The power of improvisational teaching

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Recommended Citation

1. Introduction

Early childhood education in the United States has traditionally been distinct from elementary and secondary education in its focus on child-centered practice[1] – curriculum and activities guided by typical age-focused development, organized around children's interests, and enacted through concrete activities. Yesterday's kindergarten, in its idealized form, was a prototypical example. It operated in a liminal space in elementary schools with specially trained teachers and classrooms that were more spacious and informal than other grades. The paint and clay, blocks and dramatic play, and naps all reflected a perspective that was more focused on social learning than academic outcomes.

> The early childhood curriculum is the most holistic and least differentiated at any level of education. It is also the most solidly grounded in philosophy, in clearly articulated methodology, and in theory and research. Those who contributed to the discipline of early childhood education came from occupations and professions outside the academic domain. What they had in common was an understanding of children. And that is what makes early childhood education unique; it starts with the child and not with the subject matter. (Elkind, 2009 in Miller & Almon, 2009, p.9)

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[1] Romanticizing yesterday's child-centered kindergarten ignores many of the issues related to progressive teaching practices. This perspective has been critiqued for its colonialist foundations (Delpit, 1986, Fleer, 1998), that valorizes play (Ailwood, 2003), ignoring its frequently cruel enactment by children (Burman, 1994). Curiously, curriculum in many "child-centered" programs is designed to support a prototypical child rather than particular students (Author, xxxx) and positions teachers as hands off managers (Bennett, Wood, Rogers, 1997). All of these have merit, reflecting a Eurocentric perspective of teaching young children. Our view of child-centered practice is an agentive collaboration between teachers and children that is proactive as well as responsive.

Flash-forward to today and you will find early childhood programs across the globe are increasingly standardized, with a curriculum dictated by academic standards, limited play and an assessment heavy schedule (Author, 2009). This shift was prompted by neoliberal reforms embraced by the majority of western countries that press for student outcomes through grade-level standards (Brown, 2007) and the development of data systems purported to make early childhood teachers more professional in their practice (Bradbury, 2012). This systems approach promoted aligned curriculum, assessments, and standards in K-12 and has been shifting practices in preschool programming as well (Bennett & Tayler, 2006; Brown, in press) as policymakers seek evidence for investments in public preK (Fuller, 2007). In a search of fidelity of implementation, early childhood classrooms are increasingly scripted with curricula focused on academic outcomes (Hatch & Grieshaber, 2002). Teachers complain that they have no time to have conversations with children; they must fill every moment with assessment and intervention to ensure that children will be ready for school (Bradbury, 2013).

At the same time that teaching young children is becoming more standardized, a growing body of research on classroom quality highlights instructional practices that are contingent on children's knowledge, experiences, and resources. Based on constructivist and ecological developmental theory, quality is centered on teacher-child interactions, with teachers intentionally building on children's knowledge in moment-to-moment exchanges (Mashburn, et al., 2008; Pianta et al, 2007; Pianta, et al, 2008). Key to this kind of interaction-based approach is a teacher who brings deep developmental and content knowledge, as well as familiarity with students' home resources to her practice

(Author, in press). This last element of knowledge is especially important when working

with children who are culturally different from their teachers (Tobin, 2010). The

powerful metrics emerging to measure quality are tightly related to western notions of the

role of the teacher, the nature of the child, and conceptions of adult-child interaction that

promotes development (Tobin, 2010; van Oers, 2003).

   Increased responsiveness, which involves teachers using children's interests and

knowledge as resources in instruction, fits poorly with the standardization that has

accompanied accountability policy. With the stakes attached to student performance, all

of the momentum is directed toward ensuring that children achieve specific

benchmarks. As a result, administrators "suggest" that teachers devote precious

instructional time to measurable outcomes and teacher energy and action is often diverted

away from child-initiated activities, play, or utilizing the knowledge and experience

children bring to school (Author, 2009). While it is certain that some child-centered or

play-based activities are the educational equivalent of marshmallows -- lots of fun with

limited learning opportunities -- abandoning informal learning seems shortsighted. This

is a particular concern for the practice of early childhood education, which has been

caught up in a cycle of curriculum escalation (Hatch, 2002) that pushes informal play

based activities out and prioritizes teacher directed, content-based tasks.   A prominent

concern of early childhood educators in the United States, the context for our research, it

is also connects to global curriculum escalation concerns in countries that focus strongly

on cognitive development (Bennett & Tayler, 2006; Bradbury, 2012).

   In this paper we explore an effort to rethink pedagogical decision-making and

responsivity with a group of public pre-kindergarten (preK) teachers working in a context

of curriculum escalation and commitment to play-based pedagogy. Through a professional development (PD) program designed to support developmentally and culturally responsive early mathematics, we examine how teachers took up the idea of engaging 4 year olds in mathematics in a way that married content knowledge and home practices. We use the notion of improvisation to describe how teachers can build on diverse information to enrich their educational interactions with children. Improvisation has been a useful tool in a variety of studies; we feel a critical contribution of this work is the recognition that improvisation includes multiple actors in the classroom drama – both teachers and children. To deepen our understandings of the role improvisation plays in an early childhood classroom we address the question: *How do teachers and children take up the resources that they bring into the classroom in improvisational practice?*

2. Literature

Responsive teaching requires content knowledge and teacher recognition of children's resources. But equally important, it requires *action* contingent on that knowledge (Cohen, Raudenbush, & Ball, 2003). Because of the multidimensional nature of this knowledge/action, responsive teaching cannot be scripted. Instead, it is improvisational:

> It is through improvisation that we weave familiar and unfamiliar activities and ideas in response to social, contextual and individual needs. . . We find that not only does improvisation provide children with opportunities to engage in sophisticated, collaborative problem solving processes, it also serves as a tool to revitalize our thinking about the relationships between teaching, learning, and development (Baker-Sennet & Matsuov, 1997 p. 210)

Improvisational teaching requires deep subject-matter knowledge; to respond creatively to unexpected student ideas a teacher needs a more profound understanding of relevant content than if the teacher is simply reciting a pre-planned lecture or script (Sawyer, 2004, as cited in Reeves, 2010, p. 254). For early childhood teachers, this would include knowledge of child development, pedagogy for young children, subject matter, and a disposition to follow a child's interests. A focus on responsivity helps teachers distinguish between the seemingly opposing ideas of following a predetermined curriculum script and following children's interests (Baker-Sennet & Matsuov, 1997).

Teachers improvise when they actively respond to children's diverse intellectual, social, and emotional experiences and needs; taking multiple bodies of knowledge into moment-to-moment interactions with children. Teachers create individually tailored learning experiences when they use their knowledge of children inside and outside the classroom as a source for teaching. Teachers-cannot improvise alone. They "have to be willing to go on a creative journey with children without knowing exactly what is going to happen" (Lobman, 2005, pg. 252).

One approach to improvisational teaching views all children and families as possessing *funds of knowledge* (FoK)—bodies of knowledge that are foundational to everyday wellbeing (Moll, Amanti, Neff, & Gonzalez, 1992), based on life experiences (Moje, Chiechanowski, Kramer, Carrillo, & Collazo, 2004), and interests influenced by popular culture (Hedges, 2011). Initially derived from a project on culturally responsive teaching for bilingual children, participating teachers conducted ethnographic home visits and collaborated with colleagues to create academic activities that capitalized on their students' family practices. FoK practice situates children as active agents who construct

rich bodies of knowledge scaffolded by teachers who understand and value their experience and knowledge. Improvisation is relational, so the role children play in this process must be considered as well.

Recognizing the contributions of earlier scholarship on improvisation, we build our analysis around work by critical constructivists (Holland, Lachicotte, Skinner & Cain, 1998) who argue that improvisation is the space that creates the potential for new identities -- where culture and individuals interact responsively to create change:

> Improvisations are the sort of impromptu actions that occur when our past,
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> brought to the present as *habitus*, meets with a particular combination of
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> circumstances and conditions for which we have no set response. Such
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> improvisations are the openings by which change comes about from generation to
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> generation. (Holland et al, 1998, p. 17-8)

This perspective on improvisation was compelling as we worked to understand the complex process of shifting strongly held ideas about development and practice in early childhood education.

Vygotsky's (1978) notion of the *zone of proximal development* (ZPD) is foundational to Holland et al.'s (1998) ways of thinking about improvisation. Viewed as the difference between what a person can do independently and capacity supported by an adult or more capable peer, a ZPD is the space where learning occurs between someone's current and potential development, using school-accumulated knowledge and children's FoK. Critical to the idea of the ZPD is its dual functions: it simultaneously serves to reproduce particular skills and knowledge and is a space where the learner has agency – it is a space of improvisation:

An educational activity is developmentally appropriate when it creates a zone of

proximal development for the child. Vygotsky himself explained the potential of

the zone of proximal development by referring to imitation (see for instance

Vygotsky, 1978, p. 87). By imitating roles in sociocultural activities from the

child's community the child comes into contact with the cultural tools and rules.

This promotes the cultural learning processes of the child in a meaningful way.

So, for children between 3 and 7/8 this means that they should be given the

opportunity to learn in the context of role play where they can benefit from all the

resources that are available in that context (van Oers, 2003, p. 14)

Improvisation is also closely connected to Vygotsky's work about the function of

play. In play, real-world objects lose their determining force so that, for example, a

hairbrush could become a phone. As people respond to "a particular combination of

circumstances and conditions for which we have no set response" (Holland et al, 1998)

there is potential to create a relationship between their FoK and systematic concepts

through these playful processes (Moll, 2014). This heuristic process is inherently

improvisational with past experiences meeting present situations, creating opportunities

for development of "new social competencies in newly imagined communities" (Holland

et al, 1998, p. 272).

Straddling both the theater and cultural perspectives on improvisation is the

notion of scripts – "Scripts, derived from daily routine, are standardized sequences of

events that fill in our understanding of frequently recurring experiences" (Quinn &

Holland, 1987, p. 19). Early childhood classrooms are filled with scripts: strategies for

getting a turn to talk in group, how to tell someone they can't have your toy, the order to

put on snowpants, boots, coats, hats and gloves. These scripts have local and

professional elements that can be found in multiple sites. Both developmentally

appropriate practice and highly scripted curriculum have scripts – they differ in terms of

how much improvisation is accepted during interaction. A boxed curriculum literally

provides a script, with the assumption that if the script is implemented, children will

successfully attain particular skills. In developmentally appropriate practices there are

shared scripts "Use your words. Tell me about your picture. I like the way that you. . . "

thought to optimally promote learning and development. Such scripts can be helpful

guides, but alone they are generic. The critical link between a script and learning in the

ZPD is that scripts must be a joint endeavor, constructed by a teacher and child**.** Co-

constructing scripts are enriched by teachers weaving children's FoK, along with other

relevant bodies of knowledge, into their interactions with children.

Responsive practice is not intuitive, particularly in a tradition of teaching that has

taken a hands-off view of teaching in play (Author, in press). In an earlier paper we

examined how three teachers took up the ideas presented in our professional development

courses and found that:

> Many of the teachers had drifted away from responsive, child-centered teaching . .
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> .Through our analysis we began to see how an identity of teacher as expert, which
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> was reinforced by understanding of standards and DAP, was a role in a script that
>
> constrained the possibilities for improvisation. These narrower scripts of
>
> improvisation made the idea of *reciprocal funds of knowledge*, a practice in which
>
> home and school mutually contributed expertise that could be used to support

learning, difficult to conceptualize in the professional development and in some

participants' practice. (Author, in press)

We saw how different types of knowledge and approaches to teaching created

affordances and constraints to the responsive practices we asked the teachers to

consider. We build on the analysis from the previous paper to explore the notion of

improvisation more deeply, examining how it relates to teacher/child relationships and

child agency. In this paper, we focus on children as improvisational actors and how

teachers take up improvisation in their classrooms. We move beyond what a teacher

needs to know in order to improvise to what children and teachers are doing jointly when

a teacher teaches responsively.

3. Methods

3.1. 4-Year-Old Kindergarten Professional Development Project

This article draws on data from the 4-Year-Old Kindergarten Professional

Development (4KPD) project, a professional development (PD) program designed to

promote culturally and developmentally responsive early mathematics teaching with a

group of public preK teachers. This four-year project was funded collaboratively by a

university, a school district, and the National Science Foundation and designed, provided,

and studied a PD program for 3 cohorts of preK teachers. The impetus for the PD was

the inaugural implementation of a new 4-year-old kindergarten initiative that offered

play-based programming in community childcare sites and elementary schools.   The PD

was designed to support new preK teachers as they took on new roles.

A hybrid between traditional PD and graduate courses, teachers participated in

four classes over two years. The core content of the courses consisted of foundational

early childhood practices, early mathematics content, and FoK (González, et al. 2005). The participating preK teachers explored weekly readings, engaged in a mix of whole and small group activities, and wrote reflections organized to connect their practice with the readings. To help them think more deeply about FoK, we asked the teachers to work with a focal child who was different from themselves and to design home visits and interviews that would illuminate family mathematics practices. They translated what they learned about their focal child into educational activities. Throughout the PD we stressed that responsive teaching requires teachers to tap children's home cultural practices and to develop rich mathematical activities that build on prior knowledge and experience (Schoenfeld & Stipek, 2012).

3.2. Participants

The 4KPD project recruited local educators interested in teaching in the public preK program who were early childhood certified. A total of 55 teachers, across the 3 cohorts, elected to participate. The teachers ranged from first year novices to educators close to retirement, working in public schools, childcare centers, and Head Start. All of the teachers were white women with the exception of one white man and a Vietnamese-American woman adopted by a white middle class family as a child. We looked to data from the first 2 cohorts of teachers for this paper.

3.3. Data Collection & Analysis

Across the 4 courses in the broader study, we audiotaped group discussions, collected artifacts, and interviewed the teachers. In addition, we chose a subset of the participants

to follow more closely by observing in classrooms on a biweekly basis. Our case study

sample was designed to represent a range of teaching contexts present in the local 4K

program and included veterans and novice teachers in child care centers and elementary

sites. In these classrooms we conducted 30 hours of classroom observations over a nine-

month period. We generated ethnographic field notes (Emerson, Fretz, & Shaw, 1995) of

the three hour preK sessions including whole group instruction, meals, and the hour-long

free choice playtime. This included observations of intentional math teaching and

responsive participation in play-based activities in preK classrooms

   To illuminate the embedded nature of improvisation in play and instruction, we

began our analysis by reading through the data in two ways. First, we read and coded

recursively data from all observed classroom teachers. Second, we linked joint

understanding and developing themes through a project journal and collaborative writing

(Author, 1998).   We held weekly research team discussions, identifying instances when

teachers recognized and used diverse sorts of knowledge in the classroom with the

potential that new knowledge will be co-created through interaction. The construct of

improvisation emerged as we worked to understand how teachers took up the strategies

offered by the PD. For us, improvisation embodies the nimble and knowledge-informed

decision-making of a culturally and developmentally responsive teacher of early

mathematics.

   For the purposes of this paper, we highlight Mrs. A and Mrs. C's practices,

developing case descriptions (Stake, 1999) to provide an in-depth portrayal of

improvisation in action. Mrs C. and Mrs. A's cases provide illustrative examples of what

happens when children and teachers engage in responsive improvisational practices. We

focus on these two particular teachers' cases because they represent the range of teacher improvisation from the larger data set, providing illustrative examples of the possibilities present in improvisational teaching.

4. Findings

Improvisation provided a tool to understand teacher practice in relation to the PD's 3 main bodies of knowledge: 1) early mathematics teaching and learning; 2) Funds of Knowledge; 3) foundational early childhood practices. In line with earlier work, we approached our analysis assuming that teachers had to activate these bodies of knowledge in their work with children (Cohen, Raudenbush, & Ball, 2000). With improvisation in mind, we closely examined teachers' interactions with children and the importance of particular practices became evident.

In addition to having deep understandings of the 3 bodies of knowledge outlined above, teachers needed to connect with children in the moment consistently and responsively over time to develop relationships. At their richest authentic interactions in which a teacher links to something a child knows or does were reciprocal rather than unidirectional. When teachers and children jointly constructed knowledge improvisationally, teachers put effort into interactions around children's FoK rather than being sucked into classroom management or prepping materials for the next activity. Examining the teachers' practices showed how improvisational interactions enhance the teachers' ability to incorporate diverse types of content into moment-to-moment interactions with children.

4.1 The Teachers.

Mrs. A was an experienced educator and a preK teacher in an affluent nursery school that is part of the local public preK program. She taught second grade for a number of years before moving to preschool after stepping out of the workforce to have children. She had a strong sense of literacy and mathematics content. Mrs. A understood the importance of play-based pedagogy, but struggled to find ways to enter play to enrich children's learning (Jones & Reynolds, 2011).

Mrs. C was a veteran second grade teacher who decided she wanted a chance to work in a play-based environment. The implementation of preK was the perfect opportunity. She moved into preK with a calm and playfulness that one would expect from a much more seasoned preschool teacher – her classroom was joyful and purposeful, child centered and teacher facilitated. A lover of mathematics, Mrs. C saw math everywhere in her classroom and loved to develop activities and materials that promoted mathematics learning.

In the following sections we contrast these teachers' practices, exploring how they created learning spaces through improvisation. We organize our analysis according to the actor in the improvisation.

4.2 Improvisation as a Teacher Practice

How a teacher plans activities and interacts with children is important to consider when thinking about improvisational teaching. Teaching new skills and concepts in this manner requires responding to children's resources with multiple forms of content and being open to children taking up the content in unexpected ways. Entering an interaction strongly committed to a particular correct response can reduce responsivity.

Patterns

Mrs. A supervised as the children engaged in a common preschool

practice--making "pattern crowns" to teach them how to complete an AB

pattern. Each child had a wide strip of construction paper on which s/he placed

shapes and or colors in a repeating pattern. Framed as an art project with

embedded mathematical content, activities like these can lack creativity or

context, constraining opportunities for both teachers and children to improvise.

Mrs. A knelt by the art project table. To Maggie, Mrs. A said, "In order

for it to be a pattern, it needs to say its name over and over." Mrs. A watched as

Maggie placed a circle and a square on the strip. Mrs. A asked, "Does it say it

over and over?" Maggie looked up, but said nothing. Mrs. A added, "Let's make

it with shapes first then colors. Okay, so what's going to come next,

Maggie?"   Gary asked Mrs. A for help putting his pattern crown

together. Maggie chose another circle and square, placing them next to the first

two. After Mrs. A stapled his crown to fit, she turned and asked, "So tell me, what

came next?" Maggie smiled and began to glue the shapes on her strip. Mrs. A

took a photo of her then she sat down and wrote on a piece of paper. Raphael and

Maggie worked side-by-side gluing the shapes to their crown strips. Maggie

commented on the stickiness of the glue stick. Mrs. A confirmed this by nodding

and saying, "yes, it is sticky." (Classroom Observation, 2/2012)

Improvisational teaching is characterized by interactions that are simultaneously open

and scripted – both children and teachers come to the interaction with expectations about

potential responses. In this moment each question Mrs. A asks has an expected correct

response, regardless of whether Maggie knows how to complete the pattern on her crown. The mathematical content is the AB pattern that she is teaching through the crown example. Connections are minimized; this is a lesson that could be taught to any child – the interactions are not particular to Maggie. It is essentially a script, "Does it say it over and over?" and "What comes next?" This mathematics lesson ends up being more about whether or not Maggie is capable of completing an AB pattern, the predetermined skill, rather than building on Maggie's knowledge of patterning.

A richer example involves content that has multiple nodes of entry – where the teacher draws on children's knowledge and where children have worthwhile opportunities to engage in mathematical concepts. We saw this kind of work daily in Mrs. C's classroom when she planned large group activities that engaged children in mathematical thinking, posing questions with more than a single strategy or response. These activities took the place of repetitive rote counting activities like counting days on the calendar. For example, when the class took attendance they did more than just count who was there.

<div align="center">Attendance</div>

Mrs. C and the children counted the number of popsicle sticks labeled with children's names that were in the space marked school that day. Once they finished counting, she checked their conservation of number and asked, "How many kids are here today?" The response was a chorus of children's voices saying 17 and 18. Mrs. C responded by asking one of the children to explain her answer, "Sally, why do you say 17?" Sally replied, "Cause we have 18 kids and if one is missing then we have 17." (Classroom observation, 12/2012)

This type of dialogue in Mrs C's classroom was common, in seemingly simple activities like taking attendance and more complicated mathematical tasks. On the surface, the children were participating in a large group, ritualized counting activity meant to teach a particular kind of content, one-to-one correspondence. But a closer look at something as simple as "Why do you say 17?" shows some of the possibility in improvisational practices. In Mrs. C's classroom, the preK children are expected to be able to give more than just a "correct" answer. They are commonly asked to reason through their responses. Here, Sally had the correct answer, 17, but how did she know it? She could have just counted up to 17 with the group and Mrs. C could have moved on, and then all that is really known is Sally had experience counting to 17 that day. Sally explained her response and in doing so engaged in higher level thinking in terms of one-to-one correspondence, number conservation, and beginning number operations, contributing to her development of number concepts. Further, now Mrs. C knows more about Sally's mathematical understandings that she can bring into future interactions with her. Mrs. C valued all mathematical conversation, recognizing that one could learn from both correct responses and mistakes. These mathematical conversations served to model mathematical thinking for others in the group. This included situations in which children offered incorrect answers. In this classroom the children frequently took ideas from Mrs. C's mathematics lessons into their play. Later we will see how children used mathematical concepts as they improvised during playtime, weaving familiar mathematical ideas and activities into new experiences connecting both with each other and Mrs. C.

Improvisational teaching involves more than teaching subject matter in a responsive manner. Children's resources from their outside-of-school lives should also inform how teachers respond to children. Children's FoK can often be seen bubbling up into classrooms, but knowing what to do to build on such knowledge can be difficult for teachers. Mrs. A, for example, was challenged by the idea of FoK, worried that parents would be offended by her interest in their home lives. In an interesting twist, we saw that she often used her own FoK in interactions; missing the bids children made in play. This is illustrated in the following example:

> Mrs. A sat next to Alliyah as she played with playdoh. Alliyah said, "this playdoh smells." Mrs. A smelled it and says, "It smells a little like lemons." Alliyah, "I like lemonade." Mrs. A, "Me too. My dad used to grow lemons when I was little. I don't know if you can grow lemons here in WI." Alliyah moved her fingers and said, "I will have to wash my hands when I am done" and started to clean up to leave the area. (Classroom observation, 10/2011)

Here, while the children are playing, Alliyah offered Mrs. A information about something she likes, lemonade. Mrs. A responded by using a script that pulled from her personal FoK, talking to her about her own connections to lemons and Alliyah leaves the interaction. We wonder, if Mrs. A would have asked Alliyah about her knowledge of lemonade if Alliyah would have stayed and had a conversation with Mrs. A., perhaps creating opportunities to learn more about and build on Alliyah's FoK in the classroom?

Improvisational teaching involves responding to children through instructional practices that take up children's FoK. This requires knowing and recognizing children's lives out of school provide important resources for both teaching and learning. This kind

of teaching can be challenging, because it involves making space for knowledge that is

sometimes not sanctioned by schools, like superheroes (Dyson, 1997; Hedges,

2002). There are a variety of strategies that teachers can use to capitalize on children's

FoK, including teacher-created materials, whole group activities, mindfully bringing or

responding to children's FoK in play, and being open to all kinds of topics. In this

example from Mrs. C's classroom her interactions with Daniel showed how she values

his knowledge and interests:

> Daniel went to Mrs. C and informed her that someone stole the cookie from the
>
> cookie jar. Mrs. C asked if Batman was going to be on it, was Batman going to
>
> help find out who took the cookie from the cookie jar. Daniel jumped up and said
>
> that Batman stole the cookies from the cookie jar. (Classroom observation,
>
> 4/2013)

The familiar chant, "Who stole the cookie from the jar" had made its way into Daniel's

imaginary play. When Daniel approached Mrs. C, she responded by asking him about

Batman, a character he learned about outside of school that Mrs. C knew he both likes

and is knowledgeable about. Daniel was instantly hooked and his play was extended as

he took off in search of Batman and the stolen cookies, bringing ideas from home and

school together in play. Mrs. C's response to Daniel was an offer to bring his pop culture

interests into school. While many teachers might hesitate bringing up Batman because of

the kind of rambunctious play that could ensue, Mrs. C knows that Daniel's investment in

Batman can enhance his school experiences. Daniel's response is a kind of improvisation

as well as he takes a superhero (Batman) and placed him in the musical script of "Who

stole the cookie?," but as a bad guy who steals the cookies.   This creates a hybrid

between two fantasy worlds. Acknowledging Batman helped Daniel see connections

between home and school, provided Mrs. C with more information about Daniel, and

created opportunities for Daniel to build on his conceptual knowledge (Hedges, 2011).

4.3 Improvisation as a Child Practice.

Much of the literature on improvisational teaching focuses on the actions of the

teacher. This work has been helpful in highlighting the degree to which teachers can

fruitfully take up their students' knowledge in the classroom. But it is also important to

recognize that improvisation is a *partnered* activity – successful improvisation involves

an actor taking up the bid offered by another (Lobman, 2006). We found this seemingly

obvious point illustrated in a number of interactions when we listened carefully to the

authoring in improvisation and recognized that adults did not always have the upper

hand.

Mrs. A's tendency to respond to children's bids with her own FoK fostered a

sense of disconnection between her and the children. The children were aware of what

knowledge and interests were considered a valid part of the classroom, which created

opportunities for children to improvise independently. We provide an example of

asymmetrical improvisation in two formats – one from an adult's view and the other from

a child's perspective. We suggest reading the adult version through first, then the child

version.

Insert *Table 1* here

Insert *Figure 1* here

In this snippet of action in Mrs. A's classroom you can see improvisation at two levels. On the one hand, Mrs. A set up an improvisational space that allows children to engage in a variety of activities. She focused on management in this space, working to keep the classroom running smoothly in a culture in which children have many choices. They make decisions, then shift to follow their interests. And they create an underground play culture developing scripts that they know would not be sanctioned by the teacher. Their creation of a knife garden with poisonous snakes was staged in broad daylight, but is unseen by Mrs. A because they adapt their script when they interact with her. The connections between teacher and children in the classroom are warm, but attenuated, because there are limited exchanges beyond the surface. The content in this example is related to control – Mrs. A's focus on management reinforces the rules of the classroom and in many ways exacerbates the underground nature of the children's culture. The children are learning how to code switch in this improvisation, a challenging concept, but within the skill set of four year olds.

4.4 Improvisation and Co-Constructing Knowledge.

Improvisational teaching creates opportunities for children and teachers to jointly construct knowledge in a classroom setting. Though important in all teacher/child interactions, improvisation is particularly critical when teaching in play. Relationships are important in this style of teaching, the connection teachers and children have can impact co-constructing knowledge. For improvisation to be mutually beneficial, both parties are involved. In an earlier example we shared an example of a teacher failing to pick up an improvisational thread, in the following example we see the tables turned,

with a teacher attempting to respond to children in a more improvisational manner, the

children do not take her up on it.

> Gary, Tommy, Charlie and Carson were playing on the carpet. They used the
>
> bristle blocks to make "battery chargers" that were flying in the air. Tommy said,
>
> "Your vitamin D is out." Charlie replied, "All of my battery is out." The boys
>
> flew the structures around and made blasting sounds. When Mrs. A approached
>
> and asked, "Tommy, what is vitamin D?" Tommy said, "Nothing." Mrs. A
>
> walked away. The boys continued to play on the carpet. Tommy added two large
>
> yellow cubes onto his structure and said, "I now have 2 vitamin D bombs." When
>
> Charlie says, "I don't have any vitamin D" he drops his structure to the floor and
>
> makes an explosion sound. (Classroom observation, 3/2012)

In this example, we see a lack of connection between Mrs. A and the children. Mrs. A

made a bid to enter the boys' play, the bid fell flat. Why? The children are not used to

involving Mrs. A in their play – she presented them with an unexpected script. The way

that she tried to enter play is by using a known response question – an informal test of

child knowledge. And as in the earlier example of the knife garden, the boys actively

discouraged Mrs. A's participation to continue an unsanctioned thread of play. We can

imagine a fruitful interaction in which Mrs. A frames a bid from within the play, for

example taking a bristle block and announcing that she has a delivery of vitamin

D. From there it would be easy to talk through children's knowledge from their

perspective that could ferret out the conceptual link constructed between vitamin D and

energy. Or posing a delivery of 5 gallons of vitamin D and leaving open the construction

of number problems.

In contrast to the previous example, during playtime, Mrs. C can often be found

playing with children. She circulates through the room, sometimes observing and then

dipping in briefly like she is adding spice to a recipe. Other times she stays with a group,

taking on a character to be a master player (Jones & Reynolds, 2011). She might be

found at a table playing a game and other times she worked in the class grocery store,

helping children stock shelves. Mrs. C's ability to respond to what children offered in

these moments provided them with opportunities to build their conceptual

knowledge. Mathematics was not reserved for structured activities in this classroom. It

was intertwined with other bodies of knowledge while the children and Mrs. C played

together. The following short vignette illustrates Mrs. C's classroom during playtime and

some of the possibility in improvisational practice:

> Playtime in Mrs. C's preK classroom. Mrs. C knelt down next to the art
>
> table when Kelly, Jessica, and Sally ask for help making stop signs. She told
>
> them that she'd write the word *stop* and they could copy it. Ryan came over from
>
> the block area to ask about his batman picture. "Okay Ryan, you are going to
>
> write your name so everyone will know it's yours. What does your name start
>
> with? Ryan answered timidly, "An R?" Mrs. C agreed and watched while he
>
> wrote his name. "Okay Ryan, go put this in your Batcave and then people will
>
> know that you made it and if they want to add something to it that they have to
>
> ask you."
>
> Ryan ran off to the block area, smiling, but quickly returned, asking if
>
> Mrs. C would help him write the word 'Batman.' Mrs. C suggested that he go
>
> find the word in the block area then copy it. Ryan wrote a B but said that it is not

a B. Mrs. C told him that it does look like it but that it doesn't quite look like hers

because she has been writing it for a while. They then had a conversation of how

old they are and Ryan said, "Wow" in response to Mrs. C being 31.

      Sally worked quietly on making a stop sign, but watched while Ryan and

Mrs. C discussed ages. Mrs. C asked her, "Are you still four?" Sally excitedly

said that she is four. Sally asked Kelly how old she is. Ryan said that his sister is

two. Mrs. C asked Ryan how old his brother is. "Six," he replied. Mrs. C then

asked, "And what about you?" Ryan said that he's four and explains that four is

bigger than two and that six is bigger than four. (Classroom Observation, 1/2013)

Illustrating Lobman's (2006) conception of improvisation as joint production of

meaning through story, Mrs. C supported learning in child-directed activity through

scripts for play that structure interaction but allow for child improvisation. Unlike many

increasingly closed-script classrooms today where teachers directly model skills and have

students practice at adult designed centers (Crawford, 2004), Mrs. C and her students

work with informal scripts that sketch outlines for practice. Mrs. C uses knowledge of

developmentally appropriate practice to design an environment in which children engage

in age appropriate activities and provide resources that enrich their interactions. In this

60-minute choice time, there is a wonderful balance between engagement in intentional

activities and responsive actions that build on the children's skills and interests.

She builds on FoK by carefully listening to children and their families; this allows

her to pick up on the ideas that children bring up in their play. Mrs. C makes a

considered decision to make Batman and his Batcave a part of the classroom because

Ryan is a Batman expert. She considers popular culture like superheroes to be one aspect

of children's FoK and therefore a tool for teaching and learning (Hedges, 2011).

Mrs. C's links important literacy and math knowledge to real life activities,

embedding it in social practices important to the children. She does not hammer away at

children's play pounding content into it. Instead, Mrs. C improvises her way into their

play, responding to their requests for support.

It is important to recognize that as Mrs. C improvises, so do the children. In this

loosely scripted space, they have enough cultural knowledge to playfully engage in

literacy and mathematics practices, pulling from earlier experiences at home and

school. Because they recognize Mrs. C as a master player, they can trust her to engage

with them without taking over an activity. This provides a sense of shared responsibility

within the group.

Understanding the potential of improvisational teaching requires examining how a

teacher approaches responding to children in play and planned activities, when children

improvise independently of their teachers, and what happens when teachers connect with

children through responsive interactions. This idea of connection pervaded our sense of

each interaction, regardless of whether the connections felt strong or faint. When

children were approached with a predetermined script, the interactions lacked connection

to what children were offering. Even when the teacher attempted more responsive

interactions, the children often rejected the teacher's bids because such interactions were

not the norm. The more consistently the teacher was truly responsive to what children

brought to the table, the more likely they were to engage in content and concept-rich

interactions. In interactions characterized by strong connections, the teacher established

relationships with children that were characterized by joint construction of scripts, honoring diverse types of knowledge and creating an expectation of deep thinking and learning. This kind of responsivity is forbidden in the increasingly prevalent scripted curriculum. We worry that the teacher proofing of such curriculum necessarily makes them child proof because children have no way to enter into the instructional dialogue with their cultural resources.

5. Discussion & Conclusion

One of the essential abilities for teachers who want to teach according to this play-based approach is the ability to observe pupils in their everyday activities, and, accordingly, introduce new cultural rules and tools for the benefit of the children's activities. (van Oers, 2003, p. 20)

In this paper we argue that improvisation can be a fruitful strategy for teaching, providing a space that creates new knowledge by engaging the familiar in unfamiliar ways. We make this argument through descriptions of interactions in Mrs. A's and Mrs. C's classrooms and pointing out the moments of improvisation as well as missed opportunities. We want to be clear that each teacher is a well-educated and thoughtful professional, well respected in the community. Their practice represents two threads of typical early childhood pedagogy. But micro-tweaks in their teaching practice provide interesting learning opportunities that can extend the quality of play.

Mrs. A represents the "teacher as hands off facilitator" who prepares the environment and manages behavior, but is reticent about engaging children in play as she believes that play is *their* space. Teaching in an affluent nursery school, Mrs. A has the role of assistant who supports children in their play but who is relegated to the edges. She

is like a stagehand – she sets things up so the drama is played out. Because of her marginal status in children's play, she has little opportunity to enrich it using content or home resources. Mrs. A's reluctance to actively play *with* children leads to less co-construction of knowledge and the responsiveness that addresses children in the ZPD. Obviously learning still occurs as children interact with each other and their environment, but we believe deeper learning could occur if the children engaged Mrs. A as a co-creator. We could engage in a critical class analysis of their power in the classroom; but that is outside the bounds of this particular article. Suffice it to say that the scripts in Mrs. A's classroom could be more collaborative, giving her more leverage to engage children and enrich their experience.

In contrast, Mrs. C moves in and out of children's play, picking up threads of the drama and weaving in elements of their FoK so that she enriches their play collaboratively. She is, as van Oers (2003) suggests, introducing "new cultural rules and tools for the benefit of the children's activities" (p. 20). In addition to being adept at engaging children in play, Mrs. C's interest and strength in developing early math knowledge provides the children with multiple paths for learning. The boundaries of her learning space are permeable – she brings home practice, interests and knowledge into the classroom, using it strategically to bring new ideas alive. It is her activation of diverse forms of knowledge that makes this classroom unusual. Through these practices, Mrs. C enriches the zone of proximal development, leveraging more complex learning through her activation of children's FoK. In addition, children develop self-regulation within the ZPD, learning prosocial behaviors through interaction (Meyers & Berk, 2014).

A critical element, reflected in our theorization of the research, is the importance of connections between families and schools. FoK has at its core the value of home knowledge, practices, and culture as teaching tools. In the PD program, we shared readings about FoK, we designed a focal child assignment that provided the teachers with scaffolded practice in doing home visits and identifying home cultural resources, and we asked the teachers to design instructional activities that supported math knowledge using the FoK they identified.   This process went beyond getting to know the families. It required teachers to recognize the assumptions they make about families from a child in school and in many cases brought about an "A-ha" moment when the teachers saw that they were learners, working to understand cultures in practice.

Through this work, we now more fully understand Holland et al.'s contention that another potential outcome of improvisation is the construction of a new identity. Again, we see this occurring at two levels. For the child, responsive teaching that takes up home cultural resources creates a space for the production an identity of the child as learner. This takes place in a context that recognizes the social value of the child's FoK. For the teacher, improvisation reflects a sense of actor as learner, as someone capable of recognizing and activating a child's cultural capital. This improvisational encounter allows new ways of knowing:

> One's history-in-person is the sediment from past experiences upon which one improvises, using the cultural resources available, in response to the subject positions afforded in the present...Improvisation can come the basis for a reformed subjectivity. (Holland et al, 1998, p. 18)

Finally, joining FoK with early mathematics through play, sets up a potentially fertile context for learning. Through improvisation, actors take up new meanings of cultural tools. We agree with van Oers, who notes that:

> The richness of the resources available in the context of play creates many opportunities to learn and teach. The teacher who manages to provide pupils with these resources in the context of play, without impairing the quality of play, has good chances to provoke teaching opportunities for arousing new cultural abilities in pupils, and consequently, to promote effective learning and realise effective teaching in early childhood. (van Oers, 2003, p. 23)

Improvisational practices are not scriptable, in a teacher-proof approach. Instead, they use shared cultural scripts that are frameworks that actors can fill with meaning.   They cannot be tested for fidelity of implementation. They require deep knowledge of children's multiple resources and a willingness to share the creative space of learning. They do so by making teachers authors/creators who make micro-decisions within their teaching in response to the needs and interests of their students. While it might be easier to teach a one size fits all curriculum, we are convinced in the long run, it would be mind numbing. The creation and *re*creation of links between home and school is hard work, but one whose payoff is high.

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