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DESIGNING A PROFESSIONAL LEARNING MODEL TO SUPPORT CREATIVITY IN TEACHING AND LEARNING

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This paper explores the considerations in designing professional learning for teachers for the purpose of supporting student creativity. A study of relevant literature informed the design of a professional learning series for teachers in a large urban school board, revealing similarities between creativity, maker education, design thinking, and effective professional learning. Observations indicated that teachers engaged in processes that could support student creativity.

Keywords: Creativity; Maker education; Design thinking; Professional learning

Nearly as soon as I began my role as Learning Specialist in the Learning Innovation service unit in the Calgary Board of Education, I was receiving requests from teachers about several topics related to my portfolios of Learning Commons and Career and Technology Foundations. Teachers were hearing about maker education, and wanted to know what this approach looked like in a classroom. They wanted to know more about designing spaces that enhanced collaboration. They wondered about the Ministerial Order on Student Learning (#001/2013) (Government of Alberta Department of Education, 2013), and how to: “inspire all students to achieve success and fulfillment, and reach their full potential by developing the competencies of Engaged Thinkers and Ethical Citizens with an Entrepreneurial Spirit, who contribute to a strong and prosperous economy and society” (p. 1). The Ministerial Order weaves concepts of creativity throughout, such as collaboration, problem

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setting and solving, and divergent thinking (Kelly, 2013). Taken together, these problems of practice were pointing towards the overarching concept of creativity in student learning.

The sheer volume of requests around these topics revealed a need to offer system-based professional learning. This became an opportunity to design a research-based learning series incorporating best practices in effective professional learning, creativity, maker education, and design thinking to enhance student creativity.

LITERATURE REVIEW

A thorough literature review informed the planning of the professional learning. This review revealed few articles focusing on professional learning to enhance creativity. Because of the questions I received from teachers and the absence of literature on professional learning for creativity, research was synthesized from the topics of creativity, maker education, design thinking, and effective professional learning. Design thinking and maker education are manifestations of creativity that are seen by many as being an accessible lens for creativity (Kelly, 2013, p. 8). As such, it was important to identify the distinguishing features of design thinking, maker education, and creativity to find opportunities for alignment with effective professional learning.

The research indicated that there are commonalities between the three creative topics of creativity, maker education, and design thinking, and with effective professional learning. The concepts in common between the four topics would become the foundation of the professional learning series. In the following sections, I will explore this research and how it informed the design of the professional learning series.

Effective Professional Learning

Research supports the idea that presentation-style workshops are ineffective methods of professional learning: “Much of the information gained is not likely to be remembered, and even less likely to be applied once we return to our daily routine” (Hunzicker, 2011, p. 177). Effective professional learning, in contrast, is “active, situated, social, and constructed (Putnam & Borko, 2000)” (as cited in Webster-Wright, 2009, p. 720). Timperley (2011) did an exhaustive synthesis of research on professional learning, finding that the structure of the professional learning had no impact on improvement of student learning. What did have an impact was “the knowledge and skills learned as a result of engagement in the activity or process” (Timperley, 2011, p. 6). Further, Darling-Hammond and McLaughlin (2011) identified characteristics of effective professional learning: it must be inquiry-based, include reflection and experimentation that is participant-driven, must engage teachers in concrete tasks that relate to their every day teaching contexts, must be collaborative, and must be sustained, ongoing, and focused on solving a specific problem of practice. The literature suggested I needed to design the series to immerse teachers in the process, mirroring the skills and knowledge of the topic of creativity. As a result, the activities for the learning series were designed to engage teachers in similar processes they could use with students to engage their creativity. Darling-Hammond and McLaughlin’s (2011) research also suggested the professional learning series must focus on a participant-generated problem of practice, and be structured around a collaborative cohort of teachers. To this end, the series was designed as a cohort of teachers who would meet four times throughout the school year to collaborate, and then have time between sessions to experiment and reflect on their learning.

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Creativity

Creativity can be difficult to define, simply because of its inherent interdisciplinarity – creativity reveals itself in the arts, sciences, business, education, technology, and design, among other fields (Runco, 2014, p. xi). In attempting to define the process of creativity, it is therefore most useful to use an interdisciplinary definition: Creativity is “bringing ideas or thoughts into forms, ultimately making something out of ideas that can be shared in the currency or medium of the discipline or fields where the creative practice is occurring” (Kelly, 2013, p. 6). For an educator, it is useful to focus on the process of creativity, rather than the product. Kelly (2013) supports this approach by outlining seven strands of creative development: collaboration, self-instigation, research/investigation, generation and experimentation, analysis, and creative sustain (p. 16-18). This framework, and others like it (see Sawyer, 2012, p. 88, for example) are useful in the design of the professional learning series. These frameworks were used in the learning series to allow teachers to approach creativity through the lens of their particular discipline.

Maker Education

Maker education is one approach to creativity in learning. While the concept hands-on learning is not a new pedagogical phenomenon, its current manifestation as maker education is new. Dale Dougherty (2013), one of the founders of the modern maker movement, emphasized that makers “have a sense of what they can do and what they can learn to do” (p. 8). In the context of education, there is value in the maker movement’s focus on using hands to explore and create, and put the student at the centre of learning: “Students learn to trust themselves as competent problem solvers who don’t need to be told what to do next” (Martinez & Stager, 2014, p. 13). Dougherty (2013) noted that making in education is a creative way for students to learn academic concepts and theory

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(p. 10). Through this accessible platform, the professional learning series, entitled *Making Makers* would use maker education as a method of enhancing student creativity.

Design Thinking

Design thinking enhances creativity through a procedural approach to problem solving. Design thinking came from the domain of design, but has found application in many different fields. Design firm IDEO (2012) explained that design thinking is “believing we can make a difference, and having an intentional process in order to get to new, relevant solutions that create positive impact” (p. 11). Design thinking views problems as opportunities, and aligns with effective professional learning in focusing on a context-specific problem of practice. Design thinking takes its practitioner through cyclical phases of creative problem solving: Discovery, interpretation, ideation, experimentation, and evolution (IDEO, 2012). Because it focuses on setting and solving problems, of the three creative approaches, design thinking aligned most closely with effective professional learning, and was therefore selected to both design and structure the professional learning. Like action research, in using design thinking, teachers pose “well-designed questions about their practice, systematically gathering and interpreting data to answer those questions, and consequently taking action to improve practice” (Nolan & Hoover, 2008, p. 104).

COMMONALITIES BETWEEN PROFESSIONAL LEARNING, CREATIVITY, MAKER EDUCATION AND DESIGN THINKING

From the literature, I found similarities between creativity, maker education, design thinking. I have compiled these essential elements in Table 1. These concepts informed the design of the professional learning series.

Concept	Description
Bias Toward Action	All three approaches emphasize the idea of turning thought into form and testing these tangible representations of thought.
Collaboration	Though some parts of all three processes can be done individually, collaboration deepens and broadens the creative process.
Creation (over Consumption)	All approaches emphasize creation of understanding rather than passive consumption of knowledge.
Divergent Thinking	The development of many alternative solutions.
Empathy	Creators put themselves in others' shoes to consider multiple perspectives.
Experimenting	Trying different solutions to solve a problem.
Flexibility	The ability to think of varied ideas.
Growth Mindset (Dweck, 2006)	Creators expect that they will learn from experience, and are ready to modify and assess their weaknesses so they can work towards improving them.
Ideation	Generating ideas, problems, and solutions.
Intrinsic Motivation	Creators are motivated by personal interest and satisfaction rather than external rewards.
Not Rushing	Creativity takes time; the process must not be rushed.
Open Ended	A situation where the outcome is not known.
Open to Experience (Runco, 2014, p. 354)	Creators are open to trying new things.
Optimism	An attitude of hope permeates all three approaches – creators expect a good outcome.
Overcoming Challenges	Creators are motivated to use challenges and mistakes as opportunities for growth.
Permissive	Creators are not bound by excessive rules or protocols.

Problem Finding	Identifying problems that are worth solving.
Questioning Assumptions	Creators question the status quo.
Reflection	Creators are constantly reflecting on the process to understand what to do next.
Solving Problems	Creators solve the problems they found.
Trust	A culture of trust must be built for creators to collaborate.

Table 1: Concepts in common between creativity, maker education, and design thinking.

These key concepts also align with effective professional learning. Good professional learning focuses on experimentation and testing as a key methodology, emphasizing that, “professionals learn through practical experience, and that reflection has a valuable role in learning that requires change, and that such learning is contextually mediated” (Webster-Wright, 2009, p. 720), all of which are evident in Table 1. Reflection is needed for a creator to understand what the next steps are in creative practice, as well as a way for professional learners to look backwards to move ahead. Finally, professional learning is context-dependent, as is creativity.

DESIGN OF THE SERIES

The design of this series was based on my own problem of practice: How might professional learning using design thinking support teachers in designing tasks and processes that engage student creativity? Design thinking’s alignment with professional learning was selected as the framework for the series. The process of planning the series using design thinking was an important step in allowing me to experience the processes my participants would undertake.

A cohort of fifteen teachers across grades and subject disciplines volunteered to join this

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after-school professional learning opportunity. Teachers participated in four sessions across the course of the school year, experimenting with strategies that focused on creative thinking skills, which are outlined in Appendix A. The series had participants find and define a context-specific problem of practice, collaborate to identify solutions to this problem, experiment with possible solutions, prototype a solution to try in context, and refine and evolve this solution. Participating in activities they might use with their students allowed for “active engagement with experience, while accounting for the importance of context, dialogue, and collaboration” (Webster-Wright, 2009, p. 721). For example, teachers engaged in an activity where they represented their ideas through drawing. Several teachers indicated a desire to use the strategy with their own students. Further examples of activities can be found in Appendix A.

OBSERVATIONS

I was able to observe several factors that indicated that the professional learning series supported teachers in designing ways to engage student creativity. I observed teachers highly engaged in the activities of the professional learning series. The cohort structure built trust amongst participants, enhanced collaboration, which in turn boosted ideation. Every participant designed a solution to their problem of practice and tested it in their own school, suggesting a willingness to change and grow practice.

CONCLUSION

This project aimed to discover how professional learning might support teachers in designing tasks to increase student creativity in the classroom. In planning the professional learning series, a literature review was undertaken to find the similarities between creativity, design thinking, maker education, and effective professional learning, and found concepts in common between all four

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topics. This informed the design of a professional learning series. In the series, teachers engaged in design thinking to address a problem of practice in their own context. Observations suggested that teacher-participants applied their learning and engaged in creative tasks and processes in their schools.

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APPENDIX A: OUTLINE OF MAKING MAKERS PROFESSIONAL LEARNING

Timeline	Design	Activities
	Thinking Phase	
November 2014	Overview	<ul style="list-style-type: none"> • Webinar to introduce the series.
November 2014	Discovery	<ul style="list-style-type: none"> • Participants introduce themselves sharing a metaphor for themselves, to start establishing a culture of trust • Engage in ideation to begin identifying problems of practice • Engage in collaborative brainstorming to increase ideation: Speed Dating Idea Exchange (Kelly, 2012) • Homework: Select one problem of practice.
January 2014	Discovery	<ul style="list-style-type: none"> • Collaborative ideating: Write problem of practice on chart paper. All participants use post-its to suggest possible solutions to problem of practice of colleagues.
	Interpretation	<ul style="list-style-type: none"> • Introduce concept of representing ideas visually with “So You Think You Can’t Draw” (Telus Spark, n.d.) • Homework: Select one solution.
March 2015	Interpretation	<ul style="list-style-type: none"> • Further refine solution through drawing (see “Creativity Tip: Represent Ideas Visually,” March 29, 2015).
	Experimentation	<ul style="list-style-type: none"> • Participants create a prototype of the solution to test in their own schools. • Homework: Test the solution and seek feedback from users. • Participants can access to system-owned maker education tools that they can use in their solution
May 2015	Evolution	<ul style="list-style-type: none"> • Reflect on the solution and how it could be evolved