

Life Planning by Digital Storytelling in a Primary School in Rural Tanzania

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ABSTRACT

Storytelling is one of the earliest forms of knowledge transfer, and parents often use it for teaching their children values and knowledge. Formal schooling, however, is less inclined to use storytelling as a vehicle for knowledge transfer, and even less as a vehicle for modern self-directed, student-centered, and constructionist pedagogy. Research literature reports experiences on student-centered storytelling in schools, but there is little information about such learning environments using modern information technology. Using a case study approach, we collected qualitative data from a workshop that tested a number of constructionist pedagogical approaches and one-to-one computing technology in a hypercontextualized storytelling workshop. In that workshop, which took place in a Tanzanian primary school, pupils used their XO-1 laptops as digital media tools for expressing their dreams and solutions to overcoming challenges in life. Results of this study suggest that digital storytelling offers additional advantages when compared to traditional storytelling. Designers need to follow six principles for a successful digital storytelling workshop: commitment, contextual grounding, previous exposure to the context, involvement of local experts, atmosphere of trust, and realistic flexible planning.

Keywords

Digital storytelling, Student-centered design, XO-1, One-to-one computing

Introduction

Storytelling is an ancient human activity (Miller, 2008). In many cultures, people use stories to make sense of their world and to pass knowledge on to future generations. Making use of stories in education usually starts already during early childhood, when parents teach their children values and understanding of the world using a language and metaphors that can easily be understood by the child. Educational stories are typically told by the educators in order to convey certain values or information to the learners. In many African cultures oral traditions are current, and promoting growth of the African narratives has been proposed in order to support literacy (Chinweizu & Madubuike, 1983). This study shows how technology can renew the use of storytelling in education, and more surprisingly: in the African context.

The use of stories in education has been found to be most useful in language learning, with emotionally-laden subjects, and for encouraging students to share personal experiences. Woodhouse (2008) listed a number of advantages and disadvantages of storytelling (Table 1).

Table 1. Advantages and disadvantages of storytelling (modified from Woodhouse, 2008)

Advantage of storytelling	Disadvantage of storytelling
Students can use storytelling to share stories of success and develop a sense of community	Preparation for storytelling takes time
Students can use storytelling to explore personal roles and make sense of their lives	Students require a safe environment and may feel uncomfortable to share their stories
Storytelling enhances creativity, imagination and concentrates the mind	Topics may challenge personal values and therefore be threatening
The use of imagination enables stories to be remembered	Students may need directions and guidance at various stages of storytelling
Storytelling enhances critical thinking and listening skills	The students' response depends on their earlier exposure to storytelling
Storytelling maintains the oral tradition	Storytelling requires visualization skills and may not suit everyone's learning style

We have successfully experimented on digital storytelling methods earlier. Together with secondary school students in Iringa, Tanzania, and the Finnish Evangelic Lutheran Mission FELM, we developed a booklet and an animated digital platform, which were based on students' real life stories about HIV and AIDS, and we have used that platform for education and counseling of youth in the region and in the country. The platform called "Sura ya UKIMWI" ("the face of AIDS") has shown to be a useful tool for secondary school students and for counselors working with secondary school students (Duveskog, 2009a), and it won an award in EdMedia 2009 conference (Duveskog, 2009b).

During our work with the Sura ya UKIMWI platform, we learned about the challenges of effective HIV and AIDS education. One aspect that we specifically noted was that efforts to disseminate information on HIV and AIDS lack focus, presence, and personal connection to the issues. HIV and AIDS education is often taught in ways that may have much more contact with medical professionals' reality than with students' reality.

Currently research of one-to-one computing (each student has a laptop computer) in developing countries is only emerging (Tedre et al., 2011), there is a lack of literature in digital storytelling, and there is no report of an attempt to combine those two. In order to develop the use of one-to-one computing in storytelling, and in order to develop the contextually relevant aspects of HIV and AIDS education, we developed our digital storytelling approach further and tested it in a workshop that used one-to-one computing as a platform and catalyst for a number of pedagogical changes.

Digital storytelling workshop: Technology as an agent of change

The first change that we tested in our computer-based workshop was the direction of storytelling. Usually teachers tell educational stories to children. We turned the situation the other way round: *students* were the storytellers and researchers were interested in their stories and in how the story-creating process helps students to develop various skills and insights. The storytelling process was not only individual, but also collective, as students needed to work together to create various parts of the storyline. In general storytelling in groups benefits the participants by offering contextual grounding, bonding individuals, validating and affirming experiences, and educating others (Banks-Wallace, 2007).

To change the direction of storytelling, instead of lecturing to the pupils about HIV and AIDS, the researchers listened to pupils' feelings and knowledge about the sickness. We used the trigger effect of one-to-one computing (Apiola et al., 2011) to activate students, to break the taboo around HIV and AIDS, and to keep students motivated. Our earlier studies have focused mainly on two aspects of information: gathering vivid personal experiences and delivering information. From the educational technology perspective, in this workshop we wished to explore the ways in which the pupils understood what they learned from HIV and AIDS education, and how they related that information to their own life. We aimed at activating the pupils, observing their activities, and analyzing what kinds of information were understood, misunderstood, mis-delivered, or missing.

Secondly, we adopted a fully digital approach to storytelling. Digital storytelling allows the storyteller to enrich the stories and make them more versatile, exciting, and interesting through the use of text, voice, music, animation, video, and game elements. By utilizing one-to-one computing (XO-1 laptop computers) in the workshop, we promoted digital storytelling experiences through using modern technology to expand traditional narratives. In addition, all the participants experienced what they can achieve with their own basic IT tools.

We used one-to-one computing to facilitate various types of interaction, to store information, to enable access to information, and to enable transfer of information between a diversity of individuals and devices (see Miller, 2008). A digital storytelling study from Egypt showed that as students were able to personalize their experiences, they were able to think more deeply around the topics (Sadik, 2008). In that study students did not only report facts, but reflected on their own thoughts and engagement with the subject—both visually and aurally. Students also practiced reflecting and writing about people, places, events, and problems that characterized their individual life experiences. The study also showed that digital storytelling provided a unique opportunity for students to acquire new media literacy and IT skills (Sadik, 2008). In this research study we analyzed our experiences from digital storytelling on a one-to-one computing platform in a very different context, rural Tanzania, we compared our findings with those of Sadik (2008) and came to the same conclusions.

Thirdly, instead of directly addressing the dire HIV and AIDS problem, we employed an indirect approach that focused on positive aspects of life. Development efforts in developing countries often focus on problems, and by focusing on strengths we wanted to turn that setting the other way round. In this workshop the pupils expressed their hopes and dreams, as well as their ideas about how to use their strengths to pursue those dreams in spite of troubles that may lie ahead. The pupils also planned how to turn challenges into opportunities. Through this kind of approach, we hoped to turn their minds off the immediate problems towards long-term visions. In this workshop, each of the pupils' dreams was employed as a driving force, and the HIV and AIDS epidemic was one of the challenges to be overcome.

Research context

Iringa is a rural town in the Southern Highlands of Tanzania, 500km inland from the country's economic hub Dar es Salaam. As a part of their studies, IT (Information Technology) students at Tumbaini University in Iringa entered in 2008 a competitive call for projects by the One Laptop per Child (OLPC) foundation. One of the students' projects got selected by the OLPC Foundation, and 100 XO-1 computers were donated to Ukombozi primary school for an educational project run by Tumbaini's IT students. Currently Ukombozi Primary School is well known nationally, from general public to the ministry level, for its one-to-one computing initiative. There are hardly any primary schools in Tanzania with computers readily available for students, so the case of Ukombozi is interesting from a pioneering educational technology research perspective, too.

Methodology and research design

There is quite some experience on games and storytelling workshops (Fullerton et al., 2004, Miller, 2008, Bers & Cassell, 1998). In addition, there is experience on the use of one-to-one computing in developing countries (Pal et al., 2009). However, the combination of a hypercontextualized storytelling workshop and one-to-one computing in Africa has not been reported in research literature. Of course, due to their contextual specificity, hypercontextualized solutions are not aimed at mass markets, but at a narrow, specialized market segment. One of the main characteristics of the hypercontextualized game concept is that the game is rooted in the specific context where it is going to be played (Islas Sedano et al., 2010). Similarly, the resources available on-site are employed in the workshop's design and development.

Our long-term project is concerned with three main aims: developing computer aided HIV and AIDS education, increasing pupils' knowledge and skills in ICT, and coaching pupils about life planning. In this exploratory study we used the school's resources (e.g., XO-1 laptops, educational materials, teaching staff input) to explore the suitability and sustainability of a hypercontextualized storytelling workshop using one-to-one computing at Ukombozi primary school. Our first research question was, "*What kinds of advantages and disadvantages has digital storytelling compared to traditional storytelling?*" We used Woodhouse's (2008) list of advantages and disadvantages of storytelling to analyze the digital storytelling workshop at Ukombozi primary school. That is, we wanted to identify whether the reported advantages and disadvantages of storytelling remain the same when storytelling is taken onto a digital platform.

In terms of educational technology, we especially explored three things. First, we investigated the ways in which the XO-1 works as a tool of expression and self-reflection for building skills for life planning. Secondly, we analyzed the processes through which inexperienced, young ICT users share their knowledge by using XO-1 as a tool. Thirdly, we observed how pupil groups adopted ICT as a planning tool for overcoming barriers in their life (Fig. 1). In order to deepen our understanding of the situation, prior to the workshop we gained knowledge of the participants by interviewing them. We asked them about their background, skills, expectations, and dreams.

Yin (1984) suggests that when the boundaries between the context and the phenomenon of a study are not clearly evident, the use of a case study research method will support one to gain understanding of the complexity of the study, as it helps one to examine contemporary real life situations. Due to the exploratory nature of our research, our research strategy was based on the case study method (Yin, 1984). We followed a qualitative data collection mainly through observations (field work diaries) and log files (video, text, and pictures made by pupils) (e.g., Burrell & Morgan, 1979).

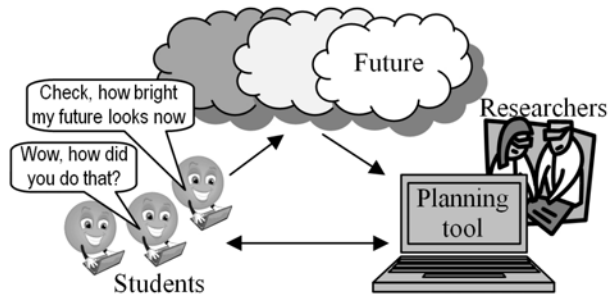


Figure 1. Analysis of the XO-1, the knowledge sharing and the adaptation of ICT as a planning tool

We emphasized gaining first-hand experiences on the participants' behavior both individually and as a group (Randolph, 2008). Typical of educational research (Cohen & Morrison, 2000), we were active participants in the workshop: We worked with the children, we guided and helped them, and we made observations of their activities. The observational method keeps the researcher sensitive to the contextual richness of the research situation (Randolph, 2008). The observational method has been argued to be especially important where the sequences of events, rather than single events, are of interest (Frechtling et al., 2002). The observational setting in this study was an obtrusive one, as the workshop participants and assisting teachers knew that they were being monitored (Bernard, 1995). However, an unobtrusive approach would have been difficult to be arranged in this research context, where the facilities and infrastructure are lacking, equipment and material are scarce, and the availability of tools and equipment is minimal.

There were 17 participants in the workshops; all the participants were pupils of Ukombozi Primary School and were aged between 11 and 15 years. In addition, there were two researchers facilitating the workshop, three university students from a nearby university, one of the schoolteachers, and the school headmaster. While monitoring the children's actions and behavior, specific attention was paid to their attitudes and their expressions of feelings towards the topics, to their group dynamics and interactions, and to their shared understandings of the topics.

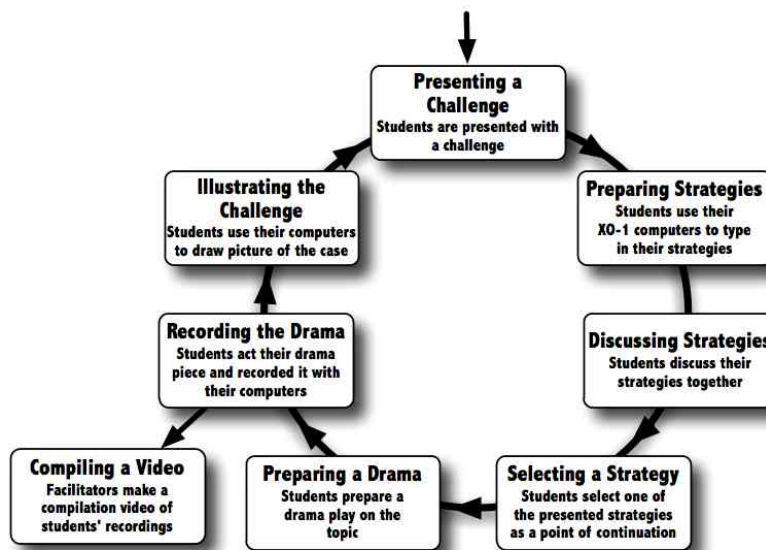


Figure 2. A Single Work Cycle in the Workshop

After a day of individual interviews with the pupils, the workshop started with cycles that each worked through seven stages (Fig. 2). Each cycle started when the facilitators (researchers, assisting teachers, and students from Tumaini University) gave the pupils a challenge that they may encounter in their life. The facilitators prepared the challenges before the sessions, and they were based on themes familiar from the literature and from pupils' interviews. Next, the pupils prepared their strategies for solving those challenges by individually writing a short text file. Pupils proceeded to discuss their strategies together, and they selected, in groups, a number of strategies as a

point of continuation. Pupils prepared a drama on the topic and recorded their drama using their computers. The facilitators collected the pupils' video clips and used them later to produce a compilation video. After the pupils had recorded their drama pieces, they proceeded to make illustrations. The text files and illustrations were also collected to be used in the final web application and as research data. From there, we proceeded back to step one by giving the pupils a new challenge (Fig. 2).

Through the workshop, the headmaster of the school supported all our activities, and was interested in the pupils' performance. A teacher of the school joined each workshop day, mainly in a role of observer and learner. He introduced us to textbooks used at the school. Additionally, the teacher helped with communication between pupils and the researchers. However, the Tumaini University students were the main communication bridge between researchers and pupils. Therefore, the workshop's schedule was agreed between Tumaini University students, the headmaster, and researchers to assure that the students and pupils were present. The headmaster also informed the pupils' parents about the workshop before it started, and they were invited to a "graduation ceremony," where the children presented their work. During each stage of the workshop, either a teacher from the school or the headmaster of the school was involved in planning and translating the challenges. In addition, they observed how the XO-1 laptops were used for integration with other curriculum material.

Analysis

Before the workshop started, the pupils were individually interviewed. We asked them about their hobbies, XO-1 knowledge, their preferred software, and finally we asked them about their life dreams. The pupils' dreams consisted mostly of occupations: becoming a doctor, pilot, journalist, teacher, professor, soldier, engineer, businessman, nurse, lawyer, and priest. This information was crucial for designing a meaningful workshop in line with the pupils' own interests and ambitions. After this part, the overall work process worked through iterative cycles of challenges (see Fig. 3).

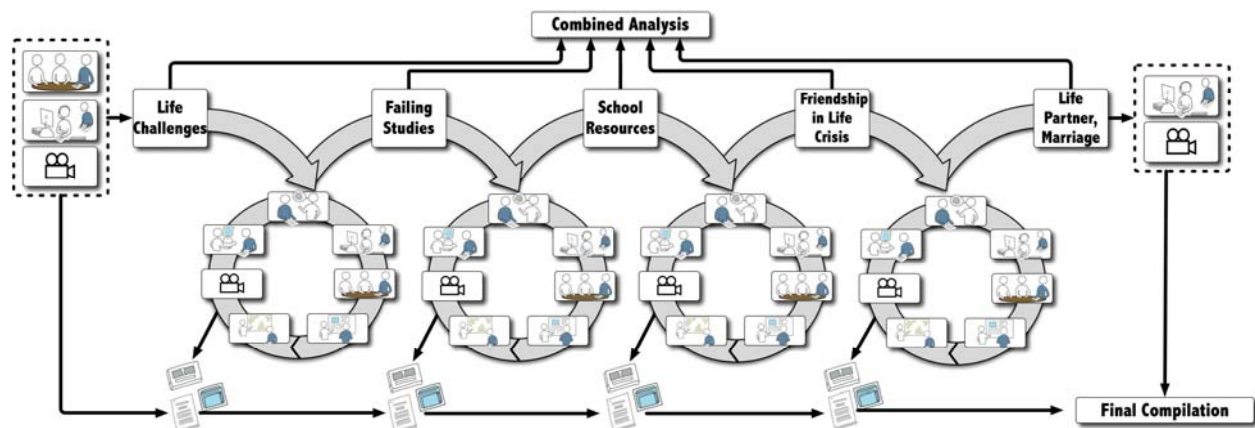


Figure 3. Digital Storytelling Process in the Workshop

Challenge 1: Failing studies

The first challenge in the workshop arose from the tension between the children's dreams and challenges in life, and the socio-economic environment of Tanzania. The first challenge concerned difficulties in school: "You are failing your studies. What will you do to make sure you can still reach your goals?" The problems that children may face are concerned with the exclusivity of the schooling system, that children may need to repeat a year, that their parents may not be willing to invest in school fees if the child is not doing well in school, and that secondary and tertiary education are only accessible to well-performing and well-off pupils. Pupils discussed their strategies together and expressed their strategies in drawings and text made with the XO-1 computers; they selected strategies for a drama play; they video recorded the drama plays with their laptops; and they displayed the videos using their laptops.

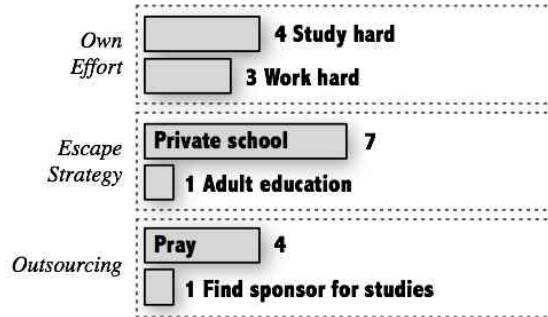


Figure 4. The most popular coping strategies when failing studies

Pupils came up with three kinds of strategies (Fig. 4). The most popular were various forms of escape strategies: Half of the pupils believed that the higher-quality education of private schools would help their study performance. However, as private schools require additional funding, the children planned that in order to secure funding, they would use the church, radio, and the Internet for getting in contact with possible sponsors, such as organizations and famous people. The second strategy type relied on the children's own efforts: studying harder, but also working harder at home so that the parents would be more willing to continue to support their studies. The third approach was a sort of outsourcing of the problem; either to a higher power or to a possible financial sponsor for studies.

Challenge 2: Resources and the learning environment

The next challenge was based on a typical situation in Tanzania: Those pupils who complete primary school need to find a good secondary school. Thus, the next big obstacle concerns the learning environment and funding. We hypothesized a quite common situation where the children's caretaker becomes sick and children need to acquire their own funding: "What would be the criteria for selecting a good school for you and how will you find funding?" The concern about losing one's caretaker is very real in Tanzania, and many children already live with adults other than their biological parents. In terms of school quality, children considered private institutions to be superior to government schools. They came up with ten quality concerns, which can roughly be grouped to five groups (Fig. 4).

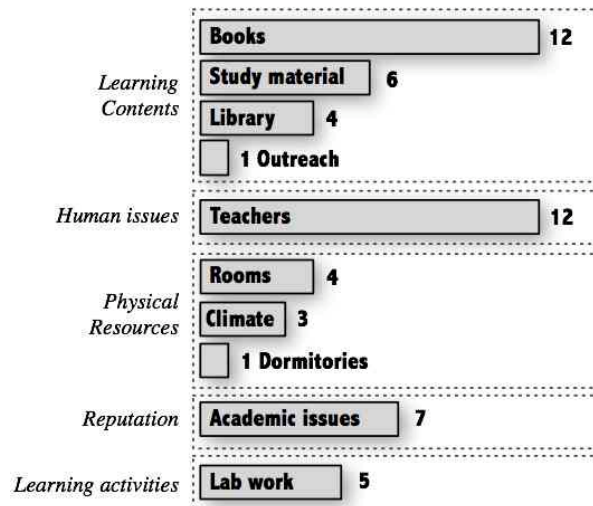


Figure 5. Concerns about quality of education

In Figure 5, teachers and books stood out as the most important single factors of school quality. Regarding quality of teachers, children mentioned, for example, the importance of harmony between pupils and teachers, as well as teachers' conformance to laws and regulations. Concerning physical prerequisites for education, children considered *books* to be the most important aspect (as there often is a shortage of books), followed by *study material* and *library*

resources. Regarding physical resources, children considered classrooms to be important: Their current school seats more than 50 pupils per classroom, and often there are not enough seats for each pupil.

Surprisingly, however, none of the pupils mentioned computers or computer laboratories as a criterion for choosing a school. Having 100 laptops at their school, and having an increasing number of Tanzanian schools getting computer laboratories, we expected that children would have included computer labs on their list. But only after the facilitators explicitly raised a question about computers the pupils concluded that computers would also be an important condition.

Challenge 3: HIV and friendship

In our earlier work in secondary schools in Iringa, every student we interviewed knew someone who was HIV-positive or who died of AIDS (Duveskog, 2009a, Duveskog, 2009b). In Tanzania HIV affects everyone in one way or another, yet the disease is still a taboo (Duveskog et al., 2003). It is important that pupils find ways of expressing their own thoughts and ideas about HIV in a way that is culturally acceptable. As the issue is highly emotional, specific attention needed to be paid to the formulation of questions and to sensitivity to the reactions and ensuing discussions. In order to protect anonymity and personal identity in the video production, we introduced traditional tribal masks in the plays, and each role in each play was attached to a specific mask instead of a specific child. Those masks allowed pupils to detach their selves from the controversial roles they played, and those masks allowed roles to be carried on even when the actors changed (Fig. 6).



Figure 6. Pupils recording a play act while wearing a mask

Based on our earlier research and on our current workshop aims, we prepared a number of questions that were aimed at sensitizing the pupils to the issue of HIV in their close circle of acquaintances. The children's replies indicated that they have talked about HIV and AIDS in school, as the replies showed that they have clear knowledge about transmission, treatment, and stigmatization. Contrary to the common tendency towards stigmatization of HIV and AIDS victims (TACAIDS, 2008), children said that they did not fear if a friend would be infected, and they stated that they would continue to show friendship, care, and support. The children emphasized the role of friendship in giving advice, studying together, motivating each other, and helping each other (in terms of, e.g., school fees, school uniforms, books, and pens). Should a friend turn out to be HIV-positive, children wished to give plenty of advice, but also wished to do things together, such as exercise, help with daily activities, go to hospital, work, and eat together. They wanted to continue to support their friends, and to not ridicule the friend.

Children stated feared stigmatization and isolation in case they turned out to be HIV-positive (it is important to remember that statistically speaking, a number of these children are HIV-positive). Children also expressed that they would feel shame, they would feel like breaking the law, and that people would assume that they have questionable habits. Stigmatization is a big problem in Tanzania and it is one of the main reasons why people do not want to know their HIV status, not to mention revealing their status to others (TACAIDS, 2008). The same concerns worked the

other way too, when children were asked how to treat HIV-positive people. The following dialogue is from one of the drama plays:

J: Masaya, I'm infected

M: Oh! With HIV? When did you go for a test?

J: Today, I just got back from the hospital

M: Oh, I am so sorry to hear that, my friend

J: Thank you, but I need some good advice from you, what do you think I should do?

M: My advice to you, first just seek advice from the doctor, all the problems you have I will help you all the way, just eat good food rich in protein that can build and give your body strength, and use the tablets that will give you a longer life.

J: Thank you, but will our friendship still be there?

M: Oh, of course yes, don't you worry about that at all.

Challenge 4: Partnership, marriage, and family

All the children except for one, who wanted to become a Catholic priest, wanted to get married and have children. There were a number of reasons that spoke for inclusion of the topic. First, in Tanzania people, especially women, often get married very young; in addition, teenage pregnancies are common. Secondly, the pupils had already received a sound body of knowledge on HIV and marriage, and they already had strong opinions on those issues. Thirdly, there is a view increasingly advocated by educational officers as well as aid workers that starting to talk about reproductive health in secondary school is too late.

The fourth challenge involved a number of common issues in Tanzanian society. As arranged marriages are common, it is important to seek the family's approval in finding a life partner. Hence, the last challenge involved a case where the pupils' plans and goals conflict with the ideas of the family. Most of the pupils (9) thought that either they or religious leaders could convince the parents to accept their children's decisions. Five pupils said they would accept their parents' decision, while two stated that they would get married regardless of their parents' view. Going against the will of the family could lead one to a conflict where one might get excluded from the family. When asked about their preferences between partner and studying, none of the pupils was willing to give up their education, as they considered it to be the key for their dreams, and they considered it to be more important than material things even if it led to a break up with the partner.

The last part of the fourth challenge was concerned with the pupils' opinions about what to do if they found their life partner to be HIV-positive. This scenario involves many controversial and emotional issues. There is the risk of getting infected, the fear of stigmatization, and the uncertainty about the origin of the HIV infection. These issues bring the discussion to a highly personal level and reflect upon marriage and family relations. None of the pupils said that they would leave a HIV-positive partner. However, none of them mentioned that they would take an HIV test to find out their own status. The reasons for not leaving their partners involved oath, love, children, and the fact that leaving would not help the situation. One of the pupils would avoid telling his/her children about his/her positive status, as the children would get sad if they heard that their parents would die.

The richness of the material in all the challenges was a direct result of the use of one-to-one computing where the pupils could feel free to openly express themselves in various ways and it also helped in enhancing their imagination.

Results

In this section we made use of the analysis of the challenges for identifying first how digital technology enhances storytelling and secondly how it neutralizes the disadvantages of traditional storytelling. Woodhouse (2008) listed a number of advantages of traditional storytelling in educational setting (Table 2). We related our analysis to Woodhouse's (2008) list, and found that digital storytelling offers the same advantages as traditional storytelling does, with a number of additional advantages. Table 2 compares the advantages of traditional storytelling to the advantages of digital storytelling. The left column of Table 2 presents Woodhouse's (2008) original list of pedagogical advantages of storytelling, and the right column presents the changes brought on by digital storytelling.

Table 2. Traditional storytelling and digital storytelling: Pedagogical advantages

Traditional Storytelling (Woodhouse, 2008)	Digital Storytelling
Share stories of success and develop a sense of community	Extended community Extended reach of stories
Explore personal roles and make sense of their lives	Similar to traditional storytelling
Storytelling enhances creativity, imagination and concentrates the mind	Increased facilitation of creative processes and focus
The use of imagination enables stories to be remembered	Extended memory
Enhances critical thinking and listening skills	Similar to traditional storytelling
Maintains the oral tradition	Provides a virtual platform for oral tradition
	Increased motivation, woven stories (Nuutinen et al., 2010)

Woodhouse (2008) listed six advantages of storytelling in education. First, he argued that students can use storytelling to share stories of success and develop a sense of community. In our workshop students shared their dreams and strategies to successfully overcome challenges. They were able to learn from each other and link their lives to challenges in their own communities. Students were also able to face challenges in a more positive way and develop a feeling of bringing hope to the community. The digitalized stories enabled the students to share the stories through the web to the global community. In this sense, digital storytelling extended the sharing of stories outside the immediate learning environment, thus extending the reach of their stories.

Secondly, by using storytelling students can explore their personal roles and make sense of their lives (Woodhouse, 2008). In our workshop, students projected their self-image on their future life. They contemplated on their lives in order to overcome typical challenges and eventually live their dreams. Digitalizing the stories did not reduce the component of the students making sense of their lives, but it is unclear if the sense-making was further enhanced by the use of technology. Thirdly, storytelling can enhance creativity and imagination, and concentrate the minds of students (Woodhouse, 2008). In our workshop too the storytelling process encouraged students to be creative, as they had to come up with strategies and imagine the implications of the strategies. Dramatizing the stories and recording their stories with their laptops kept the students focused and facilitated creative processes due to an unfamiliar environment.

Fourthly, in storytelling, the use of imagination enables stories to be remembered (Woodhouse, 2008). Our digital storytelling process involved individual imagination, group imagination, recording, dramatization, and viewing and reflection of the stories. Storing the stories digitally enabled the stories to be viewed at any moment of time, and the stories can potentially be remembered for generations. Fifthly, storytelling enhances critical thinking and listening skills (Woodhouse, 2008). In our workshop, too, students had to critically reflect on how to reach their dreams in life. Digitalizing the stories did not reduce the component of critical thinking, yet it is unclear if technology further enhanced critical thinking either. In the workshop listening skills were not emphasized, as the workshop was more about generating stories than listening to stories.

Sixthly, storytelling maintains the oral tradition (Woodhouse, 2008). Similar, our workshop was based on the oral tradition and maintained the oral tradition. Furthermore, the new technology—digital video recording—provided a virtual platform for the oral tradition and enabled presenting and sharing of the oral tradition in new ways. In addition to Woodhouse’s (2008) list of advantages, we also found three additional advantages. Firstly, apart from being able to store and further share the stories, students also gained additional motivation as their stories could be presented in new ways and for a wider audience. Secondly, students developed their computer literacy skills as a side effect of the life-planning course. Thirdly, a woven story was made, in which the viewer can select the path of continuation of the story.

Woodhouse (2008) listed six disadvantages of storytelling in education (Table 3). First, he argued that storytelling is time-consuming. The same applies to digital storytelling, but digitalizing the stories requires even more time, especially if the students also need to learn new IT tools and applications. Secondly, Woodhouse (2008) argued that students require a safe environment and may feel uncomfortable to share their stories. While sharing stories—especially personal ones—it is important that the students feel safe. In this regard computers work as a neutral platform, as students shared their thoughts more easily with a machine than with a human, as the machine does not

judge or ridicule them. It is important to ensure, however, that if the stories are shared over the Internet, the identity of students must be hidden.

Table 3. Traditional storytelling and digital storytelling: Disadvantages

Traditional Storytelling (Woodhouse, 2008)	Digital Storytelling
Time in preparation	Initially more time spent to learn new digital tools. Recording and editing add time. Can save time in reuse of material and presentation.
Students require a safe environment and may feel uncomfortable to share their stories	Neutral platform
Topics may challenge personal values and therefore be threatening	Impersonal conduit for sensitive topics
Students may need directions and guidance at various stages of storytelling	New digital tools require additional guidance
The response may depend on the previous exposure	Similar to traditional storytelling
Requires visualization skills and may not suit everyone's learning style	Offers more variety for different talents in visualization

Thirdly, topics in storytelling may challenge personal values and therefore be threatening (Woodhouse, 2008). This applied strongly in our workshop, as it dealt with sensitive topics related to HIV and AIDS. One of the main problems with HIV and AIDS is the stigmatization of people. To reduce the stigma in the society it is, however, essential to challenge personal values, even if it feels uncomfortable to the students. Digital stories are however less threatening than traditional storytelling, as the computer offers an impersonalizing conduit for sensitive topics, and is less intimidating than face-to-face sharing of thoughts. Fourthly, students in storytelling may need directions (Woodhouse, 2008). In our workshop, we used the students' own lives and dreams as a starting point, and the students had a clear direction, which was working towards achieving their dreams. In general, however, digital storytelling students need additional directions insofar as using digital media for storytelling is a new concept to the students.

Fifthly, the students' response may depend on their previous exposure (Woodhouse, 2008), and this aspect of storytelling remains the same with digital storytelling, too. Sixthly, storytelling requires visualization skills and may not suit everyone's learning style (Woodhouse, 2008). In digital storytelling visualization skills are as important as they are in traditional storytelling. Digital storytelling, however, allows the storyteller to visualize stories in various ways, giving more space for different skills. Hence, students are more likely to find a visualization method suitable for him or her. In addition to the disadvantages that Woodhouse (2008) mentions, the impersonalizing nature of digital storytelling may be a hindrance, as stories are highly dependent on their teller.

Discussion

How to design a successful digital storytelling workshops

The role of design is essential for successful integration of technology into education. According to our observations, the crucial success factors for designing digital storytelling workshop are *commitment*, *contextual grounding*, *previous exposure* to the context, involvement of *local experts* and stakeholders, atmosphere of *trust*, and realistic, *flexible planning*.

First, teachers, headmaster, tutors, facilitators, parents, and children were strongly committed to the workshop and enthusiastic about it. The headmaster was excited and supportive of the workshop goals and the arrangements, and he could see its educational value in terms of English language skills, technological skills, HIV education, and multicultural experiences. Secondly, the workshop was grounded in the local reality and did not rely on ideas alien to the children. Instead, the children wanted to share *their reality* with the facilitators.

Thirdly, the facilitators had more than ten years of previous experience on conducting similar workshops in developing countries. Thus, there were few surprises about how things can work out. Fourthly, the facilitators

already knew the local OLPC team members. The team met several times every week in order to discuss arrangements, current progress, challenges, and possible solutions.

Fifthly, the involvement and dedication of the local experts, headmaster, school teachers, pupils, and parents created an atmosphere of trust, where the facilitators could trust that things will get done. Often in projects in developing countries facilitators of similar workshops need to put significant amount of time in micromanaging, doing follow-ups, and double-checking that preparations and tasks have been done. Sixthly, the team had a plan to follow, yet that plan was flexible enough to be adapted to the circumstances. Timetables, contents, and technical details were all adaptable to local contingencies.

Motivational factors

One of the big motivators for pupils was the goal that the facilitators will combine the pupils' products into a storytelling game platform that will be shared within the school as well as in the Internet (available at <http://www.cs.joensuu.fi/games/ukombozi/>). After each challenge the facilitators displayed a rough compilation of the material in order to encourage the pupils and to demonstrate the technical possibilities. This decision turned out to work well, as the pupils were greatly motivated by their ability to express themselves in various new ways where their work was compiled together for the benefit of others.

The children's satisfaction and enjoyment with the workshop became apparent over the course of time, as it became habitual that the children would every day run to the facilitators' car and help to carry equipment into the classroom. Attendance rates were very high (97.6%), even on Saturdays. However, the workshop also created jealousy among those pupils who could not attend the workshop, and might in that sense have created an unmotivating atmosphere among other pupils in the school.

Technical challenges

One-to-one laptops were the quintessential tool for extending storytelling as a pedagogical vehicle. The children loved their XO-1 computers, but the workshop facilitators were more critical about them. While recording video and audio, the built-in microphones of the XO-1 laptops often failed to pick up sound properly, and the image was not always good. The children had to re-take many acts several times, which led them to accidentally learn about environmental effects to digital audio and video. They also used a memory stick to bring their videos to the facilitators.

The pupils' inexperience with touch pads, as well as the poorly functioning pads as such, caused difficulties to pupils. Hence, drawing pictures became more of a practice and exercise in how to use the laptops for drawing rather than an exercise on drawing things related to the challenge. That is, instead of a tool for self-expression—as the OLPC Foundation would like them to be used—laptops in this mode of working were reduced to basic tools for coping with basics of information technology.

The XO-1 laptops had several unexpected limitations that had to be dealt with (Duveskog et al., 2010). Despite the few deficiencies, the laptops proved to be sufficient for achieving the goals of the workshop, which was based on the idea of using only the available technology.

Conclusion

Digital storytelling offers a number of advantages compared to traditional storytelling. It provides a neutral platform where students feel safer to share their stories even if dealing with sensitive topics. It offers a variety of ways for different talents to express their stories according to their own liking. It increases the motivation for the storytellers. It provides an extended reach of the stories even outside the community where the listener or viewer can learn from the stories. It further enhances creativity, imagination and concentration. It maintains the oral traditions that can be stored for coming generations.

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