



COVER SHEET

This is the author-version of article published as:

Nykvist, Shaun and Masters, Jennifer (2006) Learning Informally with Digital Media: The Fifth Dimension. In *Proceedings Australian Computers in Education Conference, Cairns.*

Copyright 2006 ([please consult author](#))

Accessed from <http://eprints.qut.edu.au>

Learning Informally with Digital Media: The Fifth Dimension

Jennifer Masters
Shaun Nykvist

Faculty of Education
Queensland University of Technology

ABSTRACT

This paper describe and iteration of the Fifth Dimension, a project established as an after-school environment in order to study children using computers and related equipment in an informal context. In this setting the students are supported to create their own digital media resources such as movies, interactive web pages and animations. The project also involves pre-service teachers who participate in the project and complete an alternative assessment task for an ICT curriculum unit. It is anticipated that this project will provide informative data on the importance of informal learning and how it complements the more formal curriculum for both children and pre-service teachers.

INTRODUCTION

This paper describes a project established in after-school environment in order to study children using computers and related equipment (eg. digital cameras) in fun and informal contexts. In this setting the students are supported to create their own digital media resources such as movies, interactive web pages and animations. The project is an iteration of "The Fifth Dimension" - a world-wide network of similar sites in USA, Brazil, Mexico, Europe and Scandinavia. The Fifth Dimension (5D) operates as a diverse educational setting where researchers, teachers, students/pre-service teachers and children collaborate to create and sustain their community and activities. It is an idea about how to create environments for meaningful learning. The concept evolved from research (Brown & Cole, 2002) dedicated to developing inclusive learning contexts where children who may not be successful in traditional classrooms could experience success in learning. The model of learning differs significantly to traditional schooling in its emphasis on children's potential as learners, teachers and active participants in their learning and in their cultures and societies.

DIGITAL MEDIA AND INFORMAL LEARNING

"Digital media" is a fairly new term that we use, perhaps in place of the term "multimedia". Whereas multimedia could be referred to as "pertaining to a computer mediated software program or document containing media such as text audio, video, animation and graphics" (Fox, 1995, p. 38), "digital media" broadens this concept beyond the computer and instead focuses on the format of the media. "Digital media", therefore, refers to any content or presentation provided in a digital format. While a computer plays a role in production and presentation of the works of the Fifth Dimension, this role has lessened considerably since the days of multimedia production. Instead the children work more with digital devices such as still and video cameras for image recording and audio recording devices such as ipods. Further, we use the Apple laptops for compilation and review but the eventual product that we create is presented as a DVD so the children can play them at home in devices other than a computer.

The use of technologies such as digital media in informal learning settings is of considerable interest to educational research. It is commonly identified that children naturally access and use new technologies as part of their everyday lives (Sefton-Green, 2004) and therefore it is important to educators to find out how and what children learn through the informal use of digital technologies.

Further, it is likely that we can learn from observing these interactions and use these ideas to help design new approaches to formal education.

Research in this area suggests that informal learning contexts have some distinct differences to formal settings. Sorensen, Danielsen, and Nielsen (2005) suggested that the prominence of learning is inverted in an informal learning situation. In school, learning is the goal of the task – teachers design activities in order to engage children in learning outcomes. However in an informal learning setting, learning is simply a means to an end. Children learn skills and processes in order to reach their desired goal, whether it is reaching a level in a computer game, chatting on line or building a web page. Further they identified the importance of social learning in “spare-time culture” (p. 3). This learning incorporated a number of learning forms. These were referred to by Sorensen et al.(2005) in dimensions of a) a learning hierarchy, where younger/older, confident/less-confident or experienced/less-experienced learners work in a apprenticeship model; b) the learning community in which social structures form and reform in a loose transition; and c) a learning network where knowledge is stored and accessed by consistent reference to each other.

THEORETICAL FRAMEWORK

The Fifth Dimension concept is based on the theoretical framework of Cultural-Historical Activity Theory (CHAT) (Blanton, Simmons & Warner, 2001). The core concept of this theory is that awareness emerges from an individual participating in a social structure where activity incorporating the use of tools to produce artefacts leads to socially valued outcomes. In doing so, the individual develops their own perspective, changing the way they think and behave in future situations. The CHAT model was represented by Engestrom (1987) in the form of a triangle where the subject interacts with the community, rules, division of labour, the instruments and the object (artefact) to reach the outcome. This triangle has now become a common framework for representing understanding based on this framework.

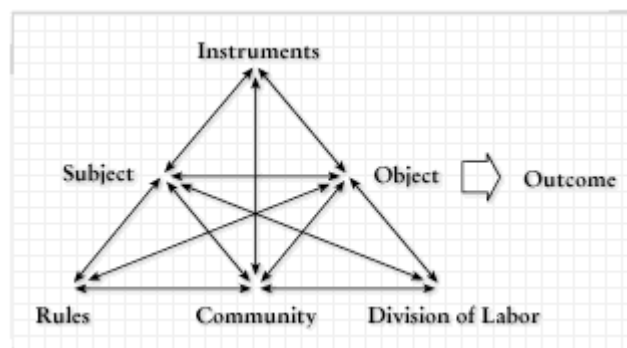


Figure 1: The CHAT Triangle (Engestrom, 1987)

The principle research methodology for this study is Case Study, however, as Cultural Historical Activity Theory not only provides a theoretical basis but also a guide to practice (Brown & Cole, 2002), the CHAT triangle is used for an analytical framework. In this context, the study considers the site as an activity system and maps the interactions between participants (children and adults), technology, pedagogy and environment. Understandings are drawn from field notes, structured and unstructured interviews, artefacts produced during activity and on-line materials such as email discussions within the Fifth Dimension community. The study has two main research foci:

- The informal learning patterns that emerge during production of products as a result of children gaining access to media and expert facilitation
- The benefits of providing pre-service teachers with the opportunity to engage in an authentic learning environment to investigate how children work and learn with digital media

THE PROJECT

The current Fifth Dimension program in Australia began in 2005. The Fifth Dimension project site is located at a recently established regional centre of our university in a town approximately 40km north of the urban campus and is across the road from a primary school. The project was initially conducted in a pilot phase, with the initial participation group consisting of 12 children from Years 5 and 6, with ages ranging between 9 and 12. The children attended after school for two and a half hours on one afternoon per week for eight weeks. In March 2006, the programme was implemented as an on going sustaining initiative and in this iteration, participation in the project was offered to pre-service teachers as part of the coursework of a unit on ICT curriculum integration. In this group, 25 children are attending the programme from Years 5, 6 and 7 and three pre-service teachers have chosen to work in the project as an alternative assessment. The program will follow the same contact structure as the pilot over an eight week period. It is anticipated that the Fifth Dimension will be offered twice a year with eventual participation drawing across the middle years – Years 5-9.

The format of our Fifth Dimension programme is deliberately casual and very little structure is imposed. The children are collected by researchers from the school at 3.00pm and walked to the campus where they are given something to eat. The group then move to a university room that acts as our Fifth Dimension base. The session usually starts with a briefing where the groups within the project (each with a researcher-mentor) nominate what they intend to do that session. The remainder of the time is spent working on productions until a quick clean-up at 5.15 pm and a rendezvous with parents at the car park at 5.30pm.

Direction in production is initiated in the first session by showing the students a variety of resources such as clay and pixilation animations. In the latest iteration it was pointed out to the children that there are roughly three genres: you could tell a story, in the form of a drama or a fantasy; you might give your audience a message, “don’t waste water” or you could impart some information, this might be a documentary format, eg. This is what happens as a sunflower grows. The groups then brain-stormed and developed a story-board of what they might like to produce as a resource. As the Fifth Dimension researchers have always been either qualified teachers or training teachers, the impulse to shape this planning into something “educational” is strong, however, we are all very aware that this setting is “different” and the direction of the activity is largely decided by the children.

While at first impression, the Fifth Dimension project may seem to lack direction and represent a laissez-faire approach, this approach is actually a deliberate strategy to examine the choices children make when digital media tools and skills are available for their own purposes. The role of the research team is to facilitate access to high-tech equipment and software and facilitate the acquisition of skills in order to use these tools. Additionally we provide a support role, where we scaffold not only the technical aspects of the task but also the operational processes of the groups in terms of decision making and social negotiation and the emotive aspects - reassuring when things get tricky and promoting celebration for those moments when it works and it is so exciting!

So what do the children in our project choose to do? In the pilot phase we engaged the help of a pre-service teacher who was also an award-winning animator and many of the first projects were sparked from showing some of his creations. The initial interest was in stop motion animation with modelling clay however several of the children moved on to “pixelation” productions where they used a freeze frame process to create an animation of themselves. *Garage Band* was to create music sound tracks and the children also experimented with blue-screen effects in *Final Cut Express*. A younger group also created images with *Kid Pix* and these were merged to produce panoramas for the website. The main productions from this trial were a story of revenge called “Pencil Power” (moderate violence warning) and a dance video – “Dancing with the stars”. These are available from our project website – http://5d.oz-teachernet.edu.au/index.php/5D_Australia

In the current iteration of the Fifth Dimension, five groups are planning group productions. These include “Pencil Power II”, a cheating in sport scenario, a fantasy including time travel and giants, a wedding saga and a documentary on a volcano erupting. As per the pilot project, this Fifth Dimension

will culminate in a presentation for parents and teachers to showcase the children's work. The productions will be published on the website and the children will take home a DVD.

INITIAL FINDINGS

While the project is still in early stages, some initial findings are beginning to emerge. These are categorised as a) Committing to a plan, b) critical reflection c) "learning the ropes" c) transfer of skills and d) involvement of pre-service teachers

Committing to a plan

We have found that children need considerable support and encouragement to think creatively about using digital media for long term projects. While the children are happy to play with the equipment at an introductory level and can generate some broad project ideas, the process of committing to an idea and then moving through the steps of production in a non-compulsory capacity was one that the children found difficult. In the pilot project particularly, it was evident that the children would spend time with the first idea they thought of, building it into grandiose plot and then were reluctant to refine it into a workable plan. Consequently, when it came to actually beginning production, the lack of details in their design led to much confusion. In the worse situation, the group changed what they wanted to do frequently, arriving each week with a completely new idea!

Learning the process of critical reflection

The enthusiasm to reach the ultimate task, ie. shooting the production, can cause children to a rush through the initial steps without be concerned about quality control or critical reflection. In the current cohort, the group of girls with the wedding production had spent some time on planning their storyboard and had conceptualised an elaborate but workable design where they combined live action with shots of clay animation. They were keen to get started and began by producing the plasticine props needed. Several of the group members and the group mentor were focused on creating models of the happy couple but one girl decided that she could create the wedding cake. She quickly got to work, selecting from a wide range of plasticine colours and within a few minutes had created a wedding cake. She then showed it to me and asked if I liked it. I commented that it was a nice cake, but I didn't think it looked much like a wedding cake. She was somewhat crestfallen by this comment but listened as a pointed out that although the three tiers with piers that she had constructed were very wedding cake like, the fact that each layer was a pancake of a different primary colour made it less realistic. I asked her if she had been to a wedding and she said that she had but she couldn't remember the cake. I then suggested that we move to the computer with the Internet and we Google-searched for images of wedding cakes. She was fascinated by the variety of cakes available and fell in love with a pastel blue extravagance with four layers and metallic ribbons. She then returned to the task with new enthusiasm, blending white and blue plasticine to make pastel blue. We also created a wire frame in order to help the construction stand straight. While the cake was not finished when we concluded the session, her conceptualisation of the processes involved had increased significantly and additionally she had raised her skills of observation to look for critical features.

Learning the ropes

An interesting dimension in this iteration of the Fifth Dimension is that the children from the pilot project were invited to participate again. Of the twelve original students, six returned for another cycle. It was quite interesting to observe the role adopted by these students, particularly in the initial session. Their demeanour was comparable to the "gracious host", as they were experts in how things worked - from finding the toilets to using a camera. These children also modelled the "working relationship" the Fifth Dimension fosters between researchers and participants. In the Fifth Dimension, adults and children work on a far more equitable basis, which is deliberately different from school and an important part of the programme. In some ways this represents the "learning hierarchy" described by Sorensen et al. (2005). These children were quite happy to model the ways in which things were done and likewise the new children looked to the previous participants for advice. As the programme moved on, the hierarchy of "newness" disappeared and was replaced by a more typical balance based on confidence, age and experience.

Transfer of skills

An appropriate research focus will be the investigation into children transferring their new understandings to other contexts. In the pilot study, one of the groups worked with the animation expert to create models in plasticine. The group produced a model for their animation using a wire frame to support the plasticine and one child was extremely enlightened by the process. After the group completed the model the child made another model with the same techniques. He then asked if he could take his model to show his teacher to explain the processes involved. It will be interesting to monitor how the children can transfer skills from the Fifth Dimension into new contexts.

Involvement of Pre-service Teachers

As identified previously, three pre-service teachers undertaking the curriculum unit “Primary Curriculum and Pedagogies: Information and Communication Technologies”, have chosen to participate in the Fifth Dimension as an alternate assignment. As part of their task they are contributing to an on-line blog and then will present the production they completed with their group, along with implementation details as their major assignment. This aspect of the project has important connotations for the University with implications for teacher education. The opportunity for pre-service teachers to engage in an authentic learning environment is likely to be a feasible model that will allow them to examine children’s informal learning and reflect on their own learning with the same theory frameworks.

CONCLUSION

It is intended that the Fifth Dimension will be an on-going project that will establish close links with schools and the University. It is anticipated that this project will provide informative data on the importance of informal learning and how it complements the more formal curriculum for both children and pre-service teachers.

REFERENCES

- Blanton , W., Simmons, E., & Warner, M. (2001). The fifth dimension: application of cultural-historical activity theory, inquiry-based learning, computers, and telecommunications to change prospective teachers’ preconceptions. *Journal of Educational Computing Research*, 24 (4), 435-463.
- Brown, K., & Cole, M. (2002). Cultural historical activity theory and the expansion of opportunities for learning after school. In G. Wells & G. Claxton (Eds.), *Learning for life in the twenty-first century: Sociocultural perspectives on the future of education*. Oxford, UK: Blackwell Publishers.
- Engeström, Y. (1987). *Learning by expanding: An activity- theoretical approach to developmental research*. Helsinki: Orienta-Konsultit.
- Fox, M (1995.) *Multimedia design and development who, what, when, where, how and why*. *Journal of Educational Computing Research*, 24 (4), 321-361.
- Sefton-Green, J. (2004). *Literature review in informal learning with technology outside school*. REPORT 7, Bristol: Futurelab
- Sorensen, B, Danielsen, O., and Nielsen, J. (2005). *Children’s informal learning in the context of schools of the information society*. *Proceedings of WCCE 2005*, Cape Town, South Africa, Jul 4-7, 2005.