"*Wayang* Authoring": A Web-based Authoring Tool to Support Media Literacy for Children

Wahju Agung Widjajanto, Michael Lund, and Heidi Schelhowe

***Abstract*—In our web-based platform "*Wayang* Authoring" children with different cultural backgrounds can share stories and make experiences in culturally different storytelling styles. The idea of *Wayang* Authoring is based on the Indonesian ancient art form *Wayang*. In *Wayang* Authoring children are able to compose a story by using digital puppets, saving, and sharing it. The research question focuses on if and how the design of our system can support media literacy for children, enhance creative storytelling and self-expression as well as help to share cultural diversity. In this article the *Wayang* Authoring platform and its background is presented.**

Index Terms*—authoring tool, literacy, media, storytelling, *wayang

I. INTRODUCTION

THROUGHOUT the world puppet show is a popular form of entertainment. Sometimes it is an ancient heritage, a reminder of an age long past; sometimes a medium for contemporary artist's experiments with shape, color and movement. For centuries it has been used to relate myth and legend and enact simple traditional farces. Now, as well as undergoing a tremendous revival as entertainment for both adults and children, it is becoming more and more widely used in education and also in therapy.

In our project *Wayang* Authoring we want to use the Web to revive traditional story telling with puppets. We aim at educational use of virtual storytelling to improve media literacy for young people all around the world trough an interesting and challenging application and an intercultural exchange. We want to enable children to express themselves in creating own stories and to share them with others.

Virtual worlds cannot substitute the rich experience of performing with real puppets and a face-to-face-audience. But we want to ponder the potentials of Web design and usage for the field. New possibilities may arise from a worldwide availability and from intercultural exchange of local knowledge on storytelling. Web software can alleviate own construction and design activities. The popularity of client-side scripting allows extended functionality and new kind of interactivity in web applications. The Web offers new and amazing communication and cooperation possibilities all over the world, especially with the rise of social networking sites and the semantic web.

The idea of *Wayang* Authoring is based on the Indonesian ancient art form *Wayang*. We will explain more about it in the second chapter. *Wayang* as a traditional art form offers a space and power to be explored. The third and forth chapter will tell about digital media and literacy. The field of storytelling and digital story telling will be explained in the fifth chapter. In our project that is portrayed in the seventh chapter we combine the tradition of *Wayang* storytelling with digital media in order to create a new type of performance possibilities without obstructing the role of the original art itself. *Wayang* Authoring is designed as a multimedia web-based application for children to create stories and a virtual community of storytellers. At least we will refer to Jenkins notion of media literacy in order to reflect on how these competences could be encountered by *Wayang* Authoring. We estimate the understanding of audio-visual codes become a major literacy factor in a media based society because it changes the way to read and write.

II. PUPPETS, SHADOW PUPPETS

Puppetry is understood differently depending on whether the explanation comes from the artist or the audience [22]. Upon the artist, the puppet is understood as a medium under his control that frees him of any responsibility, being free to act in unreal world as the consequences are only in that world [2].

Tilis defined the puppet as a theatrical figure perceived by an audience to be an object, that is, given design, movement and frequently speech, so that it fulfills the audience's desire to imagine it as having life, by creating a double vision perception and imagination, the puppet pleasurably challenges the audience's understanding of the relationship between object and life [22].

Puppets are shadow, hands, dolls, figures and figurines. *Wayang* is the general word to many kinds of traditional theatre in Java, Bali, Lombok, and some other parts of Indonesia and Southeast Asia, both puppet theatre and actor's

Manuscript received January 30, 2009.

Wahju Agung Widjajanto is member of Digital Media in Education (dimeb) Research Group, Faculty of Mathematics/Informatics, University of Bremen, Germany (e-mail: wahju@tzi.de).

Michael Lund is member of Digital Media in Education (dimeb) Research Group, Faculty of Mathematics/Informatics, University of Bremen, Germany (e-mail: mlund@tzi.de).

Heidi Schelhowe is Professor and Head of Digital Media in Education (dimeb) Research Group, Faculty of Mathematics/Informatics, University of Bremen, Germany (e-mail: schelhow@tzi.de).

theatre. *Wayang Kulit*, the most widespread *Wayang*, is an ancient form of storytelling that originated from the Indonesian island of Java. Over the centuries its religious character has increasingly developed into a distinct art form; foreign influences introduced new stories, characters were added, and new refined styles were developed at the courts.

Wayang Kulit consists of two words, *Wayang* and *Kulit*. *Wayang* is a Javanese word meaning shadow or ghost, *kulit* means leather, and added together it translates as 'shadow from leather'. The *Wayang Kulit* is a two-dimensional puppet, made of buffalo or goat leather; like paper dolls, but with arms that swivel (see Figure 1). A *Wayang Kulit* puppet is a representation of mainly human characters and the physical world. Every part of the puppets' design has symbolic significance.

Fig. 1. Example of *Wayang* puppets.

Wayang Kulit employs a white translucent screen made of cloth with an electric lamp hung near the centre of the screen (see Figure 2). At the lower edge of the screen, there are two banana trunks placed horizontally, into which the sharp points of the central controlling stick of the puppets can be stuck. The puppet are moved or fixed on or near the illuminated screen so they cast shadows on the screen. The puppets, the puppeteer, and the musicians can be watched from one side of the screen, and the shadows cast by puppets from the other. The audience can usually watch from both sides [12].

Fig. 2. View of *Wayang* performance space.

Wayang has the functions of entertainment as well as moral guidance, and is a combination of five arts, namely *seni widya* (arts of philosophy and education), *seni drama* (performing and *karawitan* musical arts), *seni gatra* (leather cutting and painting arts), *seni ripta* (thematic and literally arts), and *seni cipta* (conceptual and creative arts).

UNESCO proclaimed the *Wayang* Puppet Theatre as a Masterpiece of Oral and Intangible Heritage of Humanity on 7th November 2003 [23].

Wayang belongs to the Asian and Middle Eastern tradition of shadow theatre with puppets. Traditionally Western shadow theatre uses human actors and Eastern tradition uses puppets, but today there is an intercultural exchange between both traditions. The difference between the two kinds of shadow theatre becomes smaller. The mappings of a 3 dimensional object to a 2 dimensional silhouette hides and articulates specific aspects at the same time [37]. Some approaches use shadow play for educational targets. For example according to Reggio pedagogic the shadow is the first immaterial phenomenon a child is faced. The playful confrontation with shadows enables the comprehension the world of abstraction and concepts. In this view shadow theater could enhance the development of intelligence [30].

III. DIGITAL MEDIA AND LITERACY

Media evolves from oral to digital (see Figure 3). The most important recent milestones in this communicative and technological development are: a) the appearance of electronic media (telephone, film, radio and television) paving the way for mass communication – dominant since the 1950s – and the later emergence of digital media, especially the Internet – since the 1980s [5].

The concept of literacy was traditionally linked to an alphabet or a language code, that is, through reading, writing and understanding and this has been linked with print media. However, today, the term literacy has been extended to cover the skills and competencies involved in using computers competently, also in finding, selecting, analyzing, evaluating and storing information through the internet, in its treatment and its use, independently of the codes or techniques involved [5].

But what is literacy? According to Wendy Earle literacy means more than reading and writing. It means how we respond and understand our world. There is a huge range of definitions of particular and diverse literacies, such as computer literacy, game literacy or emotional literacy (that means to be able to decode certain signs of social communication). The aim of all these competences is to become able to interpret and interact with a range of sources of information and cultural forms [31],[32].

Sandra Calvert and colleagues have looked at the capacity of digital media to support active learning, metacognition, and verbal memory. They report that digital experiences allow children to take active control of their own learning, adjusting the pace and the level of difficulty of the material [9].

According to Jenkins paper which he published with the Mc Arthur Foundation in 2005 more than one-half of all teens in the US have created media content, and roughly one third of teens that use the Internet have shared content they produced. He summarized that (and other) trends under the term "participatory culture" that should become the center of modern media education [10].

21st century literacy is the set of abilities and skills where

aural, visual and digital literacy overlap. These include the ability to understand the power of images and sounds, to recognize and use that power, to manipulate and transform digital media, to distribute them pervasively, and to easily adapt to new forms.

Media literacy means learning a new grammar with its own rules of construction, implies the ability to use media to evoke emotional responses, and has potentials for the way we learn [21]. *Wayang* Authoring can be such a context. It incorporates aspects of storytelling, literature, theater, cinema and digital media.

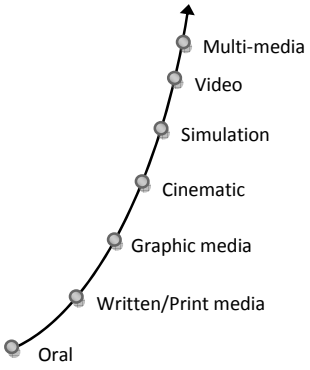

Fig. 3. Media evolution [21].

IV. VISUAL VS. TEXT

Digital media offer high production values, with exciting images, color, and movement that captivate kids' attention.

Researchers suggest that the visual element is especially important for young children, who often think in iconic, visual forms, as well as for poor readers who rely more on visualization of thoughts to scaffold memory skills [9].

Researchers have also associated digital media use with a tendency to focus on graphics first and texts second as children are used to pick up new information. The text illustrates the image – not the other way around [7].

The work of Allan Paivio indicated with his dual-coding theory that learners are far more likely to understand concrete (non-abstract) words when they are accompanied by referent pictures than when only pronounced [14].

The rich visual tradition of Javanese shadow theatre adapted a huge range of archetypical images. Often the visual appearance is an abstraction of a human characteristic, a specific emotion or behavior. This has an expressive and symbolic character, composed by reduction and a contrast of detailed ornamentation that makes them to an aesthetic object. The shadow enhances the evocative character [33],[34]. The figures become alive. The psychologist Fritz Heler created an animation movie, where abstract shapes like triangles and dots become actors. The audience gives those shapes intentions, wishes and personality. He suggests that the ability to create and understand stories is a human ability that helps us to get orientation in the social world and to understand others. Stories are fields for experiments, to try out relation and to develop empathy [35].

V. STORYTELLING

Storytelling is an ancient art form where experiences, events and actions are conveyed in words, images and sounds. This art form is traditionally an oral performance with an interactive relation between storyteller and audience. The storyteller uses often a set of incidents or fragments of plots that are mixed and composed in an improvisational manner [11].

In short words, in stories always a character acts upon a starting question or situation and reacts on events. The gap between his/her aim and the result of his/her acting, the gap between his/her vision and his/her personality creates the dramatic tension [11]. A character is a whole cosmos with diverse attributes and qualities.

Storytelling and the development of media influenced each another alternately, and each new medium established a new kind of storytelling. In theatre and film the storyline of the plot is redefined and becomes an extended aspect of this genre. According to the specific needs of literature or cinema the complexity of characters is defined. With digital media as a major medium nowadays several new kind of storytelling are created, such as text adventure, interactive fiction, role-plays and games with story elements. In an interactive story the user becomes the protagonist (the main and active character of a story) travelling through a universe of possibilities [4].

Digital storytelling is combining the art of telling stories with a mixture of digital graphics, text, recorded audio narration, video and music to present information on a specific topic [18].

Digital storytelling can enable ordinary people to tell their own lives. In the last eight years a new genre of storytelling was developed out of computer games, carrying the tradition of cinema narration into this new media. The environment, the characters and the action can be produced, individually or cooperative [24]. Here the concept of telling is more important as the idea of action.

A story can be created by an individual or by a group. The members of a group - distributed or in the same place - collaborate on the creation of a story, which may be done synchronously or asynchronously using different media [15]. This collaborative storytelling has the capacity to build social interaction and to facilitate communication among the members of a community.

Stories provide a sense of direction. Most often, they have a beginning, middle, and an end. Of course, the advent of hypertext has abolished assumptions about sequencing, but even when there are multiple pathways through a story; narratives ask to deal with notions of ordering that can help to organize thinking. Stories also bring focus to remixed or seemingly chaotic productions by grounding them in emotion. They can help find wholeness in a fragmented world [19].

A simple web-based medium with functionalities for sharing and composing stories might encourage children to engage in co-operative storytelling. This kind of media

concept fits to some main aspects of the ancient art form of *Wayang*. As an ancestor of cinema in *Wayang* the story is more important than acting and the interaction with the audience demands a social embedding of the interactivity. Sharing story fragments and composing stories, recording and viewing can be supported by the possibilities of a medium that are close to the *Wayang* culture.

VI. RELATED WORK

In the following we refer shortly to some examples of digital storytelling and platforms for sharing user-generated content.

TellStory is a web application system that supports the collaborative construction of stories. One of the most important issues of TellStory consists in the user's possibility to use a template in order to address the elaboration of the story through the typical characteristics of a narrative structure [15].

KidPad is a collaborative story authoring tool for children. KidPad provides drawing, typing and hyperlinking capabilities in a large two-dimensional zoomable screenspace. By these functionalities children can create stories by scenes and link them together in a virtual space. Collaborative storytelling helps children develop interpersonal and story-related skills [8]. KidPad supports collaborative storytelling with one computer only, but not in computer networks.

KidStory proposes to build systems that support collaborative learning which itself may underpin the development of storytelling and visualization skills along with the development of multiple forms of literacy [20].

Technology offers an opportunity to support and facilitate collaboration in many respects [1]. Today's technology can be used to support either one individual at one computer, or one individual collaborating with others at different computers using internet technology.

YouTube [27] and Flickr [28] are well known platforms for sharing content; videos and pictures respectively. In these systems users can share contents and find inspirational ideas by looking at other user's creations. However, these are not platforms that support the creation of content. Users need other tools to produce pictures or videos. And also none of them addresses children as a special target group.

Animation tools like Flash [29] are popular and very good tools to make designs, animations, and user interfaces across all browsers and platforms. But this tool is too complex for children to create an animation product.

Building *Wayang* Authoring we learned from existing approaches and decided to use digital media and the Web not only to support children to create stories either individually or collaboratively with others, but at the same time helping children to understand 'the grammar of stories' in general and in a specific culture by composing and arranging stories according to a story line. Children can produce a visual story and combine it with other stories, even from other children easily without using another tool. At the same time this is supposed to support media education in a general sense.

VII. *WAYANG* AUTHORING

Wayang Authoring is designed as a web-based authoring tool for visualizing storytelling with *Wayang* via the Internet. As it is interactive, users who author the stories can specify the behavior of each object. *Wayang* Authoring is also a choice to create a community and a social network of *Wayang* storytellers to share and to exchange their stories.

A. *Target Group*

Our target groups are children in the age span from 6 to 11. According to [19],[3],[17],[13], typically children in this age span have a set of psychological, social/emotional, moral, and environmental concerns that is all their own, such as:

Cognitive

- Strengthen their capacity for remembering, imaging, logical reasoning, problem solving, and critical thinking.
- Become more reflective – that is, better able to access, reflect upon, and talk about their own thoughts and feelings, and to describe themselves in complex ways.
- Communicate easily, using language effectively in a wide variety of situation.
- Gain ability to write and understand text.

Social/Emotional

- Form stronger, more complex relationships, particularly with peers of the sex, and grow in their desire to be liked and accepted by friends.
- Gain the ability to play and learn in teams or groups.
- Begin to create social hierarchies and sense of 'groupness'.

We expect that *Wayang* Authoring tool support the ability mentioned above.

B. *System Architecture*

Authoring tools can be roughly categorized into five basic approaches for programming: script-based, card-based, icon-based, timeline-based and object-based [16]. *Wayang* Authoring treats the application as a collection of objects. Children choose some objects and define properties of these objects.

The architecture of *Wayang* Authoring is shown in Figure 5. The user interacts with the system using a web-based

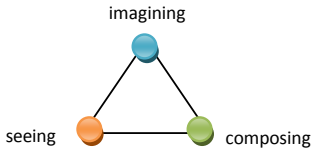

Fig. 4. Creative process

Graphical User Interface. The Story Manager maintains the story, composed by users.

Wayang Authoring is composed of three elements: the

imagination building element, the creative working element and the social interaction element (see Figure 6). Children can get an idea or an inspiration from the tutorial or from stories that are built, stored and shared by other users. This creative process is illustrated in Figure 4. They can also give comments and rank other children's stories. A child as a member of the *Wayang* Authoring community can compose a story, save it and share it. This process is supporting children to get friends and to connect with friends in the context of the

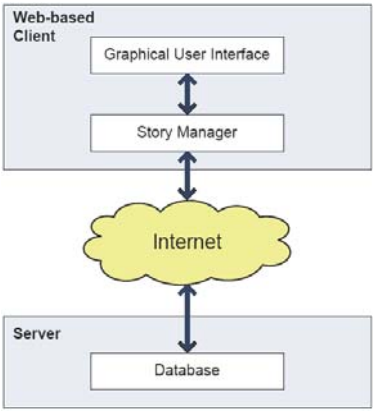

Fig. 5. *Wayang* Authoring's architecture.

social network. A story is composed by using an interactive, simple and easy-to-use tool.

C. The Prototype and Tool Features

The prototype is implemented by utilizing the most important recent feature of the Web that is the ability to run scripts on a client (generally through Javascript). Combined with the ability to access and to modify client-side Document Object Models (DOM) [26] of the browser, and the ability to add asynchronous background requests at the Web, these concepts together are commonly referred to as Asynchronous JavaScript and XML (AJAX) [6]. AJAX allows applications to provide rich client-side interfaces, and allows the browser to communicate with the Web without forcing page refreshes; both fundamental features of Rich Internet Applications (RIAs) [25].

In summary, the main features of *Wayang* Authoring are composing a story or a story list, playing a story or a story list, sharing a story, rating and commenting a story, and creating groups of story.

The tool focuses to create a story by moving the *wayang* figures. The web-based GUI of *Wayang* Authoring tool for composing a story allows for recording the movements of objects. The user can define the movement of an object using the dragging capability of that object. Direction and speed of the movement are automatically recorded, so that the user can record all movements very easily without defining a time line.

The user can also change the sequence of a story to get a different meaning out of the story. By this way, the children can learn about 'story grammar'.

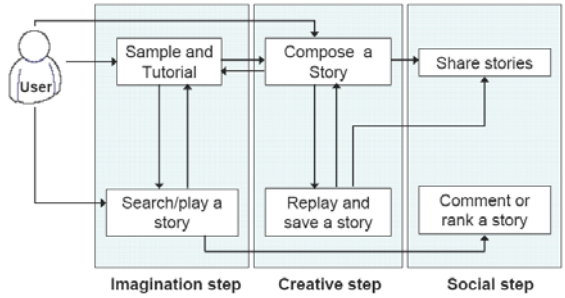

Fig. 6. Basic elements of *Wayang* Authoring.

User can create an individual and also a collaborative story. The tool "individual and collaborative stories" enables to combine different individual, maybe partial stories (that are in the "shared" modus) to one whole story. They also pay attention to other users by commenting or ranking a story.

Wayang Authoring serves all three kind of a participatory culture described by Jenkins:

1) Affiliation - through creating a user profile and joining a group centered on its favorite character.
2) Expression - through creating a new story with the authoring tool.
3) Collaboration - through rating and commenting other children's stories.

As the software is supposed to attract mainly the attention of younger children age 6-11, the social software tool shouldn't have too many functions. We have to avoid that it

Fig. 7. Screen shot of *Wayang* Authoring.

becomes confusing and takes away the attention from being a designer of creative content.

VIII. EVALUATION AND FUTURE WORK

We conducted a workshop with eight children with different cultural background at the International School Bremen. This workshop has been focused on usability and functionality of the prototype. We collected feedback from the participants regarding their opinion about the prototype.

Most of them had no difficulties to use the prototype without guidance. They enjoyed using this tool and could compose a story, playing and sharing it.

We will conduct other workshop to observe the participants, whether they really engage in composing a story

using this prototype, whether they use the online community feature, and pay attention to other users by commenting or ranking a story.

IX. SUMMARY

In summary, we propose a new approach to design story authoring that is intended to support media literacy for children. *Wayang* Authoring, a simple web-based medium, with functionalities for sharing and composing stories is supposed to encourage children to co-operative storytelling. This media concept fits to some main aspects of the ancient art form of *Wayang*. *Wayang* Authoring combines the world of computer games with this traditional art context. It could be an evocative medium alike the learning materials based on concepts of Maria Montessori. Like those materials it attracts attention, is reduced to certain aspects, and allows taking control and finding mistakes. It supports to focuses on quality. In brief it helps to develop language and thinking but it is also about crucial principles in culture and society [36].

REFERENCES

[1] S. Benford, B. B. Bederson, K. P. Akesson, Bayon et al., "Designing Storytelling Technologies to Encourage Collaboration between Young Children", *Proceedings Human Factors in Computing Systems (CHI 2000)*, ACM Press, 2000, pp. 556-563.

[2] E. H. Calvillo-Gámez, P. Cairns, *Pulling the Strings:A Theory of Puppetry for the Gaming Experience*, London, 2008.

[3] Cognitive Skills Group, *Development Overview. Harvard Project Zero*, Presented on T-543 Web site at Harvard Graduate School of Education, 1997.

[4] C. Crawford, *Chris Crawford on Interactive Storytelling*, New Riders Games, Berkeley, 2004.

[5] European network on information literacy, *Study on the Current Trends and Approaches to Media Literacy in Europe*, 2007. (January 24, 2009). http://ec.europa.eu/avpolicy/media_literacy/docs/studies/study.pdf

[6] J. J. Garrett, *Ajax: A New Approach to Web Applications*, Technical report, 2005. (12 June 2008). www.adaptivepath.com/ideas/essays/archives/000385.php

[7] B. Gros, *The impact of digital games in education*, First Monday, 2004. (December 22, 2007), from www.firstmonday.org/issues/issue8_7/xyzgros/index.html.

[8] J. P. Hourcade, B.B. Bederson, A. Druin, G. Taxen, " KidPad: Collaborative Storytelling for Children", *Proceedings Human Factors in Computing Systems (CHI 2002)*, ACM Press, 2002, pp. 500-501.

[9] D. A. Huffaker, and S. L. Calvert, "The new science of learning: Active learning, metacognition, and transfer of knowledge in e-learning applications", *Journal of Educational Computing Research*, 2003, 29, pp. 325–34.

[10] H. Jenkins, *Confronting the callanges of participartory culture: Media education for the 21st century*, MacArthur Foundation Series on Digital Learning – Youth, Identity, and Digital, 2005.

[11] R. McKee, *Story: Substance, Structure, Style and the Principles of Screenwriting*, HarperCollinsPublisher, New York, 1998.

[12] J. Mrazek, *Phenomenology of a Puppet Theatre: Contemplations on the Art of Javanese Wayang Kulit*, Kitlv Press, 2006.

[13] National Center on Birth Defects and Developmental Disabilities, *Middle childhood (6 to 8 years old) and middle childhood (9–11 years old)*, 2005 (January 19, 2009). http://www.cdc.gov/ncbddd/child/default.htm.

[14] A. Paivio, *Mental representations: A dual-coding approach. New York*:Oxford University Press, 1986.

[15] R. Perret, M. R. S. Borgers, F. M. Santoro, "Applying Group Storytelling in Knowledge Management", *Springer (LNCS 3198)*, 2004, pp. 34-41.

[16] M. D. Rabin, M. J. Burns, "Multimedia Authoring Tool. In Conference Companion on Human Factors in Computing Systems: Common Ground" (Vancouver, British Columbia, Canada, April 13 - 18, 1996). M. J. Tauber, *Ed. CHI '96*, ACM, New York, 1996, pp. 380-381.

[17] V. Rideout, D.F. Roberts, U. G. Foehr, *Generation M: Media in the lives of 8–18-year-olds*, Menlo Park, CA: The Henry J. Kaiser Family Foundation, 2005.

[18] B.R. Robin, *The Educational Uses of Digital Storytelling*, University of Houston, 2006. (10 April 2007). http://fp.coe.uh.edu/brobin/SITE2006/site-paper-2006.htm

[19] R. Shore, *The Power of Pow! Wham!: Children, Digital Media & Our Nation's Future. Three Challenges for the Coming Decade*, New York: The Joan Ganz Cooney Center at Sesame Workshop, 2008.

[20] Swedish Institute of Computer Science, *KidStory*, 2008.(7 May 2008). http://www.sics.se/kidstory/research/research_summary.html

[21] The New Media Consortium, *A Global Imperative: The Report of the 21st Century Literacy Summit*, Stanford, California, 2005.

[22] S. Tillis, *Towards an aesthetics of the puppet: puppetry as a theatrical art*, Greenwood Press, London, 1992.

[23] UNESCO Jakarta Office, *Wayang Puppet Theatre*, 2005. (22 May 2008). www.unesco.or.id/activities/culture/programme/259.php

[24] K. When, *Machinima - Was Ego-Shooter und Puppentheater gemeinsam haben*, Telepolis, 2004. (15 August 2008). http://www.heise.de/tp/r4/artikel/17/17818/1.html

[25] J. Wright, and J. Dietrich, "Survey of existing languages to model interactive web applications", in *Proceedings of the Fifth on Asia-Pacific Conference on Conceptual Modelling* - Volume 79 (Wollongong, NSW, Australia, January 01 - 01, 2008), 2008.

[26] W3C Group, *Document Object Model (DOM) Level 3 Core Specification*, Technical report, W3C Recommendation 07 April 2004. (12 June 2008). http://www.w3.org/TR/DOM-Level-3-Core/

[27] YouTube at http://www.youtube.com

[28] Filkr at http://www.flickr.com

[29] Flash at http://www.macromedia.com/software/flash/about/

[30] G. Roderi, J. D. Zipes, *The Grammar of Fantasy: An Introduction to the Art of Inventing Stories*, Teachers and writers Collaborative, New York, 1996.

[31] W. Earle, *Literacy or Literacies. Education Forum*, 4th April 2005. (20 January 2009) http://www.instituteofideas.com/transcripts/edforumliteracy.pdf ,

[32] C. Bazalgette, *Literacy and the Media*, Skillset, 2007. (24 January 2009) http://www.qca.org.uk/libraryAssets/media/11466_bazalgette_literacy_and_media.pdf

[33] F. J. Röll, *Pädagogik der Navigation*, Kopäd Verlag, München, 2003.

[34] F. J. Röll, *Mythen und Symbole der populären Medien*, GEP Verlag, Frankfuhrt am Main, 1998.

[35] S. Pinker, *Toward a Consilient Study of Literature*, 2007. (25 January 2009). http://muse.jhu.edu/journals/philosophy_and_literature/v031/31.1pinker.html

[36] M. Montessori, *Die Entdeckung des Kindes*, Freiburg im Breisgau, Herder, 2001.

[37] G. Spitzing, *Schattenwelten Indonesiens*, Verlag Asu Poleng E. K., Hamburg, 2002.