handed out. Both questionnaires were efficient, in printed version and written in Greek so as to be user-friendly for all learners and ensure valid data (Wallace, 1998). In addition, the main part of the questionnaires consisted of the same question items.

More specifically, the questionnaires were split into two datasets; Computer Skills and Writing. Except two, all the question items were 'structured', closed-ended questions (factual, behavioural and attitudinal ones) and learners had to select their options by circling or ticking. Besides, the Likert-scale questions ranged from "Not at all" to "Very much". Apart from that, there were two open-ended, 'unstructured' questions (a short-answer and a clarification one) to elicit personal information on the part of the respondents.

Although this quantitative research instrument allowed the researchers to collect a large amount of data in short time and in a form easily processed (Dörnyei, 2007), they could not explore learners' engagement and the complex meanings this would involve. Therefore, they needed to utilize qualitative analysis to add flesh to bones in their research.

4.2.3 Qualitative research tools

The qualitative survey tools were:

- a classroom observation checklist that they devised and used to evaluate the groups' performance throughout the third stage of the research as objectively as possible and then interpret the data gathered (Bell, 1987), and

- semi-structured group interviews used to shed light on views learners could not express through the questionnaires.

With regard to the observation checklist, a structured, quantitative observation instrument, containing aspects of behaviour with relevance to the research was used (Bell, 1987). This checklist would provide them with direct and reliable information of what learners within groups actually did without relying on what they claimed they did (Bell, 1987).
Concerning its format, the researchers devised systematic categories allowing them to record events quickly and effectively through the use of the Likert rating scale. This scale consisted of statements that characterised groups' performance and the observer indicated the extent to which this performance was demonstrated by circling one of the responses ranging from 4 to 1 (4 = a lot, 3 =enough, 2 = a little, 1 = not at all). More specifically, the categories focused on writing skills, foundational literacies and new literacies being recorded throughout the five phase-framework with an overall performance and speaking, learning, affective and social skills being recorded in every phase separately. As Allwright and Bailey (1991 cited in Dörnyei, 2007, p. 179) point out, "structured, 'closed' techniques may easily miss the insights that could be provided by the participants themselves". However, the researchers tried to overcome this by combining structured observation with interviews.

Concerning the semi-structured group interviews, they devised an interview guide with a set of pre-prepared question items. These items focused on a) experiences and behaviours, b) opinions and values, c) feelings, d) knowledge, e) sensory information and f) background information (Patton, 2002 as cited in Dörnyei, 2007) so that the researchers could gain an overall view of the learners' experience. Despite that, the format was open-ended with broad questions about the topic and not ready-made response categories that would limit the learners' replies. Besides, the Greek language was used during the interviews so that learners' possible anxiety about making mistakes was alleviated and everybody was given the opportunity to respond without having any misunderstandings. Furthermore, all groups were asked the same question items but not in the same order or even wording.

5. Presentation and discussion of research findings

The descriptive analysis of the collected data paved the way for the juxtaposition and comparison of the results in order to draw conclusions with reference to the research questions and the relevant theory. More specifically, the answers to the initial and the post-meant questionnaires were coded, analysed and their common areas were compared by using the statistical software program, SPSS (Statistical Package for the Social Sciences). Descriptive statistics was used to save time and space by the data being summarised and displayed in Tables and Graphs in terms of Frequencies. This type of statistics could "summarise findings by describing general tendencies in the data and the overall spread of the scores" (Dörnyei, 2007, p. 213). The qualitative data was analysed as well.

The data collected provided research-based evidence on the beneficial effect Digital Storytelling has on the development of both Foundational and New literacies. In addition to these, learners were totally engaged, enhancing multiple skills when they designed, created and presented their digital stories.

5.1 Foundational Literacies & promotion of writing skills

What can be deduced is that learners practised their Foundational literacies to such a great extent that they showed no difficulty when involved in writing tasks (Tables 1 and 2). This fact was also verified by their progress throughout the teaching/learning framework. Particularly, in the lessons of Stage B and C / Phases I and II, learners had the opportunity to acquaint themselves with Foundational literacies. More specifically, they were involved in producing well-spelled texts, syntactically and grammatically correct and moved forwards and backwards to make multiple revisions of their products.

Foundational_Literacies Frequencies				
		Responses		**Percent of Cases**[2]
		N[1]	**Percent**	
Foundational Literacies	Not at all	94	19,5%	136,2%
	Little	125	25,9%	181,2%
	Enough	164	34,0%	**237,7%**
	Very Much	100	20,7%	**144,9%**
Total :		483	100,0%	700,0%

[1] N = participants x options of responses

[2] Percent of cases = frequencies of the participants and the number of options of responses

Table 1: Level of difficulty before the research

Post_Foundational_Literacies Frequencies				
			Responses	**Percent of Cases**
		N	**Percent**	
Post_Foundational Literacies	Not at all	210	43,5%	**304,3%**
	Little	140	29,0%	**202,9%**
	Enough	87	18,0%	126,1%
	Very Much	46	9,5%	66,7%
Total :		483	100,0%	700,0%

Table 2: Level of difficulty after the research

By and large, the researchers tried to blend technology and writing aiming at learners producing authentic and engaged writing. In fact, it was a great way to help learners overcome their possible fear of writing and promote writing as a process and revision as a necessity, having a true purpose. All groups experienced striking success since they discovered the art of writing and saw themselves as writers. More specifically, they chose their words well, found their voice, created a purpose for writing and showed ownership in their stories. Additionally, they were involved in authentic writing because their words, voice, music, and images were honored in the end product.

Besides, throughout the research, the story was emphasized, technology was secondary. The process began similarly to the traditional writing process and included brainstorming, topic

selection and drafting. In the drafting stage of the lessons in Stages B and C - Phase I, as soon as learners got feedback, they rewrote their drafts until they had a satisfactory final product. Moreover, learners judged how well it stuck to the original plan, made suggestions on how to improve the other group's version or even got additional ideas when they commented on the other group's first draft.

In the revising stage, peer feedback was form-focused feedback, targeting grammar errors, elements that should have been present in the text (e.g. linking words, time connectors) or the mechanics of writing and entailed constructive comments or proofreading symbols, requiring readers to pinpoint the exact source of the anomaly observed and providing tangible help for the writers. The whole writing process, as Raimes (1985, p. 229) comments, was "not linear at all" but "recursive" since while preparing their text, learners could "loop backwards or forwards" (Tribble, 1996, p. 59) so as to compose it.

Furthermore, Pennington's model of *Writing Differently* was promoted since learners used the computer environment to write totally differently from the traditional way with pen and paper. They paid attention to their ideas, their sequence and language through the revision stages. They never showed frustration about editing and re-editing throughout all the stages because their product was real and they could understand the reason why they should make their stories look, sound and feel good. By these means, learners' work was showcased and the end product was a story available to others to watch and learn from.

5.2 Information & media literacies

As for new literacies, many opportunities throughout the proposed framework had arisen to practise them. More specifically, in all Stages and mainly B and C, learners were involved in Information literacy since they constructed meaning through the combination of information from different multimedia tools; images, sound effects, music, evaluating, by these means, the quality and usefulness of that information to comprehend meaning (Tables 3 and 4).

Information_Literacy Frequencies				
		Responses		**Percent of Cases**
		N	**Percent**	
Information_Literacy	Not at all	39	14,1%	56,5%
	Little	66	23,9%	95,7%
	Enough	89	32,2%	**129,0%**
	Very Much	82	29,7%	**118,8%**
	Total :	276	100,0%	400,0%

Table 3: Level of Information literacy before the research

Besides, they also practised media literacy as they were able to evaluate and criticize the way media tools weaved together to convey meaning (Tables 5 and 6).

More specifically, in Stage C, through story mapping (Phase I) and storyboarding (Phase II), learners learned how to weed out unnecessary information and merely stick to those pieces that were essential for their story. They also learned that the visual elements they used could add to their story, replacing many words in some cases. In addition to that, while storyboarding, learners became aware of the fact that not only the chosen font could create visual moods and setting but also the chosen sound could establish tone, mood and emotional context in ways that deepened the effects of the message (Porter, 2006). In other words, learners tried to figure out how meanings were conveyed by using media products and as a result, they developed their media literacy.

Post_Information_Literacy Frequencies				
		Responses		Percent of Cases
		N	Percent	
Post_Information_Literacy	Not at all	10	3,6%	14,5%
	Little	29	10,5%	42,0%
	Enough	71	25,7%	**102,9%**
	Very Much	16	60,1%	**240,6%**
Total :		276	100,0%	400,0%

Table 4: Level of Information literacy after the research

Media_Literacy Frequencies				
		Responses		Percent of Cases
		N	Percent	
Media_Literacy	Not at all	128	26,5%	185,5%
	Little	98	20,3%	142,0%
	Enough	130	26,9%	188,4%
	Very Much	127	26,3%	184,1%
Total :		483	100,0%	700,0%

Table 5: Level of Media literacy before the research

Post_Media_Literacy Frequencies				
		Responses		Percent of Cases
		N	Percent	
Post_Media_Literacy	Not at all	20	4,1%	29,0%
	Little	47	9,7%	68,1%
	Enough	1	33,3%	**233,3%**
	Very Much	255	52,8%	**369,6%**
Total :		483	100,0%	700,0%

Table 6: Level of Media literacy after the research

On the whole, in the teaching sessions from Phase II up to Phase V, learners developed a discerning eye for online resources. Concerning Information literacy, they passed through Bawden's six stages since they:

1) recognized a need to navigate the Internet to search for information,
2) identified which particular images, sound effects, music they needed and at the same time avoided any irrelevant information,
3) located the necessary information by developing research skills and information fluency,
4) evaluated that information by critically choosing which fitted their stories successfully.
5) When they organized the downloaded material by storing, and then retrieving it, they cut and pasted it in their files so as to synthesize it and finally,
6) used it effectively to convey the intended meaning in their stories.

Moreover, as for media literacy, learners worked collaboratively to access, interpret, evaluate and criticize media materials (images, music, sound, fonts, and title styles) intentionally in order to create and support their media products. They were able to understand how meanings were constructed through the critical reading of images and critical interpretation of sound. Furthermore, they synthesized and co-constructed the selected material into their own creations. Additionally, learners were totally responsible for aligning their story script with the selected media materials. Consequently, they became more perceptive and critical in analyzing the media they see in the world around them.

Finally, they became acquainted with what kind of digital tool a wiki is and opened new horizons concerning collaborative writing and collective knowledge development.

5.3 Learners' engagement and skills development

Throughout all the stages of the proposed framework, learners were fully engaged in their tasks and apart from the quantitative results, both the observation and interview ones justified it overtly. They were viewed as active participants, having a sense of control and responsibility for the learning process since they explored, experimented and expressed themselves in the construction of things not only for themselves but also for others. They were "active architects of their own understanding" (Bruner as cited in Wood, 1998:39) because they did not just get ideas from resources, in fact, they used them to create new knowledge; they made hypotheses, selected pieces of information, classified, identified, compared, sequenced and ranked them.

Therefore, constructivist learning was promoted since learning was:

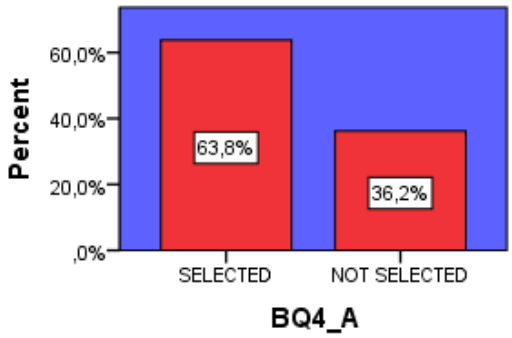
- active and manipulative; learners interacted and explored their potentials in writing tasks and had tangible representations of their manipulations,
- constructive; learners integrated new with prior knowledge to make meaning and
- authentic; they transferred their learning to real-world situations (Parker and Chao, 2007).

Moreover, elements of Sternberg's Triarchic Theory (1985) appeared in the proposed lessons especially during group work; learners were taught techniques for better memory, re-drafting, problem-solving strategies or how to better relate a task to a previous one. Also, they learnt how to select, negotiate with their peers, try out things and compare.

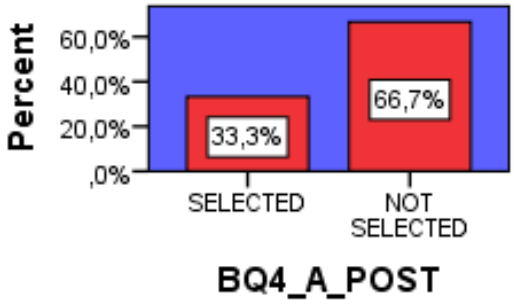
Furthermore, learners' technology skills were enhanced making them competent Computer literate through their involvement in this creative process since they acquired confidence in using the Word Processor effectively and gained knowledge of experimenting with Windows MovieMaker software program. There were many examples of learners gaining expertise and becoming peer tutors; an act that boosted their self-esteem.

5.4 Interpersonal skills and Collaboration

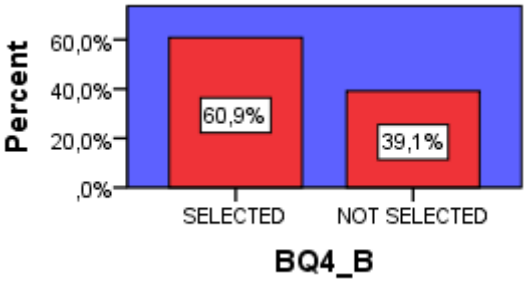
Last but not least, apart from learning how to write a good story, learners were taught how to collaborate in heterogeneous groups since they worked out what can be used and what cannot be used in the story line, the tone and the dialogue through discussion and knowledge sharing. This fact can be demonstrated by graphs 1, 2, 3 and 4.



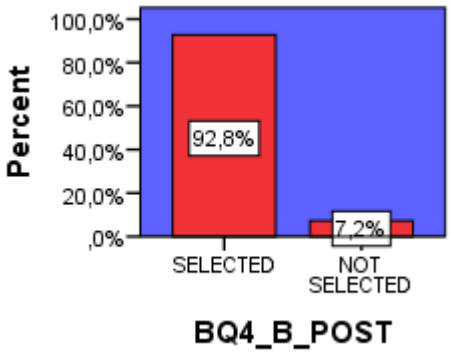
Graph 1: Working in pairs before the research (Selected = it helped me working in pairs, Not selected = it did not help me working in pairs)



Graph 2: Working in pairs after the research



Graph 3: Working in groups before the research (Selected = it helped me working in groups, Not selected = it did not help me working in groups)



Graph 4: Working in groups after the research

Learner collaboration was a learning process where learners used English as a means of communication so as to exchange ideas and information, share experiences, relate, compare, problem-solve and negotiate meaning. When learners were involved in collaborative tasks, they were led to learner autonomy since they assumed an active role, assigned roles and responsibilities and shared authority.

Particularly, learners were involved in joint collaboration since many writers worked on the same text and assumed "equal responsibility for its production in terms of official authorship" (Parks et al, 2003:39). Collaboration also, assisted learners in advancing their Zone of Proximal Development; the gap between what they could accomplish by themselves and what in cooperation with others. Apart from that, because of the fact that language development is the product of social interaction, learners achieved more through cooperation and interaction with others than they would have on their own; what Social-Constructivism with Bruner and Vygotsky advocated.

More specifically, in the drafting stage of the lessons in Stages B and C – Phase I, collaborative writing was promoted as getting learners together automatically meant there was interaction between them (Case, 2009). Additionally, the teacher was not "the only active agent of learning, the one who deposits knowledge into the learners; nor are learners seen as depositories of knowledge". Learning was no longer viewed as "the product of one individual's efforts but as deeply connected to the surroundings, tools and the overall context in which the learning takes place" (Elola & Oskoz, 2010:52). In other words, learning was enhanced when learners were able to comment, respond, practise and improve their speaking and listening skills, and mental models through their interaction and sharing of ideas with others.

Additionally, collaboration promoted Gardner's Multiple Intelligences since all participants were engaged in the learning process; some learners of a group could write while some others could illustrate, paint, search for appropriate music, sound effects or images, even compose their own music. Thus, in Digital Storytelling, learners could take roles that catered for Linguistic, Interpersonal, Logico-mathematical, Visual and Musical Intelligences.

5.5 Suggestions for further research

The results of the present study have provided evidence about the positive impact Digital Storytelling has on Primary School Education. Learners made their first steps in Digital Storytelling by creating digital fables. Undoubtedly, more needs to be investigated about Digital Storytelling as an instructional tool to supplement their books. Further investigations can provide deeper understanding on how Digital Storytelling can fully involve and inform learners of E-Generation in Secondary Education as well.

Multimedia technologies can be used for designing and creating meaningful things. Apart from writing a digital fable, learners can be engaged in designing essays, personal narratives and descriptions of people, places or even objects in digital format. Digital Storytelling can embrace different kinds of genres depending on the teacher's and learners' imagination and creativity. Furthermore, it can motivate educators to investigate new ways of collaboration with other schools and form a community of digital storytellers.

6. Concluding remarks

Educators should always keep in mind what Dewey claimed many years ago, "if we teach today as we did yesterday, we rob our children of tomorrow". Nowadays, literacy is no longer viewed simply as reading and writing. Digital stories can give learners a different kind of meaning making and a different way of knowing (Lowenthal, in Press). Besides, learners in

order to be fluent with the English language should 'make things' with the language. Papert and Resnick (1995 as cited in Resnick, n.d.:33) claim that "being digitally fluent involves not only knowing how to use technological tools but also knowing how to construct things of significance with those tools" and this can be achieved through the integration of Digital Storytelling in the writing classroom.

Through this research, Digital Storytelling was used as a vehicle to blend Foundational and New literacy development. Actually, the researchers used Digital Storytelling in order to instruct 69 Primary school learners in the world they live in, the 'Nintendo' one. Thus, they incorporated technology effectively in the classroom and used Digital Storytelling as an instructional as well a learning tool in order to promote writing skills through the development of both Foundational and New literacies, learners' deep engagement and collaboration.

What educators should ponder on is that learners succeed when they are motivated, participate in the lesson, enjoy learning, are not afraid of making mistakes, learn from their mistakes and the teacher both encourages and believes in them. Additionally, group writing tasks may encourage mutual inspiration as well as allow valuable opportunities for shared feedback and support (Mohamed, 2004). Consequently, Digital Storytelling can turn the writing class into a stimulating and pleasurable learning experience.

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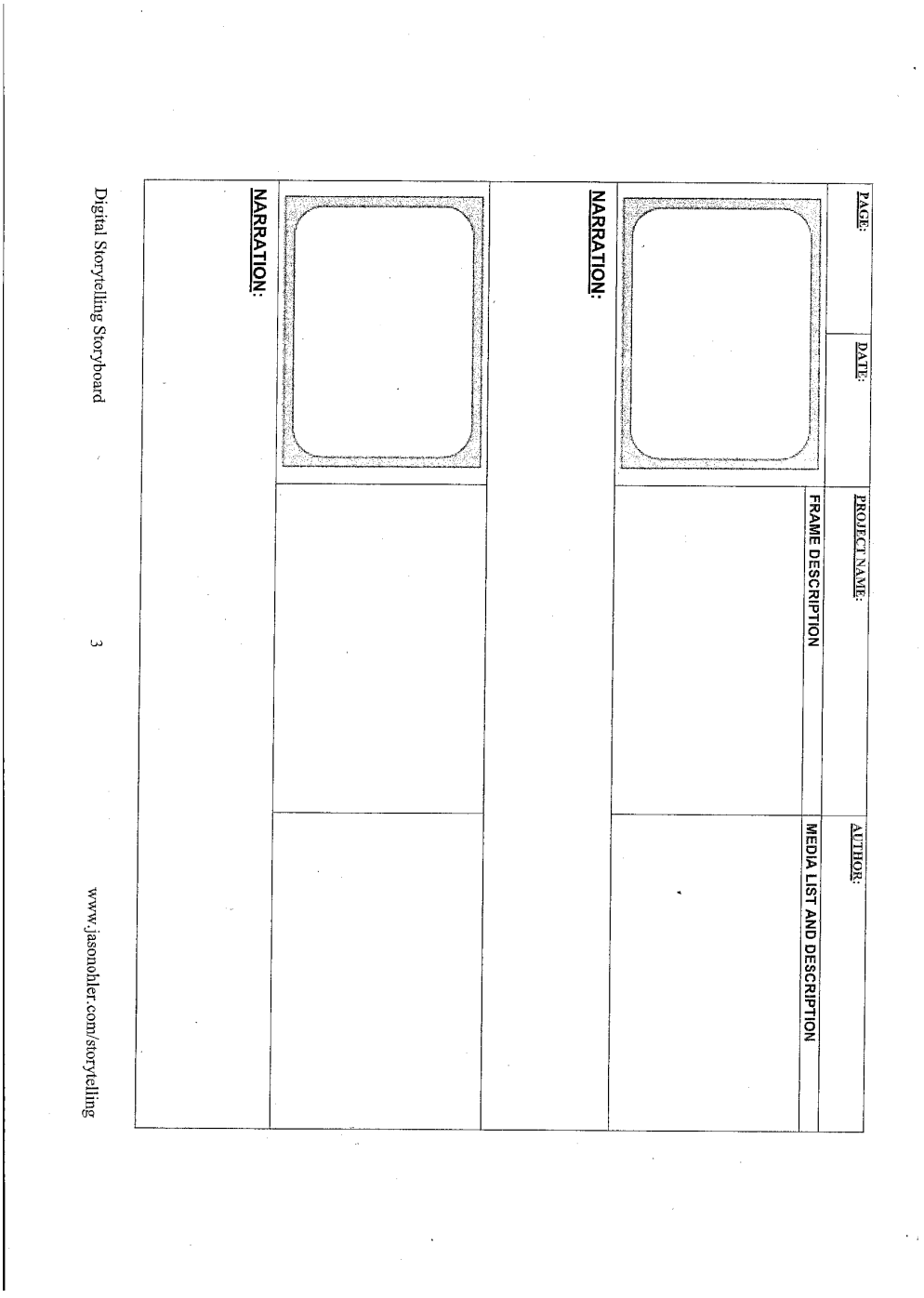
APPENDIX I



By Jason Ohler
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Research Papers in Language Teaching and Learning
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