Researching and designing learning environments with Internet technology

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Abstract. This is an interdisciplinary research and a work in progress where we are trying to understand, investigate, document and criticize how children's learning of expressive arts, engagement and self-confidence can be augmented or transformed by the use of an on-line Forum Theater environment. The potential of this computer-based educational tool is to provide an open constructionist learning environment, or microworld, (Papert, 1990) in which the learner can safely explore and express his imagination, creativity, language, aesthetics, participatory design, written skills, conflict resolution, role-playing, decision-making, and coordinated teamwork. We will study the distinctions between learning in a regular drama environment, a computer-based forum theater environment, and an ideal environment that blends both drama and forum theater techniques, as well as my proposed Virtual Forum Theater learning environment.

Keywords: *virtual learning environment, participatory design, expressive arts, Forum Theater, conflict resolution.*

1. Internet tool in support of exploring drama in education

We study the design, implementation, effectiveness of Internet tools that support educational experiences − in the classroom and beyond − with a specific emphasis on tools for exploring and creating drama and other forms of personal expression among children.

Developmental psychologists and pedagogues such as Piaget (1977), Vygotsky (1971), Papert (1990), Dewey (1938), Freire (1972), Duckworth (1987), Gardner (1973) and others from the open school movement give us insights into how to re-think education, imagine new environments, and put new tools, media, and technologies at the service of the growing child. They remind us that learning, especially today, is much less about acquiring information or submitting to other people's ideas or values, than it is about putting one's own words into the world, finding one's own voice, and exchanging our ideas with others (Ackerman, 2001).

This research is based upon the theoretical framework provided by constructivism and constructionism. Constructivism presumes that learning happens best when it is self-directed and that the learner must construct knowledge afresh every time. "To understand is to invent" (Piaget, 1977). A teacher's role is to create conditions for invention rather than to provide ready-made knowledge (Papert, 1996). Constructionists base their work upon constructivism, but also believe that learning happens felicitously in a context where the learner is consciously engaged in constructing a public entity, whether it is a sand castle on the beach or a theory of the universe (Papert, 1990). Papert's constructionism helps us understand how ideas are formed and transformed when expressed through different media, when actualized in particular contexts, when worked out by individual minds (Ackerman, 2001). Papert emphasizes digital media and computer-based technologies as objects with which to think, and as extensions of one's construction artifacts.

Bertold Brecht's theory claims that the world is revealed as subject to change, and the change starts in the theater itself; the experience is revealing on a "consciousness" level, but generally not on an

"action" level. The spectacle is a preparation for action (Boal, 1983). Boal advocates that the spectator should no longer delegate power to the characters either to think or act in his place; he must think and act for himself. Boal (1983) claims that theater should be action and a rehearsal of change. Both techniques could be applied to drama in education, and it is my intention to pull the socio-political approaches from their work. The ideas from Freire and Papert have its origins in Dewey's philosophies. Boal's work is based on Freire in a way that the spectators should construct their own actions through theater and become an active audience.

Based on the above educational research, theory, and practices of drama and theater for social change, as well as on the attributes of Internet technology, we propose to investigate how to enhance self-directed, project-oriented learning in children, and - in particular how to augment children's natural talents as creators, actors, and storytellers through the use of technological theater. Digital drama can provide a valuable learning environment in both formal and informal settings, as well as potentially helping to empower social transformation. We will investigate how participatory digital theater could play a role in children's learning through creation, expression, simulation, and collaboration.

2. The research project

In my doctoral study, we try to understand, investigate, document and criticize how children's learning of expressive arts, engagement and self-confidence can be augmented or transformed by the use of an on-line Forum Theater environment. The potential of this computer-based educational tool is to provide an open constructionist learning environment, or microworld, (Papert, 1990) in which the learner can safely explore and express his imagination, creativity, language, aesthetics, participatory design, written skills, conflict resolution, role-playing, decision-making, and coordinated teamwork.

A concrete example of how we can merge the learning of expressive arts and technology is the Virtual Forum Theater (VFT), a first version of which we designed while at the Harvard Graduate School of Education (HGSE). This was created in the fall semester of 2000 and development continued until August 2001. That first version of VFT provided the ability to construct scenery, characters, props, and "frames" that replace "acts" in a traditional play. Written in Director, this version has no ability to allow online interactions among geographically separated children. To overcome this limitation, we are currently implementing a new version of VFT in Java. As VFT ideas mature, the Java version will incorporate new features, such as microphone and web-cam support, a drawing tool, and a gallery of stock images for constructing scenes.

VFT is based upon the work of Augusto Boal, a Brazilian theatre director, author, activist, teacher, and politician (who also began as an engineer). Boal developed the Theatre of the Oppressed (TO) (Boal, 1983) based upon Freire's Pedagogy of the Oppressed (Freire, 1972). Just as Freire exploited local concerns to help participants develop literacy and to become critical questioners of, and conscious actors upon their environment, Boal (1983) used participatory theatre to develop a similar awareness through modeling real-world situations and role-playing potential solutions.

Forum Theater is a TO technique where the spectator can stop the play when conflict arises and when he or she disagrees with the course of action proposed by the actors. The spectator might go on stage and re-enact the piece or explain to the actor what should be done; TO is pedagogical in the sense that actors and audience learn together. Spectators are encouraged to become "*spectactors*": active participants rehearsing strategies for change (Boal, 1992).

Virtual Forum Theatre maintains these characteristics while adding the ability to interact over distances, to efficiently try out many different scenarios, and to provide channels for discussion about alternative courses of action, characters, and topics. In VFT, learners construct their own plays, including short scenarios or vignettes. We will make available a wide variety of tools for the learners/participants to write, record, edit, animate, provide emotive stances, costumes, and nuance for characters, create the visual scenery, and so on.

VFT will allow participants to choose pictures from an existing gallery of characters, props and scenery, to import pictures of props, scenery and characters, to draw props, scenery and characters, to animate characters, or to video tape the whole play using web-cams. In order to propose a new solution to an existing conflict the participant will have to modify existing frames of the actions and dialogs. VFT is our tool for allowing interactive creation of dramatic debate and productions.

We are scheduled to finish the development of VFT in 2004 when we will begin qualitative studies with three groups of children age ten to twelve. Most of the children should be from disadvantaged neighborhoods in the great Boston area like Somerville, Medford and South End. We would like to select children who are interested in theater, but are shy and do not feel comfortable to perform in public. We might try to select Brazilian and Spanish immigrant children, as well as Afro-American ones.

We will study the distinctions between learning in a regular drama environment, a solely computer-based forum theater environment, and an ideal environment that blends both drama in education and forum theater techniques, as well as the VFT one; we intend to answer my first two research questions (below) by studying those three groups.

The principal research product will be a detailed qualitative study of the learning effects of this technology. In the context of this study, we will attempt to address the following questions:

1- How does the learning take place in this technology/theater environment?
2- What are the distinctions between learning in a virtual, Internet based environment and in a real time, present one?
3- How can we design on-line collaborative environments that are sufficiently open and powerful to facilitate such learning interactions?

The initials goals of our qualitative research are to:

1- Understand how Internet-based drama learning environments can enhance learning of expressive fluency, argumentation skills and self-confidence in disenfranchised children.
2- Work with those children to develop their technological fluency through expressive arts, and at the same time help them to develop a critical awareness and a rehearsal for social change.

3. Bibliography

Ackermann, E. (2001). "Piaget's Constructivism, Papert's Constructionism: What's the difference?" Retrieved December 20, 2002, from http://learning.media.mit.edu/publications.html

Ackermann, E. (1999). "Learning Sites: Social and technological Contexts for learning" (Bliss, Light, & Saljo, Eds.) Elsevier: Advances in learning and Instruction. Chap.11. pp. 144-154.

Ackermann, E. (1991). "The Agency model of transaction." In I. Harel & S. Papert (Eds.) Constructionism.   Norwood, NJ: Ablex Publishing Company, pp 367-379.

Boal, A. (1983). *Theatre of the oppressed.* Rio de Janeiro: Civilizacao Brasileira

Boal, A. (1992). *Games for actors and non-actors*. London: Routledge.

Dewey, J. (1938). *Experience and Education*. New York: Collier Books.

Duckworth, E. (1987). *"The Having of Wonderful Ideas" and other essays on teaching and learning*. New York and London: Teachers College, Columbia University.

Freire,P. (1972). *Pedagogy of the oppressed*. New York: Herder and Herder

Gardner, H. (1973). *The Arts and human development*. John Wiley & Sons, Inc.

Papert, S. (1980). *Mindstorms: Children, computers and powerful ideas*. New York: Basic Books.1993 2nd   edition

Papert, S. (1990). *Introduction to constructionist learning*. Cambridge,MA: MIT Media Lab

Papert, S. (1996). *The connected family: Bridging the digital generation ga*p. Atlanta, Georgia: LONGSTREET   Press.

Piaget, J. (1977). *The essential Piaget*. New York: Basic Books, Inc.

Vygotsky, L. (1971). *Psychology of art*. Cambridge, MA: MIT Press.