RESEARCH BRIEF

Brought to you by McGill's NEXTschool Research Team

Design Thinking

DESIGN THINKING

A problem-solving process for school change

NEXTschool is seeking to support school improvement in Québec. As a result of a 50+ year history of mandated recommendations and reforms in the province, today's school change seekers are up against a culture of resistance. The last large-scale reform movement attempted in the province, the Québec Education Program (QEP), was implemented almost twenty years ago and continues to be partially adopted by educators[1]. Part of the problem is that reform movements are often implemented from the top-down. This means that administrators and policy makers make centralized decisions that impact diverse educational stakeholders (like teachers and students), sometimes without consulting them.

Research shows that top-down approaches are less effective at facilitating educational change than collaborative, transparent leadership that values teachers' voices (amongst others)[2]. What sets NEXTschool apart is that it isn't telling schools and their communities what to change (i.e., content, structure, evaluation or otherwise). Through its use of design thinking as a collaborative change process, it's showing them how.

SO WHAT IS DESIGN THINKING?

Almost synonymous with problem-solving, design thinking is a relatively intuitive process. Typically, it involves cyclical stages of empathy building; defining user-centred problems; and iteratively brainstorming, prototyping, and testing innovative solutions for real world problems[3].

Importantly, design thinking promotes shared and equitable participation amongst all relevant stakeholders (anyone impacted by the change)[4]. Design thinking can be used in any context. In a school, a team of stakeholders might be comprised of principals, teachers, students, parents, custodians, bus drivers, etc. In an educational setting, the application of design thinking can range from small-scale problem solving for things like classroom seating plans to larger-scale systemic issues like graduation rates. The key to the process is that everyone involved understands how to do it and, furthermore, participants are willing to adopt a growth mindset. This means saying "yes...and" instead of "yes...but" - thinking of solutions rather than barriers.

1 Canuel, 2014; Report on the State and Needs of Education, 2014; Wiener, 1999
2 Bryk & Schneider, 2003; Hargreaves & Shirley, 2009; Rubinstein & McCarthy, 2014; Stroh, 2015
3 Anderson, 2012; de Guerre et al., 2013; Gallagher & Thordarson, 2018; Kangas et al., 2013; Koh et al., 2015b; Kouprie & Visser, 2009; Luka, 2014; Scheer et al., 2012; Stanford d. School., n.d.; Starr et al., 2020; Voogt et al., 2015
4 Stanford d. School., n.d.

THE DESIGN CYCLE

Since design thinking is iterative, you can engage in various stages of the process at the same time or out of order. It is up to the design team to figure out what works best for their

EMPATHIZE

Who are you designing for? Empathize in this stage means to deeply understand the users experiences and needs. Interviews, observation, shadowing, amongst other activities can facilitate this process.

DEFINE

Using your observations from empathizing, define a 'goldilocks' question to guide problem solving (not too big and not too small). This question is often referred to as a "how might we" question.

BRAINSTORM

Rapidly brainstorm as many ideas as possible in response to your guiding question. This stage is also known as ideating or moonshooting because the sky is the limit. No idea is bad.

PROTOTYPE

Using the ideas generated in the ideate phase, decide on the most realistic possibility for your context. Then construct (using whatever means available) feasible prototypes to test with design users.

TEST

Implement your prototype and generate user feedback. Integrate their feedback and then repeat!

AN EXAMPLE

Use the example below to consider how design thinking might work in your own context. Design thinking can be used for problem solving with large or small scale challenges.

Once a team of willing school stakeholders (it doesn't work if participants don't want to be there) are trained in design thinking, the team meets regularly to specify their contextual needs/problems and brainstorm possible solutions.[5] For example, a team might decide they want to improve their school timetable.

Starting with **empathy**, the team reflects on and shares their individual needs for time allocation during a typical school day. These conversations often extend beyond the core team and into the community to generate as much information as possible. Although what this looks like will differ from school to school, it might involve things like creating a survey to circulate to all members of the school community or hosting a school-wide information gathering activity.

Using the information collected, step two is to outline and **define** a specific problem. The team might discover that most users are happy with the current timetable, or maybe only a small aspect of it needs reworking. Once a problem is defined, step three is to **brainstorm** ideas for timetables that best accommodate the needs expressed. After narrowing down and agreeing on the best 2-3 ideas, step four is prototyping. Participants can draw, build, mold, use props, or work with any other materials available to depict the functionality of a **prototype**. The team then considers each prototype and selects the best for step five - testing. In this example, this could mean adopting a new prototyped timetable for a month. Whether it is a school-wide adoption or single grade, or even just a single class is up to the design team. While the prototype is being tested, the design cycle starts again with empathy and seeks input from the timetable users. If the prototype isn't working, the design cycle repeats until it does. Once people know how to engage in the process, it becomes increasingly possible to problem-solve and implement changes.

5 R&D Report, 2017; Falco, 2019

Try it!

1 Empathize

- Think/Pair/Share
- Talk to a partner/colleague about your most urgent professional need/ problem
- Example: Lack of skills and/ or support for interdisciplinary collaboration

2 Define

- Come up with a problem question that responds to Step 1
- How might we...
- Example: How might schools facilitate the skills development you need for interdisciplinary collaboration?

3 Brainstorm

- Fill post-it notes with as many ideas in response to the question as possible. One idea per post-it. No idea is bad.
- Read through the post it notes and choose the top 3 ideas. Try merging elements from other ideas.
- Choose the best idea and most viable idea. What does it look like in practice? Go deep and think through details.

4 Prototype

- Create a prototype - draw, build, write, sculpt, programme... Then, if you can, test your prototype and start the cycle again.

CONSIDERATIONS

BENEFITS

- Supports the development of 21st century skills such as problem solving, creativity, and communication.[6]
- Supports the educational goals of the Organization for Economic Cooperation and Development (OECD).[7]
- Supports knowledge construction in general classroom use.[8]
- Supports curricular sustainability.[9]
- Supports the pedagogical development of pre-service and practicing teachers.[10]

CHALLENGES

- More research is required to understand whether design thinking supports and attends to the contextual concerns of schools.[11]
- Although design thinking can be used in small and large scale contexts for school change, due to its time-consuming process in the classroom it may cause deviation from lesson objectives that are generally tied to curricula and standardized testing.[12]
- The process is time consuming because it requires scaffolding, modeling, and practice.[13]
- There are limited resources on how to teach design thinking skills in the field of education.[14]

6 Anderson, 2012; de Guerre et al., 2013; Kangas et al., 2013; Koh et al., 2015a; Koh et al., 2015b, Köppen & Meinel, 2015; Luka, 2014; M. Saggar et al. 2015; Meinel & Leifer, 2013; Scheer et al., 2012
7 Luka, 2014; Scheer et al., 2012
8 Anderson, 2012; de Guerre et al., 2013; Kangas et al., 2013; Köppen & Meinel, 2015; Luka, 2014; Scheer et al., 2012; Voogt et al., 2015
9 Voogt et al., 2015
10 Koh et al., 2015b, Koh et al., 2015a; Scheer et al., 2012; Voogt et al., 2015

11 Farley-Ripple et al., 2018, Mukhopadhyay & Sriprakash, 2011; Potvin & Dionne, 2007
12 Koh et al., 2015b; Scheer et al., 2012
13 Kangas et al., 2013, Koh et al., 2015a, Koh et al., 2015b; Luka, 2014; Scheer et al., 2012; Voogt et al., 2015
14 Anderson, 2012; Voogt et al., 2015

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