

Ethnography in the Kindergarten: Examining Children's Play Experiences

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ABSTRACT

This paper describes an ethnographic study completed within a kindergarten environment with the view of gaining insights into the development of new technology for young children. Ethnography within HCI has primarily focused on studies of work practices. This project explored the effectiveness of ethnography in supporting the design of playful technology for a constantly changing, creative, and (sometimes) messy environment. The study was effective in drawing out patterns in observations and as such provides useful suggestions for the development of technology for kindergarten settings.

Author Keywords

Children, ethnography, kindergarten education, educational technology.

ACM Classification Keywords

K3.1 Computers and education: Computer uses in education (*Collaborative learning*)

INTRODUCTION

While there are communication and information technologies currently transforming higher education, secondary schools and, to some extent, primary schools, there is little in the way of technology being suitably deployed in early childhood environments. A review of the research literature [7] found that within early childhood settings the use of Information and Communication Technology (ICT) is supplemental to existing resources. In 1987 Sheingold [11] asked the question:

What role could or should a microcomputer possibly play in a lively environment where children are actively working with materials and inventing their own worlds?

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In 2005, the question remains largely unanswered. This paper addresses the need to establish broad criteria which may be utilized to develop new technological products that *transform* kindergarten¹ education. The first step in this process involves developing a better understanding of the kindergarten environment. The focus of this research is on discovering the important implications that a noisy, playful, loosely-structured environment has on the design of technology. The project has been guided by two research aims:

- To explore the effectiveness of ethnographic techniques in providing contextual information from a playful environment.
- To gain an insight into the nature of children's behaviors within a kindergarten setting: interpersonal relationships, interactions within the environment and styles of engagement with kindergarten resources.

TECHNOLOGY IN THE KINDERGARTEN

The ICT emphasis in kindergarten settings has been on computers, with child-computer interactions being frequently referred to as "playing with the computer" [8]. This terminology is understandable. Ideal early childhood education provides a balance of exploration and play [3]. Play – intrinsically motivated, freely chosen, process-oriented, non-literal, and enjoyable activity [4] – is highly valued by early childhood educators.

Paradoxically, observations have shown that boredom, frustration and disengagement are common features of young children's behavior as they interact with computers [8]. A review of the literature demonstrates that computer applications for young children are frequently designed to have explicit educational rather than play value [7]. Other research (Juhlin-Svensson et al. cited in [10]) has found that kindergarten teachers see the computer as a technical tool with which children should acquaint themselves in preparation for school.

There are examples of technology specifically designed for use in kindergartens ([12], [6] and [9] are good cases in point). These examples demonstrate the range of

¹ Throughout the paper the term kindergarten refers to a pre-school program for four to six year old children.

opportunities available to transform kindergarten education: [12] provides children with a unique construction resource, [6] is a novel tool for story telling and [9] offers a new way to draw. It is interesting to consider whether these examples have common features that make them engaging for young children. This research, in taking a step back to explore the kindergarten environment in more depth, is focused on formulating design parameters which may be used to guide the development of new, ‘playful’ technology for young children.

APPROACH AND METHODOLOGY

The research conducted in this project has sought to utilize ethnographic methods to develop an understanding of young children and their interactions within a kindergarten environment. The project draws on a social computing tradition that applies sociological understanding to the design of interactive systems [2].

Ethnographic studies involve a process of building an understanding of work or activity as it occurs, *in situ* [5]. By following the core principles of ethnography (as described in [1]), researchers are able to study activities in the natural settings in which they occur and develop detailed descriptions of the work experience. In general ethnographic studies focus on work practices. They explore issues such as divisions of labor, sequencing of activities, plans and procedures, coordination and awareness of work [5]. This project explores the potential of ethnography in providing valuable contextual information within a playful setting. The process of conducting an ethnographic study within a kindergarten environment, while resource intensive, reduces the difficulties associated with including young children as members of a design team.

The study involved thirty children from an on-campus kindergarten. The children were observed for four sessions over a two week period. Children aged between three and five and their teachers were involved in the study. A total of twelve hours were spent observing children at the kindergarten.

KINDERGARTEN OBSERVATIONS

The teachers carefully maintained the kindergarten environment so that it provided many possibilities for playful interactions. Some areas of the kindergarten were especially popular with the children (see Figure 1): home corner and block areas indoors and the sandpit and the fort outdoors.

Observations showed that the children’s day was structured by a number of key events – the daily planning meeting, free play sessions, meals and snack times, group time, and rest time. Children would come together as a group during morning tea, afternoon tea and lunch. They would also participate as a whole group in structured group time activities. From a research perspective, it was the loosely-structured, self-chosen free time activities that were of particular interest.

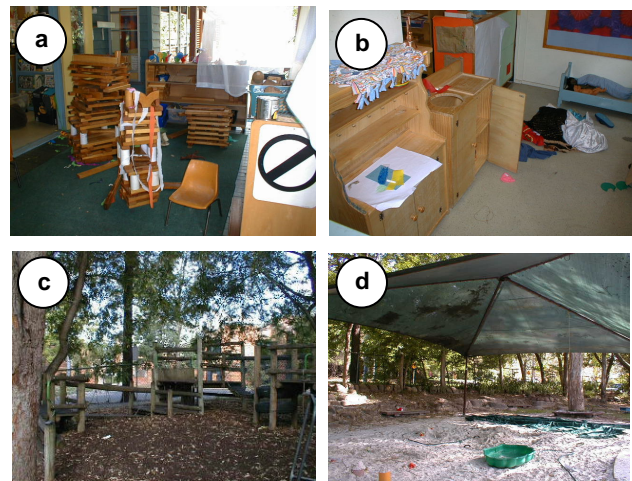


Figure 1: Favorite places in the kindergarten: a) the block area; b) home corner; c) the fort; d) the sandpit

CHILDREN’S FREE PLAY ACTIVITIES

For the purpose of analysis, free play observations have been divided into three categories – calm activities, play and artistic interactions. Discussion around each of these categories is focused on the general characteristics of the interaction, its participation structures and its spatial organization.

Calm Activities

The kindergarten offered children opportunities to participate in calm interactions. These interactions included reading books and completing puzzles. Associated activities, in both location and nature, were the computer table and the writing activity area.

General Characteristics

These activities were usually focused on achieving a single outcome – for example, successfully completing a puzzle or reading a book. For the children the journey was important in these interactions and there were many ways the journey could be made. Children were taking steps to achieve their goals; however the paths taken were many and varied. The rhythm of the activities was evenly paced and repetitive (the turning of a page, the selection of a puzzle piece) and the tempo could be best described as moderate or slow.

Participation Structures

In general, individuals or pairs of children participated in activities of this kind, and on many occasions a teacher would also be involved. A teacher might read a story, assist in the completion of a puzzle or help to find a reference in a non-fiction book. At the computer table, children interacted with a variety of computer programs both individually and in pairs. The teacher participated in these interactions frequently as he or she provided guidance and support for particular computer-based activities. In the writing area, children were more often observed in activities independent of the teachers. There were times when a child would seek advice on how to spell a word or create a particular picture.

Spatial Organization of Activities

From a flow perspective, it was common to see the output from writing activities move to the collage table to become elements of artistic creations, or to see books being moved to the dramatic play area, the cooking table or the block corner, acting as a stimulus for another activity. Observations showed that there was little flow from computer related activities to other activities. While children would create signs in the writing area which would be then used in dramatic play or enhanced through additional artwork (for example the “No Boys Allowed” sign prominently placed in the dramatic play area) there were no examples of such transmission from the computer to other areas in the kindergarten.

Play

Children were involved in a variety of different play activities. They were observed immersed in pretend play activities in home corner, constructive play in the blocks area and rough-and-tumble play outside.

General Characteristics

The play observed generally had one or more of the following characteristics; it involved pretend and make believe; it was creative; it was fluid, changing and evolving over time; it was constructive; it was a vehicle for self-expression. The rhythm of play varied greatly; observations showed that it could be careful, frantic, focused, erratic, deliberate and impulsive. Similarly there were observed variations in tempo, from lively as children raced tricycles down a path, to moderate as a group constructed an aqueduct in the sandpit, to calm as a child rocked her ‘baby’ to sleep.

Children used a range of resources in their play activities. Play demanded that resources could be transformed; that they were multi-faceted and multi-dimensional. A block could evolve from being a pillar in a building, to a rail of a fence, to a shadow on a wall.

Participant Structure

Group sizes during play varied dramatically, from children engaged in solitary play through to groups as large as six or seven engaged in collaborative play experiences. During play there was always the impression that children were in control. While a teacher may have been present, it was generally the case that he or she was there to manage the environment, not to manage the play. Teachers were observed collecting new resources, offering suggestions and, upon occasion, engaging in the play activity.

Spatial Organization of Activities

During free play sessions play was everywhere. While the nature of some play experiences dictated that they took place in a particular area (play with sand generally took place in the sandpit!), other play activities (pretending to be a family) could occur in a variety of places. Children would flow in and out of activities as their attention moved from

one place to another. They were often observed “carrying” elements of a play experience from one place to another. This element may have been a tangible (moving the dolls from the home corner to the cubby house outside) or intangible (changing from a super hero swinging from the fort into a superhero creating hero ‘headquarters’ in block corner).

Artistic Interactions

Within the kindergarten creative activities were very popular. Children were observed creating collages with a range of craft materials, painting, drawing and participating in dance and other performance activities.

General characteristics

Children were observed involved in purposeful, narrowly directed artistic activities as well as exploratory and sensory discoveries of artistic media. There was a level of intensity in some artistic interactions that was not observed in other interactions. Some children became completely immersed in their artistic endeavors, and while this intensity was generally short-lived, it was clear that children had deep personal connections with their artwork. Other children were less engaged in these types of activities – they were more purposeful and pragmatic about their work. Children created personal work (“For my daddy.”) as well as work that they wanted displayed (“Can you hang this up?”).

Participant Structure

Children were observed in a range of social configurations; from a child completing an individual painting, to a small group of three creating a collage to decorate home corner, to a large group participating in the creation of a “Happy Birthday” banner. In general teachers did not participate in creating artwork. The kindergarten philosophy was that children, seen as competent and creative, should have complete control of artistic endeavors. Teachers offered suggestions to extend children’s ideas. They attempted to enrich artistic interactions through the provision of resources such textured paper, different paints, and inspirational materials such as reproductions of beautiful paintings – Monet’s Water Lilies was prominently displayed during one of the observation sessions.

Spatial Organization of Activities

Core art activities had clearly defined spaces. Many of the artistic interactions took place on the kindergarten verandah and this is where collage, paint and drawing materials were stored. In addition, some art activities were able to be moved to a variety of places. For example easels were moved from place to place providing different “inspirational” views. The flow of artistic interactions was similar to that of play. However there was one significant difference; many artistic endeavors resulted in a tangible outcome that flowed out from the kindergarten environment into the homes of children.

IMPLICATIONS FOR THE DESIGN OF PLAYFUL TECHNOLOGY

There were a number of key patterns which emerged through the study which may be useful in guiding the development of 'playful' technology for young children. The observations support the well-known beliefs that quality play materials should: (a) embody some creative and/or constructive capability and (b) provide opportunities for discovery-oriented, autonomous play experiences. However, they also offer fresh insights.

Transformability, Flexibility and Portability: Play in the kindergarten was constantly evolving and changing and as it changed children adapted the available resources to "fit the play". Children frequently carried play materials from one place to another, and through that movement the resource was transformed from one thing into another. Therefore technology for playful interactions should be open to different uses. New resources should be able to change; they should be continuously open to re-design.

Technology at present seems to narrow the focus of interaction, rather than expanding interaction opportunities. A teddy bear might act as a baby, a pirate or even a missile, but Tickle Me Elmo will always be Tickle Me Elmo. This is not intended to criticize a very successful and popular toy, but to highlight the effect that technology can have on play resources. Flexible technology might better be used to augment kindergarten resources (e.g. having a voice component that could be added to a teddy bear, a car or a block tower) rather than prescribing the use of a particular toy.

Social and Emotional Connections: Resources were frequently incorporated into children's social play experiences. Even when resources were designed for sole use, observations showed that children transformed them to make them social (e.g. tricycle races). Another important feature of the kindergarten environment was personal connections that children made, not only with others in the kindergarten community, but also with play materials (e.g. dolls, artwork). Designing technology which allows for social interactions is important. Additionally, discovering ways to build technology which allows children to make emotional connections should be given priority.

Technology could allow children to capture, annotate and share interesting images, or to record personal images and messages to take home to their parents. These examples demonstrate how good technology design may enhance the play experience by providing opportunities for both social and emotional connections.

LESSONS FROM THE ETHNOGRAPHIC STUDY

The ethnographic study achieved its desired aim. The ethnographic ethos advocates finding patterns in observations and discovering the important associated interrelations. In this study, ethnography has provided fresh

insights into children's playful interactions, and has established a broad perspective on the ways in which we might design technology to fit into this loosely-structured, fluid and playful environment. Aspects of flow and tempo within the kindergarten, the notions of autonomy and control, and the social and emotional elements of interaction have been discovered.

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