Serious Play: Co-Designing Access to Social Justice Education

By: Megan Freund

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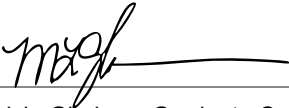
Penny W. Stamps School of Art and Design
University of Michigan
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Approved by:

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John Marshall, Graduate Committee Chair

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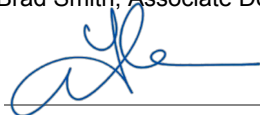Maisie Gholson, Graduate Committee Member

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Stacie Woodward, Graduate Committee Member

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John Marshall, Director MDes Graduate Program

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Brad Smith, Associate Dean for Academic Programs

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Gunalan Nadarajan, Dean, Stamps School of Art and Design

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Megan Freund
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Abstract

Serious play, the act of play pursued purposefully to achieve an identified objective, shows promise as a method for eliciting dilemmas faced by teachers in connection to social justice education. A process of participatory co-design in classrooms with high school teachers across Metro Detroit and in Alameda County, California, guided the development of a serious play toolkit, a set of loose parts which stimulate playful behaviors in teachers to communicate dilemmas, moral crossroads requiring the making of decisions, and pre-script responses to enable student access to social justice curricula. The parallel "safe space" afforded by play allowed teachers to explore their attitudes and biases connected to social justice without real-world consequences, while the "brave space" of a co-design workshop built on principles of asset-based design approaches and effective professional learning for teachers encouraged reflection on individual practice and modeling alternative actions to empower learning on race and privilege. Although the 2020 public health emergency prematurely halted research to further demonstrate the efficacy of the serious play toolkit, early prototypes saw teachers express dilemmas around race, identity and political affiliation. Follow-up interviews with participants suggest that serious play made teachers' behaviors during social justice instruction tangible, both in form and in feeling. Incorporating play into the design of interventions to address wicked problems is relevant to designers and educators seeking to expand access to social justice education, as well as to the broader problem space of instilling equity in public education in the United States.

Keywords: Serious play, co-design, participatory design, asset-based design, toolkit, social justice, social justice education, wicked problem, dilemmas

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Last and most, to the Black, Indigenous, and People of Color of this nation, your lives matter. I see you. I hear you. I stand with you. I pledge to work everyday at being a better ally to you.

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Key Terms

- **Social Justice**: The exercise of altering institutional and organizational arrangements by actively engaging in reclaiming, appropriating, sustaining, and advancing inherent human rights of equity, equality and fairness in social, economic, educational and personal dimensions.

- **Social justice education**: Teachings directed to raise awareness of social wrongs in order to activate the desire to work towards social transformation.

- **Equitable Futures**: A six-week high school U.S. History curricular module developed in Oakland County, Michigan that enables teachers to integrate social justice education into instruction on the American Civil Rights movement of the 1960's.

- **Serious play**: A mode of creative problem solving incorporating play, the free and active participation in activities that impart a sense of joy, with the difficult work of addressing matters of consequence.

- **Dilemma**: A moral crossroads requiring the selection of a decision: one choice reinforces the status quo while the other offers an opportunity to enact change. Dilemmas often involve choosing between one's personal comfort and the well-being of others.

- **Safe space**: Sanctioned metaphysical "zones" where participants may speak candidly without threat of loss of self-identity or integrity, making possible the transgression of personal boundaries.

- **Brave space**: Sanctioned metaphysical "zones" where ideas and emotions may be expressed and processed to the increased respect and understanding of others.

Preface

In many ways, my education has been a process of unlearning. The pace of my deschooling accelerated when I came to understand my race as not neutral, not normal, but white. This designation did not end at defining my skin color; it defined where I lived, where and how I was educated, my job prospects, my speech, my preferences, my priorities, and my interactions with others. This list, not nearly exhaustive, is part of a holistic system into which whites are indoctrinated that offers access to the best opportunities that society has to offer. At the same time that this system works to facilitate opportunities for people who look like me, it works overtime to deny them to black, indigenous, and citizens of color. This is the legacy of white supremacy, disrobed and embedded in the bedrock of our society.

My unlearning happened slowly, through college demonstrations and teaching abroad, then crescendoed while working as a designer in San Francisco, California. I was designing digital experiences for tech companies headquartered in Silicon Valley that are now household names, surrounded by colleagues that largely looked like me. Outside the lavish offices were expansive encampments of people experiencing homelessness, many of the inhabitants people of color. Inside the office, my colleagues exalted in how the company was changing the world. Outside the office, I wondered for whom the world would change. I began to directly connect my experiences as a white person - the seemingly effortless way I was accepted into college, landed a desirable job, found an apartment in a competitive real estate market - to the creation of cruel conditions for others. I no longer wanted to be an instrument of harm. To support changing the circumstances of others, I intuited that I first had to change myself.

Thus began a great unraveling, an in-progress process of unlearning old habits of mind and creating new ones oriented towards equity and access. Thanks to the assistance of tools like self-reflection, questioning my own assumptions, and intentionally seeking out teachers whose race and life experiences differ from my own, I'm learning to advance social justice by weighing who is helped and who is harmed by my actions.

This thesis project results from this theory of change. Equitable, socially just systems, in education and otherwise, are constructed as individuals unlearn patterns of behavior that replicate harm and replace them through designing new ways of being that promote our collective flourishing. Serious play is a promising method I used to enable myself and others to unlearn, self-reflect and arrive at new perspectives, in order to co-design more equitable futures.

Introduction

Education in the United States is described as the great equalizer, the means through which citizens gain skills and knowledge to make full and intelligent contributions to democratic society. But since the founding of the national public school system in the early 19th century, student access to high-quality learning opportunities has never been equal (Spring, 2017). Public education in the United States prioritizes the growth of the nation's whitest, wealthiest students, an insidious consequence of white supremacy and its singular objective of perpetuating a centuries-old cycle that positions white citizens in the nation's seats of power. The majority of American students are denied means of entry to even the most basic educational opportunities, including many of the nation's students of color.

The following statistics evidence the multi-dimensionality of educational inequality in the United States: American schools with student populations that are 90% white receive on average $733 more in spending per student than schools with student populations that are 90% black (UNCF, 2020). This has led to chronic school resource deprivation, from textbooks to school nurses. Only 15% of adults living in rural communities and 39% of adults in urban centers have a bachelor's degree (The 74.org). This suggests that some of the greatest educational opportunities are out of reach for many Americans.

Michigan offers a particularly bleak example. Former state governor Rick Snyder described education in the state as "dramatically failing our children" (21st Century Education Commission, 2017). Michigan's schools are underfunded and under-resourced, creating conditions in which students are unable to achieve an equality of outcomes (Arsen, Delpier and Nagel, 2019). Reading levels of Michigan's fourth-grade students rank 41st out of 50 states and eighth-grade math performance ranked 37th (21st Century Education Commission, 2017). These statistics worsen for students of color, students enrolled in special education programs, and students living in households below the poverty line; black fourth-grade students in Michigan have the lowest reading performance in the country (21st Century Education Commission, 2017).

The Equitable Futures Project is an example of curricula developed to highlight such educational inequities for students living and learning in Oakland, Wayne, and Macomb counties, Michigan. It is social justice education delivered in the form of a six-week high school U.S. History curricular module about the Civil Rights movement of the 1960's. Using project-based learning, a pedagogical approach supporting both intellectual and socio-emotional development, students engage in collaborative inquiry into the influence of white privilege on dominant U.S. historical narratives. Equitable Futures illuminates for students that history is not neutral, that the formulation of common historical narratives serve to advance specific points of view. It proactively brings this discussion into classrooms, along with the difficult conversations around race, class and politics that often accompany it. Equitable Futures believes that teaching students how to work together while engaging in dialogue about these issues is one part of leading southeast Michigan to a more socially just future.

Designing a system of education committed to the growth and learning of every student requires an unshakable dedication to social justice, defined as the exercise of altering institutional and organizational arrangements by actively engaging in reclaiming, appropriating, sustaining, and advancing inherent human rights of equity, equality and fairness in social, economic, educational and personal dimensions (Goldfarb & Grinberg, 2002; Theoharis, 2007). Education is of critical importance in building commitment to achieving this ideal, especially through pedagogies holding strong social justice orientations. Equitable Futures provides an avenue for teachers to deliver social justice education, teachings directed to raise awareness of social wrongs in order to activate the desire to work towards social transformation (Ayers et al, 2018), in the context of a historically unjust system.

In the spring of 2020, 63 teachers in 31 high schools across the Detroit region were projected to introduce Equitable Futures to over 3000 students in their classrooms (The Equitable Futures Project, 2020). Students, teachers, and administrators participating in Equitable Futures express strong support for its ambition to transform the region through increasing student awareness of their role in creating a more inclusive future. But as it heads into its fifth year of operation, Equitable Futures has experienced declined interest in its offering, as measured by the decreasing number of teachers enrolling in its required professional learning series.

Designing for Dilemmas in Engaging and Promoting Social Justice Education

Expanding the reach of social justice education can be described as a wicked problem: An intractable, multi-causal issue with no discernable solution. A characteristic of wicked problems is that they are symptomatic of other wicked problems (Rittel and Webber, 1973). Every wicked problem consists of dilemmas, inherently wicked situations or instances (Hilgren, 2017). Dilemmas demonstrate how an intractable problem or situation takes hold in an individual. When faced with a dilemma, often we must make a moral decision over who is harmed and who is helped (Sussenbach and Moore, 2015). Influencing these decisions are implicit biases, ideas or attitudes conditioned by society, culture, or personal experience (Sussenbach and Moore, 2015). The choices made in the face of a dilemma either maintain the status quo and reinforce a wicked problem, or provide an opportunity for change to occur.

To offer an illustrative example of a dilemma based on this body of work: A teacher desires to introduce social justice education to their high school students, understanding that it may invite difficult conversations around race and class into the classroom. The teacher worries that these conversations could escalate outside of their control and undermine their role as the authority figure in the classroom. Do they accept the risk of strong reactions from students and deliver the content in a way that could fundamentally shift student perspectives? Or do they teach a sanitized version of the curriculum, assuaged by the attempt to do what is honorable while maintaining their sense of control? One choice reinforces the wicked problem of educational equity, the other allows an opportunity for change to occur. To design solutions for alleviating such dilemmas in education, their existence must first be acknowledged.

Co-Design for Access to Social Justice Education

Traditional research methodologies aimed at initiating social change rely on use of ethnographic research methods to bring deeper understanding of a problem in its current state. When the problem demands the invention of a reality yet to materialize, such as equity in education, an approach to knowledge generation that unites existing assets in previously unimagined ways is needed (Manzini and Rizzo, 2011). Co-design is one such process. Co-design describes a collaboration between trained and untrained designers in an equitable, sustained partnership to achieve a desired outcome (Sanders and Stappers, 2008). Through acts of co-creation, instances of creativity shared by two or more people (Sanders and Stappers, 2008), co-designing teams translate of experiences, negotiate of priorities, and question underlying assumptions, revealing new possibilities for thinking and living.

To explore the dilemmas connected to Equitable Futures, a participatory process of co-design with teachers guided the development of an unconventional solution for enabling the communication of dilemmas faced in the classroom: a serious play toolkit.

Serious Play Toolkit

Play is free engagement in activities which bring a sense of enjoyment. It's an inherent and universal quality in humans, each of us born with the capacity and desire to play (Winnicott). Serious play is the act of play pursued purposefully to achieve an identified goal, an immersive means of problem solving in which the experience yields the same sense of reward as the outcomes produced (Castell and Jenson, 2003). Toolkits are defined by Sanders and Stappers as curated sets of interpretive materials that enable the creation of expressive design objects. The Serious Play Toolkit is a collection of flexible loose parts supporting open-ended use (Logan, 2016). It includes 60 wooden blocks, 44 figures representing teachers and students, and a paper canvas for interactions, called a "play mat," mimicking a classroom. Unbounded by specific instructions for how the toolkit's materials are to be used, participants produce 3D representations of their classrooms as the setting of a thought experiment for exploring thoughts, ideas, and beliefs which cannot be easily described in words. Through playful interactions and the building of physical models, the kit helps make tangible a cross section of dilemmas limiting access to social justice education.

When dilemmas remain implicit, they lead to routine task completion (Sussenbach and Moore, 2015). Examination of the biases influencing decision-making takes place only once dilemmas are made explicit, giving way to conscious choices. Co-design, combined with play, democratizes access to uncovering dilemmas in social justice education by offering a tool for discovery in which anyone can partake. This opens a new way for instilling equity in education.

This thesis puts forward an uncommon means of designing in the context of wicked problems. The playful interactions with physical objects afforded by serious play offers a vehicle for making the abstract "paths not taken" tangible, an embodied physical, mental and emotional experience (Camere et al, 2018). Serious play provides a bridge between the aspiration of educating for social justice and experimenting with the complex reality of what it looks, feels, and sounds like implementing such curricula with students. For educators desiring to redress the historical inequities that have denied transformative learning opportunities to millions of learners, the parallel worlds constructed in play present arenas for pre-scripting decisions (Drumwright et al, 2015) made at moral crossroads. This reframing of play as practice can help teachers uphold their values in the difficult moments that are likely to arise when teaching to transform student perspectives in their classrooms. The implications of serious play not only affect the expanse of social justice, but radiate across the broader problem space of equity in education.

Problem Statement and Research Aims

This project seeks to transform the abstract hypothetical situations teachers may confront during instruction of social justice curricula into concrete form. In essence, it aims to make the dilemmas connected to social justice education tangible, both in the metaphorical sense, in that the impact of moral decisions become seen, felt, and known by teachers, and in the literal sense, in that serious play with wooden blocks and figures becomes the mediating action leading to insights. Equitable Futures provided a vehicle to initiate this exploration, but the implications are relevant to any such effort to increase access to socially just teachings.

Two research questions guided this inquiry:

1.) What are dilemmas identified by teachers in the classroom preventing access to social justice education, such as encountered in Equitable Futures?

2.) Can serious play be used as an integrative design method to make these dilemmas tangible to build teachers' capacity to make more conscious, in-the-moment decisions?

Context

A brief examination of the interrelated histories of race and socio-economics in metro Detroit explains why Equitable Futures provides this as an orienting context for students engaged in its program of study. It also underscores the urgency of implementing social justice instruction to disrupt the legacy of white supremacy in education.

The educational landscape in the three counties making up metro Detroit - Wayne, Macomb, and Oakland counties - is one of racial and socio-economic extremes. In 2019, the United States Census Bureau reported that the percentage of citizens identifying as "Black or African American alone" was 38.8% in Wayne County, 12.2% in Macomb County and 14.0% in Oakland County. In the city of Detroit alone, 78.6% of residents identify as Black or African American. For comparison, the percentage of citizens identifying as "White alone" is 54.6% in Wayne County, 80.8% in Macomb County and 75.3% in Oakland County (U.S. Census Bureau, 2019). The dissimilarity index of Metro Detroit is 88, meaning 88% of the population would be required to move house to create an equal dispersion of black and white residents (Turner Meiklejohn, 2000).

The stark division of racial identity groups is the outcome of decades of discriminatory housing policies, known as redlining (Turner Meiklejohn, 2000). These policies confined black residents to inner city-Detroit while instigating "white flight" of white European residents to Detroit's northern suburbs (Turner Meiklejohn, 2000). The outmigration of white residents carried with it a dramatic reduction in economic activity and opportunities within Detroit's city limits.

This residential racism is intricately linked to the current state of southeast Michigan's schools (Rozas and Miller, 2009). As white residents established themselves outside of Detroit's northern border, they built institutions, including schools, reflective of the racial and economic make-up of the local population (Nielsen, 2013).

In the 1970's, the city of Detroit made a radical attempt to improve conditions in its schools by implementing a policy that would bus white students to Detroit schools from the surrounding suburbs. The subsequent outrage to the city's "last best effort" to institute racial equality in the region resulted in the 1974 United States Supreme Court case number 418 U.S. 717 known as Milliken v. Bradley. In a 5-4 vote, the nation's highest court struck down the policy, declaring it "wholly impermissible" (Horsford, 2016) to force the integration of citizens who are segregated by circumstance (*de facto*) and not by law (*de jure*), ossifying the region's racial, social, and economic divisions (Green and Gooden, 2016). Horsford states that the outcome of this case left no question that "how, or even whether, to equalize education for black students would be up to local parents, educators, activists, school board members, state legislators, and other private and public community stakeholders" (Horsford, 2016).

White Fragility and its Impact in the Classroom

The events leading to the Detroit region's educational inequities represents a shared history of urban centers across the United States. The system of advantage (Goodman, 2011) designed to concentrate educational resources on the schooling of white students explains why 82% of the teaching force in the United States is white (U.S. Department of Education, 2016); it is both an instrument and outcome of white supremacy's hold on American public education. Teachers play a pivotal role in perpetuating white dominance by conditioning students to society's power hierarchies through their replication in the classroom (Applebaum, 2017).

Social justice educators willingly assume the responsibility of challenging assumptions students may have about oppressive systems, such as public education, through their critical examination from the vantage point of the oppressed. This investigation tends to elicit strong emotional responses from students belonging to privileged groups, particularly white students of the middle-class, discomforted upon learning of their complicity in perpetuating systemic racial inequality (Goodman, 2011; Applebaum, 2017). Such occurrences require social justice educators to maintain critical awareness of their own positionality in the classroom so as to not respond in a manner that reinforces systems of oppression, inclusive of offering consolation to an emotional white student (Applebaum, 2017).

Attending to the discomfort of white students in discourse on racialized issues arises out of belief of white persons' right to comfort and avoidance of conflict. This prioritization of emotional experience is an extension of the societal privileges bestowed onto white citizens, in particular if the consolation comes at the expense of protecting the emotional experience of students of color (Applebaum, 2017). Perceived threats to this assumed right to security initiate strategies and/or behaviors on the part of whites to ensure its maintenance, such as outward displays of anger, fear or guilt, becoming argumentative, falling into silence, or physically removing oneself from a conversation. DiAngelo describes these responses as displays of white fragility, defensive moves employed by white people to avoid discussion about race and white privilege (DiAngelo, 2018). Statistically speaking, teachers advancing social justice education in classrooms are a predominantly white audience and therefore prone to the same behaviors they wish to educate against.

Seeking to co-design a means for teachers to communicate biases which limit students' access to social justice education risks activating the same defensive strategies DiAngelo details. Although white teachers affiliated with curricula like Equitable Futures opted to incorporate social justice into their instructure, their individual attitudes around race do not preclude them from acting in alignment with the cultural and societal norms driven by whiteness in schools. An example is holding preference for quiet and controlled learning spaces, a reflection of white European values (Goodman, 2011). The increased awareness of unconscious actions that reify dominance engaged in by teachers who consider themselves exceptions may produce resistance to earnest participation in design activities intended to support the surfacing of such insights (Applebaum, 2017).

Boler cites passive empathy as another outcome of white fragility. If critical examinations of race and privilege are successful in capturing the interest of whites, the inability to directly connect one's actions to the hardships of others equally damages efforts to advance educational equity (Boler, 1999). Passive empathy refers to feelings of concern directed to a distant other, a consequence of invulnerability which restricts capacity to imagine another's circumstances as one's own (Boler, 1999). This occurs when one intellectualizes the experience of oppression, but resists empathizing with the experience on an emotional level. Stimulating emotions around the experience of oppression is critical for change to take place (Goodman, 2011). Applebaum argues that engaging the affective dimension is precisely what is needed to generate an openness in the "systematically privileged" to remain in place when confronting issues of race and privilege (Applebaum, 2017). This is pertinent for co-design, as creating an avenue for teachers to vulnerably explore their emotions around teaching for social justice increases the likelihood of their sustained, and sincere, engagement in transforming public education (Goodman, 2011).

Research Methodologies for Initiating Change

For design practitioners seeking to initiate movement towards equity in education, the design begins with choosing a methodological approach to research. Designing in the context of social justice demands a just design process, one that is led by, and accountable to, marginalized groups (Costanza-Chock, 2020). Multiple case studies document co-design as a process leading to change (Costanza-Chock, 2020; Manzini, 2015; Sangiorgi, 2010; Steen, 2013;), supporting its candidacy as a means of knowledge generation for enacting social transformation. But the process of co-design has no formal mechanism in place to regularly align design outcomes with stakeholders experiencing the conditions the design team wishes to change (Costanza-Chock, 2020). Action research (AR) and participatory action research (PAR) are two methodologies aspiring toward transformation with such instituted checks and balances.

Action research seeks to transform real-world social problems through iterative cycles of observation, action and self-reflection (O'Leary, 2017). A clear rejection of positivist modes of inquiry, in which researchers position themselves as objective observers and sole interpreters of phenomenon, practitioners of action research deliberately embed themselves with communities who have lived experience of the circumstances they wish to study. Per Atweh et al (1998), the objective of AR is for practitioners to authentically develop and evolve in their practice, their understanding of their practice, and the situations in which they practice research.

Observation is of critical importance in action research projects. This purposeful act of noticing occupies a dual role as mode of data collection and motivator of choices made along the research trajectory. Reflection calls for practitioners to attend to their own practices and perspectives, out of recognition that their existing biases influence the research process (Greenwood and Levin, 2007).

Action Research Model of Inquiry

(O'LEARY, 2017)
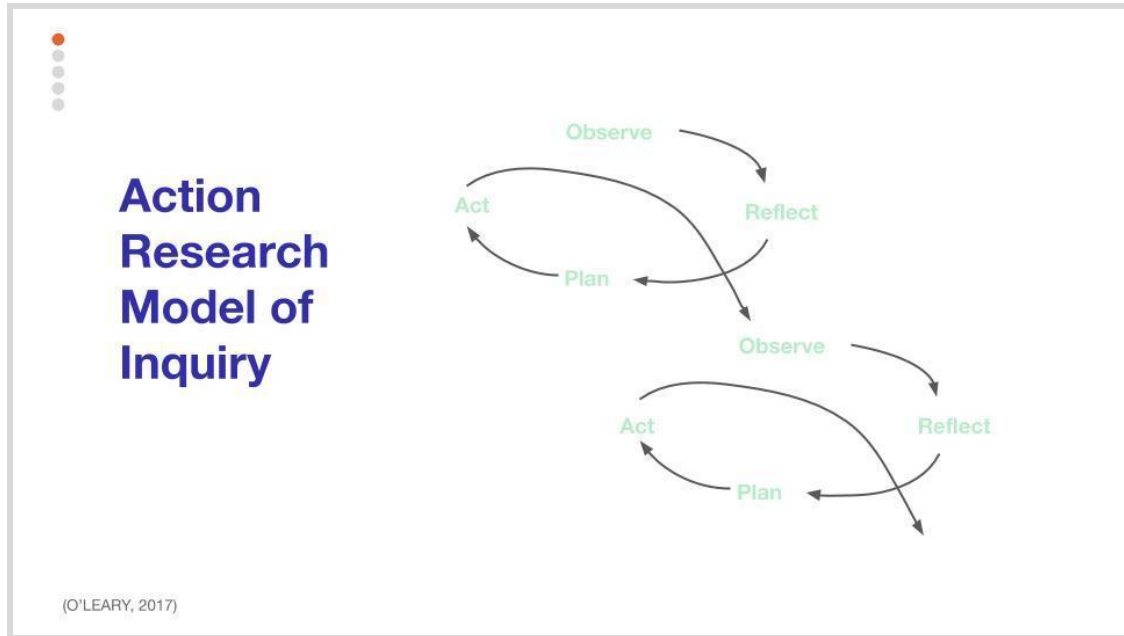
Asimeng-Boahene (2006) details an action research process a social studies teacher might follow to understand a perceived lack of student motivation in their classroom. The teacher's observation of students' apparent disinterest in the subject matter provides the impetus for inquiry. To gather insight, they might survey students on topics they enjoy learning about, then enrich their own conceptualization of the problem by conducting one-to-one interviews with a subset of students. The teacher may involve parents to understand the effects of home life on student motivation. New information may lead the teacher to believe that the reading level of the class text book challenges students, leading to the development and implementation of new reading strategies. The teacher observes the outcomes of the new intervention, which may prompt a subsequent cycle of inquiry (Asimeng-Boahene, 2006).

The above example demonstrates how stakeholder involvement in the research process serves to increase the practitioner's awareness of a problem's cause, creating an opportunity for change. It also illustrates that AR is primarily a researcher-driven process of inquiry. Input from stakeholders shapes the research outcome, but their degree of participation is determined by the practitioner. This creates the potential for an unequal distribution of power, as stakeholders position the researcher in the role of expert, disregarding the validity of their own lived experience.

Participatory action research addresses this drawback through radical participation, the determined involvement of problem stakeholders in every step of the research process. In PAR, stakeholders and practitioners engage together in inquiry as a non-hierarchical collaborative, contributing practical and academic knowledge simultaneously to build shared understanding of an issue. In this way, the iterative cycles of collectively observing, reflecting, planning and acting

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both generates new information while concurrently democratizing its access (Cook et al, 2019).

These modes of knowledge generation in AR and PAR closely resemble the iterative, cyclical process of co-design. The primary point of differentiation is how knowledge is generated and communicated. Traditional ethnographic research methods, like observation, interviews, and focus groups, are supplemented by methods situated in environments designed specifically to draw out participant creativity, like workshops (Gauntlett, 2007). Through acts of joint making, or co-creation, the teams produce artifacts to embody thoughts, emotions, and/or beliefs in tangible form (Sanders and Stappers, 2008). This arises out of the belief that most of what we understand is tacit knowledge, a knowing that is not readily expressed in words (Schön, 1983). Traditional verbal research methods neglect the stream of ideas flowing just below conscious awareness (Gauntlett, 2007). The exchange that occurs across disciplines as knowledge is expressed, created, and negotiated by a co-designing team allows for new ways of thinking to take hold. This forms the theoretical basis of co-design as a process of collaborative inquiry.

The institution of reflection as a method of accounting for and learning from decisions made in the name of research and an insistence on consistent stakeholder involvement are two measures adopted from AR and PAR to improve co-design as a socially just process for enacting social change. Allowing multiple access points for stakeholder involvement more efficiently curates design methods and activity frames that align with the needs and interests of those owning direct experience of a problem. Apart from these pragmatics, the bias towards inclusion enables the design practitioner's knowledge to combine with local knowledge, embedding the practice of creative problem solving within the community (Greenwood and Levin, 2007). The designer likewise gains critical contextual knowledge that enables them to respectfully navigate the problem space. This non-hierarchical approach to collaboration, in which each party gives and gains, cultivates empathy and respect for one another's experiences, builds relationships and creates openings for continued collaboration (Greenwood and Levin, 2007). Reflection as a needed adaptation to creative inquiry is echoed by Page et al (2016), who emphasize an urgency for co-design to support practitioners' reflections on a project's purpose, their emotions and their values, and the implications of the designed outcome. This inward exploration, be it individual or collaborative, provides the source material for new ways of thinking and creating in the context of an external research goal (Page et al, 2016). These augmentations enable design researchers to pursue design research that is participatory both in spirit and in practice.

Building Capacity in Teachers

Effective cross-disciplinary collaborations require collaborators to loosen attachments to their roles or organizational status to more deeply engage in the process of collective creative inquiry. This means cultivating emotionally safe spaces tolerant of failure in order to encourage the transgression of boundaries (Page et al, 2016; Hall et al, 2016). This holds especially true when introducing participants to novel approaches to problem solving, such as teachers to serious play. They are accustomed to operating within the value system of American public schools,

whose modern incarnation is described as risk-averse and prioritizing performance on routine tasks and assessments (Schreiber, 2018). The restrictive conditions deny opportunities for students - and teachers - to exhibit creativity. Further, design for emerging dilemmas in social justice education necessitates conversation around difficult topics. Supporting laden conversations that move teachers to contemplate changes to practice requires the construction of psychologically safe environments (Brown and McCormack, 2016). These are sanctioned spaces where participants may speak candidly without threat of loss of self-identity or integrity (Schien, 2010).

Approaching co-design with teachers through an asset-based lens assists the formation of a safe space for exploration and risk-taking as well as a brave space for growing awareness of biases affecting responses to dilemmas. Brave spaces refer to contained zones where ideas and emotions may be expressed and processed, drawing respect and understanding between participants (Gauntlett, 2007). Asset-based approaches recognize the efforts already undertaken by communities to address a problem and use them as the basis of engagement (Costanza-Chock, 2020). For co-design, this entails the use of co-creative acts to improve upon previous attempts at a solution as the spark for innovation. This framing promotes sustainable design by connecting micro-assets embedded in communities, such as relationships and institutional knowledge, to their ability to affect change in the macro-context. These approaches are inherently oriented towards social justice, especially when applied to partnerships with marginalized or oppressed groups (Pierri, 2019). This arguably includes teachers, who increasingly report feeling disempowered in their roles (Tsang and Liu, 2016).

In addition to cultivating safe and brave spaces through asset-based approaches to co-design, encouraging creativity and risk from participants in design engagements relies upon the integration of appropriate incentives and supportive frameworks for promoting intellectual growth (Page et al, 2016). Continuous learning opportunities are common within education as a manner for teachers to deepen their teaching practice. Much of this learning is delivered to teachers in the form of "sit-and-get" methods, such as classes or conferences (Woodward, 2019). These modes turn teachers into passive receivers of information, administered in spaces disconnected from their teaching contexts, often with little practical relevance to their classroom reality. New research indicates that professional learning opportunities that are collaborative, job-embedded, and sustained over time more effectively evolve a teacher's practice over traditional methods (Darling-Hammond et al, 2017). Opportunities with these affordances are more likely to see teachers translate concepts from the learning space to the classroom.

The extent to which teacher professional development opportunities allow teachers to partake in the collaborative exploration and exchange of ideas determines its efficacy (Darling-Hammond et al, 2017). Collaborative learning begets collaborative school communities of practice, organizations whose members unite in work under a shared purpose to enhance how knowledge translates to action. The full value of this shared experience of learning derives from opportunities for teachers to learn, practice, implement, and reflect upon new strategies over a

sustained period (Darling-Hammond et al, 2017). Repeated workshops, one-to-one coaching sessions, or online courses, often taking place over sequential weeks or months, are more likely to evolve teaching strategies than one-off engagements. Teacher practice, and thus student learning outcomes, improves when teachers have multiple occasions to participate in learning around a singular set of concepts (Darling-Hammond et al, 2017). Contextualizing learning within a teacher's work reality increases the adoption rate of new techniques. Job-embedded models of learning that move teachers to actively inquire and reflect on their own experiences with students create conditions for fundamental shifts in practice. (Darling-Hammond et al, 2017).

The above qualities of effectual learning for teachers formed the structural framework for a co-design engagement that would be of intellectual value to teachers. The underlying motivation of constructing an experience to promote learning and recognize past attempts to challenge students with new perspectives intended to build in teachers the capacity to independently apply serious play to express and creatively explore alternative reactions to their dilemmas linked to teaching social justice. Capacity building refers to the process of becoming self-reliant in the design of solutions to address needs and aspirations (Geppert, 2014). Modeling a workshop on asset-based design approaches and best practices for teacher development presumed that design skills gained through co-design could sustain in the school setting without the presence of a design practitioner.

Participatory Design

The involvement of teachers as co-designing partners reflects the "bottom-up" ethos of participatory design, an approach to designing that expressly chooses to make explicit the values and knowledge of the less powerful actors within a social system (Spinuzzi, 2005). Although teachers are highly visible within the education ecosystem, the United States' decentralized network of public schools favors top-down control. School administrators hold a majority stake in decisions affecting their institutions, reducing teacher agency in choosing pedagogical methods that best promote the learning and growth of their students (Tsang and Liu, 2016).

Originating in workplaces in Scandinavia in the 1970's to democratically involve workers in the designing of technological systems, participatory design aspires to bring about positive change to the realities of stakeholders by designing outcomes that uphold their tacit knowledge (Spinuzzi, 2005). Based on principles of participatory action research, participatory design likewise theorizes that emphatic involvement in co-creation produces sustainable solutions that fit into stakeholders' daily lives (Mulder, 2018). An example from the Netherlands explains how a group of youths who had dropped out of the public school system developed new competencies and feelings of empowerment through participation in the design of a digital fabrication lab (Mulder, 2018). Harboring a desire to acquire skills applicable to the 21st century workplace, the young people made their talents visible through the fabrication of prototypes. The apparent value of their contributions resulted in the establishment of a permanent digital fabrication space in a local library and new life opportunities for the students: their design experience was a catalyst to

entreprreneurship and decisions to return to school to further their education (Mulder, 2018).

Although participatory design has a demonstrated history of producing positively impactful designs with long-term effects (Sanders and Stappers, 2008), the barriers to a fully participatory design process are considerable, especially within environments where there are high degrees of social control, like public schools (Ingersoll, 2003). The process requires significant investment of time and human resources, which in turn demands institutional will to make resources available (Spinuzzi, 2005). In public schools, where emphasis on student assessment performance takes precedence, any activities deviating from instruction are widely viewed as non-essential. Unsurprisingly, this affects the interest and ability of participants to be consistently present for design activities.

Spinuzzi describes a modified format for participatory design activities involving the use of methods that are less resource-intensive, such as card-sorting and one-to-one prototyping sessions for confirming, rather than exploring, new ideas (Spinuzzi, 2005). This alternative upholds the principles of participatory design through a continuum of stakeholder collaboration across the creative process, with each individual contributing to the design of a collective outcome. This model of participation in the design process was adapted to maximize opportunities for teachers to advance the development of a tool enabling their expression of dilemmas in social justice education.

The Potential of Play for Advancing Social Justice

The needs outlined to encourage the expression of dilemmas from teachers engaging with social justice curricula are vast. The design must: contribute to the undoing of historical inequities in public education, sustain participation of those who have been historically absent from discourse on race and privilege, provide opportunities for reflection upon how actions promote or hinder social justice, and support continued learning and development in an affirming environment to build capacity for creating change. As a critical activity for human development, a design that fosters play is an unlikely, yet promising approach for meeting these criteria.

In succinct terms, play is free and active participation in activities that impart a sense of joy and allow investigation of the world around us. An action can be characterized as play when (1) participation in the act is voluntary (2) it emphasizes the process rather than outcome (3) it is distinct from other exploratory behaviors (4) it is nonliteral, involving elements of make-believe, (5) it is free from externally imposed rules and (6) it is actively engaged in by participants (Rubin et al., 1983). It encompasses a range of activities from climbing trees to formulating rhymes. While commonly associated with the pursuits of children, research is building around the importance of adults regularly entering "play mode," finding it increases creativity by emphasizing freedom while reducing burdens of responsibility, self-consciousness, and shame (Gauntlett, 2007).

Play and games share a close relationship, but games differentiate from play. Independently choosing to recreate with a game is a playful act. This, however, is distinct from a game, which qualifies play with predefined goals and structure (Maroney, 2001). The determining feature of a game is its rules, the criteria by which decisions are made in gameplay (Stenros, 2017). This limits the infinite range of possibilities of play to outcomes designated by the game's designer. The player of a game that most efficiently navigates the rules to achieve the intended outcome is deemed the "winner," revealing another central quality of games: their overt competition (Stenros, 2017). The prescribed roles embedded in these constructs of conflict - winners and losers, players and referees - brings the unintended consequence of reifying social groupings, which accentuate their difference from other players through dress or other customs (Huizinga, 1955).

If "all human history can be regarded as gamelike in nature"(Abt, 1970, cited in Sternos, 2017), play is an antidote. Play is similarly guided by a set of (implicit) rules (Gray, 2017), but unlike games, the rules are responsive to the evolving conditions in play. They can be rewritten by players as activity unfolds, allowing for the integration of new ideas. In play, it is not how well one follows the "rules" but the rules themselves that are the subject of interest. The rules are what lead a teacher to position a wooden teacher figure in the center of a student discussion circle. Revising precepts around classroom authority moves a teacher to imagine what happens when the wooden figure moves to the periphery.

Shirk recognizes play as a promising medium for resolving personal dilemmas, such as those that arise out of confrontations with race and privilege (Shirk, 1988). The proxy worlds constructed for play, in particular pretend play, function as outlets for sharing negative feelings and experimenting with alternative solutions, supported by the play world's removal from the original context (Gordon, 1993). Viewed in this way, the play space becomes a practice space. It provides an arena where participants can carry out habitual responses to racialized issues, reflect on the consequences, and investigate alternative actions without inflicting further harm in the "real world." The natural process of integration arising through play builds capacity to combine playful actions with new or existing behaviors (Gordon, 1993).

One could frame all play as "serious" given its significance to learning, but serious play refers to the participatory design method incorporating the exploratory, emergent qualities of play to surface possibilities for addressing consequential issues. This produces a unique approach to problem solving in which the process and the discovery of a solution yield the same sense of satisfaction (Castell and Jenson, 2003). Designers and researchers have employed the method to design new internal organizational structures in workplaces (Schulz et al., 2015), support identity exploration (Gauntlett, 2007), and heighten the awareness of high school students to the impact of their consumer habits on global economic justice (Wartenweiler, 2018). The latter exploratory study, part of a national effort to increase access to social justice education in Swiss schools, found that students' engagement in a "lighter" approach to investigating difficult topics showed promise as a means towards long-lasting cognitive and behavioral change.

The ethics of joining matters as consequential as social justice education with feelings of enjoyment has come into question, but Wartenweiler argues that it is precisely this unconventional combination that enables new information to permeate the cognitive, behavioral, and emotional levels of learning (Wartenweiler, 2018). "The sharing space of serious play creates opportunities to exchange knowledge that can be instrumental in developing awareness of complex themes, issues, or perspectives" (Hinthorne 2012).

Methodology

Rationale

Any effort to increase access to social justice education through design begins with a just design process. This not only requires breaking from the traditional "designing for" mentality by involving stakeholders in the acts of designing, but additionally incorporates community accountability measures to ensure that creative advancements are in service of those with lived experience of a problem (Costanza-Chock, 2020). Formalizing reflection into the process of co-design provided dedicated space to calibrate the intentions of the design practitioner with the needs and desires of teachers. Reflection afforded a "communicative space for considering the character, conduct, and consequences" of actions and decisions made along the design trajectory (Kemmis et al, 2014). In addition, collective reflection with educators provided opportunities to "surface and criticize tacit understandings and make new sense of uncertainty or uniqueness" (Schön, 1983). Engaging in reflective conversations with stakeholders assured that design activities returned value to the community and did not simply duplicate existing efforts to expand access to social justice education.
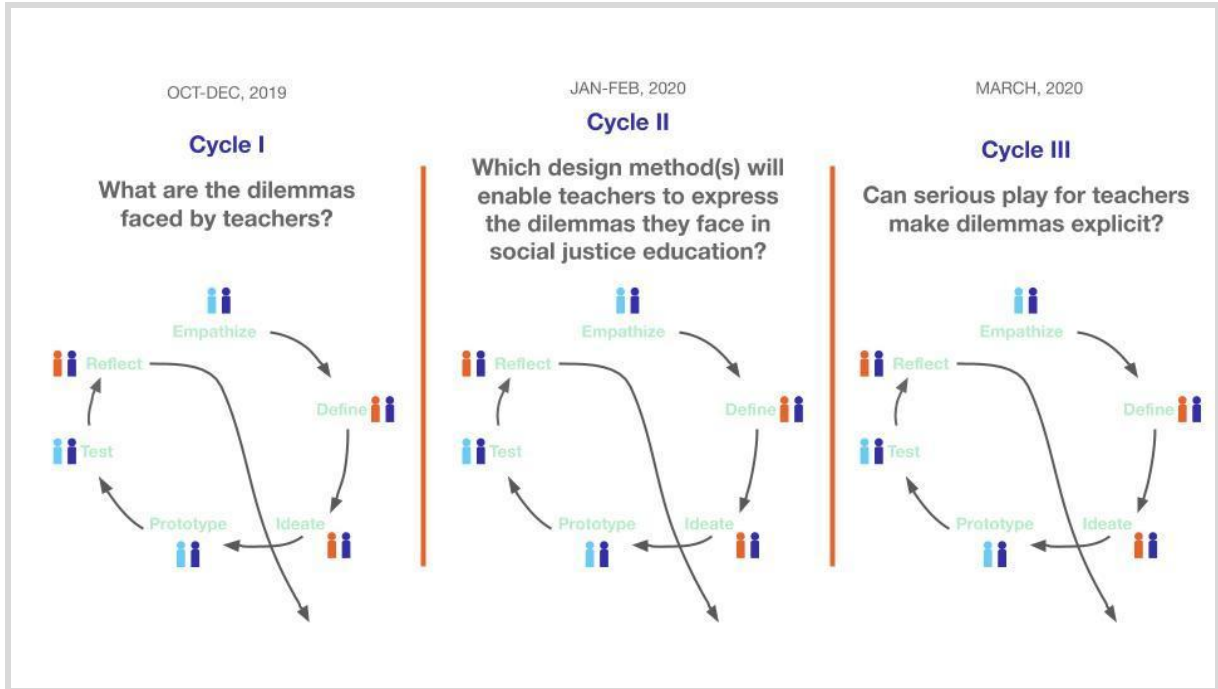
The iterative model of inquiry in action research influenced how design research was conducted. Design research occurred in three distinct research cycles, each one commenced to seek answers addressing a specific hypothesis. Each hypothesis grew more focused than its precedent as information became known.

There was a desire on the part of the design practitioner for a fully participatory design research process, wherein teachers would contribute both in the moments of idea generation ('what can be done') and moments of decision ('what will be done') (Sanders and Stapper, 2008). Stakeholder participation in design is recorded as leading to outcomes capable of sustaining over time; close collaboration between design practitioners and stakeholders catalyzes the transfer of knowledge and skills, enabling a system of community designers proficient at innovating without the aid of practitioners (Manzini, 2007). Teachers, however, are a difficult audience to coordinate with for design activities, given their varied schedules and severe limitations on availability during the school day. The expectation of their consistent involvement in each phase of the design cycle was ruled out. The resulting approach to design research more closely resembled co-design merged with action research, involving teachers where their participation mattered most: in the empathize, prototype, and testing stages. For the define, ideate, and reflect stages of the process, Stacie Woodward and other representatives of the Michigan education community stepped in, allowing for a continuity of educator feedback. This hybrid model heeds the advice of Sanders and Stappers, who share that effective co-design must involve others in ways conducive to their ability to participate (Sanders and Stappers, 2008).
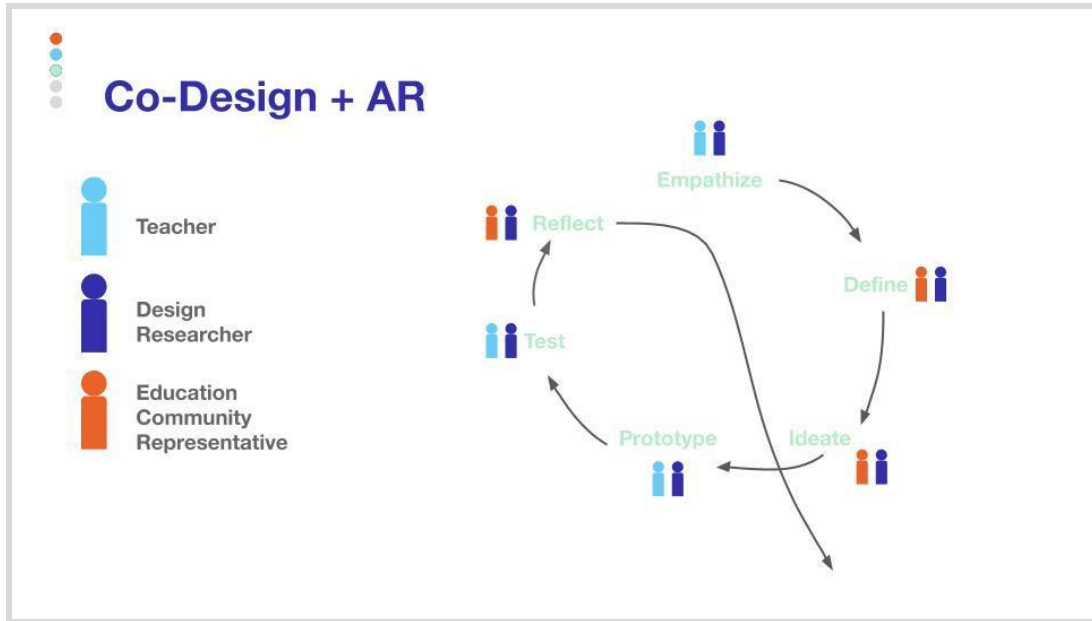
*The hybrid model of inquiry combining co-design with action research*

Research proceeded from September 2019 - March 2020. The broad, exploratory question of "What are the dilemmas faced by teachers" guiding Research Cycle I uncovered insights which influenced the initiation of Research Cycle II. This second research cycle followed the same sequence of steps and patterns of participation as the first cycle, this time with a focused intention of locating a design method or methods that would support teachers in the expression of their dilemmas associated with social justice curricula. The third cycle was specifically dedicated to the evaluation of serious play as a method for facilitating teachers' expression of dilemmas.

OCT-DEC, 2019

Cycle I

What are the dilemmas
faced by teachers?

Empathize · Define · Ideate · Prototype · Test · Reflect

JAN-FEB, 2020

Cycle II

Which design method(s) will
enable teachers to express
the dilemmas they face in
social justice education?

Empathize · Define · Ideate · Prototype · Test · Reflect

MARCH, 2020

Cycle III

Can serious play for teachers
make dilemmas explicit?

Empathize · Define · Ideate · Prototype · Test · Reflect

Summary of the three research cycles undertaken between September 2019 - March 2020.

The Co-Design Team

To accommodate for the variances in abilities to participate, co-design occurred on two levels. The first level of co-design included teachers and the design practitioner engaged in participatory workshops in school classrooms. The second level of co-design included Stacie Woodward, members of the Michigan educator community, and the design practitioner in reflection and debrief. This necessitated the practitioner to function as an envoy between the experiences in the classroom and sensemaking with Woodward, bringing insights from teachers in the form of memos, demonstrations, and designed artifacts.

Participants

● Interview   ● Workshop
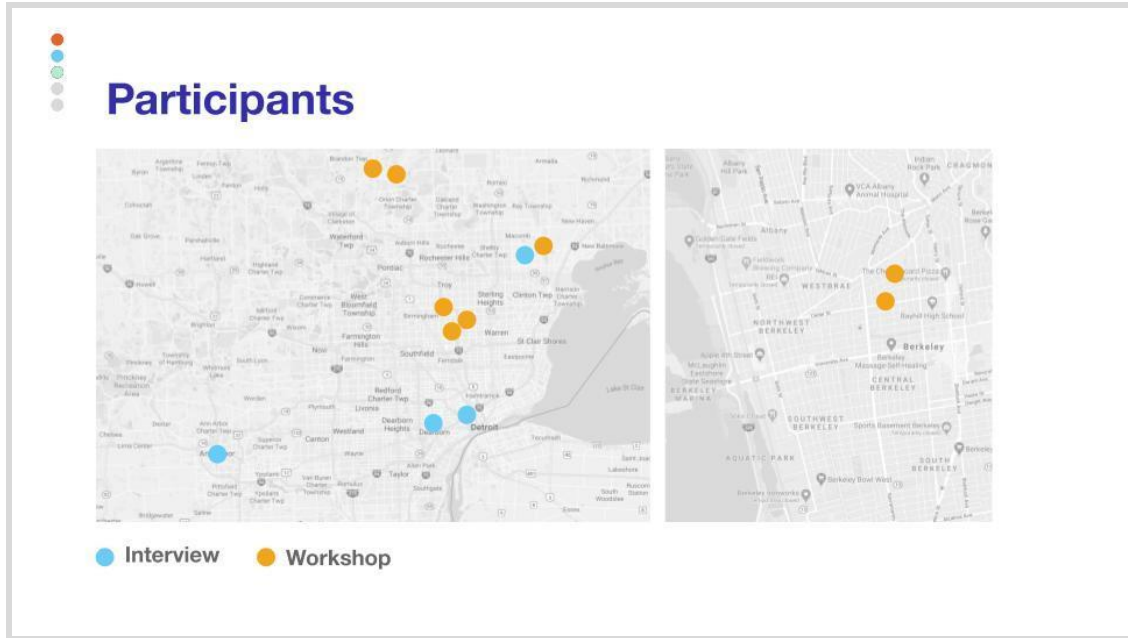
For co-design activities occurring in schools, twelve educators practicing in six high schools in five U.S. counties - Wayne, Oakland, Macomb and Washtenaw counties, Michigan, and Alameda county, California - joined as co-researchers. There were seven male participants and 5 female participants. Eleven out of twelve participants identified as white and one identified as Pacific Islander. Ten out of twelve participants had a pre-existing affiliation with Equitable Futures.

Participant recruitment occurred by way of volunteer sampling and convenience sampling. Volunteer sampling assembles research groups through a request for at-will participation (O'Leary, 2005). In convenience sampling, participants are selected in a manner that is expedient to the researcher (O'Leary, 2005). Employment of these strategies arose out of the immense challenge of identifying a representative sample of Detroit-area teachers.

Methods

Project Timeline

September 2019 - March 2020
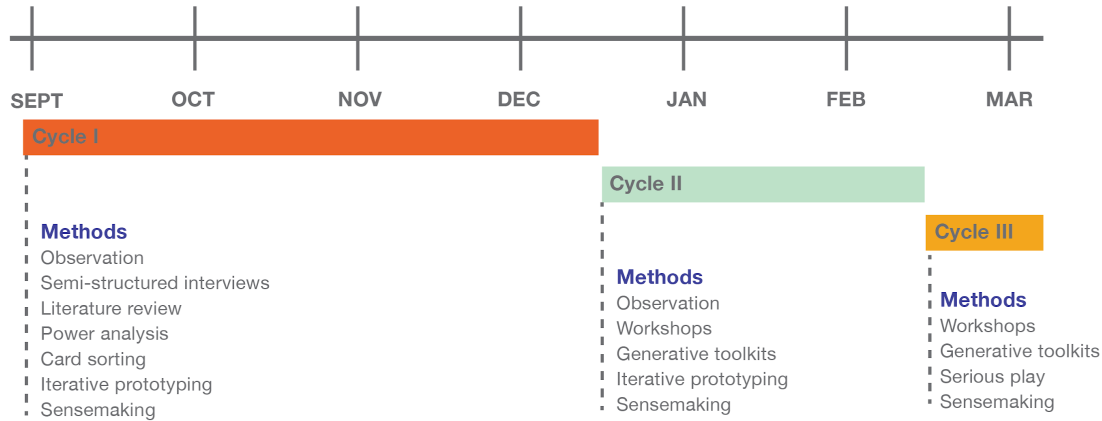
Observation

Observation offers firsthand insights by situating the design practitioner in the context where the subject of inquiry takes place (Merriam, 2009). Participant observation, a focused form of observation, makes people's behavior, conversation, and experience in situ the subjects of study (Mackellar, 2013). Both observation and participant observation were used to understand how teachers engage with Equitable Futures in the many places where it operates, such as classrooms, at conference presentations, and at the main offices of Oakland Schools. The actions and behaviors of teachers observed within these settings provided critical problem context and inspired subsequent research cycles.

Semi-Structured Interviews

Semi-structured interviews are loosely formatted conversations between researcher and stakeholder, wherein interview questions are prepared in advance, but are sufficiently open so as to bring about new insights (Wengraf, 2001). They point the researcher towards new or overlooked problem contexts as the discussion unfolds (Merriam, 2009). Assuming to find commonalities of experience in semi-structured interviews with teachers, the flexible format afforded the realization that the dilemmas connected to Equitable Futures that teachers face are highly subjective to their classrooms and their experiences.

Power Analysis

Use of the power analysis method intended to ascertain patterns amongst teachers' experiences implementing social justice curricula in their classrooms. Borrowed from the discipline of community organizing, the power analysis method is a participatory mapping tool which visualizes the centers of power within a social system (ACE, 2019). With an assumption that relational power is unequal in a system or institution, participants organize paper cutouts on a

matrix. The paper cutouts represent the following: red triangles for specific people, green squares for allied groups or organizations, yellow squares for opposing groups or organizations, and blue starbursts for actions taken. The matrix denotes degrees of power and support (ACE, 2019). The horizontal axis moves from less power to more power, while the vertical axis moves from supporter of a mission or program to opponent.
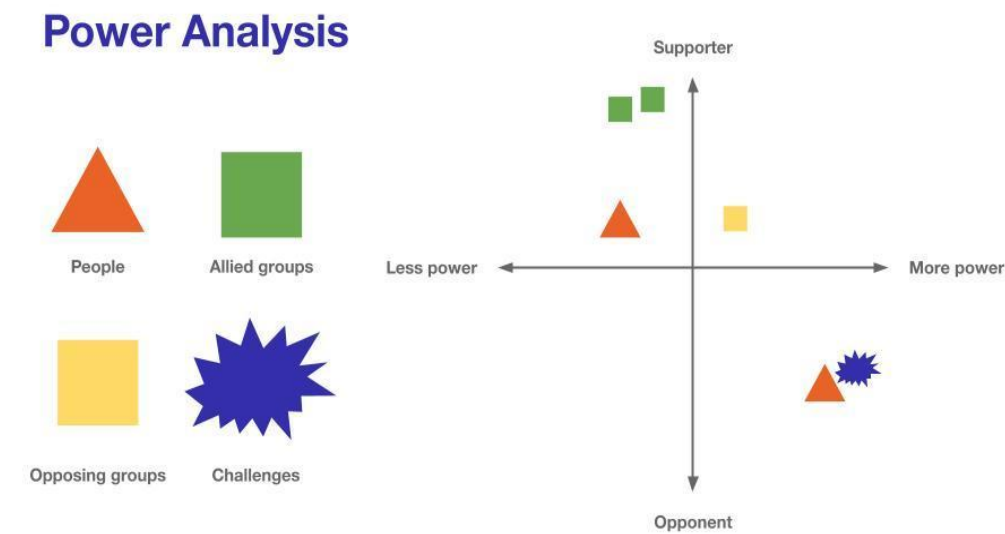
Through the power analysis method, teachers visualized answers to the questions of how the Equitable Futures curriculum was brought into their classroom and who was included in the decision.

Card Sorting

The card sorting method asks participants to organize information presented as text on cards into categories (Martin and Hanington, 2012). This participatory method determined which resources would be the subjects of design exercises. Using the online research platform Optimal Workshop, two Equitable Futures co-founders worked collaboratively to prioritize a set of cards detailing physical resources the Equitable Futures curriculum required for executing the curriculum as designed, like high-speed internet and a physical learning space. Participants virtually organized the cards under the categories "Need to have," "Nice to have," and "Not necessary."

Iterative Prototyping

Prototyping is the creative act of making in order to construct, transform, and synthesize creative research and ideation into form (Sanders and Stappers, 2008; Martin and Hanington, 2012) Participatory prototyping (Sanders, 2013), also called cooperative prototyping (Spinuzzi, 2005), enables anyone involved in the prototyping process to communicate future objects, concerns or opportunities through a cycle of making, storytelling, and enacting. In making, the hand-mind connection works to translate abstract ideas into physical form. Storytelling verbalizes scenarios

for the prototype's future use. Enacting describes the performance of demonstrating a prototype's practical application (Sanders, 2013).
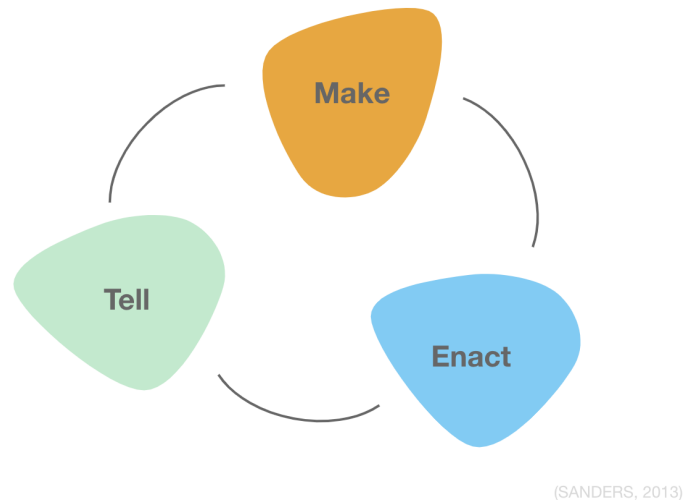
Prototyping: A cycle of making, telling, and enacting.

The serious play toolkit evolved out of multiple rounds of prototyping with teachers and educators. The resulting design artifacts informed the kit's material choices, the framing, and the context of use. Incorporating the use of storytelling into the design of prototypes was a feature added to the final iteration of the toolkit.

Generative Toolkit

An intentional collection of materials which supports the making of expressive design artifacts describes a generative toolkit (Sanders and Stappers, 2008). The physicality of toolkits stimulate the hand-mind connection, permitting participants to intuitively connect components to make abstract ideas tangible (Schulz and Geithner, 2014). Toolkits democratize participation in design events by eliminating the requirement of pre-existing skills to make use of their contents. Use of generative toolkits supported teachers in the communication of their challenges connected to social justice curricula by making available wooden blocks and figures, which were used to explore tacit thoughts, ideas, and beliefs through the building of physical representations of interactions in their classrooms.

Workshop

Creative co-design methods organized as a timed program of activities describes a design workshop, an event during which participants, along with designers, generate, ideate, prototype and test design ideas (Martin and Hanington, 2012). Rooted in participatory design, design workshops provide focused time for collective exploration and ideation of solutions. Their open expectations foster safe spaces for participants to express their inherent creativity. Design

workshops also provide an opportunity to educate interested audiences in the methods and processes of design (Martin and Hanington, 2012). Teachers in 1:1 design workshops in classrooms were guided through a planned sequence of co-design activities to indicate their challenges within social justice instruction, as well as imagine how various choices made in response to dilemmas might produce new outcomes. This introduction to alternative modes of creative problem solving can build in teachers the capacity to sustain the co-design process beyond the duration of the present study.

Sensemaking Tools

Sensemaking describes a continuous pattern of acquisition, reflection, and action through which experiences integrate into our understanding of the world (Kolko, 2010a). It is a process of analysis that prepares practitioners to take action on a problem by applying abductive reasoning to infer meaning from collected data. Sensemaking took form as both individual and collaborative acts. In collaborative sensemaking, groups of people convene in sensemaking conversations to talk into being new possibilities for situations, organizations, and environments (Kolko, 2010a). When collaborative sensemaking unites multiple disciplines, the exchange of discourses permits new ways of conceptualizing problems to take hold (Snowden and Kurtz, 2003; Kolko, 2010a). Methods such as cognitive mapping, memoing, and critique provided a milieu for sensemaking of new insights. Cognitive mapping visualizes thinking around a problem to communicate complexity and inform decision making (Martin and Hanington, 2012). Critique is purposeful dialogue between stakeholders and designers in which reactions and comments alter the nature of the design concept (Martin and Hanington, 2019; Kolko, 2010a). Memoing, in the form recorded voice memos and of a running Google document, were used in real-time to capture ideas, thoughts, and impressions. Memoing is a form of note taking that supports the researcher's conceptual leaps from data to questions or concepts to explore (Birks et al, 2018). Collaborative sensemaking in the form of critique between the designer and partner Stacie Woodward, with other representatives of the Michigan education community was also a critical component of the sensemaking process. Critique is purposeful dialogue between stakeholders and designers in which reactions and comments alter the nature of the design concept (Martin and Hanington, 2019; Kolko, 2010a).

Ethical Considerations

All participants were adults over the age of 18. Each contributor completed a waiver of consent prior to engaging in co-design activities and were informed of their ability to discontinue their involvement at any point and without consequence. Given the sensitivity of the project's focus, numerous precautions were followed to ensure the confidentiality of co-design participants. This includes the intentional omittance of faces from workshop film and photo documentation and the removal of personal identification information, such as participant names, school names, specific location information and identifying pronouns. All participants are referred to using the pronouns they/their/them. Each participating member received a $25 Amazon gift card as an expression of gratitude for their time and offerings to research findings.

Results and Discussion

Research Cycle I

The first research cycle began in September 2019 with the objective of identifying the types of dilemmas teachers encounter when teaching social justice curricula. The pursuant four months concentrated on immersion within the Equitable Futures network. Immersion permits research practitioners to engage in-depth with stakeholders, building rich understandings of the complex causes of problems (O'Leary, 2005). This exploratory cycle followed the Equitable Futures curriculum into high school classrooms, conference presentations, adult learning spaces, and the main offices of Oakland Schools. Additionally, research endeavored to validate an assumption of commonality between the dilemmas teachers encounter within social justice curricula. The identification of patterns in teachers' experiences would indicate a direction for future instances of co-design. All interview citations that follow have been anonymized to protect participant identities and allow for their free quotation.

Semi-structured interviews and power analyses conducted with teachers in their classrooms quickly revealed that schools are highly individualized environments. When asked in interviews about their initial introduction to Equitable Futures project, one teacher practicing in Wayne county, Michigan replied that a colleague familiarized her with the curriculum, saying "the way that I got involved is another one of our teachers, she no longer works here but she was doing the program." Another Wayne county teacher learned of the curriculum through her administrator, sharing that "[School Principal] emailed me because I was a 10th grade U.S. history teacher and thought it would be a good fit." A teacher practicing in Macomb county, Michigan, described their resourcefulness when it comes to finding opportunities to innovate upon their instructional methods. This teacher independently joined Oakland Schools listservs that circulate professional learning opportunities to Oakland county, Michigan teachers. After reading about Equitable Futures in an email, they enrolled in the curriculum training session without first securing the approval of their administrator. This is characteristic of how they involved themselves in such opportunities in the past: "I just do it. Yeah. Don't ask for permission." This teacher acted upon their own sense of agency to bring social justice education into their classroom.
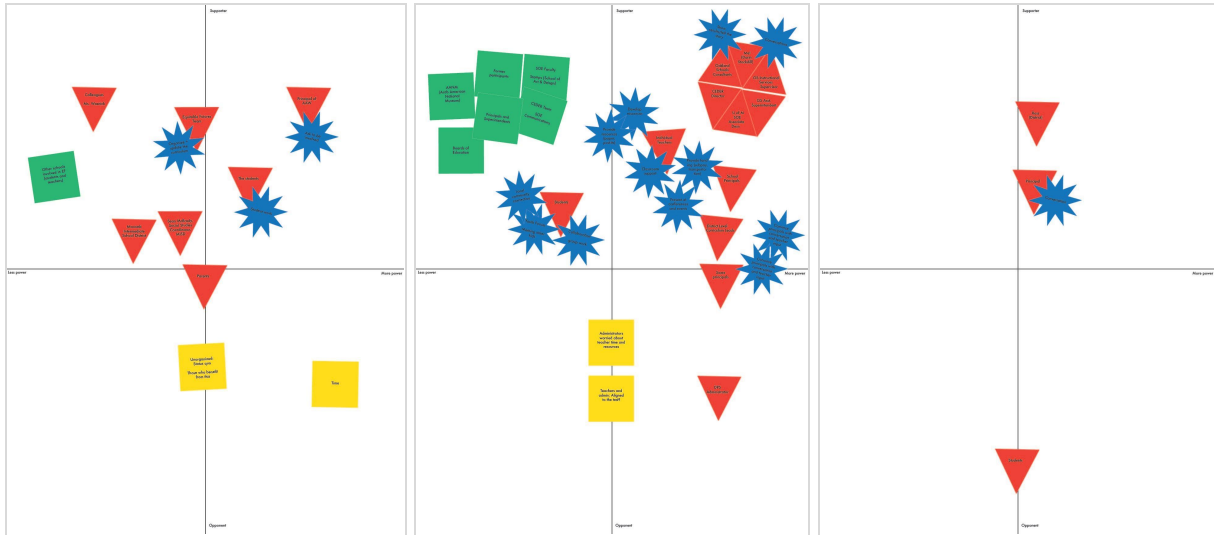
Renderings of artifacts from the power analysis activity with a Macomb county teacher (L), a Washtenaw county teacher (C), and a Wayne county teacher (R).

The results of the power analysis activity display similarly high degrees of variance. The above renderings of artifacts produced by three teachers in three different counties map the experience of implementing the Equitable Futures curriculum in their classrooms. Taken in as visual data, it is apparent that the steps followed to begin teaching Equitable Futures to students fluctuated from teacher to teacher. From the number of people involved in the decision, represented by red triangles, to the number of actions taken to progress toward implementation, represented by blue starbursts, to the number of groups aligned with the decision to transition to social justice curricula, shown as green squares, each teacher's path to instruction was unique. Further, the artifacts from the power analysis were an early signal to test additional modes of communication with teachers to facilitate the expression of dilemmas. This iteration of the power analysis occurred in the context of interviews. Teachers were advised to "think aloud" while they carried out the activity by concurrently verbalizing their thoughts (McDonald et al, 2012). As a result, the activity relied heavily on verbal communication. The minimal artifact produced by the teacher in Wayne county can be interpreted as a preference to share experiences through alternative, non-verbal means.

In November 2019, The Michigan Council for the Social Studies (MCSS) hosted its bi-annual conference for social studies educators in Clinton Township, Macomb county, Michigan. Stacie Woodward facilitated a presentation introducing Equitable Futures in a conference breakout session which attracted 18 teachers and administrators. The format of the presentation replicated for attendees the opening lesson of the curriculum, titled "Why do different races live in different places?" which explores the history of redlining, the systematic denial of home mortgages to people of color in America's urban centers. Audience members participated in the learning activity in the role of students. In a question and answer session following the simulation, Woodward addressed a teacher's question about work-arounds for lacking access to a color printer, a necessary tool for producing documents associated with Equitable Futures

in-class activities. Woodward disclosed that the documents, and consequently, a color printer, are needed to practice literacy skills embedded in the curriculum. There was an observable shift in the room proceeding from this interaction. The permission granted by this teacher expressing a challenge they faced in providing student access to Equitable Futures created space for other attendees to raise their hands and communicate their own difficulties. One teacher sought advice for modifying instruction in a class with 36 students in a classroom with a capacity for 32. Another teacher questioned whether the curriculum over-emphasized race and furthered the divide of students along racial lines.

The issues voiced by teachers at the MCSS conference connect to the dilemmas they confront in their classrooms in the context of social justice instruction. The range of dilemmas underscores the distinctive nature of schools as microcosms of the diverse societies and communities in which they are situated (Fuller and Clarke, 1994). The conditions in which this instance occurred also merit examination. The attendees willingly came to a breakout session dedicated to discussing issues of equity and social justice. All attendees were from the social studies educator community and presumably empathetic to the kinds of decisions teachers must make when selecting curricula for their classes. The presentation centered on Equitable Futures, which integrates social justice education with novel methods for teaching U.S. history. The deviation emerged concerns that remain inert during traditional means of instruction.

Reflection & Sensemaking

Insights gathered from Research Cycle I are indicative of the high subjectivity of dilemmas teachers experience in their classrooms. Results from semi-structured interviews and the power analysis activity with teachers yielded no discernable pattern in how teachers come to implement social justice curricula. Further, the dilemmas expressed by educators at the MCSS conference emphasized the individual and specific nature of the challenges faced by teachers. The assumed commonality between teachers' experiences was disproven, and collective reflection at the conclusion of the first research cycle returned a plan to pursue a design solution that respects their subjectivity.

An early prototype put forward in critique reinforced this plan. The Equitable Futures symposium was conceived to support a maximum number of teachers through their implementation of the curriculum at one time. It was proposed as a day-long event hosted by the Equitable Futures project attracting teachers, school administrators, and other communities of interest from across the region to partake in learning and conversation on social justice education, of which the Equitable Futures curriculum would feature prominently. Tempered feedback from Woodward and others cautioned that this idea placed undue burden on already overworked teachers by asking them to leave the classroom and report to another physical location. It also followed traditional "sit-and-get" models of professional learning, denying teachers an opportunity to be active collaborators in the creative process.

Rendering used in critique to prototype the Equitable Futures Symposium

Thus, the criteria outlined for a future design included: (1) Actively involve teachers in the development of the designed outcome, (2) reduce the burden on overworked teachers by limiting demands on their time, (3) create dedicated time and space for exploring and communicating dilemmas, and (4) honor the subjectivity of teachers' experiences teaching social justice curricula in their classrooms.

Research Cycle II

Research Cycle II intended to utilize co-design with teachers to surface a design method, or methods, that would allow their expression of dilemmas in their classrooms. Responding to the design criteria established at the end of the first research cycle, a co-design workshop was devised integrating the theories of effective professional learning for teachers and the one-to-one model of participatory design. It entailed the design practitioner traveling to schools and facilitating workshops with individual teachers in their classrooms, eliminating a teacher's need to travel. The 60-minute duration allowed the event to occur during the school day.

To explore method(s) that would assist communication, a "design lab in a box," a generative toolkit containing an array of creative tools, was assembled. Design labs describe dedicated physical environments supporting participatory co-design between stakeholders sharing a common interest in conducting design research on a particular problem (Binder and Brandt, 2008). The concept grew out of northern Europe and facilitates the collaborative design of social projects such as factory floor layouts (Binder and Brandt, 2008) and equitable housing (Cook

and Boyer, 2010). This modification of the design lab turned the classroom into the dedicated innovation space by consolidating materials into an easily transportable receptacle. Creative tools for the transportable toolkit were curated on the assumption that access to a greater number of tools would encourage teachers to be more communicative of their classroom challenges. The first iteration of the toolkit contained tools for writing, illustrating, sculpting, model-making, and building *(for an overview of toolkit contents, see Appendix A).*


Contents of the first transportable generative toolkit for use with teachers in their classrooms.

To actively orient the co-design engagement around social justice education, teachers were introduced to a visual overview of the opening activity of the Equitable Futures curriculum concentrated on redlining (*see Appendix B*). This framing served to purposefully ground teachers' explorations of dilemmas within the context of instruction of social justice curricula (Kolko, 2010a).

Documentation of the one-to-one workshops with teachers was captured via use of two mounted GoPro cameras. Using an adaptation of the 'sweatbox' interview method, an interviewing method utilizing recorded video to capture the metacognitive processes of participants with minimal intrusion (Silver, 1999), the cameras recorded interactions and conversation as they unfolded during the event. This freed the design practitioner to assume the roles of facilitator and co-participant in the workshops.
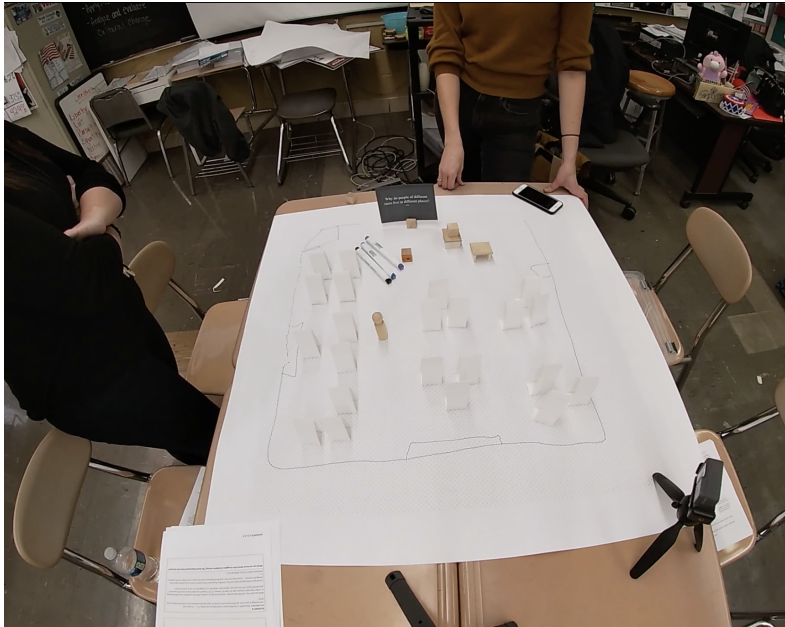
Still from co-design workshop I with a teacher in Macomb County, Michigan

The first workshop took place with a teacher in a public charter high school in Macomb county, Michigan, in mid-January 2020. While unsuccessful in its intention of supporting the expression of dilemmas, this session produced many key learnings that informed the design of subsequent co-design engagements. The workshop unwittingly advanced a "deficit-based" approach to designing with teachers, one that identifies and seeks to address shortcomings (Hiemstra and Van Yperen, 2015), by opening the event with a pre-set "ideal" fully-resourced classroom with one wooden peg doll representing a teacher and eighteen paper table tents depicting students. Over the course of the 60-minute session, the teacher was prompted to deviate from this "ideal" to create a classroom model representative of their space and students. Evident, also, was a misalignment between the creative tools meant to support expression and the teacher's ability to express. The teacher made little use of the materials except when prompted by the facilitator. The Copic-style markers, an illustrating implement preferred by professional artists and designers, triggered apparent feelings of discomfort. After being asked to select a marker to outline the floor plan of their classroom on a large sheet of paper, the teacher remarked to the facilitator "that [line] probably isn't prestigious enough for you." There was a second instance of this when a colleague entered the classroom to observe the workshop. Projecting onto the co-worker, the participating teacher said "She's like, why aren't you lining it up nice? You need a ruler." The teacher's reactions to the tools selected for the generative toolkit suggested that they implied a certain level of creative mastery. The feelings of inadequacy they provoked precluded this teacher's access to a potentially enlightening design experience.

Workshop I: Reflection & Sensemaking

The updates made to the participatory workshop's structure and sequencing following this initial session reflect a conscious shift to asset-based engagement strategies. Post-reflection with Woodward gave way to the realization that permission-giving must be emphasized in the workshop introduction. Permission-giving creates spaces tolerant of failure in order to encourage the transgression of boundaries, which is critically important for supporting reception of novel ideas (Hall et al, 2016). Re-writes to the workshop facilitator's script reminded teachers of the disciplinary and cultural expertise they brought to co-design activities; that their knowledge of their students, classroom, and teaching practice were of equal value in the design workshop as the design practitioner's knowledge of design methods. Other changes included refinements to the toolkit, such as replacing the paper table tents representing students with wooden peg dolls and removing some of the artists' tools in favor of tactile elements. Rather than open activities with a pre-set "ideal" classroom, teachers would build their own models atop a blank paper canvas using tools of their choosing.

Reflection also clarified the effects of the design practitioner's behaviors and presentation on session outcomes. One-to-one participation in play and creative acts are shown to enhance social activity and competency (Gray, 2017). To support conditions that would enable rapport building and unrestricted experimentation, conscious choices were made around dress, such as selecting colorful clothing that would impart a sense of delight to the events, and non-verbal communication. Effort was made to be mindful of hand placement that would impart openness and facial expressions to communicate excited curiosity during co-design.

Workshop II

These adjustments to the design of the workshop were in place for the second and third workshops with three history teachers, occurring at a public high school in Oakland county, Michigan in late-January, 2020. The second workshop involved an intern teacher and her cooperating classroom teacher. The unplanned addition of a second teacher afforded a chance opportunity to how the generative toolkit assists teacher collaboration.
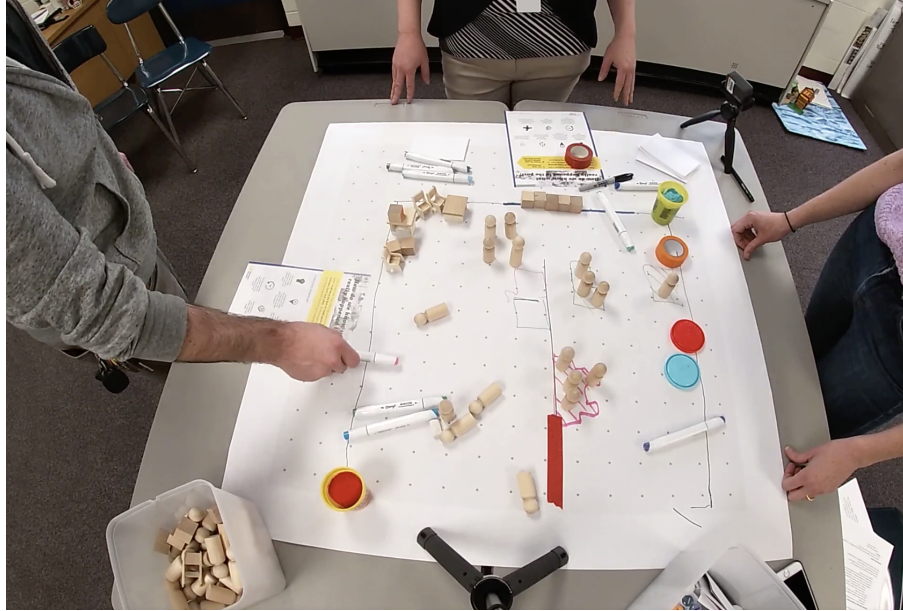
Still from co-design workshop II with two teachers in Oakland County, Michigan

The willingness of the two teachers, particularly the cooperating teacher, to utilize the creative implements in the toolkit starkly contrasted Workshop I. They readily displayed confidence, imagination, and expressiveness, both in conversation about their students and in making visible their thinking about effective instruction of social justice education, and the challenges of teaching a class of 38 students. This teacher can be described as feeling a strong sense of responsibility to teach students about social justice, demonstrating through use of the toolkit a design for an Equitable Futures activity that could make the human cost of oppressive systems more explicit.

A preference for the wooden blocks and figures again began to emerge. The teachers repeatedly reached for the wooden figures, withdrawing them from the toolkit by the fist-full, to elucidate ideas and scenarios to the design practitioner and to each other. Some of the figures were given the identities of specific students and resource teachers. The wooden blocks were readily used as stand-ins for classroom fixtures, like desks and the teacher's computer.

The inclination to use modeling to communicate a vision of effective social justice education enabled an illuminating exchange between the three workshop participants. Taking up the wooden figures and Copic markers, the cooperating teacher modeled an imagined idea for redlining floor puzzle to make the psychosocial effects of the harmful housing policy a visceral experience for their predominantly white student body. The prospect of materializing this idea, however, presented a dilemma. As this teacher explained, "When you're talking about race, it has to be right. It has to be right. You can't let something be misconstrued." The teacher estimated it would require four additional hours of work to execute their vision for the new activity that would impart a valuable lesson to students. But this comes at the cost of time spent with their family: "It's a matter of winning your day with your work life and your personal life. When are you going to

put together a good lesson like this?" This teacher expressed tension between the desire to do right by their students and be present for their family.

Workshop III

The third workshop involved a teacher who was reserved in personality and appeared skeptical of the premise of the co-design. They had not agreed to the workshop willingly, rather, they had been volunteered by the cooperating teacher from the previous session. Despite the hesitation, this engagement returned some of the richest insights within the scope of this project.

In conversation preceding the classroom representation activity, this teacher demonstrated their interest in maintaining order in their classroom. The spartan space held desks arranged in organized rows facing the teacher's desk at the front of the classroom. They mentioned that they liked to position themselves at the door at the beginning of class to pre-empt any student showing strong emotion, sending them away to gain their composure before entering the space.

Similarly to the teacher in Workshop I, use of the Copic-style marker to aid in creating a classroom representation brought about apologetic behavior over line quality. Reinforcing the asset-based focus of the workshop, the facilitator reminded that any way the teacher chose to leverage the creative tools to express themselves was welcome and valid. As in Workshop II, the wooden blocks and figures showed to be favored tools. The teacher used these to create a model of their classroom, and like the previous session, the forms took on specific identities. In building a filing cabinet by stacking two blocks on top of each other, the teacher commented "this is my school improvement stuff." After creating the model, conversation turned to Equitable Futures. The teacher mentioned that they had recently taught a lesson from the curriculum on the subject of redlining. Out of fear of coming off as politically biased, they decided in the moment to remove the term "social justice" from their instruction, out of fear that it was too politicized:

> *Teacher:*
> Before I even started [Equitable Futures], when we got there and we did that whole "What are you afraid of?" One of the things I did put, I was worried about the political bias-
>
> *Megan Freund:*
> I see.
>
> *Teacher:*
> ... before I go into it. I mean there's some people that you even bring up the term "social justice," and that's... They kind of get closed off, and don't want to hear it.
>
> *Megan Freund:*

Interesting.

Teacher:
That's tough. I do have some that could be like that, but with the redlining, I think I was able to present it in a way that wasn't, I don't think I even used the term social justice when I was talking about what we're going to be doing. Because, again, that sometimes will immediately in their head hear that, and they'll think of something else and you'll lose them.

Megan Freund:
I see.

Teacher:
So, it's like, "Let's look at some of the unequitable stuff in the past." You're not saying the buzz words, so to say, and that gets a little bit more of a buy-in. So, that was one fear I had, and it went well.

This teacher disclosed a choice made in the face of a dilemma: Do they maintain the integrity of the social justice lesson and make space for a potentially difficult conversation in the classroom, as the curriculum was designed to achieve? Or do they remove the term "social justice" from their instruction, passing on an opportunity to provide students with a new perspective, and keep relative peace in the classroom? The teacher's decision to pursue the latter denied their students of teachings that could potentially transpire into action toward regional justice.

Using the constructed model of the classroom, the teacher and the design practitioner co-designed alternative strategies for teaching the lesson on redlining, together rearranging the student figures into small groups. To experiment with the workshop's potentiality to invent new classroom realities, as is necessary to move toward equity in education, the design practitioner produce a small ball of foil and placed it amidst a group of students, asking the teacher to imagine the Equitable Futures lesson led to a heated discussion, made tangible by the foil. Sharing that one approach they had employed to address interpersonal conflict was to transform the argument into a whole-class discussion, the teacher and design practitioner again rearranged the student figures in the model into one large oval.
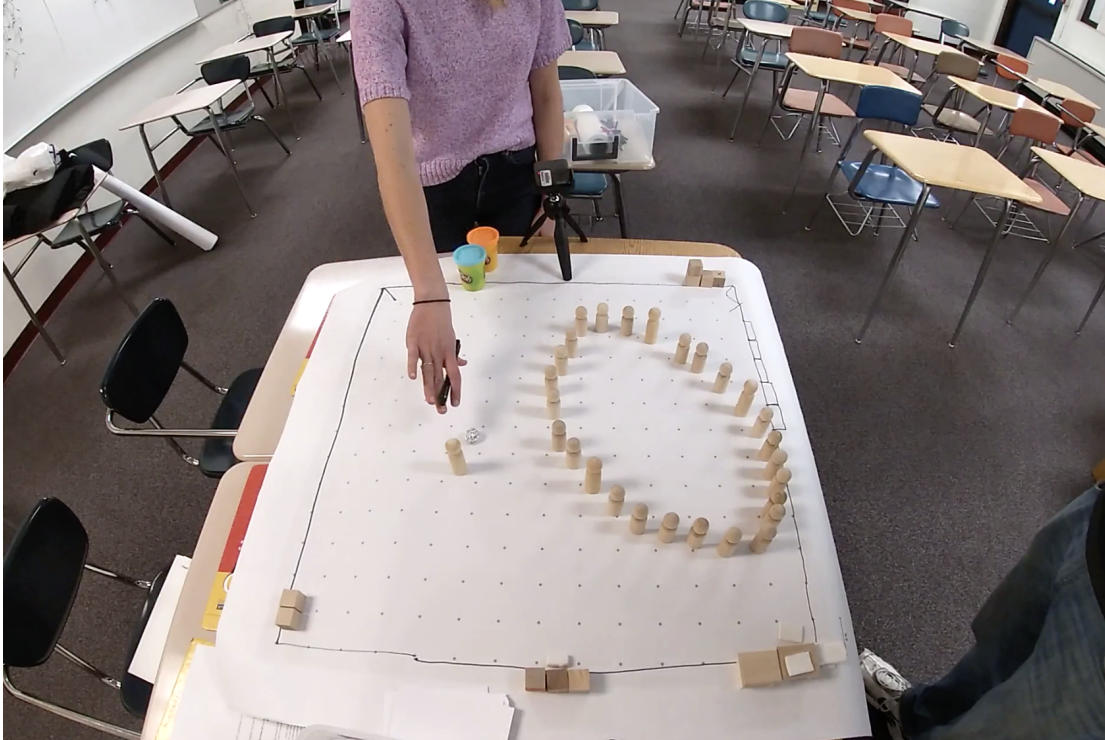
Playing with the position of the "teacher figure" during co-design workshop III with a teacher in Oakland County, Michigan.

The teacher was asked where they like to position themselves during large-group conversations. They gestured to the center of the circle, sharing their preference to be the lead moderator. At this point the wooden "teacher" figure was repositioned to the periphery of the circle. The teacher was asked to comment on the model's new configuration:

Megan Freund:
What would it be like if you removed yourself and let them talk it out? Has that...what do you think?

Teacher:
I've done that with my juniors and seniors. Again, I get a little nervous with the freshmen and sophomores.

Megan Freund:
Why is that?

Teacher:
Maturity-wise it's a big difference between 14 and 17, 18, which is why the social studies electives like sociology you only can be a junior or senior. Freshmen and sophomores can't take it.

Megan Freund:
Okay.

Teacher:
It's because of the topics we cover, and cultural relativism, and that can be uncomfortable conversations with some people. I kind of probably take a little bit more control of this than I probably should. But if I step out, then it's-

Megan Freund:
How does that make you feel, seeing the teacher separate from the group?

Teacher:
I get nervous. I get nervous because then it's like, "What's going to happen if somebody says something somebody doesn't agree with?" You got to set the boundaries right away, which is why it's kind of like almost Lord of the Flies.

The teacher had created a bond between themself and the wooden teacher figure, using it as a proxy upon which to project their feelings. They also expressed a bias for control, and a judgment that young people may not be capable of having the hard conversations necessary to achieve new depth of understanding around social justice issues unmonitored. The affordance of a parallel environment seemed to permit the imagining of other possibilities for the classroom and one's behavior within it. The interaction with the classroom model led this teacher to consider that their need to take control may be conversely harming their students.

Workshops II & III: Reflection & Sensemaking

The parallel world of the model classroom seemed to open these three teachers to express their personal hindrances to social justice education. In the case of the teacher participating in Workshop III, the model also afforded the emergence of new information about the impact of their biases on student learning.

The tools selected by these teachers to mediate discussion were not the tools presumed to encourage expression. Other implements, like the Copic markers or modeling clay, were thought to be more enabling, given they could be used to create an infinite number of forms. But these tools barred participation in co-design activities, either because they held an implied prerequisite of creative mastery or were not age-appropriate for the adult audience. Including these elements in the initial iterations of the generative toolkit reflected the design practitioner's preferences for creative communication. As attention was paid to the tools teachers used that brought awareness to dilemmas - the wood blocks and figures, and other tactile pieces - the toolkit became more refined and the teachers more expressive. These tactile components democratized participation by holding no pretense for use.

The interactions between the teachers and the wooden blocks and figures align with behaviors

demonstrated in pretend play. This mode of play stimulates non-literal or symbolic actions and is thought to promote communication, positive interpersonal interactions, enhance engagement, and reduce stigmatization of others (Barton, 2010). The teachers' instincts to transform the ambiguous forms into computers, tables, and filing cabinets, and empathize with the wooden teacher figure could be explained as object substitution and imagining absent attributes. Object substitution sees players utilize one object as a stand-in for another, such as a block for a car (Barton, 2010). When objects take on imagined qualities, such as a doll showing emotion or having an occupation, it can be categorized as assigning absent attributes (Barton, 2010). That the teachers would innately demonstrate these behaviors reflects the universality of play in humans. To play is an inherent ability, a means through which human imagination and creative action combine to develop practical skills (Schulz et al, 2015). This points to play as more than an avenue for pleasure; it is also a means of spurring thought about complex problems (Gray, 2010). That the teachers wilfully engaged in playful behaviors embedded in the context of their jobs indicates that work and play can combine. It suggests that two domains, arbitrarily considered separate, can integrate to support achieving work-related objectives in an enjoyable and affirming way.

This outlines the premise of serious play, the participatory design method leveraging playful behaviors and imagination to progress towards critical goals, to facilitate experimentation with alternative realities in the high school classroom. The method posits that intentionally inviting play into problem spaces where it traditionally hasn't belonged leads to innovation (Schulz et al, 2015). This is attributed in part to the fundamental changes in thinking and acting we exhibit in play contrasted to work. By applying playful behaviors to the physical objects in the toolkit, the journey leading the teachers to communicate the consequential decisions they regularly confront in their classrooms resembled Vygotsky's theory of double stimulation. This describes a learning process in which the learner is provided with a demanding task, the first stimulus, and an ambiguous object, the second stimulus. The object takes on new meaning as a mediator of actions necessary for completing the challenging task (Schulz et al, 2015). The use of play concurrent with questions relating to social justice education seemed to enable these teachers to be more forthcoming about the dilemmas they face.

The teachers in Workshops II and III employed the same tools, but each expressed individual dilemmas regarding time, authority, and political affiliation. Though the interactions taking place in the workshop enabled the teachers to communicate, the teachers unsuccessfully engaged in invention of new possibilities for social justice education in their classrooms. Further, the workshop excluded dedicated time for teachers to reflect upon the co-design event, missing an opportunity for them to synthesize actions and conversation into tangible changes to their teaching practice. Kolko asserts that it is the process of reflection and synthesis that make ideas "real; something that can be discussed, defined, embraced, or rejected" (Kolko, 2010b).

In collective reflection upon these experiences, consensus built around a need to employ teachers' imaginations and guide them to a visionary space through use of the toolkit and

preserve time to allow sensemaking to occur. To accomplish this, use of hypothetical scenarios and time for reflection were incorporated into the workshop plan.

Research Cycle III

The potential of serious play as a method for eliciting dilemmas connected to social justice education from teachers merited further attention. Research Cycle III dedicated co-design activities to understanding whether serious play for teachers could make dilemmas explicit.

Workshop IV

Workshops IV and V both took place in late-January, 2020 at an alternative public high school in north Oakland county, Michigan. The small school serves fifty-five students at risk of late graduation. The workshop debuted a new iteration of the generative toolkit featuring exclusively tactile elements, with the exception of Sharpie markers for documentation purposes. These co-design engagements endeavored to reinforce workshops as psychologically safe environments for expression through the use of hypothetical scenarios to remove teachers from their immediate classroom reality. An assumption asserted that activating teachers' imaginations would increase playful behaviors, building teacher capacity to disclose more dilemmas. To enable creative exploration while maintaining relevance to the Equitable Futures curriculum, teachers were asked to disclose their "hopes" for educating students about social justice after building a model of their classroom. The "hopes," or desired outcomes, were recorded on a sheet of paper and functioned as the departure point for play.

The teacher participating in Workshop IV displayed the same object substitution and imagining absent identities play behaviors as the teachers in Workshops II and III. Placing a wooden figure into their classroom model, the teacher remarked "This would probably be my super absent kid." New in this design event was the teacher's delight upon picking up a wooden figure that stood taller than the others, immediately assigning it an identity:

> *Teacher:* Ooh, am I the big one? Cool.

Gibson et al. describe this type of interaction as role negotiation, a pretend play behavior included in the establishment of foundational rules prior to play enactment (Gibson et al, 2020).

Generating a list of eight "hopes," the teacher chose to model: "Creating a sense of empathy for peers." Because of the range of economic, racial, and political diversity at the high school, the teacher emphasized this as a personal priority. After initially remarking "this is hard," the teacher modeled a situation in which students in their classroom were partaking in small group discussions about their life experiences. Through this process, this teacher realized that one change they could implement in their classroom to enable their students to empathize with one another is to teach them how to ask more thoughtful questions.

In reflection at the end of the workshop, the teacher shared their synopsis of the co-design

event:

> *Teacher:*
> *We modeled what I'm going to have to work with in a way that sort of brought*
> *my thinking out...It's just a whole other, it's a less restrictive way, I guess. It's*
> *just an added element of planning that was helpful.*

This teacher confirmed that incorporating play both liberated their thinking and offered a mode of visual planning that they found valuable.

Workshop V

The workshop similarly brought about new insights for the teacher involved in Workshop V. They described feeling a fondness for learners enrolled in alternative education, sharing that events of their own upbringing enabled them to form a close connection with their students.

As with the previous workshop, the teacher disclosed their desired outcomes for educating students on social justice after completing a model of their classroom. They shared six objectives, ranging from "recognize the impact of institutionalized segregation" to "develop critical thinking skills." The teacher chose "develop critical thinking skills" as the design prompt for play activities. Believing this would take the form of small group discussions in their classroom, the teacher rearranged the wooden blocks and figures within their model into clusters of small discussion groups. They expressed the importance of exposing students to opinions that differ from their own, acknowledging that this may lead to intense discussion. Motioning to a small discussion group in the model, the design practitioner asked the teacher how they might respond if the group's conversion grew passionate. The mention of a prospective conflict prompted the teacher to swiftly and intuitively reposition the "teacher" figure to the group experiencing friction. Realizing what they had done, the teacher began to laugh.

This demonstrated the hand-mind connection which generative toolkits seek to activate. Gauntlett shares that the brain and the hands are engaged in a continuous interactive relationship, permitting a hand's ability to both manipulate objects and think and express *through* objects (Gauntlett, 2007). In this instance, the intuitive gesture of placing the teacher at the source of the conflict revealed a more deeply held opinion of what defines appropriate comportment in the classroom. It is possible that the laugh emitted from the teacher arose out of realization that their words and their actions around the significance of productive conflict were not in alignment. In another moment during the workshop, the teacher asked to pause the co-design exercises to record an idea for a new activity to teach students about the concept of privilege, generated through the hand-mind interaction with the wooden figures and blocks.

In the concluding reflection, the teacher acknowledged that their instruction had fallen into routine and that use of the serious play tool made this apparent:

> *Teacher:*
> *I think it...I would say I'm probably a bit of a visual learner, so to be actually able to look at this, it kind of just forced me to go, "All right. Is [the classroom] working the way that I intended to work or is it just kind of how it is?"*

Workshop VI

This co-design instance occurred in late-February, 2020 at a private alternative high school in Alameda county, California. By this time, the generative toolkit had been further reduced to the wooden blocks, wooden figures, and paper canvas as its loose parts for play (Logan, 2016).

The last iteration of the serious play toolkit

The workshop collaborator was a teacher who could be described as a social justice educator, one who "guides their schools to transform the culture, curriculum, pedagogical practices, atmosphere, and schoolwide priorities to benefit marginalized students" (Theoharis, 2007). This teacher understood social justice education as an ideology and infused its practice into every interaction in their classroom. Their adoption of critical pedagogy, education serving to interrupt complacency with measured responses to particular educational contexts (Angello, 2015), resulted from the intersectionality of their own life experiences.

A teacher in Alameda County, California makes social justice instruction tangible through the serious play toolkit in co-design workshop VI

In this workshop, the toolkit allowed the teacher to visually communicate the strategies they employed to disrupt power dynamics and engage students in active interrogation of the origins of their beliefs in their classroom.

Workshops IV, V & VI: Reflection & Sensemaking

These workshops demonstrated that teachers are capable of engaging in playful behaviors to uncover insights that can be directly applied to their teaching practice. The hand-mind connection made available by the toolkit emerged new insights for teachers in Workshops IV and V: The purposefulness of a visual planning tool to make educative priorities explicit, and the discomfort of learning that actions can belie words, even for teachers that made conscious choices around educating marginalized youth.

The contextual factors of Workshop VI helped to calibrate an audience for whom this serious play toolkit could be of most use. The teachers deriving the most benefit did not fully embrace social justice as a holistic pedagogical approach. The serious play toolkit began to emerge as a means through which teachers can learn to enact social justice as a whole system of interactions in their classrooms, not a pedagogical orientation that only occurs during history instruction.

An opportunity was missed during Workshop V to learn from the teacher the meaning of their intuitive rearranging of the teacher figure to the source of classroom tension. This prompted reflection on the workshop as a prototype. It clarified that storytelling, a fundamental element in Sanders's make-enact-tell model of iterative prototyping (Sanders, 2013), was missing from the workshop's structure. Storytelling is verbal explanation through which creators make sense of constructed prototypes (Schulz et al, 2015). Just as prototypes, embedded in stories are beliefs and assumptions about the self and about others. Communicating aloud the internal narrative generated around a prototype enables assumptions to be reproduced, understood, questioned, and transformed (Schulz et al, 2015). Arguably, stories about prototypes give way to greater insights than their physical form. The feedback generated in response to a narrative's message allows the story to reflexively develop in new directions (Schulz et al, 2015).

The incorporation of storytelling is a central component of the LEGO Serious Play™ (LSP) methodology. An invention of the LEGO company, LEGO Serious Play™ consists of facilitated play interactions mediated through LEGO brick (www.lego.com). Participants in LSP workshops use brick to build metaphorical models in response to issued prompts, then share stories embedded into the model with the participant group. Group members issue feedback about the models in the form of clarifying questions, sending the builder to communicate the story in further detail. The methodology was specifically created for use with adult audiences to harness the inherent propensity for play to "build" organizational strategies and innovations (Gauntlett, 2007). To increase comfort around engaging in play to resolve challenges, LSP structures its design

engagements around four preferential qualities of adult play: (1) social bonding, (2) emotional expression, (3) cognitive development, and (4) constructive competition (Gauntlett, 2007).

The LSP methodology and workshop structure offered a useful frame for future co-design events with teachers. The addition of storytelling led to the expectation that serious play could move teachers from expression of dilemmas through use of the hand-mind connection to their deeper examination and possible transformation. Applying these actions to hypothetical scenarios that may arise while teaching social justice curricula to students allows teachers to communicate dilemmas, then test out new reactions in a safe space separate from real-world consequences. This draws upon the conceptualization of play as a mode of practice (Gray, 2017). The conscious transition of the design practitioner's role from co-designer to design facilitator served to further build the capacity of teachers to adopt serious play as a means of problem solving within the discipline of education.

Workshop VII

This final design event within the scope of the present project was scheduled to take place on March 12, 2020. It was considered the cumulative test of the serious play toolkit. On March 11, 2020, the state of Michigan saw widespread university closures in response to the public health emergency precipitated by the novel coronavirus and the increasing spread of its transmissible disease, Covid-19. The universities issued a mandate that enrolled students return to their permanent residences. A shelter-in-place order issued by the state of Michigan closed all schools in the state for the remainder of the spring 2020 semester. These events forced cancellation of the planned design research activities. At the time of writing, the latest iteration of the serious play toolkit has yet to be evaluated, yet the process redesigning an engagement around collaborative participation in serious play to uncover, share, and transform dilemmas connected to social justice curricula merits examination.

Insights gathered from previous workshops with teachers plus the design precedent established by LEGO Serious Play™ inspired a significant retooling of the design workshop (*see Appendix C*). The co-design workshop was reimagined to support co-designing teams of teachers, with the design practitioner assuming the role of facilitator. Recalling findings from Workshop II, wherein a teacher-in-training and cooperating teacher successfully utilized contents of the serious play toolkit to share ideas for new activities, the new iteration of the co-design event sought to further explore the toolkit's potential as a collaborative learning tool. An assumption also supposed that teachers would more quickly suspend disbelief and enter an imaginary space engaging in play with their peers than with an outsider. Deeper stimulation of teachers' imaginations was believed to further assist the expression of beliefs and biases that might generate dilemmas in the classroom. As a research opportunity, the workshop sought to investigate whether inviting teachers to play within the bounds of scripted play scenarios would increase their confidence confronting similar situations should they arise in their classrooms.

The updated workshop would engage 28 pre-service teachers enrolled in a social studies

education course at Oakland University in Rochester, Michigan. A pre-service teacher describes a pedagogue in training that is not yet leading instruction in classrooms (Moore, 2008). This promised an advantage, as nearly every hypothetical scenario explored through the serious play toolkit would be novel to this audience. The workshop plan divided the class into seven teams of four teachers. Each group would be issued a prototype of the serious play toolkit, further refined to contain only 60 wooden blocks, 44 figures, and a "play mat," a canvas for play interactions. The co-designing teams of teachers would use the serious play toolkit to experiment with responses to classroom situations in which they would be compelled to make a moral decision. The groups would perform the story of their decided course of action with other co-design teams.

Allowing for a potentially profound co-design experience in a duration of 60 minutes required significant changes to the workshop's framing and sequencing. Expectations established in the workshop introduction included a shared set of ground rules for collaboration. This intended to produce a psychologically safe space around the event to encourage experimentation and liberation from self-imposed boundaries (Hall et al, 2016). Mindful word choices in the facilitator's script extended an invitation to participants to engage in play rather than introduce activities as tasks that reward efficiency of completion. The timed activities prioritized participant story-making and story-telling, believing that these activities would be of greatest value to the co-designing teams.

While this specific workshop formula has yet to be tested, the rationale behind decisions to frame and scaffold this co-design event is of value for designers and educators considering collaborative serious play as a means of affecting social change.

Conclusion

This paper highlights the early success of a serious play toolkit for encouraging teachers' expression of dilemmas encountered in the classroom during instruction of social justice curricula. Use of this unconventional design method for detecting the moral decisions teachers must make when adopting social justice curricula, such as Equitable Futures, developed through participatory co-design with teachers practicing within Metro Detroit, a region whose unalleviated struggles with race and socio-economic segregation and their influence on access to education mirror a nation-wide reality. Education for social justice is a curative approach for unraveling the historical educational narratives constructed to maintain white supremacy in the United States, but only to the extent that teachers, a predominantly white audience, are willing to actively participate in the effort.

Through voluntary engagement with wooden blocks and figures functioning as stand-ins for classroom elements, educators in 1:1 participatory co-design workshops expressed a range of dilemmas specific to their classrooms and the intersectionality of their individual experiences. Examples emerged within this body of work include dilemmas related to authority, student maturity, personal vs. professional responsibility, the existence of resources, political affiliation, race, and identity. It can be speculated that these dilemmas are connected to the multiple dimensions that define equity in education as a wicked problem space, a brief list including race, socio-economic status, gender identity, age, religion, sexual orientation, political ideology, ethnic background, cultural heritage, maternal language, and geographic location (Spring, 2017).

Drawing from insights gained through this study, the dilemmas communicated by participating teachers are connected to their identities as white educators teaching for equity and social justice in an education system designed to maintain assurance of white dominance (Spring, 2017). The difficult conversations and displays of strong emotions that commonly occur in education for social justice (Applebaum, 2017) are antithetical to the cultural norms governing behavior in public schools, norms to which even progressively-minded educators are conditioned. This was demonstrated in workshops III and V, where two teachers teaching Equitable Futures in two different schools in Oakland County, Michigan made explicit through use of the serious play toolkit their preference for a classroom environment that is absent of conflict where they occupy the center of attention. This preference is the product of whiteness (Goodman, 2011). To cultivate pedagogy that responds to the demands of educating for social justice, teachers must come to see, feel, and know their own positionality in the classroom and the ways in which it undermines their efficacy in teaching to transform student perspectives around race and white privilege. In effect, the impact of their decisions made during social justice instruction must become tangible.

Serious play provides a means to make outcomes of decisions tangible in both the metaphorical and literal sense. The engagement in playful behaviors invited by the contents of the serious play toolkit emerged as an unlikely, yet persuasive, means for teachers to work within existing school structures to express their dilemmas regarding social justice education, then explore alternative

realities to advance its reach, starting with their own classrooms. The use of wooden blocks and figures to construct physical representations of classrooms stimulated the hand-mind connection, allowing teachers to "think with the hands" by intuitively moving components on the playmat. These playful gestures activated a creative intelligence undervalued in public education to emerge novel realizations about teachers' own behaviors in the classroom, and how they deter or promote access to social justice teachings. The safe and brave space afforded by the asset-based ethos of the co-design events allowed teachers to vocalize their reflections on the experience while maintaining an openness to ways in which they may change.

In follow up interviews with workshop participants, one Oakland County teacher commented that they "really liked using the different objects to visualize my classroom and discussing ways in which we could maximize student participation." A second teacher, also from Oakland County, said that in addition to serious play being a helpful planning tool, the experience of play was enjoyable, remarking "I got so excited when I saw what we were doing." A Macomb County teacher implied that participating in serious play had repercussions that extended beyond the classroom, sharing "I'm hoping to make things a little bit easier for myself and for the others around me. Being intentional in design is something that can transfer into all realms of interaction. So, I'm hoping to see some of that come through." These positive impressions after the use of serious play in a co-design setting may be attributable in part to modeling the workshop's design on effective professional development opportunities for teachers: learning that is collaborative, job-embedded, and sustained over time. Incorporating these parameters into co-design with teachers may increase the likelihood of the design engagement evolving teacher practice. These reactions from teachers follow participation in one instance of the co-design workshop; more research is needed to gauge the long-term effects of the serious play toolkit and workshop on instructional practice.

The allure of amusement derived from engaging in play contributed levity to discussions around social justice topics. The potential of this "light" approach (Wartenweiler, 2018) indicates a way for overcoming white fragility, the documented phenomenon of behaviors whites engage in to avoid confronting racialized issues, to sustain the attention and interest of white citizens in addressing matters of race and privilege. That teachers guided the advent of the serious play toolkit through preferences exhibited in participatory co-design workshops inspires optimism for the method's continued use within education. Involving teachers in collaborative co-design amended with formalized reflection formed a just design process wherein joint creative acts centered around play catalyzed discussion for promoting social justice in schools (Greenwood and Levin, 2007). This reveals a pathway for designing for change in any wicked problem space that demands the active participation of communities in the invention of a new reality.

Ultimately, it is the decisions made when facing dilemmas, moral inflection points, that determine the degree to which social justice is practiced in the classroom. Providing teachers with a tool to build their capacity to consciously make decisions that will further advance access to transformational learning is a first step towards the building of equitable structures, first in

schools, then in society. Will the serious play toolkit resolve all of the inequities in education? Most likely no. However, the notion of play meeting the consequential work of progressing social justice put forward in this thesis is one that designers and educators are encouraged to continue to iterate upon.

Limitations

The educators involved in the present design project voluntarily elected to bring a social justice orientation to their classroom instruction. They can be described as "open-minded" and therefore predisposed to pursuing novel learning opportunities for evolving their teaching practice, such as co-design events. This generates debate over whether these factors made possible the early results indicating that serious play can assist teachers in exploration of dilemmas in their classrooms. Additional research is needed to validate whether this model of participatory design workshops centered on serious play for professional development is generalizable to all high school teachers.

The use of volunteer and convenience sampling to assemble a research group further limits the generalizability of findings. Volunteer sampling and convenience sampling produce non-representative research samples. This phenomenon is reflected in the present project's participants: Although the majority of in-service teachers in the United States are white women, the majority of teachers involved in this study were white males. This speaks to a broader conversation around the intersectionality of race, class, and gender and the manifold ways they shape our access to opportunities (Costanza-Chock, 2020). The serious play toolkit's form and frame for use are reflective of those who had the privilege to participate in its development. This includes the design practitioner, whose positionality as a white woman of relative social privilege attending an elite university and a non-native of Michigan influenced the trajectory of the project.

Efforts to diversify the research sample included placing calls for participation through Michigan-based social studies education organizations, placing advertisements with Detroit-area teacher supply swap Facebook groups, requesting contacts from educators at the University of Michigan School of Education, and connecting with acquaintances from the practitioner's own social network. This is how the participants from Alameda county, California came to join the project.

Another phenomenon qualifying findings is participant churn. Teachers who had previously agreed to join the project as co-researchers later revoked their participation, citing scheduling conflicts or lack of support from school administrators.

The discrepancy between the university calendar and the public school academic calendar constrained the window of time for research events to take place. The public health emergency onset by the novel coronavirus further limited possibilities for in-person events dedicated to the generation and evaluation of designs with teachers.
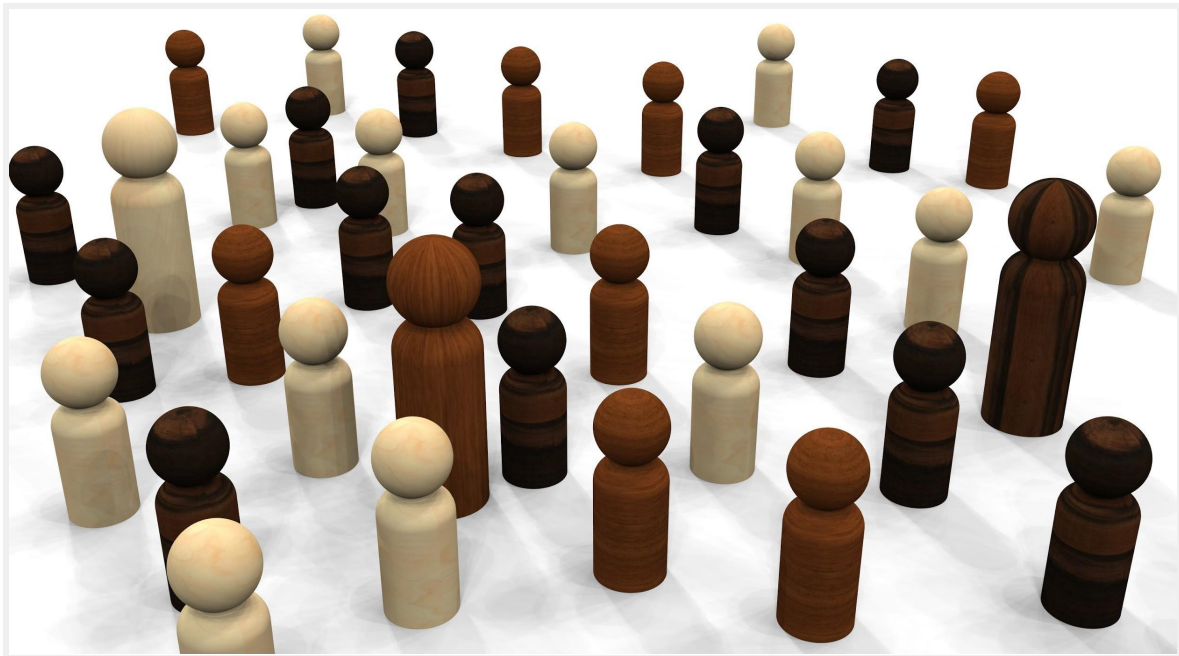
Future Work

Image credit: John Marshall

The introduction of Covid-19 has forced exploration of alternative forms of the serious play toolkit and workshop. To continue the present work, experimentation with a digital version of the serious play toolkit has begun using the online platform Google Jamboard, an interactive whiteboard that permits real-time collaboration online. Of interest is the centrality of touch and the manipulation of physical objects in the generation of insights through play. Planned tests aim to validate whether the sensory inputs afforded by digital platforms, such as image and sound, promote similarly intuitive play behaviors in participants.
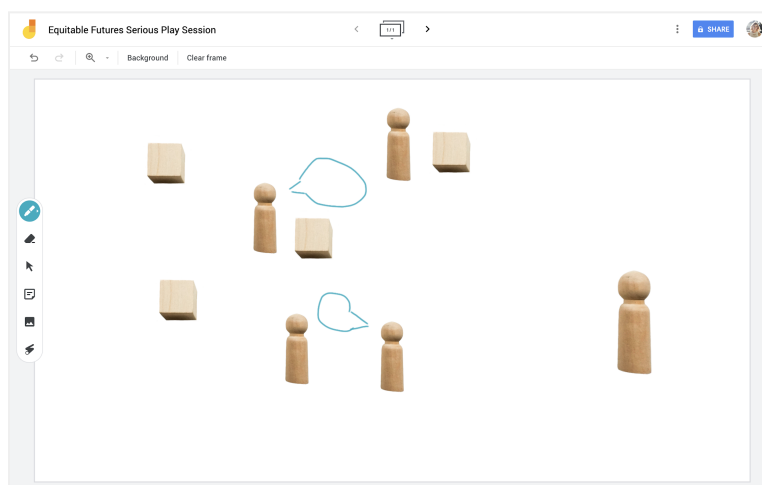
Still from prototyping session of a digital version of the Equitable Futures serious play toolkit in Google Jamboard.

Looking ahead to when in-person participation in design events no longer poses significant health risks, proposed changes to the serious play toolkit include an updated set of loose parts evoking the range of racial diversity of students attending American public schools. The off-the-shelf figures fashioned out of birch wood included in the initial toolkit prototypes carry an implicit designation of whiteness. Curricula intended to promote social justice defined by the intersectionality of race and socio-economic status, such as Equitable Futures, may benefit from use of more representative wooden figures and blocks to intentionally practice inclusive, culturally-responsive teaching practices, wherein teachers integrate individual students' home, communities and learning contexts into classroom instruction (Darling-Hammond, 2017). Given that students of color will comprise 56% of the U.S. student population by 2024 (U.S. Department of Education, 2016), tools for building critical race consciousness in teachers is of highest importance.

The potential of a serious play toolkit to reduce inequities within education is only beginning to become known. Beyond its original use to support teachers involved in Equitable Futures to identify and consciously respond to dilemmas, early feedback from teachers encountering the toolkit cited its prospective benefits for promoting equity and social justice across the educational ecosystem. One professor at the University of Michigan's School of Education advocated its incorporation into pre-service teacher education to aid instruction of pedagogical strategies. Teachers involved in co-design workshops commented how the toolkit would be beneficial for co-creating lesson plans, classroom spatial arrangements, and classroom social dynamics with their students. One educator also expressed interest in utilizing the serious play toolkit to co-design education reform policies with local school board members. To enable this continued exploration of the serious play toolkit's applications within education, plans for a freely accessible version are in development. Public school educators will be able to request a serious play toolkit at no charge to use for educational purposes. It is anticipated that teachers will develop new uses to support communication, collaboration, interaction, and co-creation within their own specific classroom contexts. Such co-designed approaches, if shared, could contribute more extensive examples of serious play in the service of addressing inequities for students in the wicked problem space of education.

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Summary of generative toolkit changes over time:

Iteration I	Iteration II	Iteration III	Iteration IV
Paper rolls (brown, white)	Paper roll (white)	Paper roll (white)	Wooden figures
trace paper	Play-doh	Sharpie markers	Wooden blocks
Pipe cleaners	Scissors	Wooden figures	"Playmat"
Play-doh	Copic-style markers	Wooden blocks	Prompt cards
Scissors	Sharpie markers	Wooden tables	
Copic-style markers	Pencil	Wooden chairs	
Sharpie markers	wooden blocks	Dot grid "playmat"	
Pencil	Wooden tables	Sculpey clay class tech (computer, printer, projector)	
wooden blocks	Wooden chairs	Small, tactile objects	
Wooden tables	Wooden figures (students and teachers)	Prompt cards	
Wooden chairs		Blank speech bubbles	
Wooden figure (teacher)	Table tents		
Table tents (students)	Glue stick		
Glue stick	Dot grid "playmat"		
Dot stickers	Sculpey clay class tech (computer, printer, projector)		
Dot grid "playmat"	Small, tactile objects		
	Prompt cards		

Activity brief describing the Equitable Futures lesson on redlining used for framing participatory co-design workshops with teachers around social justice education.

Activity brief describing the Equitable Futures lesson on the Detroit uprisings used for framing participatory co-design workshops with teachers around social justice education.

Appendix C

Facilitator's script prepared for the March 12th serious play workshop at Oakland University.

Oakland University
Workshop Agenda & Facilitator Guide
Thursday, March 12, 2020
10 - 11:20 AM

Roles
Megan Freund, facilitator
███████████, partner
Stacie Woodward, partner
Students, participants (x 28)
██████, documentor
███████████, documentor

Workshop Introduction (3 minutes, 10:00 - 10:02)
Objective: Introduce facilitator, provide workshop context, explain workshop objective and process
- **Facilitator introduction**: Good morning, everyone! I'm Megan, a second year student in the Master of Integrative Design program at the University of Michigan, and your workshop facilitator for today.
  - For the past two years, I've been studying how design can support the work of teachers and students, as well as make public education open and accessible to everyone.
  - I'm currently working with the Equitable Futures project, an initiative founded right here in Oakland county by Stacie Woodward and her team. EF is social studies taught through the lens of social justice, and you can sign up to teach it with your students. Find Stacie after the workshop and she can tell you all about it.
  - One function of the designer in education is to look across disciplines to innovate new ways to address problems, which is why I brought in these toys for you today.
- **Context**: For my thesis project, I'm exploring whether free play can help teachers anticipate and prepare for challenges they might encounter in their classrooms. I know, it sounds crazy! How can play and design enable the serious work of teaching?! There's research that suggests that it works.
  - Underneath the fun and enjoyment that comes with play, scholars have found that we are building skills, increasing our confidence, solving problems, improving our mental health and connecting with others.

Ice Breaker (5 minutes, 10:02 - 10:07)
Objective: Rapport building, permission giving, building the play mindset
- Reach under your chair
- **Pair and share**: Find a classmate who selected the same toy as you. Share a story or memory you have associated with that toy.
- **Find your team**: Migrate to the table that has the photo of the toy you selected *(this should create 7 groups of 4 participants)*.

Workshop Objective (3 minutes, 10:07 - 10:10)

- **Objective and Process**: Today, we'll be playing with these play kits. These kits are prototypes, which means they are still being refined. Your participation today is crucial to the development of the kit into a useful tool teachers can use.
  - Each team will get its own play kit
  - I will provide you with three timed play prompts. Working together as a team, you will use the kit to model your response to each play prompt.
  - You'll share the story of your model with your classmates in small groups.
- **Workshop Norms**:
  - Be open minded
  - Question the model (not the story or the storyteller)
  - Listen and reflect
  - Everyone plays
  - Have fun!

[One member from each participant team comes up to grab a play kit]

Play Prompt #1: Model Classroom (5 minutes, 10:15 - 10:20)
Objective: Introduction to play kit, building hand-mind connection, assigning identities to objects, storymaking
- Open your play kit. Take a minute to check it out.
- Using the contents of the play kit, build a model of a classroom. Build it any way you want. However, your classroom model must include:
  - A computer
  - A bookcase
  - A filing cabinet
  - A digital projector
- I'm giving you 3 minutes to build your classroom. Go!
- **Classroom tour**: Meet up with another group and take them on a tour of your classroom.

Play Prompt #2: Creating Energy (7 minutes, 10:20 - 10:27)
Objective: Reinforcing the hand-mind connection, story making, storytelling
- **Prompt**: *It's after lunch, and you have an important social studies lesson planned. Your class tends to enter the classroom somewhat sluggish and seemingly tired. How might you change the activity structure and/or space to create energy and excitement?*
  - I'm going to give you a little more time for this round, 5 minutes, to use the play kit to model your team's response to the prompt.
  - Curveball: Add 7 students to your model classroom. Take away three desks.
- **Storytelling**: TBD

Play Prompt #3: Inappropriate Comment (15 minutes, 10:30 - 10:45)
Objective: Story making, storytelling
- **Prompt**: *A student makes an inappropriate comment to you in front of the entire class. It drew attention from other students and needs to be addressed in the moment.*
  - *Choose a scenario (student-to-student or student-to-teacher).*
- **Build your shared story**: As a group, create the story of your model
- **World Café**: Select a spokesperson to remain at your table and share the story of your model

- Other members of the team: Head to another team's table and listen to their spokesperson share the story of their model
- Spokespeople: You will have 2 minutes to tell the story and respond to questions from the participants visiting your table.
  - *Sample questions: Tell me more about what the teacher is doing. Tell me about the student involved.*
- *Do this twice so you are visiting 2 tables and listening to 2 stories [Rationale: stories become more rich during second telling].*
- Report out: After hearing 2 stories, return to your home table. In your groups, synthesize what you heard:
  - What about the stories/the models were *the same?*
  - What about the stories/models were *different?*

Group Reflection and Wrap-Up (10 minutes 10:45 - 11:05)
Objective: Sensemaking, meaning-making
- **Share out**: Let's hear some golden nuggets, or key insights, from this experience. Who has a golden nugget they would like to share with the group?
  Closing: Thank you for your time and participation, this was a lot of fun! Last thing I'm going to ask you to do is complete this individual reflection form. You can drop it off here on your way out the door *[indicate location]*.
  - Also setting out my card, feel free to get in touch if you have questions about the workshop, the project, or think of any feedback you'd like to share with me.

Supply list:
- Play kit (x 7)
- Bag of toys (x 2)
- Team table call outs
- Presentation pad with play prompts written out