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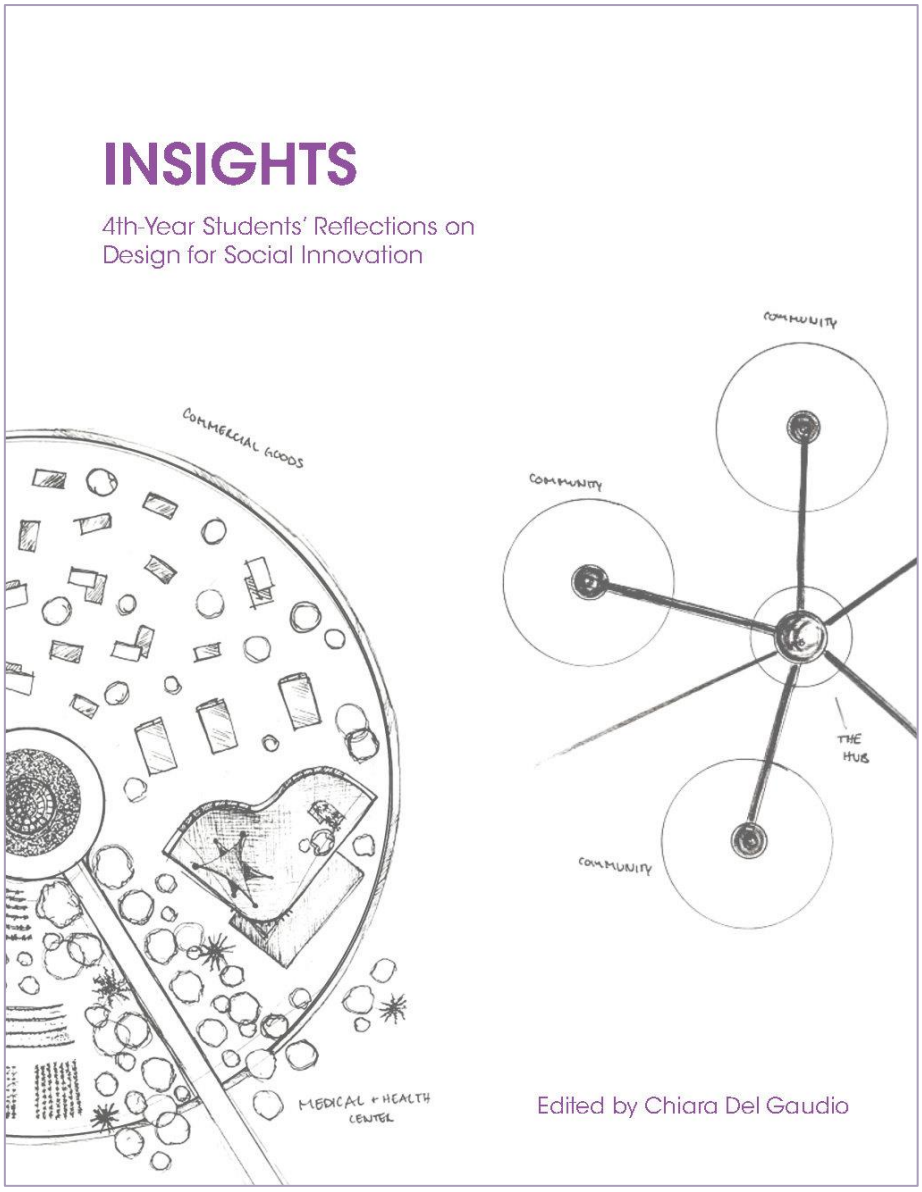

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Application of Industrial Design Strategies in Education

SOCIAL INNOVATION - INDUSTRIAL DESIGN - EDUCATION

This paper will pose the following question: How can industrial design strategies be used to generate meaningful social innovation, regarding how we deliver public education?

In the process of answering this question, readers will gain insight into where connections can be made, between industrial design, social innovation, and public education. These connections will be made clear using literature collected and analyzed from: an education innovator, a social innovator's study of a university, and an industrial designer working on social responsibility. Analysis will start with how teachers may be thought of as designers. Thinking of teachers as designers will be presented as a strategy to design classroom assignments around the process of learning. The process of learning will then be analyzed and defined in terms of a concept called transformational learning. Lastly, industrial design tools will be presented as a potential way to support a goal of transformational learning in the classroom.

Since the paper topic is social innovation within education, I decided start literature review around teachers. I think this makes sense because they are the leaders of the social environment that is the classroom. In looking up how teachers may use industrial design strategies, I remembered that anyone using these tools may be considered a designer. That is when I came across the reading by Scott & Mota (2014), named *Teachers as Designers*. The reasoning given for using this *teachers as designers* concept to develop social innovation within the classroom is to focus on learning as a process rather than the judgement of an end result. The authors describe why this is useful:

> Learning involves the students in judging their own work against a curriculum standard and engaging in meta-processes of learning (i.e., an understanding about their own learning; the development of learning pathways; the utilization of formative assessment processes; the development of personal learning strategies; and an internalization of the curriculum (Scott & Mota, 2014, p.61).

This quote suggests that actual learning resides in the processing of information, whereas the answering of test questions is just the feedback tool for evaluating whether the learning happened or not. Consequently, this suggests that directing investment toward teachers and students with the purpose of developing learning processes, rather than mostly outcomes, may be a useful social innovation. This gives us a hint as to how industrial design strategy may be useful to this purpose, since industrial design work is all about the process.

In order to understand better how industrial design strategies can be truly useful toward achieving the social innovation described above, the concept of the *learning process* needs to be defined clearly. A defined concept for the learning process that teachers and students could focus on in this context might be what is called *transformational learning.* This concept is laid out in the source by Rivers et al. (2015). The transformational learning concept is centred around the idea that quality learning is most often an uncomfortable and challenging process. The reasoning for this is that quality learning must be a process of challenging one's initial assumptions about the world and evaluating thoughts through self and peer-critical reflection. Essentially, being proven wrong and intellectual debate are both emotionally rough, but necessary for quality learning processes to take place. This must be true because no student already knows all the answers. This is the core ideology of transformational

learning; the goal is to transform student thinking into higher and better quality forms through rigorous process. I think now it can be made clear why the paper topic question is even a relevant one to ask. The question again is: How can industrial design strategies be used to generate meaningful social innovation, regarding how we deliver public education? Melles et al. (2011) provide a reason for why the question is relevant, when they point out that industrial designers have been primarily concerned with being socially responsible to people since the profession's conception at the end of the nineteenth century. After all, what's the point of designing a product if there is no social value for it? Industrial designers are also trained in the idea that the right process is often more important than the right result. They are trained in this because the process of designing a product often reveals new requirements and opportunities for the end goal of the result. Industrial design process and transformational learning are also highly complementary. Quality industrial design process calls for the designer to challenge initial assumptions and always be ready to adapt thinking in a way that can be uncomfortable. Just like no student begins school with all the answers, industrial designers never start a design project with all the answers. Therefore, I think the paper question is relevant because transformational learning and industrial design strategy are both all about developing a learning process.

So how exactly can industrial design strategies be used to support teachers in developing transformational learning in students? There were two main strategies found during my analysis that may achieve this social innovation.

One main industrial design strategy that teachers could use to develop transformational learning came from the reading by Melles et al. (2011). These authors describe the strategy of co-design and participatory design techniques. These techniques call for the designer to include many stakeholders of the project in the actual design process, rather than just asking them questions. *Teachers as designers* can use this to develop lesson plans that support transformational learning because it allows them to better understand the initial beliefs and knowledge of students. Including students in the design of their own learning should reveal ways that the lessons could be adapted to each class group's learning strengths and weaknesses. It also could include parent/peer groups in the lesson design process, which would likely enrich the teachers understanding of the students' cultural and world views in context. This idea does not suggest that the overall goal of the curriculum should be able to be adapted, just the delivery methods.

The second strategy is to give students a kind of *design brief* lesson instead of normal instructions when assigning a problem to solve. Design briefs are a common strategy used in industrial design but the idea of using it in the classroom comes from the reading by Scott & Mota (2014). The authors suggest that teachers could transform thinking in students by acting more like a *thinking facilitator* to guide students toward completing the design brief, rather than mostly being a giver of information (this is clearly complementary to the teachers as designers concept). By using this design brief strategy from industrial design to generate classroom assignments, I suggest that teachers could facilitate transformational learning in students. This would be done by going through the process of solving the more open-ended nature of the problems that design briefs offer over normal instructions and tests.

"Quality learning is most often an uncomfortable and challenging process."

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