TRANSMEDIA STORYBUILDING IN SLOYD

Annika Wiklund-Engblom[1,2], Kasper Hiltunen[2], Juha Hartvik[2] and Mia Porko-Hudd[2]
Åbo Akademi University, P.O. Box 311, Vaasa, Finland
[1]MediaCity
[2]Faculty of Education

ABSTRACT

This paper describes the theoretical foundation for a work in progress project of developing a mobile learning solution for sloyd education named Talking Tools (TT). Being a learner in a multimodal, blended learning environment entails both consuming and creating own content using a number of media sources and tools. For sloyd education, this multimodal learning experience can be seen as transmedia storybuilding, in which dynamic content facilitates learning by multiple and flexible stimulations. The learning process is the learners' own stories created through their transmedia learning experiences. We will look at the learning process of learners using the mobile learning solution from of a socio-cultural perspective of appropriating tools for learning. Phases of development are outlined in the paper.

1. INTRODUCTION

The fact that smart phones are found in the pocket of nearly every student in Finland opens up for endless opportunities of educational software development. This is a tremendous educational resource to exploit (Ilomäki, 2012). The purpose of this paper is to describe the theoretical foundation for the development of Talking Tools (TT), a mobile learning management system for smart phones, which supports both independent and collaborative learning and allows for flexible information access, communication, and documentation (c.f. Naidu, 2008). We will present how this mobile learning solution aims to enhance the learning experience in sloyd (slöjd) education. Research aims and questions are discussed within a socio-cultural framework while using terminology of transmedia learning.

Sloyd is a compulsory subject taught in primary schools in Finland. In the sloyd class, learners design and manufacture unique artifacts in a multifaceted process involving several steps and decision making. In this process various materials are being intentionally processed by hand into tangible artifacts (Kojonkoski-Rännäli, 1995). The sloyd class is student centered and allows every student to work from their own ability and motivation in creating artifacts. This includes both intellectual and manual work. The problem is that these individual processes often demand hands-on instruction and guidance on an individual level. Traditionally, the teacher guides and demonstrates sloyd techniques on demand, as there is a lack of ready made instructional material, which would be flexible enough to support the individual learning process. One purpose of TT is to provide easily accessible digital material and demonstrations of sloyd processes, which would free up the teacher's time for individual guidance instead of having a strong emphasis on lecturing. Another purpose is to allow the students to document and discuss their own creative process (Johansson & Porko-Hudd, 2012).

The TT development is a collaborative project between sloyd education researchers, transmedia developers, user experience experts, and educational technology researchers at XX, as well as software developers and coding experts at UpCode Ltd., a software company specialized in developing reading and scanning solutions for smartphones.

2. TRANSMEDIA STORYBUILDING

In sloyd education there is a pedagogical value in the story surrounding the creative process. The artifacts made in sloyd class can be seen as a type of communication and storytelling in itself (Mäkelä, 2011). We want to encourage learners to build their own story in order to capture the essence of the why, how and what within the creative sloyd process. Students can with the help of TT visualize their story of the product they are making as well as their learning related to this process. The learning resources or in other words the transmedia affordances provided by TT, involves utilizing a variety of media tools that complement each other. When the learning process flows between the design and manufacturing of tangible artifacts and a number of media tools and learning objects it becomes transmedia learning; a blended and dynamic content method to facilitate learning (Teske & Horstman, 2012). The objective is to stimulate learners in multiple ways and allow them to get different perspectives: learning by watching/listening, learning by doing, learning by sharing, learning by collaborating, learning by reflecting on one's process as a whole, as well as learning by being exposed to variations of processes through other learners' stories. We refer to the flow of the story utilizing a variety of media tools for the purpose of learning, as a "learning process of transmedia storybuilding" (see Figure 1).

We argue that humans are by default transmedia storybuilders based on our multichannel sensory system and multimodal brain. Our perceptual and sensory systems are the source of our conscious experience (Faucoinner & Turner, 2002). Sight, hearing, touch, smell, and taste are our bodies "tools" to experience various perceptions from a variety of perspectives. Our cognitive and emotional brain interprets these perceptions into experiences. Learning is the process whereby knowledge is created through the transformation of experience (Kolb, 1984). Media tools function as extensions of our bodies (McLuhan, 1964) and, hence, educational media tools can be described as extensions of our bodies and senses to assist transformation of experiences into knowledge.
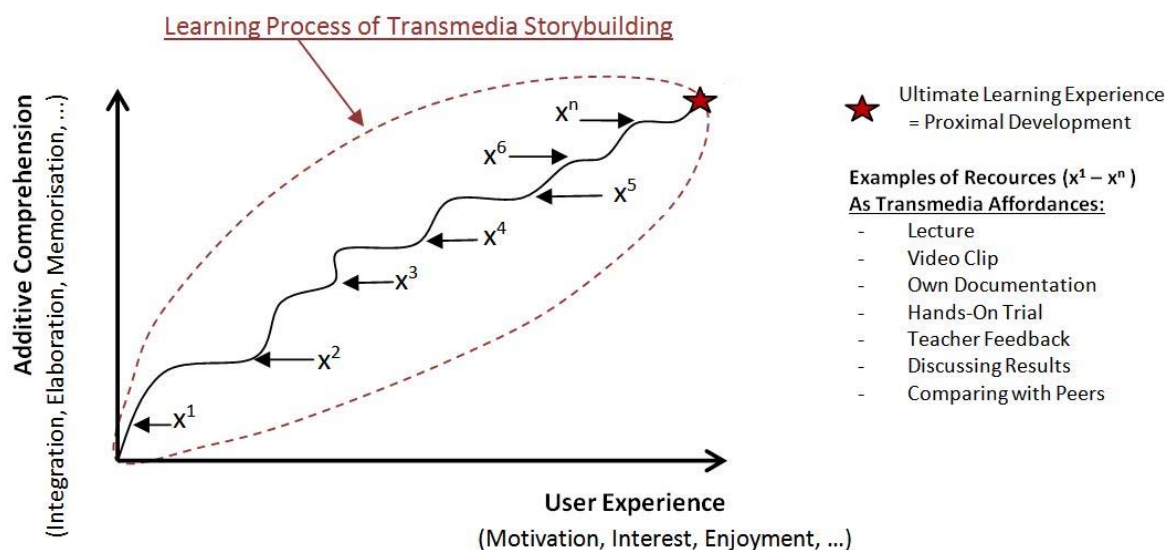

Figure 1. Illustrating potential learner choices resulting in an individual learning process of transmedia storybuilding, eventually reaching an ultimate learning experience and proximal development.

Multimodal affordances in the learning environment allows for transmedia storybuilding as illustrated in Figure 1. This provides variations of perspectives on content, and consequently optimizes opportunities for learning (Sankey, Birch & Gardiner, 2010). Every step in the transmedia flow allows for additive comprehension and adds to our understanding (Jenkins, 2006). This equals the hypothesis that we learn better the more different ways we learn something. Figure 1 shows how examples of learning resources ($x^1 - x^n$), or in other words transmedia affordances of the multimodal learning environment, are assisting the learning process both in reaching a better understanding of the subject, and in gaining a more positive learning experience. The aim of the variety of transmedia affordances is to allow students to learn more (additive comprehension) and increase positive emotions (user experience). The assumption is that the ultimate

learning experience, and hence proximal development, is the result of deep learning and high motivation. Note that the examples $x^1 - x^n$ in the figure could be any learning resource in any variety of order chosen by each learner individually. This results in unique learning processes of transmedia storybuilding depending on the choice of resources and the learner's own voice in the conversation.

3. A SOCIO-CULTURAL PERSPECTIVE

ICT has changed the way we communicate, behave, socialize, and provides a powerful tool for learning. Today, socio-cultural theory, in which learning is based on the relation between the collective and the individual, is relevant in the design of educational technology where social media often is an important ingredient. This theoretical approach sees our learning in relation to the context we live in, the tools we work with, and the social context we are a part of (Säljö & Linderot, 2002). Social learning theorists would argue that learning could even be constrained by the lack of social presence as development of knowledge is a social process (Naidu, 2008). The use of social media ingredients in TT supports self-studies, but it supports peer learning in particular, where all learners learn from each other, teach each other and advise each other.

When technological tools change, it also changes how we interact with the world around us, but also the way we learn and acquire knowledge (Säljö & Linderot, 2002). The characteristics of the medium itself will affect society (McLuhan, 1964). ICT allows for new strategies of solving problems and provides an atmosphere of trial-and-error-testing for learning. This gives permission for error-making, which then is seen as a step in the process of learning instead of being judged as being right or wrong as an end-result (Säljö & Linderot, 2002). Mistakes made during a creative process are often crucial steps in order to reach an optimal solution (Beard & Wilson, 2002). This new approach towards error-making is of significance for how we learn, and learn to learn in new ways with the help of ICT. It is a socio-cultural perspective for understanding how human learning functions in terms of appropriating new tools in our environment (Säljö & Linderot, 2002). We want to emphasize on this, since it is part of what this research is aiming for; investigating the learning process while using new technological tools and learning objects as a means for learning – both from a learner as well as a teacher perspective.

One important function of TT is to visualize the learning process and make it a transparent entity for the learners to reflect on. The learning objects created for TT holds content about techniques, materials and tools used in sloyd. These learning objects are small chunks of content which, being a variety of shapes and sizes, are difficult to assemble in a meaningful way without some kind of contextual glue to hold them together and give the combination a meaning, "bricks held together and made meaningful by a contextual mortar" (Wiley, 2008, p. 348). Transmedia seams are the choices of actions you make for learning in a transmedia learning process. These choices determine which path you take and which "bricks of content" to build your story with. Learner choices function as bricks and the learner's work process is the contextual mortar or glue that gives the individual learning objects a greater meaning.

The multimodal affordances provided by a blended learning environment assist a transmedia storybuilding process, which allows for additive comprehension of the learning content. The idea behind using transmedia content is to make the learning situation flexible and make use of tools that can enhance and visualize materials in multiple ways. In this transmedia flow the learners add their own "voices" through their active participation. It is the voices of co-creation in the sloyd conversation. The intention is to put the learner through a constructive act, not merely transmit content. The story created in this transmedia content flow is ultimately the learner's, although, to some extent structured according to a specific instructional design by the teacher. The learners are producers/designers/directors of their learning experiences.

The two significant factors for understanding mobile learning and its implication for education are conversation and context. Sharples, Taylor and Vavoula (2007) propose a tentative definition of mobile learning as "the processes of coming to know through conversations across multiple contexts among people and personal interactive technologies". They "claim that conversation is the driving process of learning" (ibid, p. 225), and that "all activity is performed in context /../ learning not only occurs in a context, it also creates context through continual interaction" (ibid, p. 230). They use Gordon Pask's conversation theory and Engeström's activity theory as stepping stones in their attempt to create a theory of mobile learning. One transmedia affordance of TT is, for instance, microblogging. This provides students with opportunities for creating a conversation around their sloyd projects.

4. CURRENT PHASE OF ITERATIVE DEVELOPMENT AND TESTING

Table 1 illustrates the phases of development of the mobile learning application Talking Tools, as well as the collaboration between Sloyd Teacher Education (SE), MediaCity (MC), and UpCode Ltd. (UC). Part of this involves continuous testing of iterations of both content and the user interface of the mobile application during development. At the time of writing educational video material to be used in the mobile application has been filmed, edited, and tested on the target audience. The next phase is to test a mock-up of the user interface in order to check understandability and usability of the interface design, as well as users' expectations of the product, and experiences of the brand Talking Tools.

Table 1. Phases of interface design and iterative development of the Talking Tools mobile learning application.

Phases	Interface Design and Iterative Development	Collaboration
Concept	Idea based on educational need	SE
	Planning concept	SE, MC, UC
Video Content	Scripting videos	SE
	Filming first videos	SE, MC
	Editing first videos	MC
	UX-Testing videos	MC
App	Planning mobile app	SE, MC
Iteration 1	Concept & interface mock-up	SE, MC, UC
	Coding interface	UC
	Feedback discussion	SE, MC, UC
App Mock-up	Mock-up of interface	SE, MC
Iteration 2	Testing mock-up	MC
	Feedback discussion	SE, MC, UC
App	Coding interface	UC
Iteration 2	Testing	MC
	Feedback discussion	SE, MC, UC
Final app	Testing in real life learning situations	SE, MC
	Researching the added value for learning	SE, MC
Guidelines	Writing guidelines based on research and best practices	SE
New subjects	Developing the app for other subjects	SE, MC, UC
Goals	Dissemination of research results	SE, MC, UC
	World wide marketing	SE, MC, UC

SE = Sloyed Teacher Ed, Åbo Akademi University; **MC** = MediaCity, Åbo Akademi University; **UC** = UpCode Ltd

On the finished mobile application, we will be testing usability and user experience in relation to both self-regulated learning and co-regulation in classroom situations using both laboratory methods and etnographic research methods. Research will be conducted on how the application assists the learning process, in order to be able to develop guidelines for teachers on how to apply it in educational situations. We simply want to find out what the added value of Talking Tools is for learning in various contexts.

5. CONCLUDING ASSUMPTIONS AND QUESTIONS

One of our assumptions is that learning resources allowing for transmedia storybuilding in learning broadens the horizon of proximal development. We want to know if this is true, and how this is true, in the case of TT. Our research questions include an appropriating perspective: How does this new tool for mobile and multimodal transmedia learning change how we act, interact, teach and learn in sloyd education? How are sloyd learning activities enhanced, facilitated, and supported by the use of TT? How do learners create their own transmedia story within the sloyd learning process assisted by TT?

Another assumption is that learning, as in integrating, elaborating, memorization, etc., increases with positive emotions. In other words, the assumption is that comprehension and user experience are interrelated in the learning process of transmedia storybuilding. Therefore, we assume that tools for additive comprehension enable increased motivation, interest and enjoyment, and vice versa.

Our research questions further include a designer perspective: What can we learn from a learning design perspective about the TT-based transmedia learning experience, in which the story is created across a number

of media tools and fragmented learning objects? How is learning related to user experience in the transmedia storybuilding process? How are the voices of co-creation influencing the conversation in the sloyd class and outside?

REFERENCES

Beard, C., & Wilson, J. P. (2002). *Experiential Learning. A Best Practice Handbook for Educators and Trainers.* (2nd edition) Kogan Page. Philadelphia, USA.

Faucoinner, G., & Turner, M. (2002). *The Way We Think. Conceptual Blending and the Mind's Hidden Complexities.* Basic Books, New York, USA.

Ilomäki, L. (Ed.)(2012). *Laatua e-oppimateriaaleihin: e-oppimateriaalit opetuksessa ja oppimisessa [Eng: The Quality of E-learning Materials: E-learning Materials in Teaching and Learning].* Finnish Ministry of Education. Helsinki, Finland.

Jenkins, H. (2006). *Convergence Culture: Where Old and New Media Collide.* New York University Press, New York.

Johansson, M., & Porko-Hudd, M. (2012). *Smart slöjd med smarttelefon? Ett forsknings- och utvecklingsprojekt om didaktiska dimensioner i digitalt lärande [Eng: Smart sloyd with smart phones? A research and development project about didaktical dimensions in digital learning].* Paper presented at KLÄM, Conference about Learning, Teaching, and Media Use. Umeå, Sweden.

Kojonkoski-Rännäli, S. (1995). *Ajatus käsissämme. Käsityön käsitteen merkityssisällön analyysi [Eng: The Idea of Our Hands. A Conceptual Analysis of the Handicraft Concept].* University of Turku, Turku, Finland.

Kolb, D. A. (1984). *Experiential Learning: Experience as the Source of Learning and Development.* Prentice-Hall, New Jersey, USA.

Mäkelä, E. (2011). *Slöjd som berättelse: Om skolungdom och estetiska perspektiv [Eng: Sloyd as a Story: About School Youth and Aesthetic Perspectives].* Umeå University, Faculty of Arts, Department of Creative Studies, Umeå, Sweden.

McLuhan, M. (1964). *Understanding Media: The Extensions of Man.* McGraw Hill, NY, USA.

Naidu, S. (2008). Enabling Time, Pace, and Place Independence. In J. M. Spector (Ed.), *Handbook of Research on Educational Communications and Technology.* Routledge, New York, USA.

Säljö, R., & Linderoth, J. (Eds.). (2002). *Utm@ningar och e-frestelser: IT och skolans lärkultur. [Eng: Ch@llenges and e-Temptations: ICT and the Learning Culture of Our School].* Prisma, Stockholm.

Sankey, M., Birch, D., & Gardiner, M. (2010). Engaging Students Through Multimodal Learning Environments: The Journey Continues. *Proceedings of ASCILITE conference*, Sydney, Australia.

Sharples, M., Taylor, J., & Vavoula, G. (2007). A Theory of Learning for the Mobile Age. In R. Andrews & C. Haythornthwaite (Eds.) *The SAGE Handbook of E-Learning Research.* SAGE Publications Ltd., London, (pp. 221-247).

Teske, P., & Horstman, T. (2012). Transmedia in the Classroom: Breaking the Fourth Wall. *Proceedings of MindTrek Academic Conference*, Tampere, Finland. Available at ACM Digital Library.

Wiley, D.A. (2008). The Learning Objects Literature. In J.M. Spector (Eds.), *Handbook of Research on Educational Communications and Technology.* Routledge, New York, USA.