

Design Thinking and Empowerment of Students in Trinidad and Tobago

Lesley-Ann Noel
Stanford University, North Carolina State University
lesley@dschool.stanford.edu

Tsai Lu Liu
North Carolina State University
tliu12@ncsu.edu

Traci Rose Rider
North Carolina State University
traci_rider@ncsu.edu

Abstract

This article highlights a study in which critical pedagogy was introduced through design thinking strategies to primary school students in rural Trinidad and Tobago. By encouraging interactive discussions between students and instructors, the overarching objective was achieved. In order to build students' critical awareness, agency and empowerment, during three weeks in a summer camp, the students and instructors engaged actively, in repeated dialogues concerning student rights, media bias, change, and utopian ideas for a better future. As the process unfolded, the students took more control of their learning. They identified and suggested solutions for community problems. The case study demonstrated that student-centred strategies which foster critical awareness and development of social consciousness, can be successfully implemented in schools with limited resources.

Keywords: Design thinking, critical pedagogy, critical utopian action research, rural education

Introduction

Background

The Secondary Entrance Assessment (SEA) examination is the placement examination to attend public, secondary schools in Trinidad and Tobago. Though preparation for the SEA officially begins in Standard Four and continues in Standard Five (equivalent to grades 4 and 5, in North American, primary schools), the standardized examination is a major preoccupation of parents and children during most of the time in primary school. Preparation for the exam is onerous and stressful. Parents complain of the cost of extra tutoring, the significant time commitment required and negative impacts on their children such as: student burnout and loss of childhood because children focus on the preparation for the examination (Barrow & Lochan, 2012). Excessive concentration on preparation for the high-stakes examination also excludes any content and materials not evaluated in the exam, from the formal curriculum. Furthermore, the examination is reported to be a poor assessment instrument and the formal curriculum is not designed for rural or working-class students (Durbrow, Schaefer & Jimerson, 2002). Unsurprisingly, many rural and

working-class students are among the majority of those who fail the examination which screens and determines entrance to higher-achieving secondary schools (Jackson, 2010). In addition, the English and Creative Writing components of this type of examination have been criticized as being biased in favour of students from the upper and middle classes (Chapman & Snyder, 2000). Generally, rural children are less likely to be successful in passing the placement examination than children living in urban areas. Accordingly, the SEA examination maintains the significant educational gap between rural and urban communities (Durbrow, Schaefer & Jimerson, 2002).

This case study explored qualitatively, how Standard Four students at a school in rural Trinidad responded to a design thinking curriculum. The curriculum devised for the three-week workshop/camp was based on a design thinking methodology which incorporated principles of critical pedagogy. In design education, in the business world, the focus is usually on the development of products and systems. The aim of this study, however, was to explore how design thinking could be applied to develop an empowering curriculum for children from a rural, primary school with limited resources. (Unfortunately, many Caribbean schools still function with limited resources). Central to the curriculum were problem-solving approaches which are integral to design thinking. They were included in order to create a sense of agency in the student participants in the working-class school.

As the workshop unfolded, the curriculum was evaluated continuously, in terms of how the students demonstrated (orally and in writing), critical awareness and problem-solving skills in terms of their attitudes, behaviours, dialogues, discussions, and reflections. This article shares some of the students' learning experiences and summarizes key research findings. Finally, it offers recommendations for educators who wish to introduce this approach in their respective formal curriculums.

Critical Pedagogy: A Summary

It is well known that critical pedagogy focuses on transforming oppressive power relationships because it empowers and humanizes the learners (Aliakbari & Faraji, 2011). By promoting critical questioning and consciousness-raising among subjugated people who have been socialized to accept the status quo (Grant & Sleeter, 2007), critical pedagogy challenges the existing social and economic order. As an emancipatory pedagogy, it advocates the creation of a fair society where people have political, economic and cultural control of their lives. It suggests these goals can only be attained by empowering oppressed people to transform their lives (Aliakbari & Faraji, 2011). Education becomes critical pedagogy when educators, through dialogue, encourage students to acknowledge constraints that impact their lives and recognize that some man-made restrictions can be overcome (Freire & Macedo, 2003). Critical pedagogy is often grounded, in the student's culture and context, a concept described by Banks (2004) as content integration where the teacher uses explanatory examples and information from the students' lived experiences. An emancipatory and critical curriculum also recognizes the legitimacy of multiple discourses and narratives (Freire & Macedo, 2003).

In the 1960s, Brazilian educator, Paulo Freire, developed a method of teaching literacy to peasant farmers in rural, North-eastern Brazil. The worldview of the adult students in the literacy classes was 'fatalistic, apathetic and immutable' (Nyirenda, 1996, p. 5). Freire taught the participants that they were subjects and not passive recipients of oppressive, educational and socio-economic systems. He wanted the adult students to change their pessimistic worldview, by

developing critical awareness and consciousness ('conscientização' or conscientization) (Nyirenda, 1996). Through a process of dialogue, the participants would understand the man-made problems of their world, and as importantly, explore how to create beneficial changes and take action (Nyirenda, 1996).

Building on Freire's work, Ira Shor (1992) developed an agenda for empowering education that encouraged students to become critical thinkers, change agents and social critics. In this framework, education was participatory, affective, problem-posing, situated, multi-cultural, dialogic, democratic, research based, interdisciplinary and activist (Shor, 1992). A passive curriculum, Shor believed, based on rote learning and memorization not only bored students, but made the school an undemocratic institution. Like Freire, Shor (1992) proposed that an empowering education, situated in the students' contexts and cultures, was student-centred. An empowering, emancipatory education connected critical thought, reflection and action. Such an education stands in marked contrast with Trinidad and Tobago's SEA curriculum, pedagogy and examination.

A heightened critical awareness, and an understanding of their life worlds, are essential for oppressed peoples to break traditional, educational and socio-economic structures. Therefore, apart from the aims of education to promote critical thinking and impart knowledge, education for oppressed, marginalized people (such as, people of colour, urban and rural poor people), should include strategies to identify and challenge traditional power structures. By using these methods, teachers help students to become active, well-informed citizens. The critical educator makes learning situated and relevant, by finding out what students 'really want to know'. Such an educator, furthermore, teaches students to question and critique the 'legitimate knowledge' of the formal curriculum (Aronowitz & Giroux, 1993).

Methodology

The curriculum for the design workshop was conceptualized and delivered during a three-week, half-day period, at a primary school during the July 2017 vacation. Designed as an exploratory action research case study, the research also adopted a qualitative approach in order to facilitate a deeper understanding of how the children experienced the workshop's curriculum and content. As well, the study included an exploration of the students' process of acquiring the knowledge and their application of the knowledge (Noel, 2018, pp. 15-16).

Participants

The participants came primarily from the Akurase Village's 4th grade of the early childhood branch, of the primary school, in the Sewaa region. (Pseudonyms are used, for all the places and people in this article). All the children in the class were invited to participate in the summer camp. Although, eighteen students agreed to participate, daily attendance ranged between 12-18 students. The age range of participants, between 8-12 years, was wider than anticipated because a few had 'skipped' a grade and some were repeating the same grade.

Design Thinking Curriculum

Design thinking is considered a useful framework for understanding perceived problems and for promoting innovations (Glen et al., 2015). It is adopted in primary and secondary schools, to encourage the development of new problem-solving and flexible thinking skills which promote students' academic success (Davis et al., 1997). In a design thinking curriculum, the main purpose

is for students to understand and work through the design process, rather than Trinidad and Tobago's traditional approach used in the SEA in which students learn the prescribed content, focused on examinations. Design thinking involves an iterative process of identifying problems, generating a large number of solutions, acting on feedback to improve the design, then selecting a design for final implementation (Cross, 2006). Accordingly, such a process-based approach, as opposed to a content driven learning approach, shifts the focus from the teacher to the students. A key characteristic is that the curriculum can be delivered in a school with limited resources, since the focus is on the students' acquiring thinking and problem-solving skills. When product making is involved, the materials used are from readily available, local resources.

The curriculum for the design thinking workshop was created to encourage the children to participate actively, in the production of knowledge. The aims were for the students' to: provoke critical discussions, identify challenges, and take action in terms of their design proposals and community research. Underpinning the workshop, was Shor's (1992) framework for empowering education which encouraged students to become thinking citizens, change agents and social critics,

The pedagogical features of a design thinking class, such as the open-endedness of the design assignments and opportunities for critique and feedback, are compatible with Shor's and Freire's principles (discussed earlier). As importantly, the learning process creates spaces to practice equity pedagogy. To reiterate, the design and design thinking classrooms are student and dialogue-centred and promote discussions concerning relevant problems and solutions. The design problems can be drawn from the local context and suggested by students and community members. Students therefore, contextualize the practice of design within their community.

The three-week curriculum was also influenced by 'Critical Utopian Action Research' (CUAR), an approach that combines critical analysis with the vision of a sustainable, democratic future. The CUAR framework connected critiques with utopian ideas and actions. Local stakeholders, including the students, focused on questions such as (i) '*what's wrong?*', (ii) '*where would we like to go?*' and finally, (iii) '*how can our dreams become a reality?*' (Husted & Tofteng, 2015; Nutti, 2016). This approach guided the discussions for the week in which the children, collectively, identified problems in their school and brainstormed possible solutions.

Merely critiquing society and analysing problems can be depressing. Accordingly, discussions about a better future were introduced to create a sense of hope. Since a Freirean approach advocates actions in addition to thinking and speaking about core issues (Peterson, 2003), a design approach for critical pedagogy creates new spaces for students to move beyond, potentially, pessimistic reflections to more positive spaces where they conceive solutions. Reflecting about concerns and then brainstorming, created supportive spaces for students to speculate about different futures or alternative scenarios. It allowed the students to envision how things 'could be' and to develop new responses to 'wicked problems' (Dunne & Raby, 2013). Thinking about and acting on ideas, for the future through design, also created responses to situations that might have left stakeholders with a sense of hopelessness and lack of agency. Accordingly, the active element in the summer workshop process encouraged participants to propose and sometimes suggest solutions to problems. Discussions were empowering for students who stated initially, that they could not influence change. The illustration below summarizes the key concepts included in the curriculum for the summer workshop in the rural, primary school.

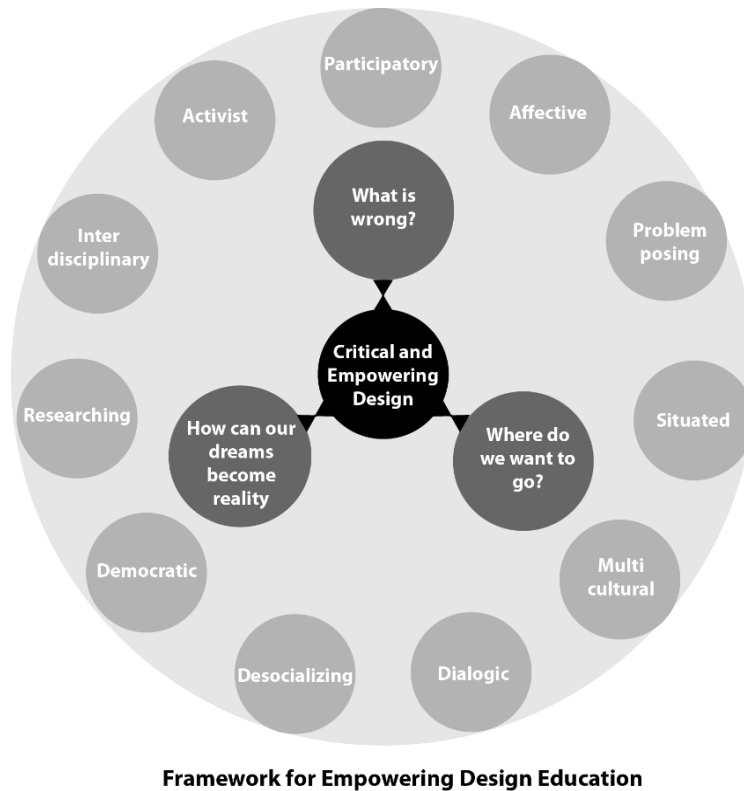


Figure 1. The framework for developing the curriculum. The outer ring shows Shor's framework for empowering education, the inner questions are borrowed from Critical Utopian Action Research. The combination of the two lead to a critical and empowering design curriculum. (Source: Lesley-Ann Noel)

Data Collection and Analysis

Two instructors delivered the design thinking curriculum. The children gave feedback daily, in reflective journals, as well as in weekly, focus groups. Data were collected from multiple sources to ensure validity and to allow triangulation.

Focus Groups: Understandably, the 'richest' data came from the weekly focus groups with the students. Focus groups and interviews allowed the two researchers to understand the research participants' perspectives.

Reflective Journals: Both the students and the instructors kept reflective journals. At the end of the day, children wrote reflections concerning the teaching-learning activities. If they preferred to draw, they were allowed to do so. The instructors analysed the students' journals and visual materials.

Observations: The instructors observed the students at work and while they interacted with their peers. Observation notes were recorded in the instructors' journals.

Data Analysis: At the end of the vacation camp, the instructors analysed the students' design solutions and final presentations for evidence of the a priori themes. Processes of a priori coding and open or emergent coding were used in this study. In a priori coding, predetermined

codes are derived from theories, the literature review, the research questions, and the code book of the second researcher/instructor. The qualitative data from the focus group discussions, the children's and instructors' journals, and the children's design solutions were analysed, and the emerging themes are presented in the following section. In analysing the data, five major themes emerged: (i) activism and agency; (ii) agency and empowerment; (iii) democracy, participation and dialogue; (iv) co-creation of knowledge and collaborative learning; (v) problem posing, researching and situated learning.

Discussion of Findings

This section discusses the five major themes as follows:

1. Activism and Agency

The theme of activism and agency was woven into the implementation/delivery of the workshop. During the first week, we focussed on the rights of the child and ways of improving the school and community. The children referred directly and indirectly to this theme in their: journal reflections, design solutions, focus group discussions, and casual conversations. In their journals, regarding the first design challenge, the children reflected on specific individual rights. In doing so, they provided interesting insights into the important things in their lives. The 'right to play', for example, was considered the most important right by the children. Five of the children also considered as significant the right to attend school and acquire an education. The rights: to be respected, to be safe, to have enough food to eat, and to be loved were the other rights that featured in their journals. A very quiet child referred to the right to be allowed to speak. Several of the children's solutions focused on environmental activism; they wished to address problems such as, the litter and garbage that they saw in the school and the community.

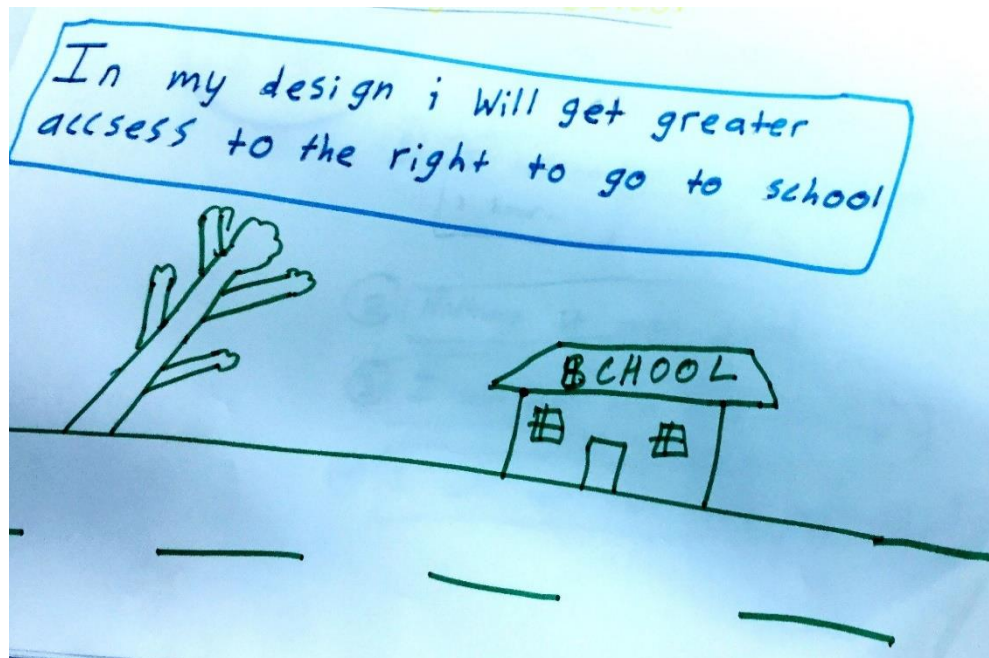


Figure 2. Ten-year old King planned to ensure greater access to school in his design. (Source: Lesley-Ann Noel)

A significant benefit of underpinning design challenges with an activist theme is that the students could build on their ideas and discussions. In a Freirean approach to problem-solving, they could begin to propose solutions to problems in their school and community (Peterson, 2003).

2. Agency and Empowerment

Fostering students' empowerment, encouraged learning through negotiation and discussion between the teacher and student (Shor, 1992). Student empowerment is not a laissez-faire process. It does not mean that the student is free to do whatever he or she wants, instead it invites the student to think critically and make changes (Shor, 1992). Power and agency, as well as the lack of power and agency, featured in many discussions during the second and third weeks of the workshop. Identified and stated interests in improving the school and community drove these discussions.

There were many discussions about whether the children had the power to make any changes in their school. The children were divided on the extent of their power. Some children felt more empowered than others. These students claimed that all they needed to do was to meet with the Principal and present a valid argument to create change. A few students said that they were only children and did not think the Principal or other adults would listen to them. However, at the end of the third week, Bumblebee, a student, who stated earlier, that adults wouldn't listen to him since he was a child, changed his mind. Bumblebee said that he felt very powerful when they interviewed some of the community's adults and learned about and understood the key community issues. Some children, further indicated that the positive feedback that they received from their colleagues on their design proposals was empowering. The workshop's interactive learning process demonstrated how design research methods can be used as tools of empowerment.

Initially, every design challenge was presented as a 'vague' problem, for which the students collaborated in order to refine the problem, develop a process, explore possible solutions, and identify a target market. Students were allowed to choose whether they preferred to write or draw. As the workshop progressed, and the students developed more skills in defining design problems and the means of expressing their ideas, they became more vocal about the specific changes they wanted to see in content and behaviours allowed. Students proposed ideas for new content, such as a session of painting and drawing for fun instead of having to produce a design. As a result, the final week's schedule was modified to accommodate the students' suggestions. At the end of the second week, they also suggested that additional reflection questions be included to expand the instructor's questions. Interestingly, the students critiqued the traditional school day and curriculum. They also proposed ways in which the camp instructors could manage classroom discipline and noise (discussed more fully below). At the same time, the students' recognized their roles in creating the disciplinary problems.

3. Democracy, Participation and Dialogue

3.1 Participation

For John Dewey and Ira Shor, participation is a fundamental tool in learning. Accordingly, active learning which promotes democratic habits was woven into the workshop's design and delivery. The students were encouraged to participate on many levels, for example, to question the instructors and their classmates. Understandably, at first, the students were not accustomed to asking questions. They had to be coached by the instructors to ask their classmate's questions that

would help improve their designs. By the third week, however, the students did not need any additional coaching. They were empowered to question their peers and instructors.

In her reflections at the end of the camp, the lead instructor noted that to save time, she had narrowed the options in the first design challenge. The participants were to design toys related to class discussions regarding, acquisition of individual human rights (discussed earlier). Angelica, the second instructor, noted that because the design options in the first week were restricted, it might have contributed to the students submitting less creative design solutions in the first week, compared to the creativity demonstrated in the rest of the workshop. Another key observation was that solutions for the first challenge were all very similar. Angelica noted that the students seemed to be copying their designs from their classmates. However, in the second and third week of design challenges, the children had to define the problems and solutions either individually or with colleagues. The resulting design proposals submitted were far more varied. Further, the proposals better met the needs of the proposed users. In the second and third challenges, the children discussed their possible solutions in greater detail with their colleagues, illustrating an increase in self-confidence and the ability to actively participate in the learning process. Another sign of increased empowerment.

The children also participated in the development of the class and learning activities in the second and third weeks. They requested the right to choose their partners and indicated preference for using materials, such as modelling clay and paint. As importantly, during the last two weeks, they were given the opportunity to change the reflection questions at the end of the day. At the weekly focus groups and in their daily reflections, the children presented feedback concerning how they felt about the class, and suggested ways to improve the learning experiences. The information was recorded, coded and included in the next set of activities.

3.2 Democracy

During the camp, there were many opportunities for the children to practice learning in a democracy. Learning about individual rights, in the first week, provided the seeds for thinking about justice issues throughout the rest of the camp. Not surprisingly, the theme of democracy surfaced several times, in the students' discussions, practices and even in casual conversations. The topic of rights, for example, led to debates about democracy. The children proposed voting to resolve several issues during the camp, such as whether to use modelling clay or not, during the next week, and whether to try to finish the assigned work earlier, by working harder, in order to get a free day. Sofia even asked the group if she could redo a presentation that she thought had been unsuccessful. Her team members voted and allowed Sofia to revise it. To control their noise levels in the studio, they suggested that the instructors should blow a whistle to indicate that the noise was too loud.

In comparing the design class with regular school, a student, Bumblebee noted the lack of democracy or the non-participatory nature of the traditional classroom. He remarked, 'they don't give us options.... We just have to do it!' Bumblebee also noted that having to make decisions and not just follow orders was much more difficult. The children agreed that in regular school they could not share their opinions while they felt they could freely do so, in the design class.

3.3 Dialogue

A significant feature of the student-focused learning process in art and design education is 'dialogic' (Shreeve, 2015). Dialogue occurs between the tutor and students, and between peers, in

small groups (Shreeve, 2015). Bumblebee, one of the more outspoken students, appreciated being able to have more open dialogue with the instructors and peers.

The layout of the furniture in the room in which students sat in small groups, also facilitated peer dialogue, while reducing the focus on the instructors as the sources of knowledge. The dialogic structure of the class also created an environment where the children could propose changes to the content and activities. They offered solutions to problems of classroom discipline. They also suggested alternative questions, for inclusion in their daily journals, in order to improve the depth and quality of reflections, and solicit greater insights.

4. Co-creation of Knowledge and the Collaborative Learning Process

Understandably, the design class had a flat organizational hierarchy. The students were allowed to participate as experts concerning: their own needs, problems in the school, and community issues. This flat hierarchy allowed the participants to contribute their knowledge and understanding of the problems, and to work collaboratively, with their peers and instructors. Co-creation of knowledge, and collaborative learning are in marked contrast with a traditional teaching-learning method which Paulo Freire described as the ‘banking model’ (Aliakbari & Faraji, 2011). Ten-year old Tiffany, for example, shared her views on the traditional classroom: ‘we just have to sit there and wait for the teacher to finish writing her notes on the board, and then we copy them down’. In the design class, the hierarchical teaching-learning structure was changed deliberately, with the incorporation of small group, and student-centred discussions. In doing so, a learning space was created where the children experienced for the first time, greater freedom to work and to create knowledge together.

Individual and group activities laid a firm foundation for collaborative learning and co-creation of knowledge. Although the instructors guided the discussions, much of the learning took place independently or collaboratively. Accordingly, there was less instructor intervention than in a traditional teacher-centred classroom. The children discussed in groups, worked independently on their designs, and gave each other constructive feedback. Initially, they had some difficulty with such different ways of teaching and learning, however, by the end of the first week, the children were working collaboratively. They could be seen soliciting and giving each other feedback on their work.

5. Problem Posing, Researching and Situated Learning

5.1 Problem Posing

In Paulo Freire’s problem-posing educational approach, the teacher’s role is to lead critical discussions on issues such as, democracy, inequality and the distribution of material resources. Problem-posing education promotes critical questioning; in the workshop, for example, the students (without being prompted), questioned the source countries of their modelling clay, and asked about the established trade structures; they went even further, they questioned whether there were local sources of clay available for their use. Admittedly, there were fewer examples of critical questioning in the first and second weeks of the workshop, and far more examples of critical questioning in the third week. This suggests that continued exposure to critical discussions over time may lead to the students’ developing greater critical questioning and analytical skills. The most critical discussions that demonstrated the students’ thinking concerning power relations took place in the final week. The assignment in the third week began with the reading of the newspaper, which

led to discussions about media representation of the community. The students followed up with their own research. They conducted critical talks with adults in the community about problems in the village, and how the community could be improved.

5.2 Researching

Shor (1992) advocated that dialogic education involves research in order to promote student self-development, in a meaningful activity. The general themes for the three design assignments were selected before the workshop began, however, the interactive learning process (discussions, brainstorming and interviews with community members) helped to narrow the problems for further consideration and to develop proposals with solutions. In the design class, the children immersed themselves in the research process. In all of the challenges, they analysed the problems and focussed on the creation of a product for a single user. For the third challenge, they developed their questionnaires for the adults they planned to interview in order to understand more fully, problems within the community. This learning activity created a meaningful environment for deep learning. The research opportunity resulted in the development of complex solutions, tailored to the users' needs. Through a series of self-directed activities, the children learned from a holistic process inclusive of each other, the instructors, and community members, participation in dialogue, investigation through journals, art, and reflections and solution-seeking.

5.3 Situated Learning

Freire (1968) and Shor (1992) proposed that critical pedagogy must be situated in issues in the lives of the people in the educational context. Both educators advocated the identification and use of generative themes of interest to a community of learners. The themes facilitated deep discussion and were a source of empowerment. Parents were asked to suggest topics of interest to the community. The children were encouraged to lead the discussions into directions that interested them.

The design challenges were set around reasonably familiar contexts for the children. The second instructor remarked during a reflective discussion at the end of the camp: 'Most of the information that they used in the design, would come from their background. Their designs would have been from their cultural background. Their skillset and their knowledge-base, and they would have brought that into their work ...' In some situations, in the teacher-centred class, middle-class students with greater and wider levels of exposure and access to resources, are likely to contribute more to discussions than students with far less exposure and access to learning resources. A composition question, such as 'a day at the seaside', is a typical example of an examination question with a social bias (Chapman & Snyder, 2000). However, the three assignments in this design class were situated in contexts that all the children knew, such as themselves, their school and their community. As a result, all students were able to participate more fully as the learning process unfolded. One student offered insight concerning why he preferred the second and third assignments, saying that he knew his school better than he knew about his individual rights, and this made the second activity easier than the first. A second student, Tiffany, produced a drawing and identified the characteristics of her perfect school.

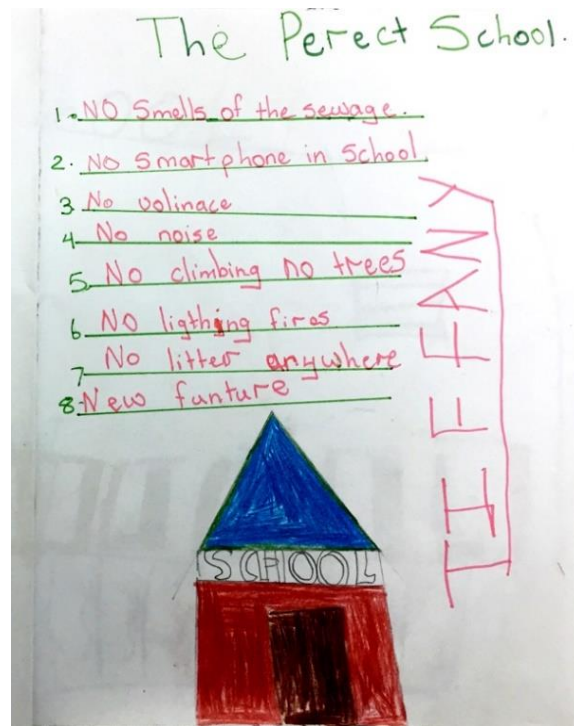


Figure 3. Tiffany imagined the criteria for the perfect school. (Source: Lesley-Ann Noel)

Discussion

The research investigated how a design curriculum could be delivered and evaluated through a lens of critical pedagogy. Shor's framework for empowering education was used to develop the workshop's curriculum. Critical discussions were introduced before each assignment. The findings showed that the content of the design assignments resulted in critical, follow-up discussions around the themes of human rights, change, and power. Critical questions ranged more widely such as the questions regarding whether some learning materials could be made in Trinidad instead of being imported. The student-centred, pedagogical style of the design class also created a space for empowerment and agency. The Standard 4 children influenced the themes of the design challenges, conducted their design research, and gave each other feedback.

By analysing the verbatim remarks from the students and instructors, and the designs that the students developed, the findings from the study suggest that design thinking education can be delivered through a critical lens that encourages children to be reflective and empowered. This educational approach was built on the experience and expertise of the children. It concentrated on the students, their school and their village. The Freirean model of open-ended questions that encourages students to critically analyse and understand their social and economic conditions and to work towards changing it, is compatible with the dialogic, open-ended nature and student-centred approach of design challenges and design studio pedagogy (Noel & Liu, 2016). Since a Freirean approach advocates actions in addition to thoughts and words (Peterson, 2003), a design approach for critical pedagogy allows a space for students to move beyond potentially pessimistic reflection on problems to a more positive space where they can develop solutions.

Challenges in Implementing a Critical Curriculum

Increased critical awareness and understanding should lead to changes, however, a transformative educational process is likely to spark fears among parents and educators, who are concerned about how ‘angry’ or ‘radicalized’ the children will become. This concern was expressed when the research was proposed to the Board of Education responsible for the school. For example, one person asked: ‘... do you want to make the children angry?’ after learning that the curriculum aimed to promote critical consciousness. Peterson’s (2003) work for example, noted that many factors impact the implementation of a critical curriculum, such as the types of involvement of parents and peers, and the political nature of the school and community. He dealt with these challenges by confronting power relations within the classroom. In our case study, throughout the three weeks of the design class, the discussions did not reach the critical depth that the researcher had anticipated. It seemed that many more discussions would be needed, and more time required to promote the level and depth of questioning and analysing of existing social structures and inequalities. At times, it seemed that the children did not see anything wrong with the way ‘things were’. They had concluded that ‘things were the way they were in a place like theirs’. As Angelica, the second instructor, stated in the final debriefing: ‘The problem is that they have developed their consciousness of what a place like this is ... and that this is okay for this place This is not a ‘town’ area. She was referring to the children’s correlation of rural life with a lower standard of living and lower expectations for schools, roads and quality of life, in general. Accordingly, the existing levels of critical and political awareness in the community will affect the ease or difficulty of implementing a critical curriculum.

Conclusion

Time was an important limitation. The project lasted for three weeks. Average attendance was about twelve children per day, ranging between 10 and 18 students. The children needed time to understand the student-centred nature of the design class which was so different to their regular school. The final workshop sessions ran much more smoothly than the initial ones, and the students noted this in their reflections. A more extended study over more weeks, such as an entire school term or school year, would be a more appropriate period to observe the impacts of the design pedagogy on students’ abilities to develop critical awareness and thinking, self-confidence, empowerment, and sense of agency. The current focus on test preparation in Trinidad and Tobago’s primary curriculum in Standards 4 and 5, however, makes it difficult to gain access to work with students for more extended periods. Hopefully, the results of case studies such as this, can be used to argue the need for students to learn for a longer period of time, in a student-centred, collaborative environment in which knowledge is co-constructed.

The aim of the study was not to achieve generalizability. The study documents the learning experiences of a particular group of students, in a Trinidadian village. Additional studies with similar and different groups of students would be useful. The group of students who participated in the study was more heterogeneous than anticipated because their ages ranged from 8-12 years. (The expected ages in the proposal was 9-10 years old). This variation, however, was not a limitation because, it was possible to compare the responses of the older and younger children. As expected, the older students gave more detailed feedback during the data collection. They also demonstrated behaviours that suggested that they felt empowered by the curriculum and felt free to make suggestions for curriculum content, for future workshop sessions. The older children also seemed to

demonstrate an enhanced critical awareness when they began to discuss the origins of their art supplies and wondered if these supplies could be made locally.

Another limitation of the research is that the primary instructor for the design camp was also the primary investigator. Accordingly, the researcher's epistemological outlook and personal teaching philosophy have affected the research. Additional empirical research where the workshop is delivered and evaluated by other educators would be useful.

Despite the limitations, the strengths of the research include but are not limited to the following: firstly, the adoption of a dialogic, non-hierarchical, student-centred critical pedagogy, in order to achieve the workshop's objectives and outcomes. Secondly, the curriculum promoted critical discussions which led to developing the students' critical awareness and thinking, fostered agency and empowerment. Thirdly, fostering the students' critical awareness, and encouraging responsibility for their own learning was demonstrated in their discussions, collaborative approaches to co-creating knowledge, and the quality of the design solutions submitted.

Recommendations for Educators

Students should be allowed to assume more responsibilities for their learning, for example, to take the lead in determining the problems on which they want to work. For more significant and more empowered learning, educators should resist the urge to narrowly define the scope of the design problems that the students will tackle. Students can determine the projects that they want to work on through discussion, brainstorming, and feedback. This approach will lead to a more meaningful and empowering educational experience. The students' lives and experiences should also significantly influence the themes of the projects selected. Concentrating the design projects on their lived experiences and expertise, allow the students to demonstrate in observable terms what they know, and finally, to actively develop substantial proposals and solutions to problems of significant interest to them.

References

- Aliakbari, M., & Faraji, E. (2011). Basic Principles of Critical Pedagogy. *2011 2nd International Conference on Humanities, Historical and Social Sciences*, 17, 77-85. Retrieved September 16, 2016.
- Aronowitz, S., & Giroux, H. A. (1991). *Postmodern education: Politics, culture, and social criticism*. Minneapolis: University of Minnesota Press.
- Banks J. (2004). Multicultural Education Historical Development, Dimensions and Practice. In J. A. Banks & C. A. McGee Banks (Eds.), *Handbook of research on multicultural education*. San Francisco: John Wiley & Sons Inc.
- Barrow, D. A., & Lochan, S. N. (2012). Supplementary tutoring in Trinidad and Tobago: Some implications for policy making. *International Review of Education*, 58(3), 405-422. doi:10.1007/s11159-012-9288-2
- Chapman, D. W., & Snyder, C. W. (2000). Can high stakes national testing improve instruction: Reexamining conventional wisdom. *International Journal of Educational Development*, 20(6), 457-474. doi:10.1016/s0738-0593(00)00020-1
- Cross, N. (2006). *Designerly ways of knowing*. London: Springer London Ltd.
- Davis, M., Hawley, P., McMullan, B., & Spilka, G. (1997). *Design as a Catalyst for Learning*. Association for Supervision and Curriculum Development.
- Dunne, A., & Raby, F. (2013). *Speculative everything: design, fiction, and social dreaming*. Cambridge, MA: The MIT Press
- Durbrow, E. H., Schaefer, B. A., & Jimerson, S. (2002). Diverging Academic Paths in Rural Caribbean Village Children, Predicting Secondary School Entrance from the St. Vincent Child Study. *School Psychology International*, 23(2), 155-168. Retrieved October 14, 2016.
- Freire, P., & Macedo, D. (2003). Rethinking Literacy: A Dialogue. In A. Darder, M. Baltodano, & R. D. Torres (Eds.), *The Critical Pedagogy Reader* (pp. 354-364). London: Routledge Falmer.
- Glen, R., Suci, C., Baughn, C. C., & Anson, R. (2015). Teaching design thinking in business schools. *The International Journal of Management Education*, 13(2), 182-192. doi:10.1016/j.ijme.2015.05.001
- Grant, C. A., & Sleeter, C. E. (2007). *Turning on learning: Five approaches for multicultural teaching plans for race, class, gender and disability*. Hoboken, NJ: Wiley.
- Husted, M., & Tofteng, D. M. (2015, November 04). Critical utopian action research and the power of future creating workshops. Retrieved May 05, 2017. From: <http://tinyurl.com/yagdjvmo>
- Jackson, C. K. (2010, December 16). Do Students Benefit from Attending Better Schools? Evidence from Rule-based Student Assignments in Trinidad and Tobago*. *The Economic Journal*, 120(549), 1399-1429. doi:10.1111/j.1468-0297.2010.02371.x

- Noel, L. M., & Liu, T. (2016). Using Design Thinking to create a new education paradigm for K-6 children for higher student engagement and success. 2016 Design Research Society, 50th Anniversary Conference, 27 - 30, June 2016, Brighton, UK
- Noel, L. M. (2018). Teaching and Learning Design Thinking through a Critical Lens at a Primary School in Rural Trinidad and Tobago. (Unpublished Doctoral Dissertation, North Carolina State University).
- Nutti, Y. J. (2016). Decolonizing Indigenous teaching: Renewing actions through a Critical Utopian Action Research framework. *Action Research*, 1-23. doi:10.1177/1476750316668240
- Nyirenda, J. E. (1996). The Relevance of Paulo Freire's Contributions to Education and Development in Present Day Africa. *Africa Media Review*, 10, 1-20.
- Patton, M. Q. (2002). *Qualitative research & evaluation methods*. London: Sage Publications Ltd.
- Peterson, R. E. (2003). Teaching How to Read the World and Change It: Critical Pedagogy in the Intermediate Grades. In A. Darder, M. Baltodano & R. D. Torres (Eds.), *The Critical Pedagogy Reader* (pp. 354-364). London: Routledge Falmer.
- Shor, I. (1992). *Empowering education: critical teaching for social change*. Chicago: The University of Chicago Press.
- Shreeve, A. (2015). Signature Pedagogies in Design. In M. Tovey (Ed.), *Design Pedagogy* (pp. 83-94). Dorchester: Gower.