Original Research Study

Drawing: The Consequential Progression of Ideas

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Abstract

This paper examines the role that drawing plays in young children’s learning and knowledge construction, and how drawing can help them elaborate their ideas. Some findings from part of a larger study of children’s drawing in a class of five and six year olds in Canada are presented. The study was carried out by the author who was also the classroom teacher, supported by a research assistant and a classroom assistant. A Vygotskian socio-cultural lens was brought to examining young children’s drawing processes. This showed how drawing in a social context mediated new knowledge and understanding. Examining drawing events over time, threads of children’s thinking were followed to demonstrate the consequential progression of increasingly complex ideas. The findings show that drawing processes that encourage young children to talk about, share, revise, revisit and re-contextualize their drawings can extend and elaborate thinking.

Key Words: Children’s drawing, thinking, socio-cultural theory

Introduction

It is widely recognized that drawing and mark making are among the child’s first efforts at abstraction and the use of a symbol system (Athey, 1990; Cox, 1992; Eisner, 1972; Matthews, 1999). Facility with abstractions and symbol systems are essential for school-based literacy like mathematics, information technology, reading and writing (Athey, 1990; Barratt-Pugh, & Rohl, 2000; Gifford, 1997; Hughes, 1986). However, most adults are at a loss as to how to provide adequate support for this critical aspect of young children’s learning. A review of the literature indicates there is little or no information that can assist adults to effectively support young children drawing. Adults are even advised not to interfere with what is seen by some as a naturally unfolding gift (Lowenfeld & Brittain, 1982). As a result there is a ‘hands off’ approach to drawing and children’s drawing skills are typically arrested at the early age of seven or eight (Davies, 1997).

While this paper presents findings from part of a larger study of children’s drawing in a class of five and six year olds in Canada, many aspects of this study might also be relevant to other contexts. There are several underlying problems that contribute to the lack of support for young children drawing in Canada. First, early childhood and junior
school teachers are still heavily influenced by the notion of a sequence of naturally occurring developmental stages where drawing progresses from scribbles to realism (Kellogg, 1969). This normative developmental perspective has been heavily criticised for not taking into account children’s social, cultural and historical contexts and influences (Anning & Ring, 2004; Brooks, 2002; Kindler, 1996). In addition such a perspective excludes any possible roles for adults or more experienced others to assist children or model drawing behaviours. Secondly, curricular frameworks for art education in Canada have drawn heavily on the aesthetic sensibilities that govern the commercial and institutional world of professional adult artists and art galleries (Taunton, 1982; Smith, 1989). Such a perspective overlays abstract notions of line and form over children’s products often taking little account of the communicative intentions of young children or their meaning making endeavours.

In recent years attempts have been made to address these concerns through the development of a strong socio-cultural framework for drawing (Anning & Ring, 2004; Brooks, 2003b, 2004, 2005; Kindler, 1997). I would like to suggest that the writings of Lev Vygotsky (1962, 1978, 1987, 1998) offer us a rich and productive way of examining young children’s drawing processes that acknowledges both the children’s context and their intentions. Socio-cultural theory, as proposed by Vygotsky (1987), offers a way of understanding mental processes through disclosure of their emergence and subsequent growth. He viewed learning and development as dialectical in nature, working together as a dynamic process in a socio-cultural context. The learner brings prior knowledge and combines it with new knowledge through his or her interaction with others. Expertise is shared in order to negotiate and construct meaning (Rogoff, 1990; Duran & Syzmanski, 1995). Individual development reflects the intellectual life that surrounds the child (Vygotsky, 1978).

I see drawing as also being dialectical in nature and in this paper I will pay particular attention to the role of drawing in young children’s learning and the consequential progression of ideas in the context of a year one class of five and six year-old children in Alberta, Canada. I will show how drawing can be a powerful tool for mediating learning within a community of learners.

This paper examines the role of drawing in young children’s learning. Focusing on children’s drawing processes and applying an explicitly Vygotskian analysis is a departure from the way we have traditionally analyzed drawings, where they have typically been viewed in a de-contextualized and developmental manner (Brooks, 2002). In particular, this paper will examine the consequential progression of knowledge through drawing. In order to do this I need to briefly explain my interpretation of three of Vygotsky’s theories, verbal thought, higher mental functions and consequential progression, in relation to drawing.
Drawing, Visual Thought and Meaning

The diagram below illustrates Vygotsky’s theory of the connection between thought and speech and the development of verbal thought.

**Diagram 1.** Verbal thought (Wink and Putney, 2002, p. xxv).

Verbal thought is “the linkage of multiple layers of language and thought as they transform themselves into greater mental abilities, the joining of thought and language to make meaning. It is the action, the process of language and thought coming together, to expand and enrich both” (Wink & Putney, 2002, p.152). Speech informs thought and thought is given life through speech. Meaning is created at the intersection of, and through the dynamic relationship between, thought and speech.

Vygotsky suggested that “the rational, intentional conveying of experience and thought to others requires a mediating system, the prototype of which is human speech born of the need of intercourse during work” (Vygotsky, 1962, p.6). Other forms of communication might include symbols, algebraic systems, art, drawing, writing, and diagrams (Vygotsky, 1962). These signs and symbols might be considered forms of language and a way of communicating.

If we consider drawing to be a language of sorts, then we can begin to consider how drawing might contribute to the formulation of thinking and meaning. The following diagram borrows from Vygotsky’s theory and illustrates a possible connection between thought, drawing and the development of visual thought (Brooks, 2002, 2003b). When drawing informs thought and thought is given life through drawing we can begin to see the connection between thought and drawing and the value of drawing in the creation of meaning.
Vygotsky (1962) describes a thought as being both whole and simultaneous. It does not consist of individual words like speech nor is it always connected to speech. What is contained simultaneously in thought unfolds sequentially in speech (Vygotsky, 1987). There is simultaneity of ideas and concepts in a completed drawing that parallels Vygotsky’s description of thought. A drawing is seen as a whole and simultaneously, whereas speech has a more linear and temporal order. Perhaps the power of drawing for children (and adults) is that it more closely represents thought.

The materiality of a drawing offers opportunities for ideas to be shared with others as well as revisited, re-evaluated and reworked. The relative permanency of drawing over speech offers children possibilities for an extended dialogic engagement with and around the drawing and the ideas it represents that might not be so possible with speech (Brooks, 2003a). When young children do not yet have fluency with text, or perhaps even oral language, then drawing offers a means of communication and a viable mediating role for collaboration, meaning making and problem solving (Brooks, 2003a). Drawing might provide a bridge to thinking that could have some advantages over speech or writing.

**Drawing and Higher Mental Thinking**

Higher mental functions are, “cognitive processes unique to humans and acquired through learning and teaching. They are deliberate, mediated, internalized behaviors built upon lower mental functions. Examples are: mediated perception, focused attention, deliberate memory, self-regulation, and other metacognitive processes” (Bodrova & Leong, 1996, p.160). Higher mental functions are built upon the interactions between spontaneous concepts and scientific concepts. The spontaneous concept is the child’s first encounter with an idea. A spontaneous concept exists for some time at an interpersonal level in a distributed or ‘shared’ form before being internalised (Vygotsky, 1998). When a concept exists in an external frame learners can access help from more experienced others. Drawing is one of the first tools young children have to exteriorise and regulate their thinking and emotions. Making a drawing focuses the attention and mediates perception thus bringing an idea or concept more
clearly into view. When thoughts or ideas are made visible within social contexts increased generalisation and complex categorization is made possible. At this interpersonal level drawing can become an accessible and useful medium for the sharing of ideas and concepts. When drawing is used in a collaborative and communicative manner it can assist this task of distribution and sharing.

Drawing can also assist a dialogic engagement with a concept at an intrapersonal level to extend what the child is thinking about. A scientific concept allows empirical connections between concepts. A system is in place and increasing generalisations and abstractions are possible. Spontaneous concepts reach up into scientific concepts while scientific concepts reach down and pull the spontaneous concept up. In both cases the abstraction of drawing requires a level of interpretation and engagement that works to raise the level of thinking so that the children engage in more complex thinking. When children are encouraged to revisit, revise and recontextualize their drawing this can play a critical role in the movement between spontaneous concepts and scientific concepts and the development of higher mental functions (Brooks, in press).

**Consequential Progression**

Consequential progression, in the context of this paper, is a process whereby the interactions amongst children and the interactions through and with their drawings, build cyclically over extended periods of time so that the understanding of the group becomes increasingly complex. The understanding that builds through this increasingly complex dialogic engagement also becomes a cultural resource that allows the group to progress as a strong learning community. When drawings are shared between and amongst the children on an ongoing basis they play a vital and accessible mediating role in knowledge building. Drawing becomes part of the cultural resources of the group.

**Intersubjectivity**

Central to an understanding of consequential progression is the notion of intersubjectivity (Wink & Putney, 2002). Intersubjectivity in the context of this paper is the collective history and mutual meanings shared by a group of people, in particular the children in my classroom. This collective history and mutual meanings are negotiated and accumulated through drawing. Drawing creates intersubjective spaces in the classroom. Intersubjectivity comes about through the dynamic relationship between intertextuality and intercontextuality. Drawing acts as an intertextual event so that the cultural significance of artifacts and ideas is brought forward within the classroom community. Drawing allows the children to recognize each other’s thoughts and ideas, link them to their own and to carry these thoughts and ideas forward to future projects. At an intercontextual level drawing links cultural practices and concepts with ways of being or actions taken. Drawing allows children to explicitly link previous experience with new learning. Drawing helps children to trust their own knowledge and provides a vehicle to work together to jointly construct a mutual understanding. These understandings become increasingly complex as the knowledge base expands.
As young children move into formal schooling there is much pressure for them to represent their ideas in writing and as a consequence drawing is often relegated to a position of recreation or decoration. Not only does this devalue and undermine any competencies children have with drawing but it also deprives them of a powerful thinking tool.

The Context for the Study

This paper presents a small part of a much larger study that was undertaken for my PhD (Brooks, 2002). The research was a visual ethnographic study (Pink, 2002) that examined the drawing processes of 22, five and six year-old children in a mainstream urban, year one, classroom in Alberta, Canada. I was both the teacher and the researcher. A research assistant and a teaching assistant assisted me with data gathering. Over a period of three months most of the drawing events that occurred during the course of the children’s everyday, project work were recorded on video. The children’s drawings from these events were dated, scanned and stored electronically. Research journals were kept by the researchers and selections of video reviewed and discussed amongst the researchers, the children and families. Ethical approval was obtained for all the children in the class and all participants of the study. An analysis of the data was undertaken using a Vygotskian theoretical framework. A complete account of this study along with a comprehensive collection of the video clips, photographs, children’s conversations and drawings can be viewed at http://www.une.edu.au/Drawing/main.html

Background to the Children’s Project

One of the topics the children initiated was an exploration of ‘light-traps’. The idea originated in and grew out of a previous study of flashlights. Each day individual children, and groups of children, arrived at school with new ideas for how to trap light. They drew elaborate plans at home and brought them to school. More drawings were done at school and these drawings were the medium of exchange for ideas in the context of the classroom. Ideas were even discussed over lunch and at recess. During class time small groups and individual children worked on the floor with flashlights and at the light table to enclose light with unit blocks. They seemed to have formed a common agreement that all of the traps should be made from unit blocks. Each day before leaving the classroom we gathered as a class and tested the traps by putting out the main lights, plunging the classroom into darkness. This way we could better see if light was escaping from any trap.

While all the children in the class were part of the study, in this paper I will focus on just five, six year old boys and describe how they used drawing to explore ideas in relation to building the light traps. Their pseudo names are Ed, Anton, Stuart, Mark and Gordon. I could have chosen any of the children in many of their projects because all children demonstrated the same processes. Like many Canadian classrooms there was a wide range of mixed ethnic backgrounds. This particular group contained three, second generation Europeans and one second generation Middle Eastern (Stuart).
I will demonstrate how drawing in a social context mediated new knowledge and understanding for these children. I will examine drawing events over time and follow threads of children’s thinking and the consequential progression of increasingly complex ideas.

**Ed’s Light Trap**

Ed was one of the first children to build a light trap. While he chose to work by himself on the light table it is important to remember that he was working within the context of the classroom where there had already been many discussions about and drawings of light traps. Ed began by drawing a plan for his trap. His drawing contained elements of ideas from his peers as well as his own emerging ideas (see Figure 1 below). The drawing brought the accumulated knowledge of light traps forward into Ed’s particular project.

After drawing his plan, Ed collected the blocks he thought he needed and took them to the light table. His drawing helped him make decisions about which blocks to choose and how many (see Figure 2 below). His drawing mediated between thought and action to make his actions more deliberate. Drawing a working plan helped Ed to organise his thinking as well as alerting him to the mathematical properties, shapes, and sizes of the blocks. He also had to aim for some equivalence when working from a drawing. This process helped Ed become aware of the relationship between his ideas, his actions, and the outcomes. Ed’s drawing fulfilled a significant role in his knowledge construction and understanding.

![Figure 1. Ed’s drawing of his light trap.](image1)

![Figure 2. Ed uses it to help build the light trap.](image2)
Having the drawing to work from seemed to aid his concentration and focus, as the many things happening around him did not easily distract him. I saw Ed using his drawing as a reference point. It reminded him of his original idea. Ed’s movement between referring to his plan and the building he was constructing displayed an understanding of the function of a plan. It was easy to follow because the idea was immediately available as a whole. Ed’s drawing was a two dimensional symbolic representation and functioned as an abstraction of an idea he had about light traps.

Within the context of the classroom, the other light traps and drawing plans he had seen had likely influenced Ed’s drawing. His drawing also revealed some of the conventions that he had acquired from his viewing of plans and diagrams both in and out of school.

His drawing was functioning as an intertextual event so that the cultural significance of ideas was brought forward within the classroom community through drawing. The fairly accurate proportions of the drawn blocks clearly indicated which blocks he had in mind. He had drawn the blocks touching each other and sometimes had even shared the line between blocks. This indicated to me, and likely to him, just how snugly they must fit together to trap light. Ed’s aim seemed to be to build a structure that absolutely contained the light without any of it escaping. His focus was on the ‘light tightness’ of a basic box, block structure (see Figure 3).

![Figure 3. Trying to solve the problem of light escaping](image)

This was one of the initial ideas that reoccurred in light traps that were built by other children. However, when he finished his building (see Figure 4), Ed seemed a little perplexed that the light from the light table was still escaping from around the outside of the base of his building.
Stuart and Anton’s Light Trap

Stuart and Anton decided to build a light trap next to Ed. The two boys sat together to plan their light trap. Each made a drawing of what the light trap would look like.

Figure 5. Stuart’s first drawing of a light trap with the mirror placed below the drawbridge to catch the light from the table.

Figure 6. Anton’s first drawing of a light trap. Two towers and a drawbridge. The light goes up one tower and across the drawbridge.
As they drew they talked with each other about their plans and looked at each other’s
drawing. The drawings allowed each child to see what the other was thinking. This
facilitated a common understanding. This is an example of knowledge existing in an
interpersonal form, the medium of exchange being the drawings along with the related
conversation. Stuart and Anton were also aware of Ed’s drawing and construction and
were keen to try to address of the problem Ed had with light escaping. This reference to
Ed’s problem is an example of the consequential progression of an idea. Stuart and
Anton gained access to Ed’s idea through the sharing of his drawing at a large group
meeting.

Mirrors featured in Stuart and Anton’s conversation from the very beginning. When
previously studying flashlights the boys had noticed the reflecting mirror around the
bulb in the flashlight and seemed convinced that mirrors and light had to go together.
Stuart said the mirror gave the light “more power”. Here drawing is functioning at an
intercontextual level that works to link cultural practices and concepts with current ways
of being or actions taken. Stuart and Anton’s drawings allowed them to explicitly link
previous experiences with new learning. In the first drawing Stuart placed the mirror
under the drawbridge (see Figure 5). His rationale was that any light that escaped from
around the castle walls would be trapped in the mirror and bounced back down to where
it came from. Anton, however, drew the light going up inside the towers. He wanted to
trap the light within the hollow towers. Anton’s drawing showed two hollow towers
connected by a drawbridge (see Figure 6). However, Stuart pointed out that the light
could only travel successfully up one tower because the other had windows in it and the
light would escape. Stuart suggested a mirror be placed in the tower with the windows.
Anton ignored that suggestion and pointed out that the drawbridge was hollow. He
reasoned that the light would only be able to go up the tower, through the drawbridge
and down the other tower. There would then only be one path for the light to travel and
it would not be able to go anywhere else. This plan seemed to make the mirror
redundant. Stuart suggested trying to incorporate the mirror at the end of the
drawbridge. The two boys discussed the necessity of the mirror. Stuart insisted that it
was the mirror that made the light “bounce off” and “keep moving”. When Stuart
mentioned, “keep moving” Anton paused and suddenly seemed to understand the
purpose of the mirror. If they placed the mirror strategically at both ends of the
drawbridge then the light would be forced to travel back and forwards across the
drawbridge indefinitely thus creating the perfect trap. Anton revised his drawing to
show how the light would bounce between the mirrors at either end of the drawbridge
(Figure 7). Stuart’s revised drawing (Figure 8) shows the incorporation of Anton’s ideas
with his own.
Unlike Ed’s drawing, these drawings did not clearly show the blocks that would make up their structure. Stuart and Anton seemed much more interested in the path the light might travel and where to most effectively place the mirrors. Drawing seemed to help them clarify their thinking about this. They were able to take some initial and tentative ideas about how to trap light and elaborate and extend them through their drawing, talking, and building. In this series of drawings we can see the movement between spontaneous concepts and scientific concepts.

Stuart and Anton managed to build a structure that seemed to them to not only trap the light but also keep the light moving between the mirrors. Drawing was the leading activity that allowed the boys to more clearly formulate their thinking and move to new levels of understanding. In this case the two boys worked together to share their existing knowledge and in the process not only extended their individual knowledge but also extended their collective knowledge. Their shared knowledge existed in an interpersonal state through their drawings and they were able to work as costructors of new knowledge and understanding. The support each gave the other seemed to be well enough matched to allow transfer of information and concepts. Revising their drawings after they had built their structure helped to transform new knowledge from an interpersonal state to a more intrapersonal state as each was able to recall and retell, through the drawing, the new knowledge they had acquired.

**Gordon and Mark's Light Trap**

Mark and Gordon had been watching Stuart and Anton and experimenting with mirrors and now they seemed intent upon putting a mirror in a light-trap. Although they were
working together Gordon had already drawn out his plan without negotiating with or involving Mark. He had drawn a solid pile of blocks (see Figure 9).

Figure 9. Gordon’s plan for a light trap

Figure 10. Mark trying to explain to Gordon why his light trap would not work. They use the drawing as a common point of reference.

At first Mark seemed willing to use Gordon’s plan to build, but as they began to build Mark became unhappy with Gordon’s plan and tried to explain why it would not work (Figure 10). Gordon did not look convinced. Mark persuaded Gordon to sit with him while he drew out his plan (Figure 11). Mark talked as he drew and Gordon watched and listened (Figure 12).

Figure 11. Mark draws out an alternate plan so that Gordon can see what he means.

Figure 12. Gordon leans in as he gains a new perspective and a new understanding.
Mark began by drawing the outside of the structure. Beside this he drew the inside of a hollow structure. Then using lines to show the light travelling back and forth he tried to help Gordon understand how the structure needed to be hollow to accommodate the mirror inside the top. Again, the mirror was an important feature in order to get the light bouncing back and forth - an idea obviously borrowed from Stuart and Anton. Mark was able to bring the collective understanding of the community forward into his drawing and negotiate new meaning with Gordon.

**Conclusion and Recommendations**

This study has demonstrated that drawing can focus the attention of young children and bring the beginning of an idea more clearly into consciousness. At the immediate and spontaneous level, ideas about light and traps were brought forth and made visible through drawing. At an interpersonal level, drawings allow ideas to be shared. Drawing dialogues amongst children, often through the joint construction of drawings, can assist with the formation of increasingly complex ideas. At an intrapersonal level drawing can function as a powerful metacognitive tool by presenting an abstraction of an idea, thereby allowing connections between concepts. In this study for example, the notion that light reflected between mirrors is somehow contained or trapped. Such linking of concepts supports the development of higher mental functions.

If teachers and adults can focus on the ideas and concepts contained in children’s drawings then they will be able to see how drawing can facilitate and support new learning. The concise abstraction, combined with the materiality of the drawings, allowed children to carry ideas across space and time. In these drawing events we can see how drawing functioned dynamically, intertextually and intercontextually, to bring forward the ideas of the group and wider community into new combinations and contexts. The collective history and mutual meanings of the children in this class, about light traps, were made visible and brought forward through their drawing. Drawing became part of the cultural resources of the group. Drawing allowed children to explicitly link previous experience with new learning. For example, the children’s previous experiences with flashlights and the reflective mirror around the bulb, was brought to the problem of trapping light. Tracking the consequential progression of ideas through drawing allowed me to see drawing supporting learning as well as to honour the intensions of these children. By providing opportunities for children to revisit, re-contextualise and revise their drawings we can acknowledge and support the consequential progression of ideas within a community of learners.

The children in this study have demonstrated that drawing is a powerful and easily accessible medium for the exchange and discussion of ideas. Providing a social context for drawing, where knowledge can exist first in a shared or interpersonal state before becoming intrapersonal, is an important strategy for teachers. Drawing is a powerful metacognitive tool that mediates between a child’s spontaneous and scientific concepts and supports higher mental functions. Teachers need to help children make links across experiences and concepts.
References


**ABOUT THE AUTHOR**

Margaret Brooks has been a lecturer in Early Childhood Education at the University of New England, New South Wales, Australia for the past three years. Prior to this she was the Associate Director of the Child Study Centre at the University of Alberta, Canada. Margaret’s research area is young children drawing. Currently she has a research grant for a three year project to study effective strategies for supporting young children’s drawing fluency. Margaret is also an artist whose medium is drawing.