

Problem of Practice Final Report: The Design Process

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As a Technology Integration Specialist for Nursery-2nd Grade, I work with students and teachers to design experiences using technology that support the classroom curriculum. I also work to providing professional development opportunities and resources that encourage teacher learning and growth with educational technology. During this course, I worked to define an authentic problem of practice that could help me in this role.

Problem of Practice

As a former first and second grade teacher in the Primary School, I already have a strong understanding of those students, their developmental and academic needs, and the curriculum. One of the biggest challenges in my new role, however, is working with teachers in Nursery and Kindergarten classrooms. The N/K Program is inspired by the progressive values of my school's founder, John Dewey, and influenced heavily by the Reggio Emilia approach. I have much to learn about the curricular and pedagogical approaches that teachers use with our youngest learners. With this in mind, I identified the following Problem of Practice:

How can I help N/K teachers integrate technology in ways that are aligned with their pedagogical approaches and learning goals?

Empathize Mode

The Empathize mode of the design thinking process is about get a sense of the user experience through engagement, observation, and perspective-taking. When the user is considered, the design process becomes human-centered and authentic. The methods of empathy I used to gain a deeper understanding of the Nursery and Kindergarten Teachers, their classroom programs and the young students I work with, included observations and engagement (working with

small groups of children and interviewing teachers). After several weeks of working with small groups of students in each classroom, I interviewed the teachers to gather information about their goals for technology (specifically with the iPads) in their classrooms. These interviews were insightful and allowed themes/goals and challenges to begin to emerge.

THEMES/GOALS

Collaborative Learning

Creativity

Active Student Learning/Engagement

Connection to Curriculum

Independence

Documentation and Sharing

CHALLENGES

- Teachers expressed difficulty in identifying apps and technology that support creativity, active learning, exploration, play, and collaboration. Time limitations and feelings of being overwhelmed with the technology also present challenges.
- There is a lack of training, comfort, and knowledge in using technology.
- Teachers recognize that technology is the future for their children but do not know how to use it in meaningful (and developmentally appropriate) ways that support their strong pedagogical foundation and practices.
- Through my observations, I noticed that teachers need support in managing their iPads (how to update, delete/add apps, manage storage, organize apps/pages, replace broken headphones or missing chargers, etc.) so they can use them more effectively in the classroom.

Through these observations and conversations, I was able to develop more empathy and understanding of how Nursery and Kindergarten teachers would like to use iPads in their classrooms and what barriers prevent them from doing so. This exercise helped illuminate some next steps as I work to solve my Problem of Practice.

Define Mode

As Stanford's d.school Bootcamp Bootleg describes, the Define mode is about unpacking and synthesizing the empathy findings into compelling needs and insights while creating an actionable problem statement based on your (the designer's) point of view. The Define mode is about narrowing the focus and reframing the Problem of Practice. To do this, I began with The 5 Whys: A Root-Cause Analysis, which challenged me to ask "why" 5 times.

THE 5 WHYS: A ROOT-CAUSE ANALYSIS

- Why don't Nursery/Kindergarten teachers integrate technology in ways that are aligned with their pedagogical approaches and learning goals?
 - Teachers don't not know how technology can support their progressive education and Reggio Emilia approaches to teaching and learning.
- Why don't they know how?
 - They haven't had enough training with technology to understand its potential.
- Why haven't they had enough training ?
 - They can't imagine fitting technology into their already busy schedules and don't make professional development/training in technology a priority.
- Why can't teachers imagine fitting technology into their already busy schedules?
 - They view technology as an add-on and think they will have to give up something.
- Why do teachers view technology as an add-on and think they will have to give up something.?
 - They do not understand that technology is simply a tool that can be integrated seamlessly into their curriculum and enhance/support their pedagogical approaches and learning goals.

For the next step, I created a Why-How Ladder (Image 1).

WHY-HOW LADDER

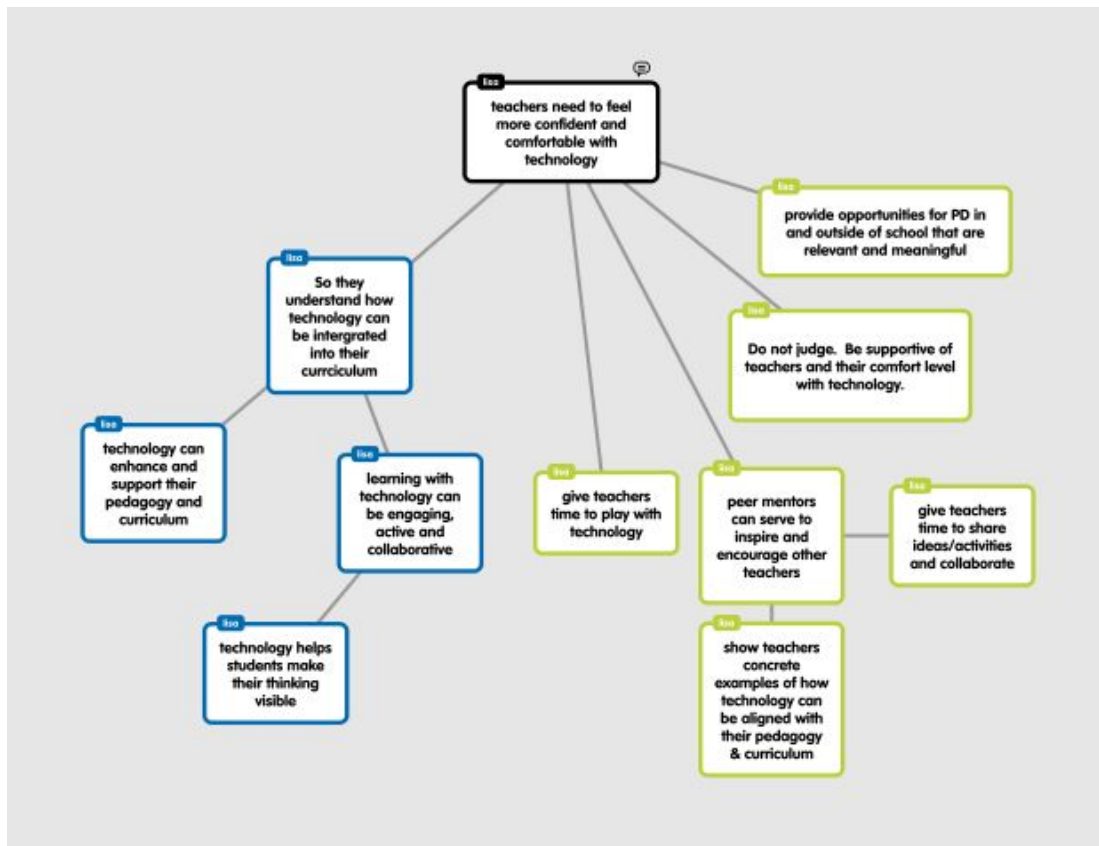


Image 1

Link to the original popplet: <http://popplet.com/app/#/3849133>

Finally, I used this information to develop an actionable Problem Statement that provided a framework for generating ideas, solutions and approaches to my problem in the Ideate mode.

Problem Statement:

Nursery and Kindergarten teachers do not integrate technology in ways that are aligned with their their progressive education and Reggio Emilia approaches to teaching and learning. The main root causes of this is that have not had enough training with technology to help them realize its potential and struggle to find time fitting technology into their busy schedules. Currently, many Nursery and Kindergarten teachers view technology as an add-on and something separate

from their curriculum. They feel as though they will have to give something up in order to make it effective and meaningful. The teachers do not understand that technology is simply a tool that can be integrated seamlessly into their curriculum and strengthen student learning. Technology can be valuable tool “in the documentation process to enhance reflective thinking and creativity in both young children and their teachers” (Hong and Trepanier-Street, 2004, p. 87). Before teachers can integrate technology effectively within their classrooms, they must have confidence with and knowledge of technology.

One way this can be achieved is through an on-going professional development model designed to meet the needs of all teachers at varying levels of understanding and confidence. Professional development/training should be differentiated according to a teacher’s needs and provide sufficient time and training for them to learn and practice the tools. Through adequate training, the hope is that teachers will begin to understand how technology can be integrated into their existing curriculum and time will no longer be such a limiting factor. Here is where I began to focus my thinking for the Ideate mode.

Ideate Mode

For the Ideate mode, I spent time actively working with my Problem of Practice and used sketchnoting (Image 2), brainstorming (Image 3) with colleagues and an Incubation Journal (Images 4 and 5) kept over the course of a week, to gather some thoughts.

SKETCHNOTE

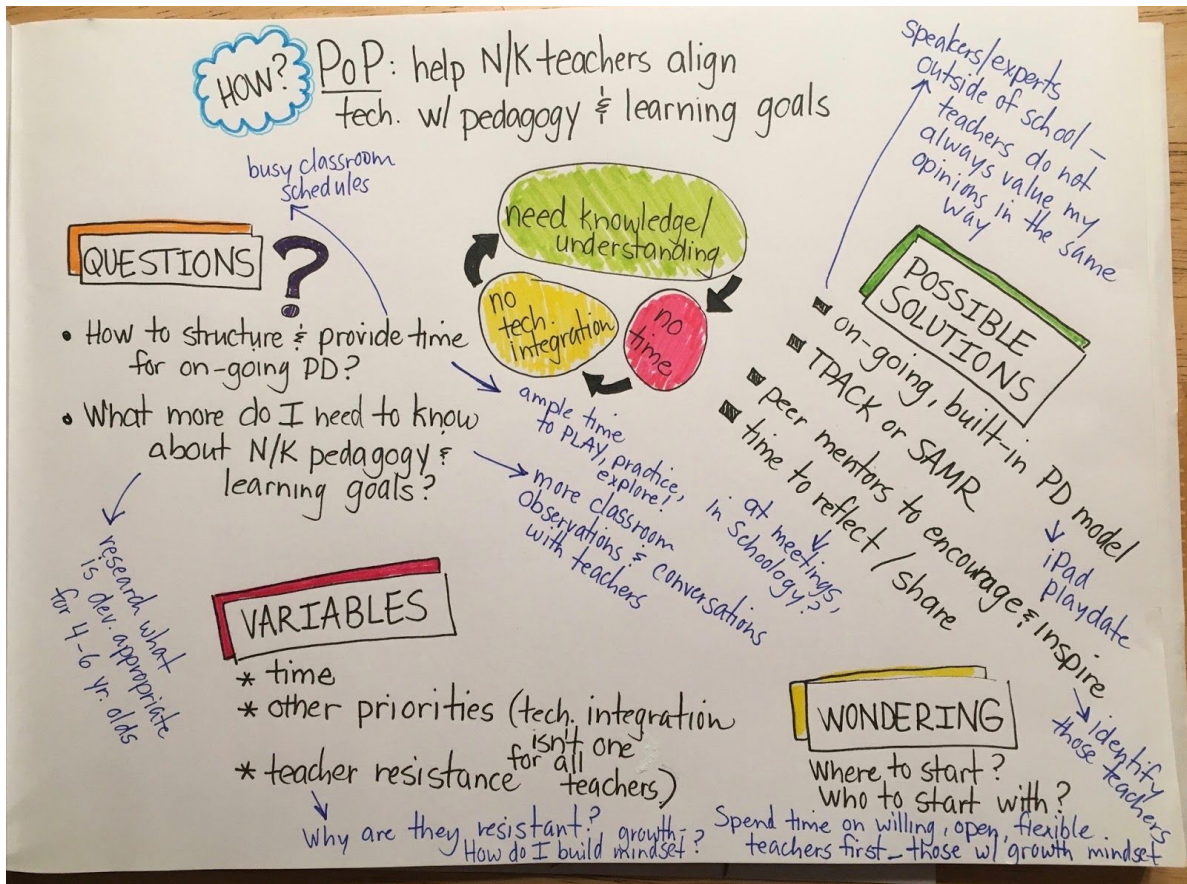


Image 2

BRAINSTORMING

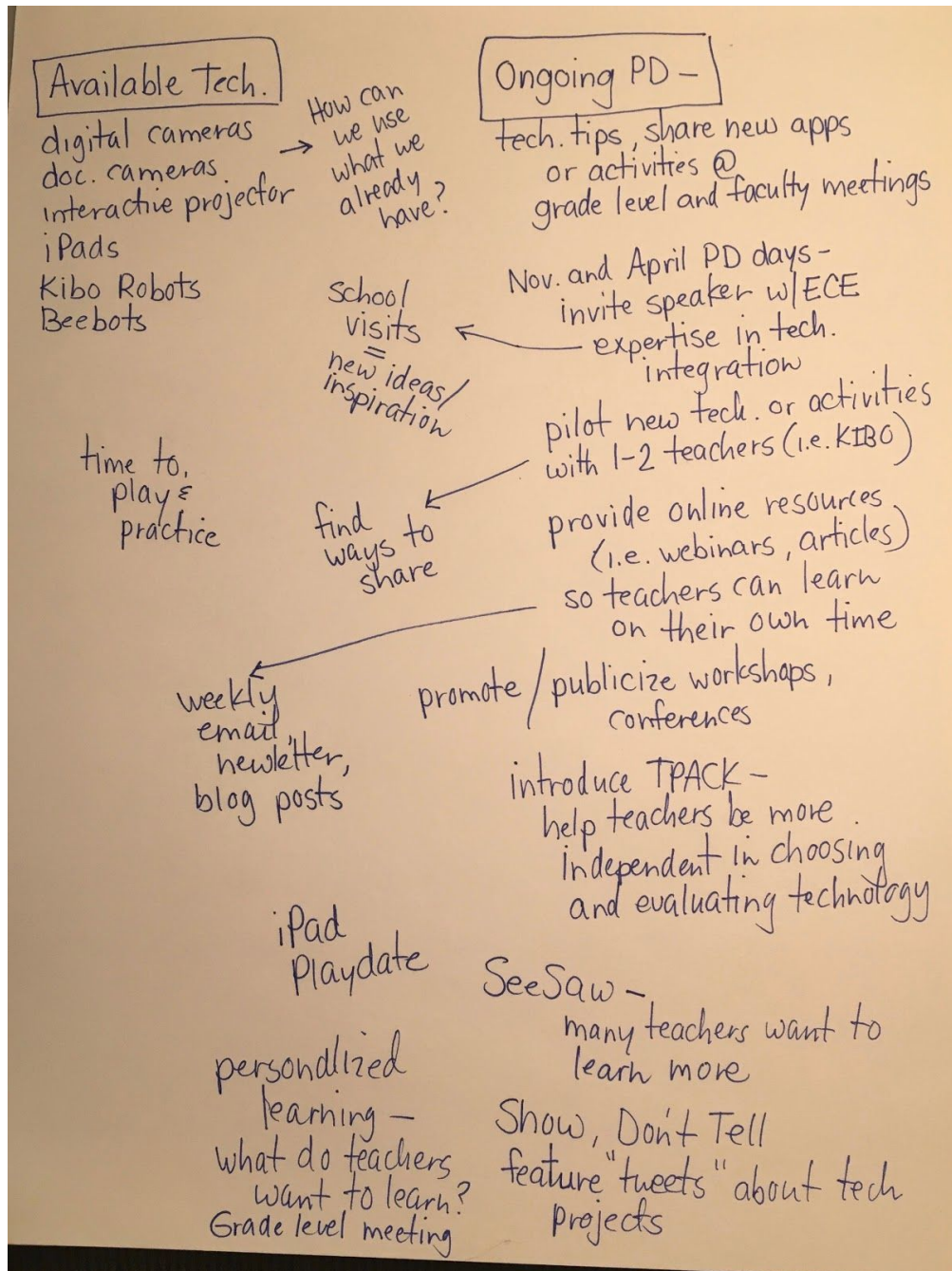
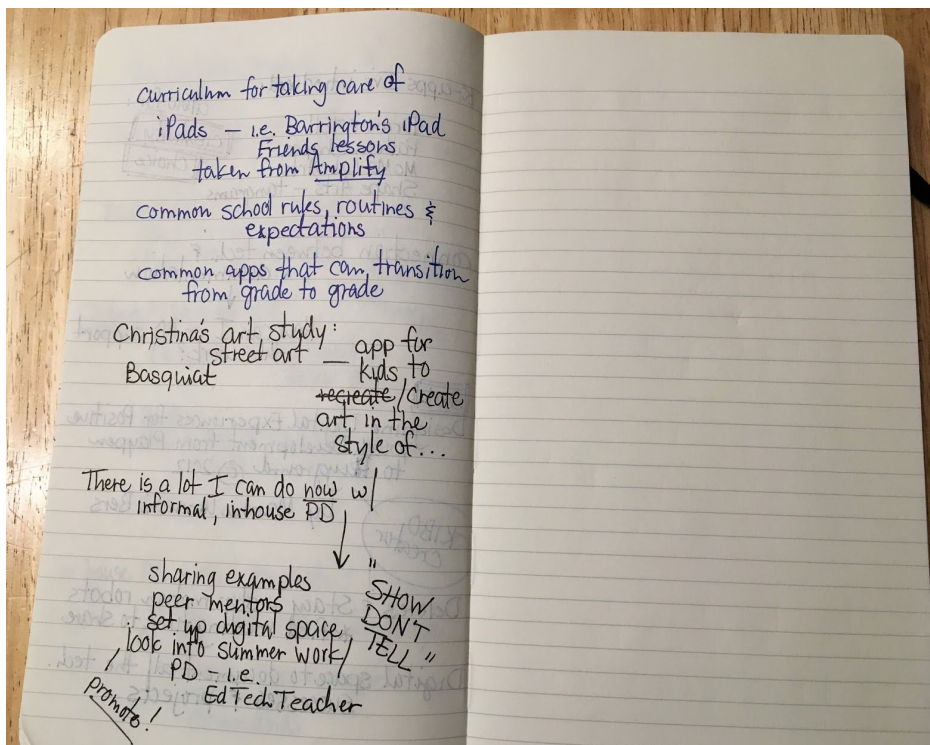
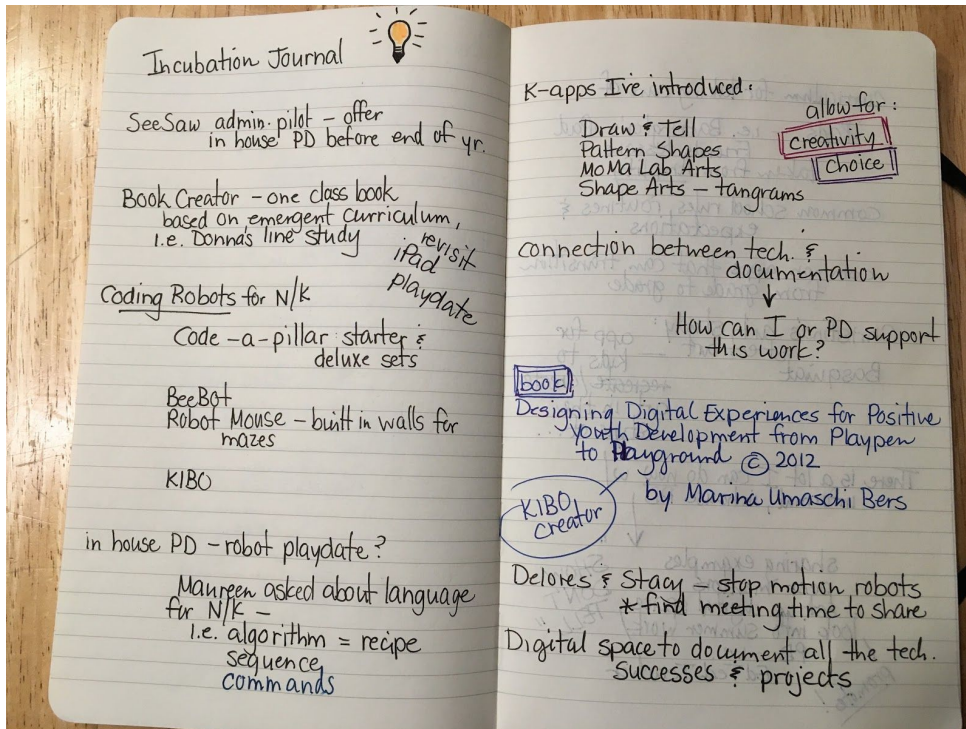


Image 3

INCUBATION JOURNAL



IMAGES 4 and 5

Through work on this mode, I realized that the process of ideation occurs in stages over time. I often wanted to keep working and persisting until I had a solution yet ideas needed time to “incubate.” I also recognized the importance of giving my active mind time to rest and regroup so it was freed up to tackle more complex problems. Creative ideas cannot be rushed and are best realized through brainstorming, incubation, reflection, iteration, and modification. There was also great value in collaborating with others. Sharing ideas, experiences and perspectives inspired creative insights that would not have been imagined when working alone.

The ideation process highlighted the real need for developing an on-going technology professional developmental model to support Nursery and Kindergarten colleagues.

Prototype Mode

During the Ideate mode, I began to focus on the need to structure an on-going professional developmental model to support teachers. Some solutions that emerged included sharing simple, practical technology tips at grade level and faculty meetings and creating a digital space to document classroom stories and successes with technology integration. My prototype was the beginning of that digital space. I created a website (Image 6) to share technology tips (including the ones I will share face-to-face at meetings), resources, a twitter feed that documents technology integration and computational thinking in the classroom, and a place to highlight classroom projects and teacher successes.



Image 6 [A Pinch of PD](#) website

This process of prototyping brought me closer to real solutions for my Problem of Practice and I learned a lot from prototyping. As I worked to design the Pinch of PD website, I had to consider the needs of the users (Nursery/Kindergarten teachers) and think carefully about what content would be most beneficial to them. I also wanted the posts to be brief – just “a pinch” of professional development. I began to include tips that were practical and simple enough for teachers to use right away. Although the content was essential to teacher learning, it was also important that the site was simple, visually appealing, easy to navigate and engaging so that teachers would come back often. For me this prototyping took time but it was also so satisfying and exciting that I wanted to keep going! Prototyping was an important step in solving my Problem of Practice.

Test Mode

The last mode of the design thinking process is the test mode. As described in the Stanford’s d.school [Bootcamp Bootleg](#), “Testing is the chance to get feedback on your solutions, refine solutions to make them better, and continue to learn about your users.”

For this mode, I made the website available to teachers, used a protocol to ask a series of defined questions about the design and layout of the website, the ease of navigation and its usefulness as a tool for accessing professional development. Before continuing to modify and refine my prototype, I wanted to be sure that it would be a helpful and meaningful tool to my colleagues (the users). Their feedback was insightful and helpful. It allowed me to continue to modify and make adjustments that would offer an authentic solution to my Problem of Practice.

The testing process was invaluable. Because I worked hard to define an authentic Problem of Practice, there was validation that I was on the right track to solving it. The website was only one idea that I prototyped and it will not be the only solution to helping Nursery/Kindergarten teachers integrate technology into their classrooms. Testing gave me new insights that will allow me to modify, adjust and improve the website so that it can be an authentic, meaningful tool to

meet teachers' needs. For other ideas, I will go through this same design process.

As described in the Stanford d.school's Bootcamp-Bootleg, testing allows you "to learn more about your user. Testing is another opportunity to build empathy through observation and engagement—it often yields unexpected insights." Through this process, I felt a greater connection and trust with my colleagues. They recognized that I was trying to address a problem that was relevant and meaningful to them.

Design Process Reflection

Going through each mode of the design process was a powerful learning experience for me. I realize now that the process cannot be rushed. It requires time or incubation so new ideas can be generated. Decisions must be intentional and thoughtful, informed by an understanding of context and the perspectives of the users. Each step of the process lays the foundation for the next. In defining an authentic problem and receiving feedback from my users, my prototype can become one solution to my problem of practice.

Actively engaging in this process also made me realize that as a teacher, I am already a designer. When developing lessons or activities for my students, I consider student learning needs, strengths and challenges. With empathy, I differentiate. I reflect, modify, make adjustments, and iterate. This to me is the art of teaching. It is a continuous cycle of testing (lessons/curriculum) and my users (students) are automatically built into the process.

The design process encourages failure so a deeper understanding can be achieved. This is something I expect of my own students and it's validating that mistakes are ok and necessary. Asking for feedback can also be intimidating and sometimes I feel vulnerable sharing ideas publically. However, authentic feedback can provide so much insight and offer new ideas and perspectives that would not have been considered otherwise. It's worth the risk. I see the power in the design thinking process and it's value in education. I am eager to use it with my students in their learning process.

References

Hong, S. B., & Trepanier-Street, M. (2004). Technology: A tool for knowledge construction in a Reggio Emilia inspired teacher education program. *Early Childhood Education Journal*, 32(2), 87-94. doi:10.1007/s10643-004-7971-z

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