USING MULTIMEDIA WITH KINDERGARTEN TO INCREASE HOMEWORK PARTICIPATION

By

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ABSTRACT

This study stemmed from a concern that homework instruction, verbal and print oriented, did not reflect a 21st century learning strategy for kindergarten students due to their reading levels and their abilities to consistently follow written instructions to complete tasks. The study examined 18 kindergarten students' perceptions of using multimedia, video and screen capture, as a medium for homework instruction and activities. The study guided by the constructivist teaching approach, described how multimedia was used as a motivational tool to engage students in literacy instruction and knowledge construction. Findings show that use of multimedia motivated and engaged students in learning both in school and at home. Students stated that multimedia activities were fun. Mean scores from pre-survey to post-survey show positive dispositions to the integration of multimedia in the class and homework activities. Findings also show that multimedia helped students create knowledge and work as a team. A by-product of this study was increased parental involvement in students' learning. Parental supervision was required for students to play DVDs or to access online files at home. This request turned out to be a positive outcome of the study.

Keywords: Technology Integration, Multimedia with Elementary Schools, Kindergarten, Technology Integration.

INTRODUCTION

What can teachers do to engage learners in homework instruction using 21st century tools? Using multimedia for instruction has grown to meet the needs and the demands of 21st century learners. Teachers have access to a wealth of resources to provide instructional presentations that combine visual and verbal modes -- text, graphics, audio, picture, animations, and video (Bull, 2009). The influences that new technologies bring to everyday social engagements have also changed the way instructional technology is viewed in education (Shih & Waugh, 2011). As teachers strive to incorporate new technologies into their classroom instruction to motivate their learners, they should harness the strength that multimedia and new technologies have to offer students for their homework instructions. To motivate and engage learners in homework instruction, delivery methods must mirror what is incorporated into classroom instruction. Since classroom instruction is the vehicle that conveys learning in the classroom, homework instruction and activities should also reflect this transformation change in delivery. Changing the way homework is delivered has the potential to extend student learning into students' home environments without the physical presence of the teacher. To ensure that instruction reflects use of 21st century technologies, teachers must keep abreast of current trends in the 21st century to match what learners are using in their day-to-day lives in and out of school. Learning and instruction are continually evolving to reflect emerging technologies. On the other hand, educational views are changing from an objective epistemology and behavior learning approach to more of a collaborative learning approach with a constructivist epistemology (Bull, 2012). To meet the needs of 21st century learners, educators and researchers are reflecting on everything from instructional practices, instructional design and delivery and how learning is facilitated in the classroom (Shih & Waugh, 2011). This study seeks to address some of these questions by addressing the impact of using multimedia files as the vehicle for conveying homework instructions and activities for kindergarten students.

Theoretical Framework

The study was guided as its theoretical framework by the constructivist approach to teaching and learning. Multimedia tools offer a unique insight into literacy processes, highlighting the way students construct meaning in electronic environments and how the final products are used for teaching and learning. CD-ROM, DVD, podcasting, pictures, wikis, blogs, and video tools are multimodal and rely upon the signs and codes of visual, audio and interactive tools to help learners construct meaning as they engage with the tools of multimedia learning (O'Byrne, Bailey & Murrell, 2011). This study used Flip cameras with students role-playing under the direction and supervision of the classroom teacher to construct knowledge.

Constructivist Learning Environment

Constructivism is a theory of learning that states that learners construct knowledge by developing their own understanding of the world around them through their prior experiences and through reflecting on their learning (Howard, Mazintas & Kanai, 2009; Bull, 2009). Experiencing is an immersion into the daily life of the learner. This requires the teacher to plan not only different kinds of experiences for the learners, but also opportunities for the students to link back to their prior experiences (e.g. personal, community) so that they are able to make those new connections so that learning can occur (Yelland, Cope & Kalantzis, 2008). Bull (2012) stated that students' existing structures are only reformulated if new information or experiences are connected to knowledge that already exists. For students to be able to internalize new ideas or information, they must draw inferences, elaborations and relationships between new and old ideas to develop multimedia content to create a more engaged student-learning environment (Neo, Neo & Tan, 2011).

In a constructivist-learning environment, learners are able to construct knowledge as they are engaged in the process of learning. Through applying their knowledge to new learning experiences, collaborating, and becoming active participants, learners develop independence and learning becomes an active process (Bull, 2009). In the constructivist-learning environment, the teacher takes on the role as the facilitator and the environment becomes learner-centered (Shih & Waugh, 2011). Howard, Mazintas & Kanai (2009) found that the environment in a constructivist classroom encourages collaboration among learners. Learners' collaboration skills and communication skills are enhanced in an environment that fosters an exchange of ideas.

Bull (2009) stated that a constructivist-learning environment is guided by six major principles:

- Learning is content-based and aligned with curriculum.
- Learning is contextualized in authentic activities aligned with the content area and grade level curriculum.
- Learning provides students with opportunities to collaborate with others to create and reinforce knowledge.
- Learning promotes personal autonomy and control of learning because the focus is on designing technology-based resources aligned with specific content and pedagogical knowledge.
- Learning promotes personal growth of students through designing and creating technology-based activities, resources, and contributing to knowledge in the applied content area.
- Evaluation of technology-based activities, resources and projects should focus more on the perspective and understanding of the effectiveness of each product as it relates to the content and grade level objectives, rather than on correctness.

Multimedia

A multimedia-learning environment utilizes several types of representation that include text, audio, video, graphs, photographs and animation, (Bull, 2009). Multimedia construction is a complex process for developing higher order thinking and can be used in formative assessment as well as an instructional tool in the classroom (Brown & Green, 2007). The learning process can be enhanced through the use of multimedia instruction (Neo, Neo & Tan, 2011). Using multimedia in instruction provides users with control over learning and supports interactivity in the process.

Video use is gradually becoming a part of every facet of

education today. Hansson & Wettergren (2011) stated that the head of Cisco's group for Emerging Technologies, Marthin De Beer, predicted that 90% of the Internet traffic would consist of video in 2013. The increase of video is due to increased broadband capacity, the use of video applications such as YouTube, and the emergence of easy-to-use video recording devices that include high quality cameras, especially mobile cameras (Hansson & Wettergren, 2011). YouTube and similar video hosting sites with the capability of users uploading video content to the Web have been one of the factors for the expansion of video technology use. The YouTube platform has transformed the essence of streaming video with its combination with wireless mobile devices, video annotations, screencasting software, video capture software, and video editing software (Lupshenyuk, 2010). The digital natives of today are very familiar with narratives in audiovisual formats television, film, and computer games more so, than older generations Hansson & Wettergren, (2011).

Web 2.0 videos are shared and viewed with video sharing networks (like YouTube, TeacherTube, ForaTV, ScieVee, and Screencast), where individuals can share their videos with other individuals who share a common interest (Burke & Snyder, 2009). Web 2.0 videos are often referred to as "collective intelligence" which contains "the aggregate knowledge that emerges from the decentralized choices and judgments of groups of independent participants" (Tapscott & Williams, 2006, p. 41). Video sharing networks have similarities to human cognitive abilities with the video sharing and information retrieval that is a part of the video-sharing networks (Lupshenyuk, 2010).

According to Hansson & Wettergren, video in the educational setting is needed because it is a part of people's daily lives. They also stated that video is a preferential way to learn and acquire skills because of the preference to view audiovisual format over reading. There are different categories of video that can be used in the educational setting. The uses for video differ as well as the groups that the video is intended to target. The educational purpose of video files needs to be considered in relation to the specific objectives and targeted outcomes for learning. Video can only be effective if the educational goals are clearly defined in terms of its application to the learning process (Lupshenyuk, 2010). Videos are particularly suited for overviews of material, whereas text is more suitable for communicating deeper information. Video can be used as an introduction to courses, to inform about practical and technical functions and to summarize knowledge. Some might argue that videos might encourage a passive approach, but using questions to encourage viewer feedback and reflection throughout video can promote interactivity and engage learners in classroom activities (Hansson & Wettergren, 2011).

Video tutorials are another option for using video in a web-based learning environment. In combination with sound pedagogically instructional design, video tutorials offer powerful small-chunked learning, compared to traditional, several hours of continuous learning (Sing, 2010). Blended learning with the use of video tutorials offers improved pedagogy/learning, increased access and increased cost effectiveness Sing, (2010). The major strengths that video tutorials have to offer students are step-by-step practice, the pause and the replay feature that allow students to reflect on the information being presented, and the self-paced learning that gives the learner freedom from pressure from peers or instructors (Sing, 2012). Visual materials can add relevance and a conversational structure to traditional presentations. There are several advantages to using instructional video tutorials for both instructors and students. The benefits include, but are not limited to the ability to start and stop, quick access to a wide range of explanations, an alternative to text-based instruction, access to quality explanations, use as a tutorial, and the ability for instructors to pool their resources and create videos as a team (Sing, 2010).

Jon Udell used the term screencast to describe video that captures the computer screen contents along with audio narration in 2004. Screencast allows the user to record multiple times. The teacher guides the audience through learning materials that can contain text, images, video files, web pages and any media that are available on the computer. Screencast provides a way for the user to create learning materials without the use of traditional cameras

and recording crews. Lectures can be recorded in real-time digitally and a link can be made available to the user to access lessons anywhere they have an Internet connection. Some lessons are pre-recorded and use adaptive release so that they can be accessed during the appropriate times when lessons are needed. The videos can be used to explain basic concepts that are being taught or can provide step-by-step tutorials. Screencast provides the users with the option to access information repeatedly whenever they need to review or listen to materials that contain hard-to-grasp concepts (Newland, Dickson & Galling, 2010).

Screen capture programs like Jing and Camtasia offer educators an easy way to record voice and activities on a computer screen. One area that this study drew upon was using Camtasia to produce multimedia homework instruction that extended the classroom environment into students' homes. The process of incorporating video into the instructional environment has two significant functions. First, it has the capacity for students to construct knowledge. Second, it enables learners to participate in multimedia homework instruction and activities.

Participants

Participants were 18 kindergarten students from the southeastern part of the United States. The research was conducted in an elementary school in a rural setting. The student population was diverse. There were 10 boys and 8 girls involved in the study. Participants ranged in ages from five to six years old. Written permission was given by the parents/guardians of all involved participants in this study. Twelve students had access to the Internet at home and received multimedia files via the school's website or via a Screencast URL. There were 6 students without access to the Internet, who received the same multimedia files via the DVD option.

Purpose of the Study

The primary aim of this study was to examine the perceptions of kindergarten students towards using multimedia files for their homework instruction and activities. The study also examined the impact of using multimedia files to learn print literacy instruction. The following questions guided the research:

- What are the perceptions of kindergarten students as to integrating multimedia into homework instruction?
- How does the use of multimedia impact students completing homework assignment?
- What are the advantages and disadvantages of using multimedia in classroom instruction?

Intervention

Kindergarten students participated in the creation of nursery rhyme videos that were incorporated into the screen capture program Camtasia. The nursery rhymes videos and nursery rhyme text were uploaded to the school's website, Screencast.com and also recorded on DVDs for students without access to the Internet. Each video lesson featured a pre-recorded song that the students helped to create, which served as an introduction to the lesson. Each lesson also consisted of a single nursery rhyme that challenged students to follow along during the first role-play. Next, the students reenacted the nursery rhymes for video recording. The next phase required students to read along as the video is played. Callout features were incorporated along with audio to direct learners' attention to starting points, directionality, and one-to-one word matching.

Twelve 5-10 minute lessons were created (Table 1). Students with assistance from their parents were instructed to access lessons from home by accessing the school's website and links provided. Students who did not have access to the Internet at home were provided with DVDs to view the same lesson content.

Lessons	Nursery Rhyme Homework
Lesson 1	Jack Be Nimble
Lesson 2	Humpty Dumpty
Lesson 3	The Three Little Kittens
Lesson 4	Little Miss Muffet
Lesson 5	Jack and Jill
Lesson 6	Hickory Dickory Dock
Lesson 7	Little Boy Blue
Lesson 8	Little Jack Horner
Lesson 9	Hey Diddle Diddle
Lesson 10	Itsy Bitsy Spider
Lesson 11	Georgie Porgie
Lesson 12	Wee Willie Winkie

Table 1. Multimedia lessons

Research Design

This study was implemented with a group of kindergarten in fall 2011, six weeks into their kindergarten year. Quantitative as well as qualitative research methods were used to conduct this investigational study. For the qualitative research, the study focused on evaluating the use of the multimedia as an instructional homework medium, its impact on literacy instruction, and the advantages and disadvantages of using multimedia as part of the classroom instruction. The quantitative research examined the perceptions of students towards using multimedia in the classroom. A quantitative individualized survey designed by researchers was used to determine students' perceptions towards using multimedia in homework instruction, pre and post intervention. Qualitative analysis was based on classroom observations of students in designing multimedia products, classroom participation during and after integration, and comments by students.

The pre-test and post-test were developed using a Likert scale to measure the students' perceptions, using a 3-point scale with smiley faces that the students colored in. The three scales were as follows: Happy Face (with an assigned value of 3 points), Somewhat Happy Face (with an assigned value of 2 points) and a Sad Face (with an assigned value of 1 point). The classroom teacher, who was also one of the researchers, administered the instrument one-on-one with students because the teacher was familiar with each child and could also find multiple opportunities to administer the instrument if students were not ready during an administration. Administration of the survey was done one-on-one with students. Descriptive statistics was used to analyze the data. The maximum mean for the survey was 3.0. For this study, a mean score of 2.25 points was deemed a positive disposition for an item. A change of mean of +0.30 from pre-test mean to post-test mean is deemed a significant change. All 18 students were individually interviewed and asked the same five questions in the pre-test and post-test phases of this study.

Findings

Findings from the study indicate a positive disposition to using multimedia for homework instruction and activities. The pre-survey and post-survey analysis findings were identified (Figure 1 & Table 2)

Results of Survey

Question #1: What are the perceptions of kindergarten students to integrating multimedia into homework instruction?

The pre-survey results show that students have a positive perception towards using multimedia as a learning tool. The survey was based on a 3-point Likert scale. An analysis of post-survey means indicate positive dispositions towards using multimedia to teach kindergarten students. There were notable positive changes in the mean from the pre-survey to the post-survey ranging from +0.06 to +0.44. Since the pre-survey mean scores were relatively positive, the infusion of multimedia supported their positive perceptions to multimedia integration. It is clear from the results that the greatest gains occurred with integrating music (change of +0.44), homework as fun (change of +0.17), and pictures (change of +0.12). There was a +0.17 change in the overall mean scores between the pre-and post-survey. This gain showed a positive trend towards using multimedia for homework instruction and activities.

Question #2: How does the use of multimedia impact students completing homework assignment?

The qualitative research from teacher observations,

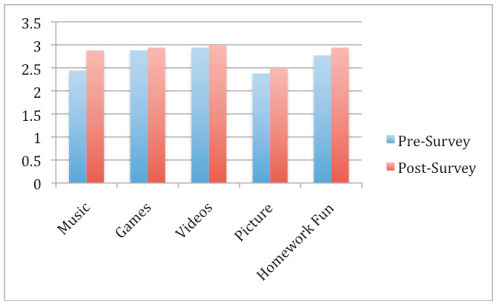

Figure1. Students' Perceptions of Multimedia

Survey Question	Pre -Survey	Post -Survey
1. Do you like music?	2.44	2.88
2. Do you like games?	2.88	2.94
3. Do you like to watch videos?	2.94	3.00
4. Do you like pictures?	2.38	2.50
5. Is homework fun?	2.77	2.94
Overall Mean Scores	2.682	2.852

Table 2. Results of Multimedia Survey

students' class participation, and comments from students indicated positive interest in the multimedia homework instruction that was provided. The teacher's anecdotal notes and observations during this period show a significant increase in class participation and students' engagement. Students showed an interest in taking home the DVDs over and over and those with access to the Internet commented how they watched files repeatedly. The teacher's observation records show that students were more engaged in class activities for lessons that were supported by video files.

Question #3: What are the advantages and disadvantages of using multimedia in classroom instruction?

This study yielded several advantages in using multimedia in classroom instruction with kindergarten students. First, the constructivist tenets were demonstrated in this study, as students constructed knowledge, collaborated, understood outcomes of their multimedia products from a perspective of the relevance to their experiences, and designed products relevant to their curricula. Second, a by-product of this study was increased parental involvement in students' learning. Parents requested links to the online version of activities to work with their children at home. Parents also expressed how this learning strategy engaged their children in homework activities and they hoped that other teachers would adopt this strategy for other grade levels. Third, students demonstrated interest in acting roles for creating video segments that were incorporated into the homework assignments. Initially, when the project started students were shy to participate, but once they saw final products, they became very interested in auditioning for lead roles. Fourth, the use of multimedia not only transformed students from consumers of knowledge to producers of knowledge, but made them engaged learners. Fifth, video files served as tutorial for students, which extended the role of the teacher to the homes of students.

The study was not without challenges. First, planning, designing, recording, and uploading video files were time consuming activities for the teacher in this study. However, once files were created they were used multiple times. Second, lack of access to the Internet was a limitation for some parents. However, this was addressed by the DVD option. Third, parents using dial-up Internet service providers complained about the length of time to download a 5–10 minute video file. There were initial frustrations, but the DVD option was available to all parents. Despite these obstacles, the educational positives of using multimedia files for homework instructions and activities far outweighed the challenges.

Implications

Use of multimedia with kindergarten students is not a new phenomenon, but the norm. What is unique about the study was creating multimedia presentations to support their learning in school and at home. This study is small in size and scope. It is the desire of researchers of this study that this paper will intrigue and encourage other researchers to expand upon this research to demonstrate the effectiveness of using student created multimedia products to support not only instruction in the class, but also used to support instruction at home. The challenges faced by the classroom teacher in designing and uploading content and the challenges faced by parents with limited or no access to the Internet should be addressed in planning any future research of this nature. Student engagement in learning is fast becoming a national discussion. Educators need to find unique ways of engaging 21st century learners by using technology tools for learning. This study lays a foundation for other kindergarten and elementary teachers and students to build upon. As outlined earlier, use of multimedia is a natural integration with kindergarten students, but the strategy to get students to create their own multimedia presentations for instruction is a unique phenomenon aligned with the constructivist teaching approach.

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