

**Organizing for Relational Equity in Teaching and Learning: An Investigation of the
Potential of Adult-Youth Relationships**

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A three-article dissertation submitted to the Faculty of the Graduate School of
The University of Colorado Boulder in partial fulfillment of the degree requirement for the

degree of

Doctor of Philosophy

School of Education

2017

The thesis entitled:

Organizing for Relational Equity in Teaching and Learning: An Investigation of the Potential of
Adult-Youth Relationships

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The final copy of this thesis has been examined by the signatories, and we
Find that both the content and the form meet acceptable presentation standards
Of scholarly work in the above-mentioned disciplines

IRB protocol #15-0502

Abstracts

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Organizing for Relational Equity in Teaching and Learning: An Investigation of the Potential of Adult-Youth Relationships

Dissertation Chaired by Associate Professor Ben Kirshner

1. Relational Equity as a Design Tool within Making and Tinkering Activities

This article focuses on the partner-like relations that emerge between undergraduates and youth as they engage in ‘Making and Tinkering’ activities in an afterschool learning ecology, *El Pueblo Mágico*, and illustrates the potential for designed tinkering activity to produce relational equity among participants. Grounded in sociocultural theory, but leveraging and extending theoretical contributions from both learning sciences and tinkering research, this study draws on interviews and fieldnotes across one year to examine how the social organization of Making & Tinkering activities provides necessary social conditions for ‘feedback-in-practice’ and consequential learning. Analyses of youth-adult interactions during activity reveal how more symmetrical intergenerational relationships serve in the design of equitable learning spaces.

2. Seven Chilis: Making Visible the Complexities of Leveraging a Cultural Repertoires of Practice Approach in a Designed Teaching and Learning Environment

Drawing upon four years of research within a social design experiment, we focus on how teacher learning can be supported in designed environments that are organized around robust views of learning, culture, and equity. We illustrate both the possibility and difficulty of helping teachers disrupt the default teaching scripts that privilege traditional forms of participation, support, and hierarchal relations, as well as disrupt static and reductive notions of culture. In doing so, we hope to make visible the complexities of leveraging cultural repertoires of practice within a designed learning environment in which novice teachers work to negotiate both common sense and normative conceptualizations of learning and culture.

3. Organizing for Relational Equity: Insights from a Scottish Youth Development Program

Light Up Learning is an extracurricular school-based program in Scotland that supports young people in pursuing their curiosities and exploring their interests. Its approach to youth work centralizes the humanizing relationship itself as a site of learning, and in so doing, extends contemporary notions of what youth development can look like. In addition, its approach to teaching and learning pushes on market-driven conceptualizations of learning as a means to some other end. Bringing together theories of learning and youth development, I draw on ethnographic data over one trimester to examine the social organization of the teaching and learning activities within this novel school-based youth program. Analysis of adult-youth interactions reveals the ways in which Light Up Learning serves as an exemplar of a youth program organized toward *relational equity*.

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INTRODUCTION

The past few decades have been characterized by growing consensus on the nature of learning among sociocultural researchers. Theorized by many in the neo-Vygotskian tradition as transforming participation in changing practices over time (Rogoff, 1990; Lave & Wenger, 1991; Nasir, 2012), learning is now often conceptualized as “movement” (Gutiérrez, 2008) – as a socially, relationally, and culturally mediated phenomena that inheres within and across the “everyday” (Scribner & Cole, 1973). In addition, within the Learning Sciences, scholars have oriented in the past decade toward research and design for equity—with work that investigates and designs spaces and activities, for example, to support consequential learning for young people from non-dominant communities (Gutiérrez & Vossoughi, 2010; Calabrese Barton & Tan, 2010; Jurow, Hall & Ma, 2008; Polman & Hope, 2014).

At the same time, this body of work remains less precise on how educators and researchers can design learning environments that squarely address issues of power and privilege in teaching and learning practices. Situated within this problem space, I focus my work on the dyadic relationship between youth and adults in teaching and learning practices. In particular, my most recent work in a cross-cultural context investigates how to support and cultivate *humanizing* relationships in school-based settings between people of different ages, social identities and institutional powers. In educational contexts, a humanizing relationship involves adults working continually to make sense of youths’ actions, experiences, or ways of expressing themselves in expansive and non-deficit and ways— ways that can, at times, lead adults into more vulnerable or uncomfortable spaces (Nakkula & Ravitch, 1998). By earnestly putting youths’ lives in conversations with their own, adults can work toward the practice of humanizing, rather than othering, young people from communities often different than their own.

Committed to pursuing this line of research as I move forward in my academic career, this three-article dissertation offers insights into the beginning of my framework for understanding the social organization of *relational equity*— a term that I use to guide my investigations of the intricate relationship between social inequality, adult-youth relationships, and teaching and learning practices. I understand working toward relational equity as integral to the organization of equitable learning environments, and in what remains of this introductory chapter, I briefly introduce my orientation to this framework which has been informed by my case study research in two informal learning contexts in the US and the UK.

Relational Equity

Sociocultural perspectives on learning and development have done well to take up issues of *asymmetry* in experience and expertise amongst teacher and learner as they relate to the creation of “zones of proximal development”—the organizing principle of Vygotsky’s theory of learning (Vygotsky, 1930/1978). In this view, children learn through participating in authentic activities with more experienced peers or adults, and try out new roles in which the playful imagination is central and where they can assume increasing responsibility for meaningful tasks over time (Gutiérrez, 2008; Rogoff, 1991). From a sociocultural perspective, then, asymmetry in experience and expertise between children (novices) and adults (experts) is assumed, and understood as a necessary part of the organization of learning and development.

While I too understand zones of proximal development as critical to the organization of learning activity for youth, my work aims to make central the ways in which “social hierarchies of power” (Philip, Bang, Jurow, Vossoughi & Zavala, under review) amongst children and adults in contemporary learning environments mediate the potential for consequential learning for children. Learning environments in 2017, that is, where the children (novices) in public schools

and programs are predominantly from communities of color and low-income families, and where the adults (experts) are from predominantly White, middle-class communities. Put another way, the contemporary teaching and learning demographic of in- and out-of-school settings is one that is shaped by multiple social hierarchies of power, largely along racial and class-based differentials. Cognizant of this reality, I argue that any discussion of how to organize learning environments around zones of proximal development must simultaneously take into account the ways in which such social hierarchies of power mediate the organization of interaction between children (novices) and adults (experts). To do so, I bring together research from youth development and critical theories of learning in my examination of issues of (a)symmetry in adult-youth relationships in learning environments.

Within research and practice on learning, there is less known today about how to design for more *symmetrical* relations between adults and youth, or *relational equity*—relations in which all participants' sense making and ways of being are taken up and brought into joint activity in valued and equitable ways. In the typical case of an adult teacher and youth learner, relational equity can be fostered when the adult privileges and makes uses of the knowledge(s), experience, and expertise that the youth bring to the activity. Working toward relational equity requires more than just attending to the unequal ways that racial and class-based hierarchies structure social institutions and social interactions—it requires that those in positions of relational power continually reflect and reposition themselves in activity in ways that trouble the unequal status quo. It also proceeds from the understanding that contemporary educational settings are organized in ways that privilege the experiences and knowledge of some while marginalizing, and often oppressing, those of others (Moll, 1998).

Asymmetrical relations of power are constituted across multiple levels. They do not just arise in the moment, they arise historically, and are enacted in moment to moment interactions.

According to Vakil et al. (2016)

human relationships are shaped by histories of race and differential power that set the stage for partnership formation. Yet, we also assert that relationships are sites of contestation, constantly negotiated and managed through moment-to-moment interaction and activity. In this way, we draw attention to the political dimensions of relationships but also to how they are politicized through purposeful collective activity (p. 12).

Working toward relational equity is a challenge within contemporary school-based environments for several reasons. For one, the relation of student to teacher figure is often not a voluntary one. Children and youth under the age of 18 are required to attend school, and teachers must be adults who meet certain qualifications to teach. This relation is reinforced by broader discourses about youth as less capable, less rational, and more emotional than adults, characteristics that are viewed as deficits to be remedied through schooling. And as mentioned briefly above, contemporary schools in the US and the UK are segregated by class and race, with great disparities in resources and opportunities to learn (Oakes, 1995; Carter & Welner, 2013). Without working toward relational equity among adults and youth in teaching and learning settings, I argue that even the best-intentioned of designed opportunities may fall short of meeting their equity-oriented learning aims.

Contrary to commonplace notions of ‘equal opportunity’ within educational practice, racialized relations between a predominantly White teaching population and a largely Latinx and Black student population in the US continue to shape and delimit learning opportunities for Black and Brown youth (Matias & Zembylas, 2014; Nasir, 2012). Similar dynamics in

classrooms exist along class-based lines of difference in the UK (Willis, 1977; Rampton, 2006). Especially within the contemporary local and global climate of increased visibility of racism, xenophobia, and nativism (Philip et al., under review; Williams, 2015), I understand relational equity as integral to creating the conditions for young people from non-dominant communities to take on increased responsibility, to shape the production of knowledge, and/or to contribute authentically to the telos of learning activity—again central tenets of what a Vygotsky (1930/1978) conceptualized as the “zone of proximal development.”

My focus on *the relationship* between adults and youth as the unit of analysis in my research on inequality reflects in part my theoretical grounding as a sociocultural, or situated, learning scientist—meaning that I understand the relationship itself as the vehicle through which learning happens. Accordingly, I illustrate throughout my case studies that even the most innovative designed learning space, activity, or assessment tool will fall short of its equity aims if it does not attend to the potential asymmetry in power, or social hierarchies of power that exist between adults and youth in educational practice. In other words, because learning inheres within co-constructed, collaborative zones of proximal development between more experienced and less experienced persons, I argue that the relationship itself ought to become an object of analysis in educational research, given the continued and increasing disparity in educational outcomes along racial and class-based lines of difference (Carter & Welner, 2013; Kirshner, 2015).

Grounded in sociocultural theories of learning—again, those which understand learning as fundamentally constituted by and through social and relational interactions—my dissertation research empirically investigates the organization of human social relations as central features in the design of equitable learning environments. The overarching question that drives my research,

then, is a quest to better understand how inequality is maintained, troubled, and/or reproduced through teaching and learning relationships in educational settings.

Overview of Three Article Approach

In my first article, I explore the ways in which the relational and material feedback of particular making and tinkering activities served to promote more symmetrical and partner-like relations among White pre-service teachers and elementary age students of color. I do so by bringing together conceptual frameworks from Nasir's (2012) research on informal learning environments with Resnick & Rosenbaum's (2013) research on designing contexts for tinkerability, and use them to investigate the social organization of 'Squishy Circuits' and 'Scribbling Machine' making and tinkering activities at *El Pueblo Mágico*, a pre-service teacher practicum experience/Fifth Dimension¹ afterschool club in Colorado. In particular, I attend to the ways in which immediate and continual feedback, from both activity and interaction, serve to promote equity within the adult-youth relationship, and in turn, opportunities for more expansive and equitable pedagogical arrangements in the context of pre-service teacher learning space.

In my second article, I lift up an example of a designed making activity that served to both enable and constrain equitable learning for the youth of color at *El Pueblo Mágico*, due in part to the complexity in operationalizing more expansive notions of 'culture' in practice. I employ mediated discourse analysis to highlight the nuanced ways in which the discursive exchanges between those involved in a kitchen-science-like-making activity both enabled and constrained the emergence of collective "third spaces" (Gutiérrez, Rymes & Larson, 1995). As a

¹ As a Fifth Dimension after-school learning ecology (see Cole, 2006; Vásquez, 2013), EPM is modeled after its California antecedent *Las Redes* and is designed in line with Engeström's notion of a "change laboratory." Change laboratories are intended to create expansive learning—"learning in which the learners are involved in constructing and implementing a radically new, wider, and more complex object and concept for their activity" (Engeström & Sannino, 2010, p.2).

former course instructor and site support for the pre-service teachers who worked at *El Pueblo Mágico*, I am careful to name my own shortcomings in this teacher education work as part of the potential shortcomings in activity and relational design. In this way, this piece calls attention to the need for teacher education and preparation to think critically about the intersection of perceptions of culture within adult-youth interactions in teaching and learning practices.

And in my third article, I investigate how a youth program whose primary tool was the adult-youth relationship itself, served to promote relational equity through the purposeful organization of humanizing and non-instrumental adult-youth interactions. The empirical site for this second case study was *Light Up Learning*, a school-based youth program in a working-class community outside of Edinburgh, Scotland. In this piece, my analysis of the adult-youth relationship draws upon critical studies of learning and youth development and situates the ‘work’ of the youth program within the broader contemporary landscape of youth development programs. In doing so, I hope to contribute to contemporary conversations on what youth development programs focused on equity can look like.

Taken together, these articles elevate the adult-youth relationship as a focus of design in the organization of learning environments, with the potential to both support and delimit expansive and consequential learning for young people. My research foregrounds the relationship itself within a continued focus on the social situation of child and adolescent development. In particular, my work calls attention to the need to take seriously the ways in which “social hierarchies of power” (Philip et al., under review), so often shaped by racial and class-based lines of difference in educational settings, mediate equitable learning opportunities for youth from non-dominant communities.

Introduction References

- Barton, A. C., & Tan, E. (2010). We be burnin'! Agency, identity, and science learning. *The Journal of the Learning Sciences*, 19(2), 187-229.
- Carter, P. L., & Welner, K. G. (2013). *Closing the opportunity gap: What America must do to give every child an even chance*. Oxford University Press.
- Cole, M & the Distributed Literacy Consortium. (2006). *The fifth dimension: An after-school program built on diversity*. New York, NY: Russell Sage Foundation.
- Engeström, Y., & Sannino, A. (2010). Studies of expansive learning: Foundations, findings and future challenges. *Educational Research Review*, 5, 1–24.
- Espinoza, M. L., & Vossoughi, S. (2014). Perceiving learning anew: Social interaction, dignity, and educational rights. *Harvard Educational Review*, 84(3), 285-313.
- Gutiérrez, K., Rymes, B., & Larson, J. (1995). Script, counterscript, and underlife in the classroom: James Brown versus Brown v. Board of Education. *Harvard educational review*, 65(3), 445-472.
- Gutiérrez, K. D. (2008). Developing a sociocritical literacy in the third space. *Reading Research Quarterly*, 43(2), 148-164.
- Gutiérrez, K.D., & Vossoughi, S. (2010). Lifting off the ground to return anew: Mediated praxis, transformative learning, and social design experiments. *Journal of Teacher Education*, 61(1-2), 100-117.
- Jurow, A. S., Hall, R., & Ma, J. Y. (2008). Expanding the disciplinary expertise of a middle school mathematics classroom: Re-contextualizing student models in conversations with visiting specialists. *The Journal of the Learning Sciences*, 17(3), 338-380.
- Kirshner, B. (2015). *Youth activism in an era of education inequality*. NYU Press.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*.

- Cambridge, UK: Cambridge University Press.
- Matias, C. E., & Zembylas, M. (2014). 'When saying you care is not really caring': emotions of disgust, whiteness ideology, and teacher education. *Critical Studies in Education*, 55(3), 319-337.
- Moll, L. C. (1998). Turning to the World: Bilingual Schooling, Literacy, and the Cultural Mediation of Thinking. In *National Reading Conference Yearbook*(Vol. 47, pp. 59-75).
- Nakkula, M. J., & Ravitch, S. M. (1998). *Matters of interpretation: Reciprocal transformation in therapeutic and developmental relationships with youth*. Jossey-Bass.
- Nasir, N. I. (2012). *Racialized identities: Race and achievement among African American youth*. Stanford University Press.
- Oakes, J. (1995). Two cities' tracking and within-school segregation. *Teachers College Record*, 96, 681-681.
- Penuel, W. R. (in press). From designing to organizing new social futures: Multiliteracies pedagogies for today. *Theory into Practice*.
- Philip, T., Bang, M., Jurow, A.S., Vossoughi, S., Zavala. (under review). The role of the Learning Sciences in an era of US nationalism. Journal tbd.
- Polman, J. L., & Hope, J. M. (2014). Science news stories as boundary objects affecting engagement with science. *Journal of Research in Science Teaching*, 51(3), 315-341.
- Rampton, B. (2006). *Language in late modernity: Interaction in an urban school* (Vol. 22). Cambridge University Press.
- Resnick, M. and Rosenbaum, E. (2013). Designing for tinkability. In Honey, M., & Kanter, D. (eds.), *Design, Make, Play: Growing the Next Generation of STEM Innovators*, pp.163-181. Routledge.

- Rogoff B. (1990). *Apprenticeship in Thinking: Cognitive Development in Social Context*. New York: Oxford University Press.
- Rogoff, B. (1994). Developing understanding of the idea of community of learners. *Mind, Culture, and Activity*, 1, (4), 209-230.
- Rogoff, B. (1995). Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In J.V. Wertsch, P. del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind* (pp. 139-164). Cambridge, UK: Cambridge University Press. Reprinted (2008) in K. Hall & P. Murphy (Eds.), *Pedagogy and practice: Culture and identities*. London: Sage.
- Scribner, S. & Cole, M. (1973). Cognitive consequence of formal and informal education. *Science*, New Series, Vol. 182, No. 4114, (Nov. 9, 1973), pp. 553-559. Published by the American Association for the Advancement of Science.
- Williams, Bianca C. "Introduction: #BlackLivesMatter." Hot Spots, *Cultural Anthropology* website, June 29, 2015. <https://culanth.org/fieldsights/688-introduction-blacklivesmatter>
- Willis, P. E. (1977). *Learning to labor: How working class kids get working class jobs*. Columbia University Press.
- Vásquez, O. (2013). *La clase mágica: Imagining optimal possibilities in a bilingual community of learners*. Mahwah, NJ: Erlbaum.
- Vakil, S., McKinney de Royston, M., Suad Nasir, N. I., & Kirshner, B. (2016). Rethinking race and power in design-based research: Reflections from the field. *Cognition and Instruction*, 34(3), 194-209.
- Vygotsky, L. (1978). *Mind in society*. Cambridge: Harvard University Press.

ARTICLE ONE

Relational Equity as a Design Tool Within Making and Tinkering Activities

Making & Tinkering (M & T) practices have shown to be a powerful means for engaging and exciting children around Science, Technology, Engineering, and Mathematics (STEM) learning (Resnick and Rosenbaum, 2013; New York Hall of Science, 2010). M & T activities provide a context for connecting youths' everyday interest and practices with new forms of activity and participation, through engaging youth in an interest-driven collaborative process of (re)design, (re)production, reflection, and remixing (Barron, 2006; Ito et al., 2010) in activities such as solar car construction or online game design. In addition, making activities are playful and aesthetic, creating a type of "invitational potential" which holds promise for easier entry into STEM-oriented practices, such as projects that require circuit building or 3D modeling (Vossoughi & Bevan, 2014). Because of the playful, imaginative nature of many M & T activities, the traditional notion that 'science is for scientists' begins to dismantle, as children discover that they too can engage in scientific pursuits. M & T environments have recently been lauded not only for their ability to engage children in STEM learning, such as figuring out what materials conduct electricity or how to create a circuit, but also for their ability to provide a reimagining of what learning can look like. To be sure, M & T practices can open up new spaces for students to develop a sustained engagement with learning processes (Washor & Mojkowski, 2010; Resnick & Rosenbaum, 2013). However, the research around what potential M & T can have on creating more symmetrical teaching and learning relations and designing more equitable learning ecologies remains an area for growth. Toward this end, we explore the ways in which M & T activities can create the conditions for more symmetrical relations within a learning context of pre-service teachers and elementary age students.

More symmetrical relations and the purposeful shifting of expertise among teachers and learners, or experts and novices, has long been considered a productive direction for the design of learning environments (Vygotsky, 1978; Lave & Wenger, 1991; Rogoff, 1994). However, we extend this argument to suggest that more symmetrical relations, or *relational equity*, should rightly be considered both a tool and an outcome of designed learning activities. As sociocultural learning theorists, we understand learning to be socially and relationally constituted, and as such we propose the need to consider how adult-youth relations necessarily impact the ways in which participation in activity takes shape. And as sociocultural learning theorists committed to promoting equity through the design of learning environments, we explore the ways in which particular types of youth-adult relationships have the power to trouble the traditionally asymmetrical power relations of intergenerational learning environments (Halpern, 2005; Tabak & Baumgartner, 2004; Kafai, Desai, Peppler, Chui & Moya, 2008).

We respond to Tabak & Baumgartner's (2004) call for "research that is directed at considering teacher-student interactions in terms of the ways in which they might foster symmetry, identification and access" (p. 429) and propose that the instantiation of M & T activities in educational environments has the potential to engender relationships that are characterized less by the traditional teacher/student power dynamic to which we have become accustomed, and more akin to the valued partnerships known to be crucial to equity oriented social practice (Gutiérrez & Vossoughi, 2010; Lave, 1996).

Conceptual Framework

We introduce, albeit briefly, learning sciences research from informal learning environments, in tandem with Making and Tinkering research, because these bodies of work overlap and intersect in ways that hold potential for the design of robust, equitable learning environments built around

the development of relational equity. Specifically, we conceptually bridge Nasir's (2012) arguments around the necessary social conditions for learning within informal contexts with Resnick & Rosenbaum's (2013) work on the learning characteristics of 'tinkerable' activities. As sociocultural researchers who understand learning to be fundamentally constituted by and through social, relational, and culturally mediated experiences, we articulate the need to not only think about the types of activities and contexts in which youth learn and develop, but also about the ways in which youth-adult relationships inform learning activities and contexts for youth development.

It is important to note here that this investigation of Making and Tinkering activities could not have been possible if it were not for the particular context in which these activities were embedded- that is, the social design experiment of *El Pueblo Mágico*. As a Fifth Dimension afterschool learning ecology (see Cole, 1996; Cole, 2006; Vásquez, 2003), *El Pueblo Mágico* (EPM) is modeled after its California antecedent *Las Redes*, and is designed inline with Engeström's notion of a "change laboratory."² As such, it is a social design experiment³ whose aim is to engender transformative learning for both undergraduate pre-service teachers and elementary age youth, and the designed context for learning is purposefully hybrid in a number of ways (Gutiérrez & Vossoughi, 2010). To be sure, the context of EPM is intended to be a playful environment that stretches the current developmental level of the children by purposefully designing activities around notions of the co-construction of the zone of proximal development (Vygotsky, 1978). These activities, often computer supported, are embedded within

² Change laboratories are intended to create *expansive learning*—"learning in which the learners are involved in constructing and implementing a radically new, wider, and more complex object and concept for their activity" (Engeström & Sannino, 2010, p. 2).

³ Social design experiments are vehicles for the creation and study of equitable change, and are fundamentally about a re-mediation of the functional system (Cole & Griffin, 1986; Gutiérrez, 2005; Gutiérrez, 2008; Gutiérrez et al., 2009; Gutiérrez & Vossoughi, 2010), or a disruption in ways the ways that participants of activity systems are coordinating meaning with their environment.

a hybrid environment in which multiple languages, epistemologies, and intergenerational relationships are privileged and leveraged towards engagement in joint activity. Though the role of the social design experiment is not the focal analysis of the present article, it undoubtedly informs the ways in which the M & T activities get organized and taken up by the participants. And, working within such a context that is aimed at transformative learning has deeply informed our attention to shifting (a)symmetrical relations among youth and undergraduates.

Sociocultural Approaches to the Design of Learning Environments

We champion a view of learning and development that allows for the creation of learning environments that supports and builds upon the diverse “repertoires of practice” that all youth bring to educational spaces (Gutiérrez & Rogoff, 2003). Seeing learning as a situated, social practice (Lave, 1996), rather than an individual, static acquisition of knowledge of skills, allows for a more humanistic approach to the study of complex learning environments in the real world. Our conceptual orientation to learning has been largely informed by the work of Vygotsky (1978), who placed a primacy on the social, relational, and cultural nature of learning; and argued for a sincere consideration of the ways various tools (especially language) mediated the development of higher psychological functions in humans. As neo-Vygotskians, we are oriented to more than just the individual learner in a given environment, but also to the social context of development in which the learner is developing, whether in informal or formal learning spaces.

Informed by her contemporaries in research on informal learning spaces (Lave, 1996; Rogoff, 1990), Nasir’s work also operates under the Vygotskian assumption that learning and development are social and cultural processes, heavily mediated by the context by which they are constituted, and understood as “shifts in ways of understanding, thinking about concepts, and solving problems and closely related shifts in ways of doing or participating in activities” (2012,

p. 17). Her research in informal learning environments such as track, dominoes, and basketball contexts (Nasir, 2012; Nasir, 2008; Nasir & Hand, 2008; Nasir & Shah, 2011) has provided in depth analyses of the ways in which informal spaces support the positive alignment of youth's learning and social identities. This body of work suggests that learning environments that provide safety and a sense of social belonging enable youth to engage in sustained, meaningful learning practices. In particular, Nasir's (2012) work illustrates how certain informal spaces are organized to support four necessary conditions of learning: consistent feedback, a sense of social belonging, room for personal contribution to the practice, and the availability of multiple roles for learners. For the purposes of the present analysis, which conceptually bridges research on activity and context design, we emphasize the first condition, though we understand the inclusion of each of the four to be equally as important in the design of any learning environments.

In the social organization of learning activity, 'consistent feedback' is a critical aspect of the learning practice (Nasir, 2012). Consistent feedback speaks to the availability of supportive feedback from undergraduates in moment-to-moment activity, guidance/assistance when needed, opportunities for observation and modeling, and multiple chances to try again. To be sure, this type of relational feedback from the learning context promotes room for the ongoing formative assessment known to be critical for good practices of teaching and learning (Bransford, Brown & Cocking, 1999). Additionally, receiving feedback in a repair-friendly context (e.g., not in a test-like setting) allows learners to feel safe to try again, engendering potential for sustained engagement in the practice. However, because we are interested in both the context for learning activity and the learning activity itself, it is necessary to discuss what is known about creating contexts for the emergence of this relational feedback *in tandem* with what is known about

activities that support productive feedback through the material activities themselves. It is to this discussion of feedback from activity that we now turn.

Designing for ‘Tinkerable’ Learning Activities

In M& T, students can take ownership over their own learning processes, and the design of the activity facilitates immediate feedback, open exploration, and fluid experimentation (Resnick & Rosenbaum, 2013; see figure 1 below). And fluid experimentation, for example, has been articulated as important for creating STEM activities with low barriers to entry, e.g. learners can readily engage in activities that are ‘easy to start’ and ‘easy to connect’ (Vossoughi & Bevan, 2014). While each of these three facets of ‘tinkerable’ activities are equally important, we restrict our subsequent analysis to a discussion of ‘immediate feedback’ in an attempt to illustrate the consequential and dynamic role of feedback from activity *and* context in creating more symmetrical relations among undergraduates and youth.

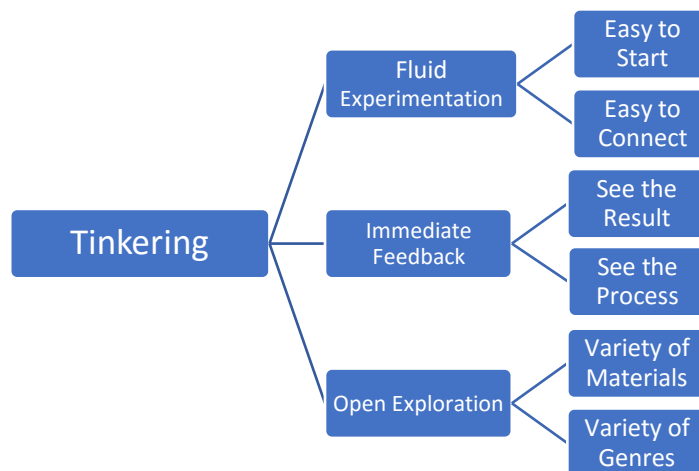


Figure 1. Tinkerability chart (Resnick & Rosenbaum, 2013)

In designing for activities whose materials allow for participants to both ‘see the process’ and ‘see the result’ of their work, Resnick and Rosenbaum (2013) argue that ‘immediate feedback’ from the physical activity itself facilitates meaningful and sustained learning. In *Scratch*, for example, students program their own stories, games, and designs and share them on, engaging in

a tinkering process where they “create programming scripts and costumes for each sprite, testing them out to see if they behaved as expected, then revising and adapting them, over and over again (Resnick & Rosenbaum, 2013, pp.168-169). To be able to test out a pattern or design and get immediate results is instrumental for learning because it allows the learner to see the consequences of her/his ideas, making one’s learning more visible (Branford, Brown, & Cocking, 1999). In its ideal form, tinkering should be an ongoing process, and activities that promote a ‘live’ quality, such that they allow learners to see how the parts of an activity relate the its whole, are especially important for engaging learners over time (Resnick & Rosenbaum, 2013).

A conceptual bridge: How feedback from both context and activity supports the development of more symmetrical relations between youth and undergraduates

To be sure, the idea that feedback is beneficial for learning is not new (Branford, Brown & Cocking, 1999; (Wagster, Tan, Biswas, & Schwartz, 2007; Barron, Schwartz, Vye, Moore, Petrosino, Zech, & Bransford, 1998), however it is our aim to broaden the discussion of feedback to attend to both to activity and the context within the design of a learning environment. Through subsequent analysis of illustrative Making and Tinkering interactions at EPM, we aim to show 1) how consistent feedback from the social organization of the M & T activities led to increased relational agency among participants and 2) how immediate feedback from the M & T activities itself led to the emergence of relational expertise in activity (Edwards, 2011). The emergence of these two phenomena, we argue, supported pre-service teachers in taking up and valuing the diverse ‘repertoires of practice’ (Gutiérrez & Rogoff, 2003) that the elementary age youth brought to *El Pueblo Mágico*- and supported the development of more symmetrical relations among teachers and learners.

Methods

There are many ways to organize learning environments that invite increased participation and positive relationships among teachers and students. However, in our research in this particular historically indexed, equity-oriented social design experiment, we noted particularly interesting practices and processes of relationship building that emerged specifically from the Making and Tinkering activities. Accordingly, our guiding research question became the following: In what ways does the organization of Making and Tinkering activities lead to more symmetrical relations, or relational equity, between youth and undergraduates in the context of a social design experiment?

Setting and Participants

In order to get at how relationships developed through the M & T activities *and* environment, our unit of analysis was the social organization of the practice itself. As mentioned briefly above, the research context for this project was *El Pueblo Mágico (EPM)*, housed in the library space of a elementary school that is located in a predominantly Latino suburb in Colorado. On each day of the program, which runs Monday-Wednesday from 3pm to 5pm, there were about thirty children from low income and Latino backgrounds who attended EPM. These children were students between grades two and five, and their participation in EPM was free and voluntary, consistent with other afterschool programs that this school provides. The CU Boulder undergraduates, as part of their Educational Psychology requirement, are required to attend EPM once a week and co-lead an ensemble of two to six children. Most of the undergraduates who participated were junior or senior level pre-service teachers who expressed an interest in working with children in the future.

Role of the Researchers

EPM continues on to the present day, and both authors remain deeply involved in its design on a theoretical and programmatic level. However the research for this particular article was carried out between Fall 2012 and Spring 2013. During this time, the first author conducted a small qualitative study drawing on principles of ethnography to better understand relationship development among ensembles during activity. In addition to serving as a researcher at the site, the first author attended EPM every week on Mondays to assume a programmatic support role, assisting with both activity creation and with modeling pedagogical practices for the undergraduates.

Between Fall 2012 and Spring 2013, the first author collected sixteen field notes from weekly observations at EPM. However, for the purposes of this article which emphasizes Making and Tinkering activities, both authors drew from the latter eight field notes that included M & T, which was introduced to the site in January 2013. Accordingly, the latter eight field notes emphasized the interactions and discourse among ensembles that demonstrated engagement over time with two primary M & T activities of ‘Squishy Circuits’⁴, and in fewer cases, ‘Scribbling Machines’, which are discussed in more detail below. To gain a more emic perspective into the experiences of the participants, we interviewed three undergraduates during the course of one semester, asking them about their experiences with the program and the children. Additionally, we interviewed four children, though these interviews lacked in some consistency due to the young age of the children.

Designed Activities

⁴ “Squishy Circuits, developed by AnnMarie Thomas, consist of two kinds of play-doh; one is conductive, the other not. By layering conductive and non-conductive play-doh in different configurations, simple, tangible, ‘squishy’ circuits can be made and hooked into simple electronics” (LeDuc-Mills et al., 2013, p. 618).

The primary materials for Squishy Circuits, play-doh and LED lights, lend themselves to playful exploration and playful learning without needing certain levels of prerequisite knowledge, both important elements of learning from a sociocultural perspective. As articulated by Johnson and Thomas (2010)

“these compounds have extremely low entry barriers; anyone can learn from, and enjoy them. The procedures for implementing basic circuits are very simple as well...one can almost immediately start building circuits...This learning tool was especially effective [for improving knowledge about circuits and electricity] among students that, judging from the preliminary test, had almost no pre-existing knowledge of these subjects” (p. 4103).

These qualities of the Squishy Circuit allow both youth and undergraduates to “jump into the practice,” a central design principle of M & T (Resnick & Rosenbaum, 2013). Scribbling Machines activity employs similar guiding tenets for design as those in Squishy Circuits, though it involves creating a moving drawing machine out of batteries and recyclable art materials, These activities served as ideal practices in which to study the affordances of “alternative learning spaces” (Nasir, 2012) that involve processes of learning by doing, albeit disguised more informally as collaborative art/game design and play.

Analysis

Analytical Approach

To capture discourse around identity and relationship development in activity, the first author worked side by side with the groups doing various activities at EPM. Because of working so closely across and within activities and ensembles, the first author was able to gain insight into which activities were ‘working’ best, in terms of creating contexts for sustained engagement in

activity and what appeared to be instances of positive relationship development between youth and undergraduates. When Making and Tinkering activities were introduced to EPM in January 2013, the first author noted a marked shift in the types of relationships being produced in situ during activity. Accordingly, the first author chose to focus her field notes on the ways in which the social organization of M & T was producing such symmetrical relations. To be sure, other activities at EPM merit further investigation, but for the purposes of the present article, we restrict our analysis to the data from the spring semester of 2013 at EPM.

We drew upon the conceptual framework from Nasir (2012)'s research on the necessary social conditions for learning to systematically code the data, because her work on the social organization of informal learning environments provided a useful heuristic with which to understand the learning organization of the informal M & T setting at EPM. To be clear, this meant that we coded for instances of 1) consistent feedback 2) the availability of multiple roles 3) personal contribution, and 4) sense of social belonging across the data. Subsequently, as the research team investigated the affordances of tinkering activities, we chose to add another layer of coding to the data based on the conceptual framework of 'tinkerability' by Resnick and Rosenbaum (2013), in an attempt to attend to both the learning affordances and constraints of the activity itself and the social practice by which it was constituted. This meant that we secondarily coded for immediate feedback, open exploration, fluid experimentation, disaggregated by its components (recall figure 1 above).⁵

We looked for disconfirming evidence as well, of which there were a few instances when the M & T practices engendered the traditional 'teacher as all knower' pedagogical practices,

⁵ Before deductively coding using the aforementioned conceptual frameworks, the first author was careful to inductively review and broadly code the data noting instances of the following: joint activity, identity declarations, play, and perceptions of teaching and learning, because these were the primary low inference patterns that emerged from a first pass of the data (Carspecken, 1996; Miles & Huberman, 1994).

characterized by asymmetrical relationships. However, to an overwhelming extent the social organization codes overlapped and intersected with the ‘tinkerability’ in such a way as to confirm the reasoning behind deductively coding the second pass in this way. In particular, the excerpts associated with both ‘immediate feedback’ and ‘consistent feedback’ revealed how relational- and activity-based feedback was allowing for the development of more symmetrical relations, or relational equity among participants. The following illustrative cases will serve as demonstrative of this phenomenon.

Analysis of Findings

In this section, we illustrate how the social organization of designed M & T activities, particularly the relational and material feedback from context and activity, afforded more symmetrical social relations in which undergraduates assumed a more ‘partner-like’ approach in activity. For purposes of brevity, the below table 1 shows an excerpt of the codebook that illustrates the two feedback codes. The potential learning consequences of these two types of feedback will be subsequently explicated through a discussion of Edwards’ (2011) notion of relational expertise and relational agency, both of which work to produce the relational equity that constitutes the emergence of the partner-like learning relations between undergraduates and youth.

Table 1: Excerpt from codebook: Activity and Context Feedback

Parent code	Child code	Definition	Excerpt
Immediate feedback ⁶	See the process	During construction of M & T artifact, participants can readily the consequences of each step of activity, meaning that they get a sense of ‘what works’ during moment-to-moment activity	“When there is a problem with the scribbling machines, many of the ensembles work to fix it by adding weight or tape so that the wire stays tapped to the battery. The children smile when their machine works. They don’t seem to tire with reworking and adjusting the speed of their machines.”
	See the product	Participants are able to construct a tangible product that they and others can interact with, either digitally and physically; and see how the parts relate to the whole	“I think she [the youth] likes the fact that she can like make something, you know, and have like a product.”
Social organization of the practice ⁷	Consistent feedback	During activity, participants provide ongoing feedback to each other regarding their joint or individual tasks; which is facilitated through working in close proximity to each other and the repair- friendly nature of creating an artifact through tinkering, rather than through recipe-like instruction and formal assessment	Youth: “It’s too hard. It’s hard to keep the back up, and to do it by myself.” Ug: “Okay let’s work on it together.” [the scribbling machine] Youth: “I don’t see the wires because of the zebra tape... But I like the zebra tape...” Youth: “But that’s what holds the battery together!” (Both undergrad and youth are working on their own machines and with batteries. Both machines are working differently) Youth: “You’re not supposed to hold onto it, you are supposed to make it run by itself. You are supposed to use this (goes

⁶ Other ‘tinkerability’ parent codes, in addition to immediate feedback, included open exploration and fluid experiment, as well as their subgroups (recall figure 1 above).

⁷ Other child codes for ‘social organization of the practice’ included: availability of multiple roles, room for personal contribution, and sense of social belonging.

into supply bag) and then places a rubber band on the batter and then the propeller starts to spin fast.”

Table 2: Feedback frequency and co-occurrences across 8 fieldnotes and 6 interviews*

Code	Frequency	Co-occurrence
See the process	19	13 (with consistent feedback)
See the product	13	10 (with consistent feedback)
Consistent feedback	22	

***4 youth, 2 adults**

Example 1. The collaborative activity of making a Squishy Circuit requires all participants to sit together on the floor or at a table, coordinating their activity in ways that positioned them physically at the same level with each other. This activity also invites participants to work in close proximity, facilitating ready exchange of ideas and suggestions during making. Additionally, the material use of tinker-friendly play dough and LED lights afforded different ways of designing the artifact, providing opportunities to continually repair one or another’s design. Consider the following example:

From field note 8, 4.5.13: I [first author] approach a table of five participants [youth and undergraduates], watching Jacqueline [youth], who is creating a butterfly out of the dough. She says that she hopes to light up its eyes. When I get closer to see what she is doing and she can’t make it light up, she tries various ways to plug in the wires and the batteries, but quickly says “I’ll call you back when it’s ready.” Jacqueline’s undergraduate [who is seated next to her] says to her: “How do you think you made it work the first time?” Nearby, Paige and Devon, two other youth who are working to light

up their designs, are also struggling initially either because of battery, LED, or wire issues. They spend a few minutes talking about previous successful or failed attempts, and then Paige says, “Devon it’s so cool-it’s so bright because I’m touching it!”

Jacqueline then chimes in: “Wait I got it- It’s working! It’s working, and it’s so bright!”

We argue that these relational and material feedback elements of the activity helped to create an environment with relational agency—a “capacity for working with others to strengthen purposeful responses to complex problems” (Edwards, 2011, p.34). According to Edwards (2011), relational agency arises from 1) working with others to expand the object of activity and 2) aligning one’s own responses to new interpretations being made by the others while acting on the expanded object. In the above example, we understood the youth and undergraduate to have been 1) working together to expand the object of activity [e.g., creating a butterfly whose wings light up, requiring problem solving around how to conduct a circuit] and 2) aligning one’s own responses to new interpretations in activity [e.g., the youth spend a few minutes talking about previous successful or failed attempts], after which they made repairs that allowed their designs to work.

Example 2. At *El Pueblo Mágico*, youth are given the freedom to choose which activities they want to do during their afternoon sessions with the undergraduates. Some youth attend EPM just one day a week, while some attend multiple days the week. This has the affordance of allowing some youth to really gain expertise in a certain practice at site. For example, Isabel, a young 2nd grader at EPM, wanted to do the Squishy Circuits nearly every time she came to site. As a result, she became something of an ‘expert’ in the practice, and felt comfortable taking on a guiding role for newcomers. Consider the following excerpt from our fieldnotes (3.5.13)

About an hour into the EPM session, Josie [youth] comes in to the tinkering room and wants to do Squishy Circuits. Isabel has been working on her own designs for the past hour, and says that she will help Josie. The two of them sit down and gather materials from me to get started. Their undergraduate is nearby, and asks if Josie needs help, and she points to Isabel saying “No, because she is going to help me!” Together, she and Isabel make insulating play-doh and I can hear Isabel taking a lead role in telling her that “We need more salt” or “It’s too sticky;” they are both work together and helping each other make dough. Josie says to me [first author], as I sit down next to them, “We are going to make chocolate chip cookies” and I ask her if they will light them up, and she says loudly, “Yea we can light them up!”

The social organization of the M & T activity of Squishy Circuits engendered a context where Isabel could readily display her expertise and support others in joining her practice. Though her undergraduate is nearby and offers help, Isabel’s confidence in her practice supports her shifting identity as a knowledgeable maker of Squishy Circuits. We contend that this instance is an example of activity that created room for ‘relational expertise’, which is based on “confident engagement with the knowledge that underpins one’s own specialist practice, as well as a capacity to recognize and respond to what others might offer in local systems of distributed expertise” (Edwards, 2011, p. 33). And the consistent and support relational feedback that Isabel was able to offer Josie during activity may likely have led to Josie’s later confident statement of “Yea we can light them up,” despite her novice status in the practice.

Example 3. In the particular pre-service teacher learning social context of El Pueblo Mágico, it can be difficult for the undergraduates not to take an authoritarian-type role in activity because they enter the space excited to be ‘teachers’. Yet, we found that during the Making and

Tinkering activities such as Squishy Circuits, undergraduates often did not feel comfortable with the disciplinary learning involved in the STEM activity – which precluded them from organizing a more traditional didactic based learning environment (Boaler & Greeno, 2000). As the below excerpt from the first author’s interview with Miley (3.20.13) demonstrates, the undergraduate herself acknowledges that she does not know the science behind the functioning of the Squishy Circuit.

1st author: And what would be the benefits within that exercise, or the activity [of Squishy Circuits]?

Miley: Um, if you can get them to give you responses to why the light bulb is lighting up, and understanding the insulating dough and everything like that. I mean remember you asked me yesterday why our circuit was lighting up a certain way, and I was like I don't even know the answer to that!

Miley admitted that she was not familiar with the practice of circuitry, and because of this she often relied on the youth to lead the way in activity. When her group was ready to light the circuit, she frequently called to Sara (youth) because she was the best at creating a successful circuit. To be sure, creating a learning context that privileges the development of relational expertise and relational agency takes more than adults being unfamiliar with the subject area. However, in this particular pre-service teacher learning context, we contend that the Squishy Circuits activity was socially organized to allow for novices to assume more expert roles in the practice. In doing so, the context created room for relational expertise (the capacity to recognize and respond to what others offer in local systems of distributed expertise) to be leveraged toward relational agency (the capacity for working with others to solve problems) in joint activity.

Example 4. The opportunity for immediate feedback from the material activity, as well as the repair-friendly social context of the learning activity, were equally important for promoting sustained engagement in the learning process. The interaction with Rosdy below highlights how both the actual activity as well as the environment in which it was embedded allowed Rosdy ample room to negotiate her understanding of the science behind the functioning of the Scribbling Machine.

Field Note 4, 2.27.13: When I [first author] asked Rosdy what she was thinking about when she was designing her scribbling machine, she said “I was thinking about what was going to work.” When she tries out her machine on paper, the propeller spins vigorously but the cup doesn’t move on the paper like it is supposed to. She and Jordan [undergraduate] talk about why this could be the case, for example “because the propeller is too heavy” or “the pen is bad.” I signal to Andrew, a youth seated nearby at the computers with more experience in making Scribbling Machines, to come over and help. He says that we need to change pens before going back to his station. I offer to go get thicker pens and bring them back to Rosdy. The scribbling machine now scribbles around the page in a circular fashion. When I ask Rosdy if she knew that the machine would go in circles when she was making it, she said no. A few moments later, she says, “Maybe it’s because it is a circular cup.” [Another pause]... “Or because the propeller spins in a circle.” She continues to voice various reasons why the machine was now moving in a particular direction.

Without being asked to do, Rosdy proffers a number of possible explanations to why her machine was working better or worse during her exchange with the first author. The social

organization of the practice was such that she was able not only to have ready assistance and ‘repair’ opportunities (Stone and Gutiérrez, 2007) of her undergraduate, Jordan, but she was also able to talk through her thinking with Andrew and the first author, both more experienced ‘Tinkerers.’ This immediate and localized feedback and room for repair is important for the development of her own identity as a learner, in that she had the time and space to learn from others through modeling and to situate herself as competent within the practice. If the experiment had ended with Rosddy’s first failed attempt to make her Scribbling Machine draw, her understanding of motion and battery propelled energy (or simply her enthusiasm for exploration) may have been left wanting.

Limitations of Analysis

The spring semester of 2013, in which the first author was collecting field notes on the tinkering activity, was the first semester that tinkering activities were introduced to the *El Pueblo Mágico* learning ecology. As such, the design team was emergent in their understanding of how to best support tinkering activities as well as how to create a robust Maker space. Moreover, most of the undergraduates involved in the activities did not report any prior experience with STEM-related activities. Accordingly, the authors are not proposing that this analysis should be comparable to the analysis of activities in a fully developed Making and Tinkering space.

Additionally, the first author decidedly focused her field notes on these new M & T activities, and as a result is not able to speak the social organization and material affordances of the other designed activities at EPM in such detail. However, investigations of the transformative learning of such Fifth-Dimension spaces is well documented (Vásquez, 2003; Cole, 1996; Gutiérrez & Vossoughi, 2010), and this article is but one small and perhaps complementary contribution to the analyses of teaching and learning in such ecologies.

Discussion

El Pueblo Mágico is an informal pre-service teacher learning context, and the undergraduates in this space often expressed⁸ a tension around not understanding their role at site with the youth—Are they supposed to act as teachers? Mentors? Friends? As site staff and course instructors, we stress the importance of a light pedagogical touch through emphasizing learning, over teaching, in this designed afterschool ecology. This tension around mentoring roles, however, is well documented (Villalpando & Solorzano, 2005), and we saw this manifest in the undergraduates’ discursive framing of the youth. Similar to Kafai et al.’s (2008) findings, we believe that undergraduates’ perspectives on the youth in this particular context were “built on an inherent knowledge differential between the mentor and mentee” (p. 18), which can lead to an inherently deficit perspective of the youth and their learning abilities. However, we found that the Making and Tinkering activities within this context mediated the ways in which the undergraduates interacted with the youth. In particular, the material and relational feedback from the Squishy Circuits and Scribbling Machines allowed for the emergence of more symmetrical relations between teacher and learner. Perhaps because of the undergraduates’ lack of extended experiences in Making and Tinkering prior to their interactions with the youth, they more readily became learners in practice, despite their possible preconceived notions about what it meant to be a teacher/mentor in this space. In this way, we believe our findings build upon prior literature (Kafai et al. 2008; Tabak & Baumgartner, 2004) in suggesting the need to consider how particular activities and participant structures can create more equitable teaching and learning practices in pre-service teacher learning environments.

Specifically, in this paper, we argue that the availability of consistent and immediate feedback, as conceptualized by both Resnick & Rosenbaum (2013) and Nasir (2012), engendered

⁸ And continue to express to the present day (April 2015 at EPM)

space for the development of more symmetrical relations between the undergraduates and elementary age students. The undergraduates' relations with students during M & T activities more closely resembled partnerships, rather than the hierarchal power dynamics often seen in educational environments or mentoring relationships. In their discourse, the undergraduates demonstrated an authoritative top-down approach to teaching and learning. In contrast, during M & T activities, the undergraduates' practice looked very different: they often positioned themselves as novices and learners, asked youth for guidance in activity, and developed a meaningful relationship through fluid conversation over time.

Conclusion

In this study, we illustrate how the social organization of particular Making and Tinkering activities, within the larger context of a social design experiment explicitly designed for transformative change, helped to create a learning environment with the necessary social conditions for feedback-in practice that supports consequential learning. As the data show, the development of joint activity was bolstered by the material and relational feedback of the activity and the activity context. Of significance, more equitable learning opportunities for youth and undergraduates emerged in the iterative process of Making and Tinkering. These analyses support our ongoing conjecture that proleptic orientations to learning in mediated praxis helps to foster a new social and pedagogical imagination (Gutiérrez, 2008; Gutiérrez & Vossoughi, 2010) within a pre-service learning context.

We believe this work has implications for broadening participation in STEM-rich activities, for introducing novice teachers to new content and pedagogical practices, and for the development of more equitable opportunities to learn. These practices become increasingly salient for historically marginalized communities who may benefit even more from the

instantiation of M & T practices, as students from these communities are typically not provided with fluid nor sustainable entry and access to higher order material, relational, and ideational resources (Nasir, 2012). We argue the need for more opportunities to engage in consequential, side-by-side learning and for a design focus that attends to the necessary social conditions for learning now and the future. The present study suggests that those interested in pre-service learning environments would do well to investigate Making and Tinkering practices, because of their demonstrated potential to engender more symmetrical types of participation structures where students and teachers can utilize both relational agency and relational expertise to learn alongside one another, together in practice.

Article One References

- Barron, B. J., Schwartz, D. L., Vye, N. J., Moore, A., Petrosino, A., Zech, L., & Bransford, J. D. (1998). Doing with understanding: Lessons from research on problem-and project-based learning. *Journal of the Learning Sciences*, 7(3-4), 271-311.
- Bransford, J., Brown, L., & Cocking, R. (Eds.). (1999). *How people learn: brain, mind, experience, and school*. Washington, D.C.: National Academy Press
- Brown, J., Collins, A. and Duguid, P. (2012). Situated cognition and the culture of learning. *Educational Researcher*, 18 (1), 32-42.
- Carspecken, P. F. (1996). *Critical ethnography in educational research: A theoretical and practical guide*. Psychology Press.
- Carter, P.L. and Welner, K. G. (Eds.) (2013). *Closing the opportunity gap: What America must do to give every child an even chance*. Oxford: Oxford University Press.
- Cole, M. (1996). *Cultural psychology: A once and future discipline*. Cambridge: Harvard University Press.
- Cole, M. and Engeström, Y. (1993). A cultural-historical approach to situated cognition. In G. Salomon (Ed.), *Distributed Cognitions: Ecological and Educational Considerations* (pp. 1-46). New York: Cambridge University Press.
- Cole, M., & Griffin, P. (1986). A sociohistorical approach to remediation. *S. deCastell, A. Luke, & K. Egan (Eds.), Literacy, society, and schooling*, 110-131.
- Cole, M. & the Distributed Literacy Consortium (2006). *The Fifth Dimension: An After-School Program Built on Diversity*. New York: Russell Sage Foundation.
- Cooper, C. (2011). *Bridging multiple worlds: Cultures, identities, and pathways to college*. New York: Oxford University Press.

- Edwards, A. (2011). Building common knowledge at the boundaries between professional practices: Relational agency and relational expertise in systems of distributed expertise. *International Journal of Educational Research*, 50(1), 33-39.
- Engeström, Y. (2004). From design experiments to formal interventions. University of Helsinki, Finland, 1-29.
- Engeström, Y., & Sannino, A. (2010). Studies of expansive learning: Foundations, findings and future challenges. *Educational Research Review*, 5(1), 1-24.
- Gutierrez, K.D. (2005). Intersubjectivity and grammar in the third space. Scribner Award Lecture. American Educational Research Association. Montreal, Canada.
- Gutierrez, K.D. (2008). Developing a sociocritical literacy in the third space. *Reading Research Quarterly*. 42 (2), 148-164.
- Gutierrez, K.D. and Vossoughi, S. (2010). Lifting off the ground to return anew: Mediated praxis, transformative learning, and social design experiments.” *Journal on Teacher Education*, 61 (102), 110-117.
- Gutierrez, K.D. Morales, P. and Martinez, D. (2009). Re-mediating literacy: Culture, difference, and learning for students from nondominant communities. *Review of Research in Education*, 33 (1), 212-245.
- Gutierrez, K.D. and Rogoff, B. (2003). Cultural ways of learning: Individual traits or repertoires of practice. *Educational Researcher*, 32 (5), 19-25.
- Halpern, R. (2005). Instrumental relationships: A potential relational model for inner-city youth programs. *Journal of Community Psychology*, 33, 1: 11-20.
- Ito, M. et al. Hanging Out, Messing Around, and Geeking Out. Cambridge: The MIT Press, 2010.

- Johnson, S. and Thomas, A. Squishy circuits: A tangible medium for electronics education. CHI 2010, Work-in- progress. Atlanta, GA, 4099-4104.
- Kafai, Y. B., Desai, S., Peppler, K., Chiu, G. & Moya, J. (2008). Mentoring Partnerships in a Community Technology Center: A Constructionist Approach for Fostering Equitable Service Learning. *Mentoring & Tutoring*, 16(2), pp. 194-201.
- Lave, J. (1996). Teaching, as learning, in practice. *Mind, Culture and Activity*, 3, 149-164.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.
- LeDuc-Mills, B., Dec, J., and Schimmel, J. (2013). Evaluating accessibility in fabrication tools for children. Proceedings of the 12th International Conference on Interaction Design and Children - IDC '13, New York.
- Matthew B. Miles, & A. Michael Huberman. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.
- Nasir, N.S. (2008). Everyday Pedagogy: Lessons from Basketball, Track and Dominoes. *Phi Delta Kappan*, March 2008.
- Nasir, N.S. and Shah, N. (2011). On Defense: African American Males Making Sense of Racialized Narratives in Mathematics Education. *Journal of African American Males in Education*, 2, 1.
- Nasir, N. (2012). *Racialized identities: Race and achievement among African American youth*. Stanford: Stanford University Press.
- Nasir, N. S., Rosebery, A. S., Warren, B., & Lee, C. D. (2006). Learning as a cultural process: Achieving equity through diversity. In R. K. Sawyer (Ed.), *Cambridge handbook of the learning sciences* (2nd edition, pp. 489-504). New York: Cambridge University Press.
- New York Hall of Science. (2010). Proceedings from the “Innovation, Education, and Maker

- Movement” Workshop. <http://www.nysci.org/media/file/MakerFaireReportFinal122310.pdf>
- Resnick, M. and Rosenbaum, E. (2013). Designing for tinkability. In Honey, M., & Kanter, D.(eds.), *Design, Make, Play: Growing the Next Generation of STEM Innovators*, pp. 163-181. Routledge.
- Rogoff, B. (1990). *Apprenticeship in Thinking: Cognitive Development in Social Context*. Oxford: Oxford University Press, 1990.
- Rogoff, B. (1994). Developing understanding of the idea of community of learners. *Mind, Culture, and Activity*, 1, (4), 209-230.
- Stone, L. and Gutierrez, K. (2007). Problem articulation and the processes of assistance: An activity theoretic view of mediation in game play. *International Journal of Educational Research*, 46 (1-2), 43-56.
- Tabak, I. and Baumgartner, E. (2004). The Teacher as Partner: Exploring Structures, Participant Symmetry, and Identity Work in Scaffolding. *Cognition and Instruction*, 22 (4), 393-429.
- Vásquez, O. (2003). *La clase mágica: Imagining optimal possibilities in a bilingual community of learners*. Mahwah, NJ: Lawrence Erlbaum.
- Villalpando, O., & Solorzano, D. G. (2005). The role of culture in college preparation programs: A review of the research literature. In W. Tierney, Z. Corwin & J. Colyar (Eds.), *Preparing for College: Nine Elements of Effective Outreach* (pp. 13-28). Albany: State University of New York Press.
- Vossoughi, S., & Bevan, B. (2014). Making and Tinkering: A Review of the Literature. National Research Center.
- Vygotsky, L. (1978). *Mind in society*. Cambridge: Harvard University Press.
- Wagster, J., Tan, J., Biswas, G., & Schwartz, D. (2007). How metacognitive feedback affects

behavior in learning and transfer. In *Workshop on Metacognition and Self-Regulated Learning in Intelligent Tutoring Systems* (p. 33).

Washor, E. and Mojkowski, C. Making their way: Creating a new generation of “Thinkers.”

<http://www.handoc.com/documents/makersymposium.pdf>

ARTICLE TWO

Seven *chilis*: Making visible the complexities in leveraging cultural repertoires of practice in a designed teaching and learning environment

Leveraging what is known about how people learn across everyday settings, we hope to contribute to scholarly conversations that center around how to create teacher-learning environments where equity remains both a design principle and an outcome of the adult-youth interactions in practice. We locate this work and our own orientation to it within longstanding research about the cognitive and sociopolitical consequences of participating in thoughtfully designed environments organized around expansive notions of culture and equity, learning and development, critical pedagogies, and design (Cole, 1996; Gutiérrez & Rogoff, 2003; Lave & Rogoff, 1984, Scribner & Cole, 1973; Vásquez, 2013). This substantive body of research has been foundational to the present work, making visible the possibilities for transformative learning in designed environments that draw on informal learning (Rogoff, Callahan, Gutiérrez, & Erickson, in press) and “proleptic” (Cole, 1996) orientations to learning. Drawing on Cole, prolepsis’ future-orientation is central to design, as it involves organizing learning in the present for the future. Extending these perspectives, we promote a view of learning in which one’s potential is not limited by her or his present developmental capabilities, or constrained by normative or commonsense views of teaching, learning, and culture that often imbue and organize educational spaces (Mendoza, 2014). Our design principles in this work support a future-oriented interactional dynamic in which the range of possibilities for movement and growth is undefined and open-ended. At the same time, we understand that the activity systems in which people traverse and participate are rife with contradictions that must be negotiated and made the objects of attention, analysis, and re-design.

Adopting this view of learning requires a careful look not solely at the learning practices of the youth or the teaching practices of the adults, but rather at their *relation* in moment-to-moment interactions over time. Drawing upon four years of research as part of a social design experiment, we focus on how teacher learning can be supported in designed environments that are organized around sociocultural views of learning and culture, and equity-oriented design principles (Gutiérrez & Jurow, 2016). In this paper, we hope to illustrate both the possibility and difficulty of helping novice teachers disrupt the default teaching scripts that privilege traditional forms of participation, support, and hierarchical relations, as well as disrupt static and reductive notions of culture (Cazden, 2001). Specifically, we discuss how the default script and static notions of culture and cultural communities work together to preserve more traditional and less-than-equitable teaching practices that can serve to delimit learning and transformative forms of agency on the part of the youth.

Our experiences working with youth from nondominant communities as partners in design support us in documenting and addressing those subtle and often imperceptible contradictions that stem from the normative forces that shape and often reify asymmetrical participation structures in practice (Oakes, 1992). Substantive research documents the ways in which these racialized forces, driven largely by deficit understandings of low-income youth and youth of color, can serve to marginalize and delimit equitable learning opportunities for youth from nondominant communities (Ladson-Billings, 1994; Valdes, 1996; Valenzuela, 1999). Within this problem space is work that documents empirically how culturally relevant pedagogical strategies and practices can work to provide more equitable learning opportunities for low-income youth and youth of color (Duncan-Andrade, 2006; Ladson-Billings, 1995). The present study contributes to this important conversation by making visible the complexities of

creating and maintaining an equity-oriented teacher-learning environment in which teachers organize learning activity in ways that reflect expansive notions of culture.

Learning Theory in Action: The Designed Environment of *El Pueblo Mágico*

The article grows out of our collaborative work with the Community Arts Zone project (CAZ) in which elementary age youth and pre-service, i.e., novice teachers, play and learn together in an innovative afterschool setting, called *El Pueblo Mágico* (the magical community). In contrast to many educational spaces where youth and adults interact and the emphasis is on youth learning, the design of this particular ecology attends to both youth and adult learning, including new ways of working and learning together. Inspired by its Fifth Dimension antecedents, principally *Las Redes* (Gutiérrez, Baquedano-López, Alvarez & Chiu, 1999) and prototypical 5th Dimensions (Cole, 1996; Vásquez, 2013), *El Pueblo Mágico* (hereafter EPM) and its university-school collaboration remains iterative and responsive to the ever-changing needs of the elementary age students and the pre-service teacher university students. Within this model, undergraduates (pre-service or novice teachers, most of whom are White) participate in a university course on cultural historical theories of learning and development, which are designed to encourage their attention toward practices of *learning*, rather than teaching—pushing against normative emphases within teacher education spaces. As part of their participation in the university course, the undergraduates join K-5 children, many of whom are from nondominant communities, in STEAM-oriented making, tinkering, and designing activities at EPM. Here the children have the opportunity to become the principal designers, rather than the consumers of the creative activities and games in which they engage.

Since the club's inception, youth have been invited to participate in a range of making/creating/designing activities, including but not limited to activities like *Agent Sheets*,

digital storytelling, Marble Wall, Squishy Circuits, and Garage Band.⁹ This playful learning environment aims to privilege hybrid language practices—that is, practices that value, make use of, and support the expansion of youths’ complete linguistic toolkit—by foregrounding the benefits of multilingualism and heterogeneous and multi-voiced learning environments that support the creation of “third spaces.” As Gutiérrez, Rhymes & Larson noted in 1995, third spaces are “places where the two scripts (that of the teacher and that of the student) intersect, creating the potential for authentic interaction to occur” (p. 445). More recently, Gutiérrez (2008), helps us understand third spaces as collective zones of proximal development. Within this view, third spaces are interactionally constituted and traditional conceptions of learning are contested and replaced with forms of participation and practices that are contingent upon students’ sociohistorical lives, locally and historically. Here students’ full linguistic toolkits and the conscious use of social and learning theory, play and the imaginary situation, are central to the ecology’s design and potential (Gutiérrez, 2008).

As a social design experiment, EPM is organized around dynamic notions of culture, an equity-oriented approach to design and democratizing forms of inquiry in which mutual relations of exchange between youth, adults, communities and researchers are advanced (Gutiérrez & Jurow, 2016). Of consequence to this project, social design experiments are guided by a more complex understanding of cultural practices creating the potential for more opportunities for consequential learning—that is, learning in which one’s relationship to the material shifts as a result of transforming participation or engagement (see Beach, 1999). In this way, EPM, as well as the university course, is intended to serve as a learning environment that supports the

⁹ Agent Sheets, designed by Alex Repenning (see Repenning & Sumner, 1995), was the centerpiece of an NSF collaborative study with PI Gutiérrez. The first iteration of making and tinkering activities were implemented with the help of Shirin Vossoughi & Meg Escudé (see Vossoughi, Escudé, Kong & Hooper, 2013) and the Exploratorium Science Museum, San Francisco.

development of third spaces in part by explicitly privileging expansive notions of culture and pushing against commonsense notions of what it means to be a teacher and a learner. To better understand the ways in which the environment is meeting these aims, we take an analytical focus in our research on the social organization of interactions within designed teaching and learning activity in the university course as well as in the afterschool club. We do so in an attempt to understand better the challenges and affordances of leveraging students' repertoires of practice toward more engaging and consequential learning activity and forms of agency.

“Repertoires of practice” refers to the sociocultural tool kit that students develop as they move across time, space, and activity (Gutiérrez & Rogoff, 2003). Taking this perspective of culture as it relates to novice teacher learning is fundamentally about understanding culture not as something inherent within a person or place, but rather as socialization within set of shared and divergent practices in which people participate and that impact the ways in which they make meaning about the world. Such a perspective on the relationship between culture and learning is also about attention to the “cultural mediation of thinking” (Moll, 1998)—that is, it is about organizing for learning activity in a way that recognizes the historically and socially mediated nature of tools and normative practices, and in turn their malleability and potential for reorganization toward more equitable ends.

Toward Relational Equity in Educational Practice: A Focus on the Social Organization of Interactions

Designing for equity, or creating the conditions for what we term “relational equity” in practice (see DiGiacomo & Gutiérrez, 2015), involves supporting forms of participation and relations such that the sense-making and repertoires of *all* participants are taken up and brought into joint activity in equally valued ways. It proceeds from the understanding that contemporary

educational settings are organized in ways that privilege the experiences and knowledge of some while marginalizing, and often oppressing those of others (Moll, 1998). Contrary to often commonplace notions of ‘equal opportunity’ within educational practice, racialized relations between a predominantly White teaching population and a largely Latinx and Black student population continue to shape and delimit learning opportunities for these youth (Matias & Zembylas, 2014; Nasir, 2012). Working to design more equitable relations between adults and youth in diverse learning ecologies is the focus of our emphasis on relational equity, as we understand such relations as instrumental to creating the conditions for youth to take on increased responsibility, to shape the production of knowledge, and/or to contribute authentically to the telos of activity.

Accordingly, working toward relational equity requires more than simply attending to the unequal ways that racialized hierarchies structure social institutions and social interactions (see Thomas, 1999)—it also requires that those in positions of relational power continually reflect and reposition themselves in activity in ways that trouble the unequal status quo. To be sure, we recognize that achieving relational equity in educational practice is challenging, given the historically rooted and contemporaneously instantiated notions about the normative role of teacher (as expert) and student (as novice)—and amplified by the contemporary racial and ethnic composition of public school classrooms and programs. However, it is precisely within this problem space that we locate our ongoing study of learning and (in)equity in diverse educational settings.

To investigate the ways in which particular activities support and/or constrain relational equity in a designed learning environment, we directed our attention to the social organization of the interactions between the pre-service teachers (again, predominately White and middle-class)

participating in EPM and the youth (predominantly Latinx) with whom they interacted on a weekly basis. Specifically, we focused on the social relations in the organization of learning within a new making activity, to better understand how emergent forms of more symmetrical joint activity and participation, or relational equity, emerges in practice. In particular, this article illustrates our ongoing interest in designing new opportunities that recruit youth from nondominant communities, Latinx youth in particular, as core participants into new practices that involve more relationally equitable forms of participation.

Our emphasis on gaining better insight into *the relationship* between adults and youth as the unit of analysis in this work reflects our theoretical grounding as sociocultural learning scientists—meaning that we understand the relationship itself as the vehicle through which learning happens (Vygotsky, 1978). We see learning as a social, relational, and culturally mediated phenomenon and as part of everyday social practice. From this perspective, everyday practices have transformative potential and serve an important role in helping to reorganize the relationship between cognitive structures and experience (Gutiérrez, 2016). Our work, then, challenges the dichotomy between everyday and scientific or school-based knowledge and practices and advances the important role that everyday practices, including youths’ linguistic and cultural repertoires, have in consequential forms of learning and youth agency development (Beach, 1999; DiGiacomo & Gutiérrez, 2015; Gutiérrez, 2008; Gutiérrez & Rogoff, 2003).

Examining Notions of Culture, Teaching, and Learning in El Pueblo Mágico

Fostering more symmetrical and equitable forms of participation involves shifting adults’ notions of the youth with whom they worked, including their potential in the present and future action. Even in designed environments such as *El Pueblo Mágico* in which equity is an explicit goal, moving away from essentialist and static notions of cultural communities and their practices is

difficult. Thus, developing dynamic and robust notions of culture is a key goal of EPM and its attendant university course, as how we conceive of people, their cultural practices, and our understanding of the regularity and variability in all cultural communities is important to the development of equitable learning opportunities.

By designing learning environments that introduce novice teachers to theories of learning and development and provide contexts for engagement in reflective practice, novice teachers can build a different pedagogical imagination—one that might trouble normative conceptions of what it means to teach and who can be a teacher. It involves and emphasizes teacher learning in practice. Explicit attention to reflective, mediated praxis (e.g. purposeful and reflective examination of one's practice through theory) is fundamental to supporting shifts in teachers' thinking and ways of being, as even more experienced teachers can struggle to find ways to recruit youths' repertoires of practice in activity. As human beings who live in predominantly segregated social spaces and institutions (see Orfield & Lee, 2005), moving away from essentialist notions of learning and culture is hard work that requires frequent participation in practices that are organized explicitly to push against reductive notions of culture. As will be discussed in our analysis of findings, in our own designed learning ecology, we found that the novice teachers' normative views of culture, in tandem with normative conceptualizations of learning (often instrumental, vis-à-vis teacher-led instruction), mediated the ways in which the activity was organized—and subsequently constrained the potential for unbounded, less scripted, and more equitable learning opportunities for the youth. And as we illustrate in our analysis of teacher-student interactions, we noted instances of youth's culture being recruited in ways that did not support the creation of more equitable, transformative learning opportunities.

It is important to note here that as observant participants and researchers highly involved in the day-to-day organization and activities of EPM, as well as instructors for the teacher-education course itself, we understand ourselves to be contributors to the constitution of the social organization of the teaching and learning activities. As such, the subsequent critical analysis of the teaching and learning activity at EPM is as much a call to action *for our own* preparation of teachers to organize learning environments in more culturally expansive ways. To be clear, we see our own teaching practices as always in need of similar reflection and re-mediation. Re-mediation understood in contrast to conventional notions of remediation is more than word play; instead, re-mediation involves mediating anew and, thus, a transformation of the functional system rather than a fixation on individual people (Cole & Griffin, 1986). We should note here too that we take a developmental perspective on teachers' learning and view the processes of teaching and learning as being life wide and life deep and thus challenge straightforward, static, and linear notions of teacher learning trajectories (see Banks et al., 2007). Teaching and learning are iterative, recursive, and situated processes with ongoing and persistent moments of great challenge, alongside rich moments of insight, reflection, revision, and re-imagination. Working to change such processes takes time, support, and opportunities to repair one's own thinking and practices.

It is within such an understanding of these complex processes that we present our analysis of a routine yet illustrative teaching and learning event at EPM. Informed by a cultural historical activity theory approach, we see tensions and contradictions in activity systems and human interactions as areas for growth and learning. Accordingly, our analysis highlights moments, such as those when novice teachers fall back into the default teaching script, even as they are seeking to become different kinds of teachers (Gutiérrez & Jurow, 2016). And given

what we know about the central role of human relations in the creation of collective third spaces, we aim to learn more about how to create the conditions for relational equity—relations that explicitly push against the multiple levels of asymmetry that inhere in normative adult-youth relationships in educational settings. Relationships, in the present day, that remain largely characterized by highly asymmetrical power dynamics along age, institutional, race, and class-based lines of difference. Again, because social relationships constitute and surround the *in-between spaces* through which learning occurs, we find it productive to attempt to unpack the social organization of the adult-youth interactions; with the explicit goal of unearthing commonplace and unmarked notions about perceptions of culture, which necessarily impact, and at times delimit, the potential for equitable learning.

Methods

As two of the co-designers of the *El Pueblo Mágico* research team for the past four years,¹⁰ DiGiacomo & Gutiérrez have served as site supports, undergraduate course instructors, and/or participant observers for over five semesters. As such, there is a large corpus of data from fieldnotes, video recordings, youth and adult interviews and surveys that inform our approach to analysis of interactions in the club, which also includes the ethnographic data collected by the dozens of researchers (professors, post-doctorates, graduate students, undergraduate learning assistants, and undergraduate researchers) that have been involved in either a programmatic or research role with this multi-sited social design experiment. However, hereafter, we emphasize data from a singular activity on a typical day at EPM because for this analysis we aimed to uplift the sociality of discourse in action—cognizant of the ways in which broader social patterns are

¹⁰ Gutiérrez served as Director, course instructor and PI for EPM. DiGiacomo served a variety of roles as part of the EPM Project, including course instructor, and generated the fieldnotes that documented activity at the Recipe Creation Station.

indexed in small discursive exchanges, as well as in the intricate relationship between perceptions of culture and practices of teaching and learning.

Serving as a pedagogical model for undergraduate pre-service teachers was a key activity for graduate site assistants like DiGiacomo, a role that required active participation in group activity. This form of engagement required a side-by-side approach to working with the undergraduates and the youth. In addition to this role, DiGiacomo also engaged in observant participation (Erickson, 1985), characterized by weekly descriptive fieldnotes and strategic audio recordings of interaction. For this analysis, we emphasize a sequence of transcribed discursive exchanges from an audio recording (with accompanying field notes) taken by DiGiacomo on a typical afternoon at the Recipe Creation station during the Spring 2015 semester.

The Recipe Creation Station—a hybrid science-literacy and maker activity—was designed by DiGiacomo to amplify the linguistic and cultural repertoires of practice that youth draw upon when engaging in joint learning activity with the undergraduates. The activity asked the youth and undergraduates to leverage their everyday kinds of knowledge about science, math, cooking, and language to come together to create, present, and test out their co-constructed recipes. This, then, drew upon principles of “making” (Vossoughi & Bevan, 2014), but also attempted to create a context of development for youth to develop new identities about themselves as learners and designers, as well as a context for novice teachers to work in new ways with youth, and to reflect on their beliefs about learning and culture, and about who could learn and how.

Approach to Analysis

Investigating the social relations of a learning environment requires attention to the moment-by-moment interactions that constantly occur among the many participants of a given activity in a

given moment of time. In the particular context of EPM, paying attention to the ways in which the undergraduate pre-service teachers discursively engage with the youth matters for understanding how they organize and mediate learning. Accordingly, we employed mediated discourse analysis as an analytical tool to make visible the complexity of people's actions, the cultural tools employed in those actions, including their social consequences (Jones & Norris, 2005, xi). The EPM social context was saturated with a multitude of cultural tools, linguistic repertoires, and a diversity of participants—in terms of age, language, experience with new media, grade-level, experience with school, and ethnicity and race. Yet because it is situated in a school, we expect ongoing contradictions in its activity system; that is, consequential learning and mutual forms of exchange were (and still are) often in tension with features of traditional school, and their ideologies therein.

In our sense-making around how perceptions of culture interact with practices of teaching and learning, we aimed to employ an analytical tool that would allow for us to move toward a more nuanced understanding of how broader social issues are indexed by moment-to-moment discourse in action. Drawing on Wertsch's (1998) concept of "mediated action" as the appropriate unit of analysis, Jones & Norris (2005) argue that mediated discourse analysis seeks to make visible

. . .how broad social concerns interact with the common moments of our everyday lives: to explain how discourse (with small d), along with other mediational means, reproduces and transforms *Discourses*; and how *Discourses* create, reproduce, and transform the actions that individual social actors (or groups) can take at any given moment (p. 10).

Mediated discourse analysis, then, underscores the irreducible tension between actor and mediational means (Wertsch, 1998). Similarly grounded in a sociocultural approach to the study

of human action, we too proceed with the assumption that there is always a dialectical relationship between the actor and her mediational means, and more generally, between the individual and her/his society (Engeström, 2011). Studying a person's actions outside of the context in which it was given life can lead to narrow and partial understandings of human activity and potential.

Attempting to operationalize this perspective, we honed in on the discourse-in-action that helped to organize learning and interaction between Elena (a 4th grade Mexican-American student who describes herself accordingly) and her intergenerational group at the Recipe Creation station. Elena's group included her close friend, Alex (White 4th grader), three undergraduate pre-service teachers (two White and one Person of Color), and DiGiacomo, who grew up in a multilingual, Brazilian American family. Over the course of the semester, Elena's group had participated at the Recipe Creation station a number of times, but this analysis draws from a focal event that emerged on one day in the span of this group's participation in this activity station. We selected this particular event as it was emblematic of recurring activity at the club in general, as well as within this adults-youth ensemble.

The affordance of attending to this particular brief interaction led by Elena is that it allows us to unpack the ways in which word-in-actions are constituted by layers of meaning that must be accounted for in designing for consequential learning. Of import, these layers of meaning are imbued with and constructed across differential power relations. Because we are interested in the ways in which culture mediates the potential for the creation of rich and consequential collective zones of development—or third spaces—in educational settings, it was important to dive into an analysis of how particular and constraining notions of culture are

instantiated through the social action of discourse in action, as well as how these understandings help to shape participation structures and, thus, opportunity to learn meaningfully.

How do you say that in Spanish?: Analysis of discourse in action

In the diverse learning ecology of EPM, the notion of culture was taken up differently, by different participants, at different moments in time. This is not a trivial point, as how people make sense of culture and, thus, cultural communities orient them toward particular beliefs and actions that organize learning. In our broader work, we highlight the importance of understanding people's everyday practices, as they are indexed with sense-making processes, beliefs, values, and identity work. It is in this seemingly mundane work of everyday life that people live culturally and learn. With this understanding, it is not the purpose of this analysis to minimize or critique the contributions of the adults in the space—rather, it is to highlight the in-the-moment challenge in taking up and extending youth's culturally-related contributions to learning activity in ways that lead their growth and development.

Consider the following representative interaction from our analysis in which we see how Elena began to create her own recipe by drawing on her everyday knowledge and cultural experiences. In this interaction, Elena moved fluidly between talking about her interests and hopes, making visible a variety of personally meaningful experiences which she appeared to relate to the current task of making a *chili* recipe.

Stanza 1

(Setting is an ensemble of undergraduates, elementary age youth, and DiGiacomo around a circular table with papers, markers, and cooking materials)

:05 to :45 seconds

Elena: I like a boy in my class. His name is Ronnie Jose Gonzalez.

Undergrad 1: There's actual butter here today, you got real butter.

DiGiacomo: Yea, I did, we're going to melt it

Undergrad 2: What are you guys going to make?

Alex: Salsa.

Elena: Yeah I'm going to make my chili.

Alex: It's *salsa*. Do you guys know what the difference is between those?

Elena: Yea I do I'm Mexican.

Alex: Then speak Spanish to me.

Elena: Oh *that* I can't do.

Elena: *Chilis*, oh just kidding, 3... oh wait 7, I forgot 7, it's 7...7 *chilis*, 7 red *chilis*...

00:45-3:40

Recipe creating time, while youth are writing down recipes and drawing the pictures of their recipes

3:40-4:00

Elena: México, México, México!

Alex: Mexico.

Elena: Mexicó.

Alex: Avocados from Mexico.

Elena: Avocados from México!

4:00-8:40

Youth are still creating recipes and adults occasionally ask them to translate the various components of their recipe into Spanish

8:40-9:15

Undergrad 1: Ok so Elena your turn to share.

Elena: I'm going to have a Quinceañera?!...Ahhh....If I have good grades...

DiGiacomo: I want a Quinceañera.

Alex: Too late.

Undergrad 2: What's that?

DiGiacomo: It's like a 15th year birthday party, right... I went to a...

Alex: Do you know what your theme is going to be?

Elena: Uh-huhhhh [nodding yes]

Undergrad 1: Okay so Elena you are still sharing.

Elena: Ok, 7 red *chilis*, 3 green *chilis*, 5 tapatillos, 3 tomatoes, 1 can...

Alex: Ohhhh, How do you say that in Spanish?

Elena: (mumbles no)

Undergrad 2: Okay, how do you say green in Spanish?

Elena: verde

Undergrad 2: How do you say three green chilis in Spanish?

Throughout Stanza 1, Elena openly said that she did not speak Spanish, and that she did not know how to say particular words or phrases in Spanish. When her peer Alex noted that she does not really speak Spanish, Elena did not contradict this.¹¹ However, these self-assertions about her linguistic repertoire accompanied her passionate talk about Mexico, including her proud self-identification as Mexican. She proclaimed her affiliation and knowledge of practices she identified with those of Mexican-heritage communities such as her reporting that she is going to have a *Quinceañera* (a typical coming-of-age-party for teenage girls) or her knowledge and her love for a traditional Mexican recipe, menudo. Elena's self-reported description of her limited knowledge of Spanish and her simultaneously held rich familiarity with valued community practices is not uncommon for Mexican-heritage youth, especially in light of hegemonic English-only practices in schools. Based on these self-assertions (in bold above), Elena, in her

¹¹ We do not know if Elena knows Spanish fluently or not, or if it is her preferred language; Elena was born in the U.S. and we cannot assume that she uses Spanish regularly or has a strong command of the language.

own words, identified as Mexican. And Elena lived her “Mexican identity” through her participation a varied and rich set of family practices that she animated in her talk.¹²

However, in this interaction, her identity as Mexican and her corresponding repertoires of practice are, for the most part, not taken up in ways that might have been more consequential for Elena’s learning. Recall that third spaces are interactional, hybrid, and often uncomfortable spaces where the knowledge and expertise of the teacher-figure is not always privileged, and where the typical one-sided dialogue of the teacher script is troubled. In the above interaction when Elena talked about her *Quinceañera* and her appreciation of menudo while writing out her recipe, we understand her to be making sense of the task-at-hand in relation to her knowledge of these cultural practices. By expressing her connections to the practice out loud, Elena provided multiple opportunities for the undergraduates, and DiGiacomo, to take a deeper dive into understanding and potentially building upon her repertoires of practice. Yet rather than responding to Elena’s declarations of self with curiosity and strategic questions about the *experiences* that led her to desire a *Quinceañera*, for example, or the settings where she had made chili or ate menudo, the undergraduates focused their questions on asking her to get through sharing her entire recipe, and on how to say various recipe words in Spanish. Such adult responses illustrate the need for teacher preparation programs to support teachers’ development of expansive theories of culture, as well as to engage in pedagogical practices that extend students’ thinking, engagement, and repertoires. These adult responses also highlight the challenge in moving away from more traditional I-R-E-like scripts (Cazden, 2011) and co-creating third spaces even in a designed learning activity such as the Recipe Creation station.

The discursive exchange between the adults and Elena in Stanza 1 also reflects commonsense notions about what it means to be a teacher, in that the undergraduates likely understood their task in part in the interaction as getting the youth to share their recipe out loud. In this way, they were probably doing what they understood as appropriate, especially considering their social context--a school-based setting.

¹² We are careful to note here that these are Elena’s expressions of her own identity and cultural practices; we are not advancing a notion of culture that is organized around food, fun, and festivals, in and out itself a more reductive notion of culture and multiculturalism (Gutiérrez & Rogoff, 2003).

Where the potential for meaningful learning falls short, in our analysis of interaction, is in its creation of a collective zone of proximal development, or third space, where the expertise of either the adult or the youth might have impacted the telos of activity or the co-construction of a new shared understanding. Said differently, while asking Elena to share her recipe allowed her voice to be heard in the group and honored her contributions, it did not extend or expand upon her sense-making. After she responded to the first adult initiated question, another one was asked and was subsequently answered without encouragement or the space to build upon the first response—a pattern of discussion that does not typically promote the type of back-and-forth movement that leads development. Of import, rather than unfolding in a way more reflective of its intended design (as an activity that could build upon everyday forms of knowledge and expertise), the interactional dynamic between adults and youth largely mirrored traditional forms of teacher-student participation (e.g. teacher asks the student to provide their answers, teacher moves on).

When Elena shared the design and components of her actual recipe (e.g. 7 red chilis, 3 green chilis, etc.), the undergraduates transitioned into asking her how to say various parts of her recipe in Spanish. This type of adult response likely reflects their yet emergent understandings about how to leverage cultural knowledge, as well as perhaps what they perceived it meant to be a member of a particular cultural or ethnic group. So, they focused on their commonsense understanding of the language practices of members of cultural communities. However, in Elena's case, she had already made it clear that she did not speak Spanish, so asking her to translate at the word level was not a practice that guided her development or promoted an extension of her understanding. Nor did it encourage her to consider the historical practices and social relations that inform her present recipe design. At the same time, the undergraduates' responses may be reflective of the possibility that they were unsure of how else to engage her repertoires of practice other than to rely on a word-level-translation request—again, suggesting the need for teacher education programs, including the one in which EPM undergraduates were a part, to focus on preparing teachers to engage culture in more expansive ways.

The larger point here, we should note, is about the difficulty in moving away from default teaching scripts, even in designed activity and within informal learning spaces that privilege mediated praxis. To be sure, the social organization of the Recipe Creation station did well in part to foster an environment in which Elena was able to take responsibility in crafting her own recipe, bring in her experiences, and express them to others. At the same time, we argue that we would do well to consider how to encourage discursive exchanges in designed teaching and learning activity that move beyond the traditional ask-and-answer teacher scripts, toward the design of activities that more closely resemble everyday practice. For example, in the case of the Recipe Creation station, toward the design of undergraduate-student interactions that might have more closely resembled the discursive patterns of a family making a recipe together for a special occasion—interactions, given the presence of more experienced adults and multiple forms of expertise, with the potential to reorganize the relationship between everyday practices and cognitive structures.

In Stanza 2, however, we see what we understand to be more authentic exchange between adult and youth, in which the adult expressed curiosity about one of Elena's experiences. This small instance of discourse-in-action reveals the possibility of opening up the possibilities of third spaces known to be critical to more consequential practices of teaching and learning. Consider the following interaction:

Stanza 2

DiGiacomo: So what is your recipe? What are you making?

Elena: Uh, uh, uh, oh, salsa. Sal-sa

DiGiacomo: Where does salsa come from?

Elena: Mexico, from Mexico.

DiGiacomo: What do you think people eat salsa with there?

Elena: Oooooohhhh, they eat it with their burritos, they eat it with their chips, they eat it with their menudo.

DiGiacomo: hmm-mmmm, does everyone know what menudo is?

Elena: Yea, I don't know what it is but I love it.

Undergrad: What's it like? What's in it?

Elena: It's sooo goooooood.

Undergrad: What's in it?

Elena: I don't know, but I don't want to know.

DiGiacomo: Why don't you want to know?

Elena: Because then I won't be able to eat it.

DiGiacomo: You mean cause you're worried about it being some...[giving strange face]...

Elena: Yeaaaa [Elena smiling, acknowledging that menudo has inner animal parts...]

(Hereafter, action in ensemble moves into a different activity)

Elena contributed her own familial knowledge about menudo, bringing in parts of her personal experiences and linguistic repertoires. This interaction could have been taken up reductively with a focus on “oh all Latinos eat menudo or know about menudo”; *or* it could have been taken up in a way that acknowledges that she has a range of meaningful practices that she draws on to create her recipe. We see the undergraduate's questions of “What's it like?” and “What's in it?” as an instance of opening up a third space where the youth's contributions were more authentically taken up and attempted to be extended within the group ensemble. Elena found a way to make her experiences relevant to the making and learning practice, and while she was not able to fully explain what menudo is, she was not encouraged to move on quickly to responding to the next question. This discursive exchange more closely resembled an everyday dialogue between friends—where genuine curiosity and interest pulled the conversation and all participants' contributions appeared equally valued because they were built upon. In this way, we see this interaction as moving more toward the creation of relational equity than we saw in Stanza 1.

To be clear, there could have been a range of yet more expansive adult responses and pedagogical moves even within this interaction. DiGiacomo or the undergraduate, for example, might have encouraged Elena to think about the practices in which menudo is a part, including menudo's elaborate preparation and the many family rituals therein. This richer form of engagement might have created an

opening for her to bring together her own everyday knowledge of familial cooking with her emergent understanding of how to calculate the right proportions for a new recipe, for example. Unfortunately, given that the activity shifted directions at this point in the discussion, we are not able to know what might have been—but we lift up this example to demonstrate the complexity and potential in leveraging repertoires of practices toward the creation of meaningful third spaces in formative educational practice.

Discussion

Taking a repertoires of practice approach requires a fundamental view of culture not as a fixed collection of traits or characteristics, but as a fluid constellation of experiences within a particular community or set of shared practices and histories (Moll, 1998). As articulated earlier, adopting and embodying this dynamic view of culture in practice is not easy for novice or even more experienced teachers who may be more familiar with understanding culture as immutable traits and in which learning is assigned a style by virtue of people's membership in cultural communities, (Gutiérrez & Rogoff, 2003; Gutiérrez & Vossoughi, 2010; Moll, 1998). We reemphasize this important point because as Gutiérrez & Rogoff (2003) argue, culture is seen as inherent traits or abilities based on one's cultural community. Within this view, culture is viewed as homogenous and static and cultural practices practiced uniformly within a cultural community. In Elena's case, such a view would motivate one to assume that because she is a Brown-skinned young girl who identifies herself as Mexican, she must necessarily speak Spanish. However, as we previously alluded, Elena is a second generation Mexican-American who says she has little knowledge of Spanish. In asking her repeatedly to focus at the word level and to say various recipe words in Spanish, the undergraduates are focusing on more superficial understandings of Elena's cultural repertoire, instead of leveraging the knowledge and expertise gained in participation in valued everyday practices, including those imbued with her Mexican heritage.

As an informal learning space, EPM is designed to trouble traditional notions of what it means to teach and to learn. However even within such an informal learning context, we find that the pre-service teachers struggled at times to abandon didactic ways of organizing activity and

learning grounded in previous experiences and preconceived notions about how adults are supposed to mentor youth (Kafai et al., 2008). As a result, many adult-youth interactions defaulted to the same hierarchical power dynamics that characterize traditional classrooms. These power dynamics can be observed in the everyday interactions among youth and adults, among youth themselves, or even in the briefest of seemingly inconsequential discursive exchanges in activity. And because asymmetrical power relations have increased potential to reify bounded and less robust teacher-student scripts, we remain keenly attentive to their instantiations in designed teaching and learning environments. As we alluded to at the beginning of this article, working toward relational equity—again, relations in which all participants sense-making are taken up and engaged with in equally valued ways—is difficult in educational practice. But because we understand relational equity as central to the provision of equitable teaching and learning practices, especially in racially and ethnically diverse settings, we believe it to be an objective worthy of our continued investigation and designed research efforts.

Conclusion

Because our empirical setting, like so many other designed learning environments, is a social context saturated with a multitude of histories, cultural tools, linguistic repertoires, and diverse epistemological and ontological orientations, it seemed fruitful to employ the analytical approach of mediated discourse analysis that allowed for our analysis to move beyond the prose, and toward an understanding of how broader social issues are indexed by moment-to-moment discourse in action. Of course, as Ochs (1979) reminds us, transcription is theory and thus our rendering could be interpreted and understood in a variety of ways, and we would always seek further investigation and analysis, particularly ethnographically over time and space. We share this focal event and continue our analysis of such practices across hundreds of other interactions

documented weekly at EPM. Our research will continue to pursue questions such as: How can we design pre-service teacher learner environments (such as this one) that promote openings for authentic discourse and different participation structures to create routine practices organized around relational equity? How can we support novice teachers' movement from more static views of culture towards more fluid and expansive notions of learning and of culture and cultural communities, including how to leverage young people's diverse repertoires of practice in joint learning activity?

Our work in general and this work in particular helped us better understand the difficulties in creating the conditions for the emergence of third spaces as collective shared practices between adults and youth in educational settings. In reflection, we offer a potential suggestion about how to design learning contexts that grows out of our longstanding, ongoing, collective work in 5th Dimension settings—an idea informed by our commitment to the development of learning ecologies that privilege consequential and equitable teaching and learning. *Pre-service teachers, as well as more experienced teachers and educational researchers, should have ongoing opportunities to examine their own assumptions about culture and its intricate yet complex relationship with the social organization of joint learning activity in carefully mediated praxis.* We believe such opportunities hold potential not only to disrupt the default script, but also to rupture reductive notions of culture and what is cultural about learning that persist within even the best intentioned of designed learning environments.

Article Two References

- Beach, K. (1999). Consequential transitions: A sociocultural expedition beyond transfer in education. *Review of research in education*, 101-139.
- Banks, J., Au K., Ball A., Bell, P., Gordon, E., Gutiérrez, K., Brice Heath, S., Lee, C., Lee, Y., Mahiri, J., Nasir, N., Valdes, G., Zhou, M. (2007). Learning in and out of school in diverse environments: Life-Long, Life-Wide, Life-Deep. The LIFE Center (The Learning in Informal and Formal Environments Center), University of Washington, Stanford University, and SRI International.
- Cazden, C. B. (2001). *Classroom discourse. The language of teaching and learning*. Portsmouth, NH: Heinemann.
- Cole, M. (1996). *Cultural psychology: A once and future discipline*. Cambridge: Harvard University Press.
- Cole, M., & Griffin, P. (1986). A sociohistorical approach to remediation. *S. deCastell, A. Luke, & K. Egan (Eds.), Literacy, society, and schooling*, 110-131.
- DiGiacomo, D. K., & Gutiérrez, K. D. (2016). Relational equity as a design tool within making and tinkering activities. *Mind, Culture, and Activity*, 23(2), 141-153.
- Duncan-Andrade, J. (2013). Keynote speech for the Teachers of Color and Allies Summit at University of Colorado at Boulder.
- Engeström, Y. (2011). From design experiments to formative interventions. *Theory & Psychology*, 21(5), 598-628.
- Erickson, F. (1985). Qualitative Methods in Research on Teaching. Occasional Paper No. 81.
- Gutiérrez, K.D. (2016). Designing Resilient Ecologies: Social design experiments and a new social imagination. *Educational Researcher*. 45(3), 187-196.

- Gutiérrez, K. D., Baquedano-López, P., Alvarez, H. H., & Chiu, M. M. (1999). Building a culture of collaboration through hybrid language practices. *Theory into practice*, 38(2), 87-93.
- Gutiérrez, K.D., Bien, A., & Seland, M. (2011). Polylingual and Polycultural Learning Ecologies: Mediating Emergent Academic Literacies for Dual Language Learners, *Journal of Early Childhood Literacy*, 11(2). 232-261.
- Gutiérrez, K.D. & Jurow, S. (2016). Social design experiments: Toward equity by design. *Journal of Learning Sciences*.
- Gutiérrez, K.D & Rogoff, B. (2003). Cultural ways of learning: Individual traits or repertoires of practice. *Educational Researcher*, 32, (5), 19-25.
- Gutiérrez, K.D & Vossoughi, S. (2010). Lifting off the ground to return anew: Mediated praxis, transformative learning, and social design experiments. *Journal of Teacher Education*, 61(1-2), 100-117.
- Gutiérrez, K.D, Rymes, B., & Larson, J. (1995). Script, counterscript, and underlife in the classroom: James Brown versus Brown v. Board of Education. *Harvard educational review*, 65(3), 445-472.
- Jones, R. H., & Norris, S. (2005). *Discourse in action: Introducing mediated discourse analysis*. London: Routledge.
- Kafai, Y. B., Desai, S., Peppler, K. A., Chiu, G. M., & Moya, J. (2008). Mentoring partnerships in a community technology centre: A constructionist approach for fostering equitable service learning. *Mentoring & Tutoring: Partnership in Learning*, 16(2), 191-205.
- Ladson-Billings, G. (1994) *The dreamkeepers: successful teachers of African American children*. San Francisco: Jossey-Bass.

- Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. *American educational research journal*, 32(3), 465-491.
- Lave, J. (1996). Teaching, as learning, in practice. *Mind, Culture and Activity*, 3, 149-164.
- Lave, J. & Rogoff, B. (1984). *Everyday cognition: Its development in social context*. Cambridge: Harvard University Press.
- Matias, C. E., & Zembylas, M. (2014). 'When saying you care is not really caring': emotions of disgust, whiteness ideology, and teacher education. *Critical Studies in Education*, 55(3), 319-337.
- Mendoza, E. (2014). *Disrupting common sense notions through transformative education. Understanding purposeful organization and movement toward mediated praxis* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Database. (UMI No. 3635879)
- Moll, L. C. (1998). Turning to the world: Bilingual schooling, literacy, and the cultural mediation of thinking. *National Reading Conference Yearbook*, 47, 59-75.
- Nasir, N. I. (2011). *Racialized identities: Race and achievement among African American youth*. Stanford University Press.
- Ochs, E. (1979). [Transcription as theory](#), in *Developmental pragmatics*, ed. by E. Ochs & B. Schieffelin. New York: Academic Press, pp. 43-72.
- Repenning, A., & Sumner, T. (1995). Agentsheets: A medium for creating domain-oriented visual languages. *Computer*, 28(3), 17-25.
- Rogoff, B. (1990). *Apprenticeship in thinking: Cognitive development in social context*. New York: Oxford University Press.
- Scribner, S. & Cole, M. (1973). Cognitive consequence of formal and informal education.

- Science, New Series*, 182(4114), 553-559. Published by the American Association for the Advancement of Science.
- Oakes, J. (1992). Can tracking research inform practice? Technical, normative and political considerations. *Educational Researcher*, 21, 12-20.
- Valdes, G. (1996). *Con respeto*. New York, Teachers College Press.
- Valenzuela, A. (1999). *Subtractive schooling: U.S.-Mexican youth and the politics of caring*. New York, SUNY Press.
- Vásquez, O. A. (2013). *La clase mágica*. London: Routledge.
- Vossoughi, S., Escudé, M., Kong, F., & Hooper, P. (2013). Tinkering, learning & equity in the after-school setting. In annual *FabLearn conference*. Palo Alto, CA: Stanford University.
- Vossoughi, S., & Bevan, B. (2014). Making and tinkering: A review of the literature. *National Research Council Committee on Out of School Time STEM*, 1-55.
- Vygotsky, L. (1978). *Mind in society*. Cambridge: Harvard University Press.
- Wertsch, J. V. (1998). *Mind as action*. Oxford: Oxford University Press.

ARTICLE THREE

Organizing for relational equity: Insights from a Scottish youth development program

Learning for its own sake appears increasingly utopian in contemporary discussions of schooling and youth development. More common is the understanding of learning as a means to some end—such as to obtain a place in college or to secure a well-paid job. Such an orientation toward the activity of learning is not surprising given the broader socioeconomic landscape of 2017, shaped over the last four decades by neoliberal forms of market-driven capitalism. In this article, I present a case of a youth development site seeking to hold onto the goal of learning for learning’s sake through its persistent emphasis on the cultivation of a humanizing adult-youth relationship as well as an explicit de-emphasis on instrumental views of learning.

Neoliberalism refers to an ideology that has accompanied social and economic policy in the United States and Great Britain since the beginning of 1980’s. Central tenets of neoliberalism include “the elimination of the public sector, imposition of open-door free-trade policies, and a draconian curtailing of state subsidies, compensations, and social protections” (McLaren, 2001), all of which have contributed to expanded inequities between the rich and the poor (Chang, 2012). This current age of capitalism is characterized by public discourse on how de-regulatory and competition-inducing policies themselves lead to an expansion of opportunities across the globe.

Neoliberal policies have had specific impacts in the education sector. Neoliberal approaches to education reflect an ideology valuing individualism, productivity, efficiency, and capital accumulation, which has worked to privilege the few at the expense of the many (McLaren, 2001; Torres, 2013). The bipartisan policy of ‘No Child Left Behind’ (2001), with its rhetorical emphasis on the importance of holding schools and youth programs to particular

standards and de-funding those that do not meet those standards, is just one example of how this approach has been operationalized. The valorization of school choice is another (Howe, 1997). In a youth development context, one can also see neoliberal ideologies at work. For example, constructs such as grit and resilience, which celebrate individual toughness as a solution to structural inequality, have become popular as foci of youth programs (Tough, 2012). Youth programs in general are under heightened pressure to prove or demonstrate outcomes for their participants – such as academic achievement, employment, or reduced delinquency. The re-framing of the category of ‘youth’ itself, as “capable” of becoming future productive citizens, reflects neoliberal logic that simultaneously works to promote an environment of individualism and competition (Sukarieh & Tannock, 2011). Perhaps a reflection of the saturation of this logic on all aspects of social policy, there exists fewer discussions on non-instrumental youth programs—that is, youth programs whose practices remain unable to be measured by contemporary metrics and whose pedagogy itself resists outcome-oriented approaches to youth learning and development.

In what follows, I present research about *Light Up Learning* (LuL), a youth program in the working-class suburbs of Edinburgh, Scotland. LuL’s approach to youth work centralizes the more equitable and humanizing adult-youth relationship itself as a site of learning, and is so doing, extends contemporary notions of what youth development can look like. Its approach to teaching and learning pushes on market-driven conceptualizations of learning as primarily *instrumental*—as a means to some other end. Through ethnographic observations, interviews, and surveys with the adult youth workers, school staff, and youth participants of the program, this article explores the tensions and possibilities of learning for learning’s sake in the

contemporary neoliberal era. As such it is a story of both social possibility *and* social reproduction (Livingstone & Sefton-Green, 2016).

Situating the Work of Light Up Learning in Theory and Practice

The empirical case of Light Up Learning is best understood in the broader landscape of contemporary youth development and youth programs. Embedded within a broader socioeconomic context characterized by high-stakes accountability, standardization, and the valorization of individual effort, it is a landscape in which the pursuit of learning cannot help but be measured instrumentally, in terms of what it can produce or demonstrate, rather than as a process with value in and of itself. It is also a landscape that appears to place a primacy on adult-youth relationships but finds it difficult to embody such a value in practice. In this section, I illustrate the complexity and tensions within youth development work that surround my empirical site of analysis.

Youth Development

In addition to the time they spend learning in school, children and young people participate in various forms of learning activity outside of school hours. Long understood as a supportive complement to in-school learning, out-of-school time or afterschool programs (hereafter OST) have played, and continue to play, a significant role in the lives of young people. OST programming has typically been associated with increased emphasis on the “whole child,” rather than a sole focus on the academic or intellectual development of a young person (Halpern, 2002). Investments in OST, while following the ebb and flow of public sector funding, have continued to proliferate in recent decades, with substantive funds allocated toward afterschool initiatives such as the 21st Century Community Learning Centers federal afterschool initiative, in the case of the US, and toward the third sector, in the case of the UK (See

afterschoolalliance.org; Honig & McDonald, 2005; Scottish Government Social Research, 2013).

While varied in type and scope, there is evidence that OST programming continues to play an important role in young people's learning and development (Patall, Cooper & Allen, 2010; Rocha, 2006).

Socioeconomic and political shifts in government policy in the US and the UK have shaped how OST youth programs have been framed in public discourse. During the second World War, for example, program providers articulated three major roles for youth programs: “providing care and supervision to children of working mothers, helping children cope with psychological stresses of the war, and providing a vehicle for children to contribute to the war effort” (Halpern, 2002, p. 195). With the onset of neoliberal socioeconomic policy in the 1980's onward, afterschool programs have experienced a shift toward “educational remediation and enrichment” activities, such as homework help and tutoring (Halpern, 2002, p. 201). This shift reflects the still-present notion that young people ought to be doing everything they can to prepare themselves to enter and participate successfully in a rapidly moving global economy, and that education and youth programs should be designed in ways that support that type of learning and development (Vossoughi & Bevan, 2014).

Across racial and class-lines, the landscape of youth development and youth programs over the past forty years has shifted in ways reflective of broader socioeconomic and political emphases—which in 2017, is characterized in the educational sphere by increased privatization, individualization, standardization, and a push toward greater accountability and efficiency (Baldrige, 2014; Rose, 2014). In other words, contemporary perspectives on the role of youth programs in youth learning and development reflect today's emphasis on *outcomes*, namely in the form of personal, social, or school related improvement. Such an emphasis on improvement

or gains that can be measured, at the individual or community level, is readily reflected in the ways in which youth organizations organize their programs and articulate their goals and mission (Kwon, 2013). At the same time, while the espoused goals of many youth programs reflect a contemporary emphasis on outcomes, the primary organizing principles of good youth development work remain largely non-quantifiable by traditional means or measures, as the following paragraphs briefly illustrate.

Adult-Youth Relationships in Youth Development

Across research on youth development, the notion that social relationships matter for youth learning is strong. Whether through the discussion of mentoring, adult-youth partnerships, or the design of afterschool programs, one would be hard pressed to find research on youth development that doesn't include some discussion of the theoretical and mediating role of social relationships. For instance, seminal research on youth development argues that best practice requires attention to the physical, intellectual, psychological/emotional, and social development of young people—supported in large part by opportunities to “feel a sense of belonging and valued” (Eccles & Gootman, 2002, p. 8). Working to create a sense of belonging for youth within a program or space necessarily indexes a need to focus on the cultivation of varied and meaningful social relations, as notable branches of youth development work argue.

Positive youth development (PYD), or the healthy development of social and personal assets, is a recent branch of youth development research that has gained popularity since the 1990's. PYD has been lauded for its assets-based framing of youth as capable, as well as for its attention to contemporary research about how young people learn. For instance, Eccles & Gootman (2002) proposed PYD framework outlines the central design features of learning environments that support the diverse and fluid developmental needs of adolescent youth: 1) physical and

psychological safety, 2) appropriate structure, including clear, consistent adult guidance, 3) supportive relationships, 4) opportunities to belong, 5) positive social norms, 6) support for mattering, 7) opportunities for skill building, and 8) the fluid integration of family, school, and community. Conceptualized as ‘the construction of adolescence’ (Halpern, 2005; Nakkula & Toshalis, 2010), positive youth development involves adolescents experimenting with their identities, a process that necessarily indexes their evolving social, relational, and cultural experiences. PYD contexts are thought to be knowledge-centered, youth-centered, and assessment-centered (McLaughlin, 2000; Nasir, 2012; Brown, 1992). And finally, PYD environments, such as those found within community-based organizations, sports, or arts programming are documented to be critical for positive youth development because they offer the “rare combination of intrinsic motivation in combination with deep attention” (Larson, 2000, p. 170), creating the potential for sustained engagement in meaningful learning activity, as well as opportunity to relate to others in such activity. Young people’s relationship(s) with others is of central import in discussions of PYD, as reflected by each of the aforementioned emphases on the social aspect of adolescent learning and development.

Even more focused on the importance of social relationships, youth adult partnership (YAP) research argues that more egalitarian relationships between adults and youth are best suited to support healthy and positive adolescent age learning and development (see Zeldin, 2012; Larson, 2000). As youth develop, they are continually asked to make sense of the evolving world around them, including their own place within their changing world. For this reason, the types of social relations and experiences that youth have during this time are especially important for how youth come to see, value, or devalue themselves as participants in

the world around them. As Nakkula and Toshalis (2010) argue, identity development, largely informed by adult-youth relations, is intricately related to adolescent development.

With a thoughtfully organized relationship, adolescents and adults can engage in a process of reciprocal transformation, through which the co-authoring of narratives between adults and youth leads to transformative learning on both ends (Gutiérrez & Vossoughi, 2010; Nakkula & Toshalis, 2010). According to Zeldin (2012), a youth-adult partnership in a teaching and learning setting ought to be developmental, rather than prescriptive, because it will favor positive youth development through shifting power and responsibility, orienting the youth toward a sense of community and shared goals. And according to Halpern (2005), youth-adult partnerships are most successful if they are also characterized by joint, task-oriented activities like the production of some new media form or the construction of a piece of furniture. Such relations, according to Halpern (2005), demonstrate the potential to create stronger senses of valued, capable selves for youth who are often unsure about their identities as valued members of a practice, group, or learning setting.

A consistent thread in youth development work, then, is the need for adults to organize for the healthy development of personal and social assets of young people by themselves serving as types of “developmental” allies (Kirshner, 2015). And yet when one turns to empirical investigations of youth development programs, including the ways in which they are organized and assessed, this emphasis on the importance of the adult-youth relationship becomes less visible. As I discuss below, this tension may stem, in part, from the pressure contemporary programs face to adhere to the neoliberally shaped market-driven logic of the present day.

Tensions within Youth Development Practice

As they operate within and through the market-driven economy, youth programs necessarily adhere to the same principles that guide broader social policy. As alluded to earlier by Halpern (2002), the espoused goals of OST programming have long mirrored broader socioeconomic shifts in society. Today, this takes the form of youth programs as most often in the service of academic remediation or enrichment, or even as resume fillers for youth aspiring to attend the most prestigious of universities (DiGiacomo, Prudhomme, Jones, Welner & Kirshner, 2016). In other words, contemporary youth development work maintains its instrumental orientation to youth learning and development in part through its practical emphasis on programs' ability to tangibly improve some aspect of the youth's lives.

In addition, not all OST opportunities, or youth development schemes, are created equally. For youth from nondominant¹³ communities, the market-driven approach to social policy, including that of education and youth development, has been felt in particularly severe ways. In fact, "marginalized youth have historically been targeted for after-school programming as a preventive measure and as a place of containment for those considered 'at-risk'" (Baldrige, 2014, p. 444; see also Halpern, 2002; Kwon, 2013). Rather than participate in the "busy-ness" of multiple and varied organized extra-curricular activities like their wealthier peers (Gutiérrez, Izquierdo & Kremir-Sadlik, 2010), youth from low-income families are characterized in public discourse as in need of remediation—from homework help to character development to crime prevention schemes. By getting involved in these types of programs, as this normative and indeed racist line of reasoning implies, young people from nondominant communities may be

¹³ By nondominant communities, I draw upon Gutiérrez's (2008) term of *nondominant* to "better communicate issues of power and power relations" (p. 161) among people with varying social identities. In the US context, nondominant is used to refer to people of color and low-income people, and dominant refers to White and middle class people (who have worked to oppress and marginalize the nondominant). In the UK context, nondominant refers to people whose social class is deemed 'working' or 'lower', with dominant reflecting the middle and upper classes.

less likely get into ‘unproductive’ or ‘risky’ activities (Kwon, 2013). For example, in her work with Black youth in in-and out-of-school programming, Baldrige (2014) argues that the recent neoliberal educational strategy to divest in public schools and privatize youth programming has been made possible by a pathologizing discourse about Black and Brown youth, a discourse that supports a narrative to warrant their ‘saving.’ “Public” and “Black” have become synonymous with “bad,” while “Private” and “White” with “good” — which, according to Baldrige, is an undergirding assumption of neoliberal ideology that serves to uphold “privilege for those in power” (p. 445).

Taken together, contemporary youth development work faces two significant pressures in its practice to support healthy and positive adult-youth relationships that have the potential to improve outcomes for youth, that reflect its embeddedness within a broader socioeconomic context that demands the delivery of individually oriented outcomes. First, there is the practical challenge of measuring and demonstrating outcomes of work (like the cultivation of adult-youth relationships or a sense of social belonging) that remains largely process-oriented and therefore somewhat intangible (See also Michalchik & Gallagher, 2010). And second, the fact that normative public discourse on the role of youth development for youth from nondominant communities continues to propel the notion that such youth are particularly ‘in need’ of this extra developmental, intellectual, or social support to achieve those desirable outcomes. Given such a context, it is perhaps not surprising that despite strong theoretical commitments to the importance of adult-youth relationships in youth development, there remains less empirical research on youth programs whose primary mode of operation rests on the cultivation of a particular type of adult-youth relationship—and in so doing, by both design and default, stops short of demonstrating youth outcomes or instrumental gains.

It is within this complex and contradictory landscape of youth development and OST learning that I approach the investigation of *Light Up Learning*, the youth program that served as the empirical setting for the present study. Light Up Learning (LuL) was designed to support young people (adolescents of high school age) in pursuing their curiosities and exploring their interests. The primary ‘activity’ of the LuL youth program was the pursuit of the youth’s interest(s) through sustained adult-youth interactions. LuL as a youth program was not oriented toward a particular content area (e.g. Math, Science, Arts) nor by the expectation of any type of personal, social, or community level improvement. It operated through the development of an adult-youth relationship over time.

My approach to the investigation of Light Up Learning reflects a larger desire to explore how youth development work can maintain its theoretical commitment to the importance of adult-youth relationships in practice. Informed principally by my training as a sociocultural learning scientist, I understand learning to be constituted by and through social relations; social relations with the potential to both enable and constrain opportunities for equitable learning. In this way, I remain committed to the notion that youth work that aims to promote equity must necessarily consider how to support youth development and learning through the organization and continued instantiation of more equitable adult-youth relationships in practice. As a result, my analytical lens for documenting youth work is grounded in the relationship itself as a primary site of investigation.

Amplifying the Adult-Youth Relationship for Youth Development

Sociocultural psychology understands learning as a fundamentally social, cultural, and relational process—as a phenomenon that inheres in “zones of proximal development” (Vygotsky, 1930/1978). Zones of proximal development, here, refer to collaborative action in

which more and less experienced persons, often with the support of historically and socially constructed artifacts, engage in mutual systems of exchange with one another, in ways that lead the learning and development of the less experienced person(s), as well as shape the learning and development of the more experienced other(s). My approach to the investigation of youth learning and development extends this sociocultural focus on joint activity to simultaneously take into account the multiple forms of power and privilege that structure the organization of interaction and collaborative activity within adult-youth relationships in practices of teaching and learning (See also Vossoughi, 2014; Vossoughi, Hooper & Escudé, 2016).

Relationships can both enable and constrain learning because of the power-laden nature of human social relationships themselves (Philip, Bang, Jurow, Vossoughi & Zavala, under review; Vakil, McKinney de Royston, Nasir & Kirshner, 2016). The design of a learning environment involves many aspects, including attention its spatial organization, the type and quality of activities offered, and the sense of community within its social practices, to name just a few. However well designed, though, the *relationship* youth have with the adults in the environment is perhaps most consequential for the ways in which learning ensues. In the case of the US, racialized relations between a predominantly White teaching population and a largely Latin@ and Black student population continue to shape and delimit learning opportunities for Brown and Black youth (Matias & Zembylas, 2014; Nasir, 2012). In the UK, class-based lines of difference among adults and youth similarly shape the structure of equitable learning opportunities (Livingstone & Sefton-Green, 2016). Given such a context, learning environments would do well to consider the extent to which the teaching and learning practices of the adults and youth in their spaces reflect *relational equity*. Relational equity, here, refers to systems of relations in which all participants' sense-making repertoires are taken up and brought into joint

activity in valued and equitable ways. Relational equity is not a fixed achievement, but rather constituted by ongoing interactions among adults and youth in which neither's way of being in the world or making sense of it is taken as primary. I argue that working toward relational equity, while admittedly a tall order in contemporary contexts of teaching and learning, is central to the creation of a social situation amongst adults and youth in which youth can authentically assume increasing responsibility and autonomy in learning activity, both indicators of movement toward the joint construction of a collaborative zone of proximal development between more and less experienced persons.

A central aspect of organizing for relational equity is to approach interactions with others, independent of their social identities, in a way that is *humanizing*. Humanizing relationships have a few defining features. First, they proceed with the assumption that every encounter with another is an opportunity to learn more about oneself, because humans, as social beings, constitute each other. In valuing one's humanity above all else, a humanizing relationship aims to foster equity among participants, cognizant of the chaos and harm that inequity causes. The cultivation of a humanizing relationship requires that those with more positional power or status recognize this and continually reflect and reposition themselves in activity in ways that trouble the unequal status quo. Part of addressing issues of power and positionality involve recognizing the inherent dignity of the other person; or the notion that there is intrinsic moral value in each human being (Espinoza & Vossoughi, 2014; Penuel, in press).

This notion of dignity and worth was the focus of 20th century philosopher Martin Buber, who distinguished between 'I-thou' and 'I-it' relations. Whereas I-It reflected interactions that were based on a process of objectification through analysis and classification, I-Thou describes encounters where a person enters into a relationship with all objects they encounter, and is

necessarily transformed by that relation; the ‘You’ he encounters is encountered in *its entirety*, rather than as the sum of its qualities. Organizing for relational equity between persons along various of lines of difference, then, is about moving in the direction of the ‘encounter’ mode of engagement with the world, through working toward foster interactions in which all participants’ sense-making repertoires are taken up and brought into joint activity in valued and equitable ways. According to Buber, the phenomenon of ‘encounter’ in humans can be likened to that of a type of love—a word that Light Up Learning used often when asked to describe the type of pedagogy to which they most ascribed. While it is beyond the scope of the present article to delve fully into the philosophical traditions of what constitutes a humanizing approach to interaction, it is my aim in this analysis to make visible the tenets of LuL’s approach to youth development that reflected a humanizing approach to teaching and learning activity. In lifting up what I understand as the characteristics of humanizing relationship, I hope to contribute to contemporary conversations on how to promote relational equity in practices of teaching and learning amongst adults and youth across various lines of difference.

Background of Program and its Participants

Light Up Learning is a youth program housed in a large secondary state school in working-class outskirts of Edinburgh, Scotland. Born in early 2015 out a collaboration between two upper middle class youth workers (named Will and Ric) and the deputy head of a secondary school (called Lasswade), the program aims to supports young people in learning about what they love. It is intended to serve students whose families wouldn’t otherwise be able to afford private tutoring or paid-for extra-curriculars. At Lasswade, students between years S3 and S6 (grades 9-12 in the US), who are also eligible for free and/or reduced lunch, are able to voluntarily sign up for LuL. Will and Ric’s goal in establishing LuL was to create a program that

reflected in some ways their own experiences with learning—as an activity to pursued for its own right, as something with intrinsic value. During initial meetings with their potential school collaborator at Lasswade, Will and Ric pitched LuL as a program to support young people in learning about what they were interested in. After gaining approval to proceed at Lasswade in the early Spring term of 2015, the school’s Deputy Head asked its guidance teachers (homeroom teachers in the US) to disseminate the news of the program to students who were not currently seen as “high achieving” by their teachers (a decision made by the school personnel based on their “most pressing needs”). Informational letters were sent home to the students chosen by the guidance teachers, and student enrollment in the program was (and continues to be) voluntary and non-contractual.

During the study there were 10 students participating full time in LuL at Lasswade. It has since expanded to 14 students. Each student met weekly, for one hour, with their LuL youth worker (who was known as their mentor) in an available open room in the school. During these sessions, which replaced one of students’ core classes on a rotating basis, youths’ interests drove the ‘work’ of the adult-youth pair. Sessions took different forms from week to week, but tended to start with informal chat about how each person (adult and youth) was doing, followed by joint work on the topic of choice, which tended to take the form of “research,” discussion, and occasionally reading and/or writing. I use the terms “work” and “research” purposefully, because they were the precise words I heard being used to describe the session happenings by both the adult mentor and the student during my time as a participant observer. See Table 1 below for a few examples of a typical session, as articulated by the students whom I interviewed.

Table 1. Student description of typical LuL session

Student	Description

Thomas We either come to the interview room or the library and we talk about what's been going on, like whatever, politics, war, then **we usually get onto the subject of sports**, like if one of us has read an article or seen something that is quite interesting, we'll talk about that, then I'll get 20 minutes to **just kind of do my research and write, then we'll come together and analyze it and see what can be improved**, or if it's okay.

Aspen Well **we usually research things, he will usually ask me what types of things I want to research. So right now we are doing architecture**, and we are planning a trip to go see stuff in Edinburgh. First we did an essay as well, it was about anime, and Richard just asked me what I like, and I said anime, and then he asked if I wanted to write an essay, because I wasn't very good at writing, and actually it's helped a lot.

Daniel A typical one, we come in here, or down the library, and we go through all the work we done last week, and we pick up from where we left off, and then what usually happens **I do some research**, and when I've found all the research that's on all the website, I go onto Youtube and do more research, and then he comes back, and **we usually write a bit, and I usually hate writing, but I enjoy writing when I'm doing it with LuL**.

For example, Cameron, a 15-year-old who hopes to be a paramedic when he gets older, liked to explore the topics of emergency medicine, football, and the paranormal during his weekly sessions with Ric. Grieig, who was 17, often read excerpts of science fiction novels with Will, as they tried to make sense of complex plots and circuitous writing structures. Thomas, a young rugby enthusiast, recently discovered sports psychology, and liked to investigate the lives and careers of famous national players. And Jorji, an aspiring "boss," enjoyed having the opportunity to engage in political discussions with Will about the future autonomous state of their country. These examples represent only a handful of the over a dozen students who were involved in LuL at Lasswade, and a fraction of the interests that have been articulated by the LuL young people over time.

The ‘work’ or ‘research’ component of these sessions also took different forms, and were pursued through a variety of tool-supported pedagogical strategies. Often, the students used their mobile devices to look up information, while the mentors used their iPads. Or, both student and mentor shared a desktop computer at the library or in one of the testing rooms. Sometimes students communicated what they found in the moment to their mentor, or sometimes they took notes and brought them back for discussion toward the end of the session. By and large, students expressed an interest early on, and this interest guided the work and research of the adult-youth pair for a number of weeks. Other times, students’ interest(s) faded and they told their mentor that they were bored, uninterested, and/or wanted to explore something else, at which point the direction of their joint work shifted. During the period Spring 2015 to Spring 2016, the students’ articulated interests including the following: Economics, American football, politics, football, rugby, cooking, Animee, airplane crashes, forensics, the paranormal, hotels, anatomy, dance, artificial intelligence, Islam, science fiction, sports journalism, astrology, Greek mythology, Ronaldinho the soccer superstar, and films starring the actor Paul Walker.

School staff and involved parents both lauded LuL for the good work it did for the Lasswade school community. Alan Williamson, principal of Lasswade at the time, said of LuL that “this has been a fantastic programme and initiative and can honestly say that in well over 10 years of Senior Leadership I can’t recall as positive feedback about this work as any other that I have been involved with.” Williamson’s feedback was echoed in both formal interviews with the guidance teachers, as well as throughout informal conversations with school personnel.

Methods

Guiding Questions and Logic of Inquiry

This study took a primarily qualitative approach to inquiry to understand what learning looked like in a non-instrumentally oriented, school-based, youth program. My initial goal in pursuing a cross-cultural case study of an informal learning environment was to further theorize how the development and continual enactment of a humanizing relationship could contribute to more equitable kinds of interactions and learning between adults from dominant communities and youth from nondominant communities. In line with that goal, the objective of my inquiry was to capture the types of discourse, collaboration, positioning, and joint activity that constituted a social interaction that promoted relational equity as an outcome of teaching and learning activity. Given that objective, the following research questions guided my study:

- What practices support the creation of relational equity among adults and youth in teaching and learning activity?
- How is humanization revealed through discourse, positioning, gesture, and/or physical embodiment?

To empirically investigate these questions in the context of the Light Up Learning program, I took a mixed-methods approach including a) focused fieldnotes that documented the social organization of the adult-youth social interaction in practice, b) interviews with both adults and youth that provided insight into personal perspectives on interpersonal relationships in practice, and c) surveys that captured self-perceived learning and development on the part of the youth.

Because the focus of my investigation was the adult-youth relationship in practice (including the types of discourses, positioning and joint teaching and learning activity that constituted that relationship), I took the social organization of the adult-youth interaction as my central unit of observation. In particular, attention to Rogoff's (1995) notion of the "interpersonal plane" allowed me to study learning as it inhered through the relationship--across

time scales and within the relation between individual and the social plane. The interpersonal plane, according to Rogoff,

focuses attention on the system of interpersonal engagements and arrangements that are involved in participation in activities, by promoting some sorts of involvement and restricting others...[and]...stresses the mutual involvement of individuals and their social partners, communicating and coordinating their involvement as they participate in socioculturally structured collective activity (1995, p. 30).

Directing attention to the positional *arrangements* and *engagements* that people take up as they participate in joint activity, and how these mediate the participation and engagement of others, allows for a deeper and more situated understanding of how adult-youth relations develop, as well as mediate, learning and development in joint practice. Rogoff's perspective directs attention to the ways in which human beings are *mutually involved in each other's development*, despite potentially great differences in positionality and power. Because Light Up Learning is a youth program that organized its learning activity primarily through adult-youth relationships, adopting such a framework allows for a greater methodological emphasis on the relationship itself and its organization.

Data Collection

I played a variety of voluntary roles for Light Up Learning since its inception in early 2015, including educational research consultant, program evaluator, volunteer mentor, and type of observant participant from January to April 2016. I use the term "observant participant" because while I did employ ethnographic research principles of jottings, careful observation, and subsequent descriptive fieldnotes, I was also a very active participant in the on-goings of the LuL sessions (Erickson, 1986). In addition, my approach to data collection and analysis was

informed by a community-based approach to research, which involved keeping a researcher journal to document the development of my own feelings about the research alongside my participation as an observant participant. It also included engaging in weekly “participant checks” with the LuL mentors in which they had the opportunity to comment on my sense-making of their interactions with the youth, including providing feedback on my fieldnotes and analytical memos.

Fieldnotes. During my fieldwork, I attended 53 LuL sessions and 10 program-related meetings, including meetings with funders, parents, and Lasswade school staff. At each event, I took careful jottings down with paper and pencil, and after getting consent, audio recorded both meetings and LuL sessions themselves. In line with Spradley (1979), I wrote condensed field notes directly after each observation, followed within the week by an expanded account which led to the 21 detailed days of fieldnotes that serve as the a primary source of data for this analysis.

Interviews. In February and early March 2016, I conducted interviews with each of the students with whom the Light Up Learning mentors have been working since 2015 (10 total). During these interviews, which usually lasted between 15 and 30 minutes, I asked students about their experiences with Light Up Learning, including how they came to be involved, how they felt about it currently, and how their relationship with their mentors had evolved over the past year. These interviews were audio recorded and transcribed, and also serve as a primary source of data for the present analysis. Additionally, I conducted brief interviews with a number of the school staff, including two guidance teachers and one school administrative personnel. In these adult interviews, I posed questions about school-related perceptions of the Light Up Learning project, as well as the adults’ general feelings about the Lasswade student and school community.

Surveys. Prior to the start of my fieldwork, LuL had asked for my support in designing a survey that would support the mentors in understanding how participation in LuL was impacting the students. They articulated this need for a survey based on external feedback they had received about the sustainability of their program. In collaboration with the LuL mentors, I created a survey that was intended to gain insight into students' attitudes toward school, their future, and about themselves, as well as their experiences learning in LuL sessions. Survey design was informed by the Berkeley Evaluation and Assessment Research (BEAR) Assessment System (Wilson, 2004), which uses a construct mapping approach to the development of items (e.g. questions) along a hierarchical continuum.¹⁴ The survey was designed principally to measure two constructs: 1) student's socially oriented identity and 2) student's academically oriented identity. In late March/early April 2015, after about a month and a half (5-6 sessions), the Light Up Learning mentors asked the first cohort of Lasswade students to take the initial survey. Most students (7 out of 11 total at the time) took the survey at this time. In late February and early March 2016, I administered the survey, which had been slightly amended for clarity, and seven of those students who initially took it, took it again. However, for the present article, I used the survey data as a complement to the more robust qualitative data that served as the primary source of data for my analysis.

Data Reduction and Analysis

During the three months of intensive fieldwork, and in addition to writing in my researcher journal, I wrote memos twice a week that brought together my emergent insights with my weekly re-reading of the data I was collecting. These memos necessarily evolved, becoming longer and more analytical and increasingly interwoven with both data and theory. After

¹⁴ Refer to Appendix B for examples of the two construct maps used for survey design.

completing the fieldwork, I moved fluidly between inductively and deductively coding the data, a process that included the development of a broad descriptive coding scheme¹⁵ that attributed a “class of phenomena to a segment of text” in relation to my research questions (Miles & Huberman, 1994, p. 57). For instance, because I was interested in documenting the social organization of the adult-youth interaction and its impacts on learning and development, my inductive codes included sibling-codes like ‘adult acknowledgement of youth strength or interest,’ ‘adult alignment with youth,’ and ‘adult attempts to transfer power in activity to youth.’ Informed by a critical sociocultural approach to the study of learning, and in particular my methodological attention to the interpersonal plane of development, my initial deductive coding scheme included parent level codes such as ‘joint activity’ and ‘adult talk.’

I took multiple passes at and across each qualitative data source, applying both sets of codes alongside my critical review of the youth studies literature. In so doing, I created a third coding scheme¹⁶, which reflected an attempt to characterize perceptions of the youth program as tied to broader socioeconomic and political patterns— such as ‘funding issue,’ ‘kid-fixing discourse,’ ‘troubling power relations,’ and ‘philosophy on teaching/learning.’ I also found it useful to take a sub-set of codes and apply them to a cross-section of my data (e.g., a youth interview, a field note from a session, and a field note from a meeting). I repeated this process a number of times, and in this way, I was able to confirm that the descriptive patterns I was memoing about held across the data.¹⁷

Analysis of Findings

¹⁵ See Appendix A for example of coding scheme with descriptions and exemplars from the data.

¹⁶ Called ‘program level codes’ within Appendix A.

¹⁷ To ensure a level of surface validity with my codes and coding application, I administered reliability tests for the primary codes within the Dedoose qualitative data analysis platform, which garnered Kappa results ranging between .1 and .7.

Two Light Up Learning sessions were never the same. Because each adult-youth pair was different, and each week's flow of activity was somewhat distinct, one would be hard pressed to find instances of repeated 'work' or 'talk' in the LuL session over time. At the same time, I documented certain patterns in how the LuL adult mentors organized their interactions with the youth, which led to particular patterns of engagement among the adult-youth pair. In this section, I illustrate how the social organization of the interactions between the LuL adults and youth reflected movement toward relational equity within a relationship and context that could otherwise be distinguished by multiple social hierarchies of power, along class, age, and institutional lines of difference. As evidenced primarily through the organization of their talk, the LuL adults worked with the young people in a way that was both humanizing and pushed against instrumental approach to youth development. I identified three practices: 1) privileging youth interests, 2) sharing power, and 3) working against manifestations of a 'kid-fixing' approach to youth work, which, taken together, contributed to such a humanizing approach in practice.

Youth Interests

The guiding premise of LuL as a youth program was about providing a space for youth to explore their interests and curiosities. Such a program ethos is not atypical for many OST spaces today—however through careful interactional analysis what emerged was not only the frequency in which the adult mentors named the importance of youth interest, but also the multiple strategies and junctures at which they worked to ensure that it was those very interests that were driving the interactional work of the adult-youth pair. Indeed, the sibling codes of 'adult naming youth interest' and/or 'adult privileging youth interest' occurred 43 times across the 21 days of fieldnotes.

Consider the following two excerpts from my data that are illustrative of how the adults worked in the moment during the sessions to frame the youth's interest as the central driver of activity within their interactions.

Will (adult) asked Lewis (15-year-old male youth) if it might be okay if that day we all listened to radio show from BBC Channel 4 about Anatomy, called 'In our Time'. (*DD: Will had brought in a recording of a radio show on the subject of Anatomy, for which Lewis had recently expressed an interest in learning more about*). Will placed the iphone in the middle of the table that the three of us were seated around. Before Will started the recording, he looked at Lewis and said "let us know if you think this is boring and we will stop it, because we don't want to waste time here" (Fieldnote Jan. 21).

By checking his understanding, in-the-moment and out loud, of Lewis' interest in listening to the audio recording on anatomy, Will reaffirmed Lewis' privileged position in the adult-youth relationship, and made explicit the fact that Lewis' interest was consequential to the continuation of activity. Relatedly, Will's comment about not "wasting time" points not to a need for the activity itself to produce some end or to reach completion by a certain stage, but rather to Will's insistence on their relational activity being centered around the sincere interests of the young person.

Similarly, when Ric (adult mentor) and Thomas (male youth) were reviewing Thomas' recent work on an essay about rugby, one of Thomas's interests, Ric purposefully paused to ask him about the direction he wanted to go with his essay:

Thomas asked if Ric had seen Manchester United play last night. Ric had, and so they talked about game highlights for about two minutes. Ric then asked "so where do you think you want to go from here with this Thomas?" and turned the ipad (*where the text of*

the essay was located) to Thomas. Thomas proposed he would want to write about the upcoming match with Sam Burgess, a Scottish rugby star, and they got into a small conversation about a recent play he had made. Ric said that Thomas' plan sounded like a good idea, and that we [Ric and me] would leave him alone for 10 minutes so that he could get started on that section of writing in peace.

Throughout their time together, Thomas openly and frequently expressed his interest in rugby. In fact, his work with Ric had prompted him to consider a future career in sports journalism or sports psychology. Yet as is evident in the above interaction, Ric continually asked him questions about the direction he wanted to take the activity-at-hand— positioning him as the person in the space whose interests would guide their next steps together. To be sure, it would have been much easier, and faster, for Ric to lessen the frequency with which he checked in with Thomas about the direction within each step of the activity. However, such as a careful emphasis to the youth's desires with regard to the 'work' of their time together, however non-instrumental, was an important part of what made Thomas feel valuable within that learning space.

These interactions between Will and Lewis, Ric and Thomas were illustrative of the types of moves the adults made to continually privilege the interest(s) of the youth at all stages of activity. They did so by explicitly asking and frequently reminding the young people that their role in the relationship was to lead the direction of the work—a role that pushed against their conceptualizations of what normative teaching and learning practices looked like in a school-based setting.

Working to authentically privilege youth interest in practice led to what might be considered 'a snail's pace' of progress by those looking in from the outside. In fact, over the course of my fieldwork, not one of the 10 LuL students with whom Will or Ric worked

‘finished’ a piece of work (e.g. an essay, a revision, an email chain). And, as coding and analysis across the data sources revealed, the youth articulated with frequency the idea that that LuL was an “interest”- related space where they could really “understand” rather than “just being able to do” (except from Lewis’ interview). For example, Ric and Daniel (a 17-year-old male student), worked nearly two semesters on one essay about the Steelers American football team. And often, the adult mentors would take half of the session time to ensure that the youth felt able to express their interests in-situ, as the following illustrative excerpt from Ric’s work with Cameron reveals:

“In this session, we spoke initially about Cameron’s choices for next year, mostly about why or why not he wanted to do Computer Game Programming, which he said some of his friends were doing, but he wasn’t totally sure about it yet. He said he wanted to be sure about making the right choice about if he really wanted to do it, and then Ric said that that point led into what we would be doing today. He asked Cameron to write about what he thought the purpose of the LuL sessions were. He asked Cameron to write freely, even just making word associations with what he felt. Cameron drew lines on the board, with words like school, freedom, choice, confidence and judgement. Ultimately Cameron said that he did feel open to speak in the LuL sessions, but just that he didn’t always have the confidence to do so, and said a number of times that his confidence sometimes just “went away” or “disappeared.” Ric asked him if he would feel comfortable telling us what he wanted to do in the sessions, and that when he felt that a topic had gone past its point of being interesting, such as our discussions related to the life of a paramedic. Cameron said he felt like we still had a bit to do, and then maybe we could switch it up week to week, maybe talk about football and the paranormal. Ric told

him how happy he was that Cameron had been open about that, and that he hoped to continue this conversation next time. We all packed up and said goodbye.” (Fieldnote, March 17, 2016).

Cameron was not a young man of many words, and there were often long silences after Ric asked him questions during the sessions. Yet Ric was deliberate in creating the space for Cameron to share his ideas and thoughts, even if it meant making space for longer-than-typical silences between adult and youth. As Ric told me time and again, LuL was about creating a space where youth could playfully and meaningful explore their interests, and not about producing any particular object or meeting any particular benchmark or deadline—contrary, in many ways, to what normative (and instrumental) neoliberal logic deems good practice in educational spaces.

Sharing Power: Troubling Normative Adult-Youth Relations

Foregrounding youth expertise. The LuL adults embodied relational equity through privileging youth expertise throughout their discursive interactions with the youth. Expertise, here, refers to one’s experiences and way of knowing. The adult mentors in LuL worked to continually privilege the expertise of the youth at all stages of the activity— and in so doing, embodied a more humanizing approach to youth work through countering normative notions about who holds the power in teaching and learning activity, or within adult-youth interactions more broadly.

Analysis of data revealed frequent instances of the adult mentors meaningfully deferring to the youth when engaged in discussions, which perhaps was captured most strongly through the sibling code of ‘adult asking youth for more information, to name structure, or to explain further’ (43 instances across the data). Consider the following exemplar interaction between Will and

Lewis on the topic of anatomy, taken from the conversation that followed the radio audio recording. Note, in particular, when Will purposefully positioned Lewis as an expert (bolded below).

I (Daniela) asked to pause the audio recording because I said that it would help if I had a picture of what a nerve looked like in my head. This ensued into a nearly 30-minute discussion, led by Lewis, prompted by questions from me and back and forth dialogue between Will and Lewis. When Lewis didn't know about something, like how to draw the third type of nerve, he got out his notebook from his backpack and looked through the pages for it. He turned it to us so we could see, and continued to explain. When Will suggested an explanation for something, however, he would turn to Lewis and say, **“Lewis, correct me if I’m wrong here...”** When I asked a follow up question to them about sensory nerves (something like ‘so do we have more sensory nerves, then, in the areas of body that we think of as sensitive?’) both Will and Lewis agreed, and then I gave an example of placing your hand on something hot and not removing it. Lewis smiled and said it’s a bit more complicated, but that maybe if you have a mental health issue, your brain...**at this moment Will stopped him and asked if he might take it a bit slower to explain to me the exact process that flowed between me putting my hand on something hot and my brain telling my muscles to pull me away from it.** Lewis did this, often getting his notes out or drawing pictures on the yellow page in front of him. By saying out loud that Lewis had the ability to correct him (as the adult) in his explanation, Will lifted up Lewis’ expertise as valuable to the learning activity. And by asking him to slow down in his explanation to really help another adult’s understanding, Will again worked to position

Lewis even within the short interaction as someone with expert knowledge that could support another's emergent understanding.

This pattern of the adults privileging the content-area expertise of the youth emerged strongly across the fieldnotes, as well as instances of the adults naming that they themselves didn't necessarily know the answer, or that it was something that they would need to work more on in order to figure out. In doing so, the adults pushed against common notions of the adult-as-expert in learning activity, in particular within their adult-youth dynamics of private-school educated, upper class adults and state-school educated, working class youth. Such instances were captured by broader parent codes of 'sharing power' and 'purposeful language' both used to code the following illustrative interaction, again between Will and Lewis on the topic of anatomy.

Lewis paused the audio recording to ask a question to Will about if when the radio people talked about the fluid in the head, they were talking about the lymphatic system, Will said, "Well, the answer is that I don't know", and that "we'll have to look that up and find out" (Fieldnotes Jan. 21).

The adult mentors worked to privilege the expertise the youth not only by positioning them as experts, but by pushing against the normative assumption that the adult or adults in the space were the people who held the knowledge or knew all the answers.

Through analysis of youth interviews, too, it became clear that the youth experienced the relationship as one that supported their expertise. Nearly all (8 out of 10) youth reported that their LuL mentor treated them "like an adult" in response to the interview question of 'how does your LuL mentor treat you during the sessions?' Consider, for example, Greig's response in which he not only expressed a felt sense of equity, but articulated feeling like an 'expert':

Greig: He treats you just like anybody, like equally, he doesn't look down on you, he'll actually like to hear about what, and you get that feeling that he really wants to know about what you know, like I'm the expert for a small bit (Interview, March 2016).

Having expertise and being able to use it are two different things. Greig's response simultaneously reflects an understanding of his relationship with Will as normal ("like anybody") *and* as distinct from others in his world ("for a small bit"). In this way, LuL's approach to youth work embodied the importance of a more equitable and humanizing adult-youth relationship for supporting youth learning and development.

Making space for youth's ideas. Analysis of interaction across fieldnotes revealed the ways in which the adults worked to *make space* for each and every idea or contribution that the youth brought forward, including the process by which the youth made sense of what they were thinking or doing. These instances were captured by inductive sibling codes such as 'adult accepting all youth inputs' (e.g. youth could express any interest to pursue, regardless of if it aligned with adult's expertise or interest) within the broader parent code of 'sharing power,' which garnered a frequency of 34 instances across the 21 fieldnotes.

Consider the following exemplar, in which Will had recently encouraged Jorji, a 17 year old female who hoped to one day become a politician and or at the least, someone's "boss," to look into the principles governing the Conservative Party of the British government.

"Will tasked each of us [Jorji, me, and himself] with looking up certain aspects of the Tory Conservative party. We spent about 15 minutes researching using various tools (ipad, computer, smartphone) and when we came back together around a table in the cafe, Will asked Jorji for what she had found. She listed some of the Conservative party's practices (cutting taxes, providing jobs, etc.). He asked her to try to think about their

principles while looking at the Conservative Manifesto (on the ipad). She began to talk about a tax scheme, but then paused to say that she was probably wrong about the answer. He quickly said that there was no wrong answer, and that it was really just about thinking about this stuff and learning and trying to get clear about the generalities that help us think about politics and economics [Jorji's primary interests]" (Fieldnote, February 2016).

By naming that there were "no wrong answers" in the course of their discussion, Will made visible to Jorji that the purpose of their time together was about exploring and learning together, with the goal of being able to potentially make greater connections and reach better understandings; rather than to achieve any particular 'right' answer. This example is illustrative of the way the LuL adults worked not only to make space for the youths' contributions, but to meaningfully engage with their ideas and expressions in ways that appeared to promote a sense of perceived sense of agency and freedom to learn within the relationship on the part of the youth.

In a typical LuL session, the adult mentor would, at some point during their time together, ask the young person to carry out her or his bit of research for the day, after which point the pair would have an extended discussion about what the youth had found. To gain a better picture of the form of equitable interactional dynamics that constituted LuL sessions, consider again the following excerpts from my interviews with Daniel and Thomas:

Daniel: A typical one, we come in here, or down the library, and **we go through all the work we done last week**, and we pick up from where we left off, and then what usually happens **I do some research**, and when **I've found all the research** that's on all the website, I go onto Youtube and do more research, and then he comes back, and **we usually write a bit**, and I usually hate writing, but I enjoy writing when I'm doing it with LuL.

Thomas: We either come to the interview room or the library and **we talk about what's been going on, like whatever, politics, war**, then we usually get onto the subject of

sports, like if one of us has read an article or seen something that is quite interesting, we'll talk about that, then **I'll get 20 minutes to just kind of do my research and write**, then **we'll come together and analyze it** and see what can be improved.

In both Daniel and Thomas' responses, note how they fluidly changed between using the first person 'I' and 'we' to describe their work within the adult-youth pair, suggesting a shared sense of power within the practice. During the 'research' time, which was often supported by some new media tool like a smartphone or tablet, the LuL mentor always worked alongside the youth on a topic of interest to them, but often in a space physically separate from the youth (such as across the room, on a different device, or with a different book). For Will and Ric, working alongside the youth on something of interest to them personally was an important part of the ethos of LuL as a program.¹⁸

Additional analysis from youth interviews similarly revealed a sense of youths' perceived freedom to explore within the adult-youth interactions over time, as well as felt encouragement to delve into their curiosities in the moment. Grieg, for example, said that it's a "period once a week where you work on what you want and talk about what you want." Aspen said that in LuL, she experiences "freedom to get to do what I want and learn what I want to learn." Jorji, Zach, Thomas, and Declan all expressed a sense of freedom to think and be within the adult-youth relationship, saying they get to "talk freely about the things you like", "look into stuff you're interested in", "research what I want," and "discuss something I find interesting." And Daniel and Lewis' responses, respectively, reflected the idea of LuL sessions as a place to increase their own understandings in ways meaningful to them: "learning in depth about new things that I never knew about before," and "learning successfully, instead of just being able to do, like being able to understand how I'm doing and what I'm doing." In each of their responses, then, there

¹⁸ As revealed through analysis of fieldnotes from program-related meetings.

appeared shared sense of authentic agency within the adult-youth relationship, or the sense of their perceived ability to act and think freely. These excerpts from youth interview suggest that the youth themselves experienced the space as one that supported their desires with regard to their own development, in whatever form that took. Such articulations serve as important evidence of LuL's approach to youth development as indeed a humanizing one.

Analysis of youth responses in regard to their relationship confirm that the youth themselves experienced the relationship itself as one with meaningful space for them to think, act, and be—fundamental to the cultivation a humanizing approach to youth work. Consider the pattern of responses that emerged from the interviews, when I asked the youth to describe their relationship with their LuL mentor: Four youth called it “like a friendship,” three called it “not formal” and “personal,” and two called it “comfortable/relaxed.” These responses suggest that LuL's approach to youth work did not adhere to more normative patterns of adult-youth relations in teaching and learning activity. Instead, as the youth responses reveal, the youth experienced the relationship as one akin to that of a friendship—connoting a perceived sense of appreciation, value, and equity.

Purposeful alignment. In addition to privileging their interests and expertise in joint activity, and working to create the conditions for youth to feel free to explore their interests, the adults often aligned their own stances or positions with the youth. This pattern was captured with the code ‘adult aligns response to that of youth,’ emerging 15 times across the fieldnotes. The below excerpt between Ric and Cameron (youth) is illustrative of the type of explicit alignment articulated by the adults toward the youth, indexing a type of in-the-moment solidarity with the youth's contributions and sense-making. In this interaction, Ric and Cameron discussed how to

best end the email that Cameron was sending to an experienced paramedic [his hopeful future job]:

Ric asked how he might sign off the letter, and Cameron said, “I don’t know, to be honest” (a phrase he often said), and Ric listed the ways he might do it, naming sincerely, best wishes, regards. He paused and then Cameron said, “Best Wishes.” Ric responded “I’m with you on that one Cameron” (Fieldnote, January 2016).

Perhaps seemingly mundane, the above interaction was characteristic of the continual verbal expressions of solidarity that the adults in LuL made whilst in the sessions with the youth.

Consider the following interview response from Daniel, which confirms that the youth themselves experienced felt solidarity on the part of the adult. In this excerpt, Daniel describes his relationship with Ric:

It’s hard to say, he treats me, **like one of his friends**, like he doesn’t take me out for a pint or anything like that, but it’s a simple school saying, like treat others like you want to be treated, he treats me like that.

Daniel’s response reveals that LuL’s approach to youth work enabled him to feel like Ric, his adult mentor, was akin to one of his friends; strong evidence for the case that LuL’s approach to youth work was in fact a humanizing one.

Against ‘Kid-Fixing:’ Anti-Instrumentalism in Practice

Not about diagnosing or mending. Part of the humanizing approach that Will and Ric brought to their work with the students was reflected in their post-session sense-making around interactions; noting, for example, that all days don’t have to be groundbreaking days. By accepting everything that the youth brought to the LuL table, despite its form, sound, or shape,

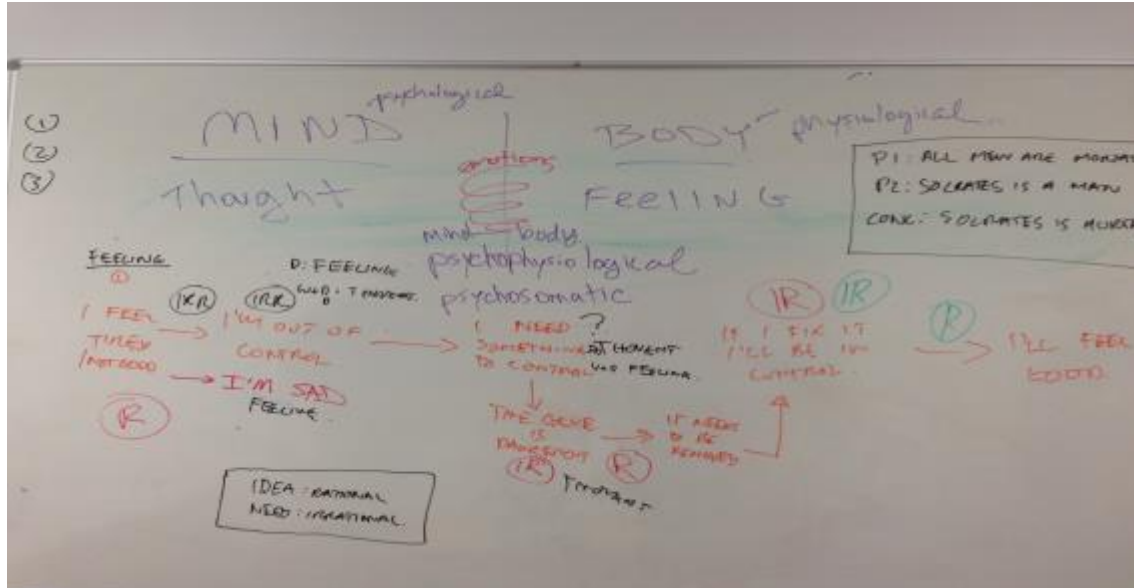
Will and Ric acknowledged the humanity of the youth. Consider the following illustrative example, which comes from an informal meeting after a day of sessions at Lasswade.

I told Ric and Will that I noticed that Cameron (youth) was quieter today in his session, and that he seemed a bit off. Ric said that I was finally getting to see a more typical Cameron, that he was a quiet kid, but that he had learned himself that days like today were okay, that we have to understand that they are doing their best, like we are doing our best, and some days we'll not be so on, and other days we will; and that everyday can't be a groundbreaking day, because that just wasn't human (Fieldnote, Feb. 4, 2016).

As Will and Ric made sense of the youths' actions, experiences, or ways they did or did not express themselves during the sessions, they intertwined their own experiences and ideas into the conversation, often aligning themselves with the youth, or noting differences or contradictions. By putting the students' lives in conversations with their own, they were engaged in the practice of humanizing, rather than othering, the young people. Such a practice worked to trouble more instrumental conceptions of youth work as needing to achieve some particular aim or improve some aspect of a young person's life.

When the young people did articulate feeling a lack of confidence, or the desire for support in experiencing less stress or being more vocal, Will and Ric would organize the sessions to attend to their articulations. This took the form, in Will's sessions in particular with the more senior youth, of practicing 5 to 10 minutes of joint silent meditation or free writing. In the case of work with Declan (an 18-year-old male year student whose attendance of LuL was spotty due to his anxiety-related absenteeism), Will used one of their weekly sessions to explore questions of emotions as related to issues of control, freedom, agency, and choice. Figure 1 captures this discussion, the image reflecting the writing of both Will and Declan.

Figure 1. White board during March 10th LuL session with Will and Declan.



Declan remained engaged throughout this session as evidenced by his chattiness and saying after the session that “I find this quite interesting and helpful” (Fieldnote, March 10, 2016). And yet directly after the session, Will let me know that he likely would be stepping back from that type of session organization in the future:

“After Declan walked out of the room, I told Will good job, and that Declan seemed super engaged. He said that he wasn’t sure, that he felt a bit like we had just basically done CBT (cognitive behavioral therapy), and that he wasn’t sold on this approach, he wasn’t a trained psychologist, and that it wasn’t what LuL was about, or even maybe the right thing to do for Declan” (Fieldnote, March 10, 2016).

Will focused that particular session on an exploration of Declan’s interests in his own emotional state—which in many ways seemed an appropriate pedagogical strategy given the youth’s recent articulated needs. However, Will’s reticence to even pursue an activity that seemed to him reflective of therapy or a psychological tool was illustrative of LuL’s approach to youth development as grounded in a non-fixing, non-deficit orientation to work with young people.

Not about academic improvement. While LuL sessions routinely involved authentic engagement with disciplinary knowledge, the adult mentors were steadfast in their articulation that LuL was **not** an academic improvement program. Analysis of fieldnotes revealed multiple instances of this sentiment, but it came across most clearly in programmatic conversations with potential funders and business consultants. Consider the following excerpt from a condensed memo of interactions I wrote during my fieldwork regarding program-level conversations with strategy consultants and Lasswade school personnel, which is illustrative of the type of feedback LuL received regarding their potential ability to garner external funding or apply for grants.

When Will and Ric met with Jane, a friend and business consultant for charities and foundations in London, she told them that though she recognized the ethos of Light Up Learning wasn't about improving grades, it would be extremely attractive to youth and education funding bodies if they could demonstrate academic gains as a result of participation in the program. Graham Paris, the deputy head of Lasswade, told Will and Ric that an obstacle in securing "match school funding" (a relatively common practice within Lasswade) would be LuL's de-emphasis on academic remediation and exam prep, given the relatively lower-achieving status of Lasswade school in the community. And as a potential evaluator of LuL, I (Daniela) even suggested that we access the students' school tracking reports to be able to speak to their grades alongside their participation in LuL. (Fieldnote, February, 2015).

Despite this type of external feedback, Will and Ric were clear that LuL was not about improving academic achievement, and that the mentor's role within the sessions was not about remedying any academic deficiencies in the youth. In this way, it was not the role of the adult in

that space to impart any particular knowledge or fill any particular gap within the young people. For example, consider Ric's response to me when I expressed initial anxiety around being able to fulfill my role own role as a volunteer LuL mentor for a few students during the course of my fieldwork:

Whilst we were walking to meet Will, I mentioned to Ric that I was nervous about mentoring the youth because I am not good at math or science or British history. He told me that in fact the less I know the better, because my job isn't to teach them disciplinary knowledge; but the best way is for me to learn from them. It's not about the disciplinary knowledge, he said, it's about them teaching me. (Fieldnote, Dec. 2015).

Such a perspective on youth work reflects an approach to youth learning from the understanding of young people as sources of knowledge and experience, rather than as in need of remedying. LuL's approach to youth, then, led with the assumption that they were not, in fact, vessels to be filled.¹⁹

Even when the youth expressed that their current and most pressing stressor or need was around improving their academic achievement, LuL adults approached the situation from a perspective different than what one might expect in a school-based setting. For instance, early on in the sessions with Jorji (an 18-year-old female student), she expressed that she was really worried about her ability to get into college for Economics because of her low performance on Maths exams. The following excerpt from my fieldnotes shows Will's response to this situation:

"When Will and I stepped away from Jorji to let her research, we talked about what the best use of our time would be in that session, and moving forward, and I said that it sounded like she was most stressed about doing well in school on the exams in order to

¹⁹ Paulo Freire (1970) famously argued against children as "empty vessels to be filled with facts, or sponges to be saturated with official knowledge" (Shor, 1993, p. 25).

get accepted to the universities, so we should probably help her with Maths-related work. But Will reminded me quickly that as an organization, that's not what they are about; they don't do direct remediation, and would be happy to help during exam time with study-related skills, or to connect her with a Maths tutor, but that they were not about disciplinary tutoring. He said they would continue to explore her interests in the political economy, in whatever form that took" (Fieldnotes, Jan. 28, 2016).

Whereas my first inclination in the moment was to attend directly to the area of articulated need by Jorji, Will's response was based on an approach that would build on her interests and evident motivations, rather than her espoused deficits. Such a response was characteristic of those expressed by Will and Ric in their work with the students. In this way, LuL's approach to youth work was distinct from more commonplace goals of the utility of adolescent learning in 2016, such as getting into college or doing well on an exam.

Careful attention to the talk or language that Will and Ric used, in practice and in reflection of their practice, made visible the ways in which Light Up Learning's approach was in tension with the more instrumentally oriented approaches to learning and youth development that characterize contemporary OST youth programs. Their anti-instrumental perspective toward learning and youth development, when brought together with LuL's emphasis on the adult-youth relationship itself a site for meaningful learning, combined to create a space of social possibility— one in which worked to transgress the normative social hierarchies of power that existed within this setting.

Limitations of Analysis

There is sure to be a level of imprecision that comes with the intangibility of investigating strategies that support the organization of relational equity, or that characterize a

humanizing approach to interaction. Not only are such phenomenon difficult to document, their description is often limited to words and phrases which can serve to simplify their complexity or reify their problematic. In addition, while all studies of human social science must necessarily contend with issues related to the subjective, multisided, and fluid nature of social interaction, my study attempts to lift up the nuanced connection between power relations, human relationships, and teaching and learning. In so doing, it is particularly vulnerable to the critique that my own positionality as a White, middle class adult (and therefore member of multiple dominant communities), as well as long-time friend of the adult youth workers, constrains me from making such situated claims regarding what constitutes ‘humanizing’ on the part of the adult and youth participants in my study. While this limitation of the analysis can never be overcome, it has been attempted to be addressed through continual data-related member checks with the involved adults as well as the purposeful collection of first person perspectives from the youth in the form of interviews, surveys, and informal conversations throughout the fieldwork.

Discussion

The case of Light Up Learning serves as an instance of a youth program based on the cultivation of a particular type of adult-youth relationship over time. The LuL adults’ approach to youth work, which was both humanizing and anti-instrumental, troubled neoliberal logic through a continued de-emphasis on outcomes as well as the purposeful disruption of normative power relations between adults and young people in teaching and learning activity.

In school-based and afterschool settings, it is traditionally adults who occupy positions of relational power—adults structure student time, tell students what to learn, and in many cases, how to learn it. In a Light Up Learning session, while the adults did support the youth by providing various mediational tools such as technology devices or connections to their own lived

experiences, it was the youth themselves who were responsible for driving the ‘work.’ It was the youth who named what they were interested in exploring, and it was the youth who decided how they wanted to learn about whatever topic they chose. In this way, a LuL session provided a small space that could be understood as pushing against the normative relations of power that tend to characterize typical adult-youth relations in educational activity.

In addition to the generational or institutionally-informed power dynamics that exist between adults and young people in school-based settings, there were the deep-seated class-based dynamics that existed between the adult mentors of Light Up Learning and the youth with whom they worked. Recall that the youth, representative of their peers in Lasswade, came from working class backgrounds. The adults, similar to many of the adult teachers at Lasswade, came from middle-upper and upper-middle class backgrounds, and attended only public schools (aka private schools in the US) for the entirety of their education. Still in 2016, class-based lines of difference largely shape opportunities for participation in Scottish society (The Equality Trust, 2015), and the youth of Light Up Learning often expressed curiosity as to why Cambridge-educated adults would be interested in working with youth from their community.

In a Light Up Learning session, however, the adults explicitly and continuously redirected the power relations within the activity toward the youth. In practice, this took the form of the adult naming that he did not know, did not have that experience, or was in less of a position to answer a given question than the youth. Or it involved the adult passing the technology tool, the book, or the pen into the hands of the youth, and asking them to use it to think out-loud about the topic at hand. In attempting to continually shift the power within the adult-youth pair toward the side of the youth, the adults were working to foster relational equity, and in doing so, were purposefully moving away from more typical school-based learning

activities with the potential to reify adult-as-knower/youth-as-receiver logic (see Chiu, Moya, & Peppler, 2006). Though analysis of these practices across the data, I argue that Light Up Learning served as a small model of a youth development program that extends contemporary notions of what youth work can look like—namely through its emphasis on the cultivation to a more equitable and *humanizing adult-youth relationship*, as well as in its dedication to the notion that *learning ought to be pursued for its own sake, rather than as a means to some end*.

At the same time, LuL as a program is not free from the practical demands of maintaining a youth development program in a school-based setting. For example, successful funding options have yet to be ascertained because of Will and Ric's refusal to focus on academic remediation, in tandem with the program's lack of focus on a population deemed highly vulnerable by UK funding bodies (immigrants, developmentally disabled, of an ethnicity with linguistic minority, etc.). And in order to undergo external program evaluation or even to make pitches to expand to nearby schools, LuL will have to report impact or outcomes of its youth work that are attractive and comprehensible to a wide audience, including school administrations, parents, students, and potential funding bodies. Concise articulations of such outcomes may contradict, in part, the program's intent to remain focused on the cultivation of a humanizing relationship, or the pursuit of learning for learning's sake. The combination of these issues has located LuL in a type of stand-still, at least temporarily. In this way, this study serves as a small but illustrative case of the tensions that many youth programs face in the ways that they structure and present their 'work' with youth (Kwon, 2013). And it calls for future investigations as to what youth programs, like LuL, can do to sustain in a socioeconomic climate that rewards measurable outcomes, often at the expense of more intangible, process-related pursuits?

Conclusion

As a program intended to serve as a space within school hours for youth from working class families to learn for learning's sake, Light Up Learning located itself in a somewhat unique space within the broader landscape of contemporary youth development. Its approach to working with youth defied neoliberal logic of instrumentally-oriented conceptions of learning for some other ends, such as to get a certain grade, obtain a particular job, or be accepted into university. Moreover, the approach developed by Will and Ric defied more paternalistic or deficit-oriented conceptions of youth work, especially for work with youth from nondominant communities. LuL's adults de-emphasized a 'kid-fixing' approach through maintaining what I have defined empirically as a humanizing relationship; that is, a relationship in which the other's full humanity is regarded above all else, and seen as whole.

This study suggests that in order to work toward relational equity in teaching and learning activity, the person(s) in the position of relational power must work overtime to consider how zones of proximal development are being mediated by the normative and often racialized, class-based lines of difference that characterize the social interactions which constitute all practices of teaching and learning. Working toward relational equity, then, can involve creating the conditions to support a type of critical zone of proximal development through the cultivation of a humanizing relationship; a zone of proximal development that is mobilized, in part, by explicitly pushing the power lever of the relationship toward the person who occupies the position of less power, not just once, but continually. In the case of youth development work, it also involves reimagining ways to practically embody a commitment to the importance of an adult-youth relationship in a young person's learning and development, despite known pressures to produce outcomes that can be measured. After all, when it comes to discussions of humanity, not everything that counts can be counted.

Article Three References

- Baldrige, B. J. (2014). Relocating the Deficit: Reimagining Black Youth in Neoliberal Times. *American Educational Research Journal*, 0002831214532514.
- Barton, A. C. (2001). Capitalism, critical pedagogy, and urban science education: An interview with Peter McLaren. *Journal of Research in Science Teaching*, 38(8), 847-859.
- Brown, A. (1992). Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *The Journal of the Learning Sciences*, 2(2), 141-178.
- Carter, P. L., & Welner, K. G. (2013). *Closing the opportunity gap: What America must do to give every child an even chance*. Oxford University Press.
- Chang, H. J. (2012). *23 things they don't tell you about capitalism*. Bloomsbury Publishing USA.
- Del Razo, J. L., & Renée, M. (2013). Expanding Equity through More and Better Learning Time. *Voices in Urban Education*, 36, 23-34.
- DiGiacomo, D. & Gutierrez, K.D. (in press). Seven *chilis*: Making visible the complexities of leveraging a cultural repertoires of practice approach in a designed teaching and learning environment. *Pedagogies: An International Journal*.
- DiGiacomo, D. K., & Gutiérrez, K. D. (2015). Relational equity as a design tool within making and tinkering activities. *Mind, Culture, and Activity*, 23(2), 141-153.
- Duncan-Andrade, J. (2007). Gangstas, wankstas, and ridas: Defining, developing, and supporting effective teachers in urban schools. *International Journal of Qualitative Studies in Education*, 20(6), 617-638.
- Eccles, J. & Gootman, J. (2002). Community Programs to Promote Youth Development. Washington, DC: National Academies Press. Ch. 4: Features of Positive Developmental Settings, pp. 86–118.

- Erickson, F. (1986). Qualitative methods in research on teaching (pp. 119-161). *Handbook of research on teaching*.
- Espinoza, M. L., & Vossoughi, S. (2014). Perceiving learning anew: Social interaction, dignity, and educational rights. *Harvard Educational Review*, 84(3), 285-313.
- Gutiérrez, K. D., Izquierdo, C., & Kremer-Sadlik, T. (2010). Middle Class Working Families' Beliefs and Engagement in Children's Extra-Curricular Activities: The Social Organization of Children's Futures. *International Journal of Learning*, 17(3).
- Halpern, R. (2002). A different kind of child development institution: The history of after-school programs for low-income children. *Teachers College Record*, 104(2), 178-211.
- Halpern, R. (2005). Instrumental relationships: A potential relational model for inner-city youth programs. *Journal of Community Psychology*, 33, 1: 11-20.
- Heath, S. B., & McLaughlin, M. W. (1994). Learning for anything everyday. *Journal of Curriculum Studies*, 26(5), 471-489.
- Howe, K. R. (1997). *Understanding equal educational opportunity*. New York: Teachers College Press.
- Ito, M. et al. Hanging Out, Messing Around, and Geeking Out. Cambridge: The MIT Press, 2013.
- Kirshner, B., Pozzoboni, K., & Jones, H. (2011). Learning how to manage bias: A case study of youth participatory action research. *Applied Developmental Science*, 15(3), 140-155.
- Kirshner, B. (2015). *Youth activism in an era of education inequality*. NYU Press.
- Kwon, S. A. (2013). *Uncivil youth: Race, activism, and affirmative governmentality*. Duke University Press.
- Lareau, A. (2011). *Unequal childhoods: Class, race, and family life*. University of California Press.

- Larson, R. (2000). Towards a psychology of positive youth development. *American Psychologist*, 55 (1): 170-193.
- Livingstone, S., & Sefton-Green, J. (2016). *The class: Living and learning in the digital age*. NYU Press.
- Mahoney, J. L., & Eccles, J. S. (2008). Organized activity participation for children from low-and middle-income families. *Disparities in school readiness: How families contribute to transitions in school*, 207-222.
- McLaughlin, M. (2000). Community counts: How youth organizations matter for youth development. Washington D.C: Public Education Network.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.
- Nakkula, M. & Toshalis, E. (2006). *Understanding Youth: Adolescent Development for Educators*. Cambridge: Harvard Education Press.
- Nasir, N. (2012). *Racialized identities: Race and achievement among African American youth*. Stanford: Stanford University Press.
- Navarro, T. (2010). Putting Race to Work: Economic Development and Racialization in the US Virgin Islands.
- Ochs, E., & Kremer-Sadlik, T. (Eds.). (2013). *Fast-forward family: Home, work, and relationships in middle-class America*. Univ of California Press.
- Philip, T., Bang, M., Jurow, A.S., Vossoughi, S., Zavala. (under review). The role of the Learning Sciences in an era of US nationalism. Journal tbd.
- Reardon, S. F. (2011). The widening academic achievement gap between the rich and the poor: New evidence and possible explanations. *Whither opportunity*, 91-116.
- Renee, M., Welner, K., & Oakes, J. (2010). Social movement organizing and equity-focused

- educational change: Shifting the zone of mediation. In *Second international handbook of educational change* (pp. 153-168). Springer Netherlands.
- Rose, M. (2014). *Why school?: Reclaiming education for all of us*. New Press.
- Rogoff, B. (1995). Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In J.V. Wertsch, P. del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind* (pp. 139-164). Cambridge, UK: Cambridge University Press. Reprinted (2008) in K. Hall & P. Murphy (Eds.), *Pedagogy and practice: Culture and identities*. London: Sage.
- Shor, I. (1993). Paulo Freire's critical pedagogy. In P. Leonard & P. McLaren (Eds.), *Paulo Freire: A critical encounter*. London: Routledge.
- Sukarieh, M., & Tannock, S. (2011). The positivity imperative: A critical look at the 'new' youth development movement. *Journal of Youth Studies*, 14(6), 675-691.
- The Equality Trust. (2015). London, UK. Accessed through equalitytrust.org.uk
- Thomas, D. (2004). *Modern blackness: Nationalism, globalization, and the politics of culture in Jamaica*. Duke: Duke University Press.
- Tough, P. (2012). *How Children Succeed: Grit, Curiosity, and the Hidden Power of Character*. New York: Houghton Mifflin Harcourt Publishing Company.
- Torres, C. A. (2013). Neoliberalism as a new historical bloc: a Gramscian analysis of neoliberalism's common sense in education. *International Studies in Sociology of Education*, 23(2), 80-106.
- Vakil, S., McKinney de Royston, M., Suad Nasir, N. I., & Kirshner, B. (2016). Rethinking race and power in design-based research: Reflections from the field. *Cognition and Instruction*, 34(3), 194-209.
- Michalchik, V., & Gallagher, L. (2010). Naturalizing assessment. *Curator: The Museum*

- Journal*, 53(2), 209-219.
- Vossoughi, S. (2014). Social analytic artifacts made concrete: A study of learning and political education. *Mind, Culture, and Activity*, 21(4), 353-373.
- Vossoughi, S., Hooper, P. K., & Escudé, M. (2016). Making through the lens of culture and power: Toward transformative visions for educational equity. *Harvard Educational Review*, 86(2), 206-232.
- Vygotsky, L. (1978). *Mind in society*. Cambridge: Harvard University Press.
- Wilson, M. (2004). *Constructing measures: An item response modeling approach*. Routledge.
- Zeldin, S., Christens, B.D., Power, J.L. (2013). The psychology and practice of youth-adult partnership: bridging generations for youth development and community change. *American Journal of Community Psychology*, 51, 3-4: 385-397.

CONCLUSION

The three articles in this dissertation addressed the complex relationship between teaching and learning practices and the social organizations of the adult-youth relationships that constitute those practices. In this final chapter, I briefly summarize the key findings of each article, express final words on my emerging framework of relational equity, and outline implications for future research that come from this collective body of work.

In the first article “Relational equity as a design tool within making and tinkering activities,” I illustrated how the social organization of particular making & tinkering activities, within the larger empirical context of a social design experiment explicitly designed for transformative change, helped to create a learning environment with the necessary social conditions for feedback in practice that supported consequential learning. In the second article, “Seven *chilis*: Making visible the complexities in leveraging cultural repertoires of practice in a designed teaching and learning environment,” I discussed both the possibility and difficulty of helping teachers disrupt the default teaching scripts that privilege traditional forms of participation, support, and hierarchal relations, as well as disrupt static and reductive notions of culture. And in my third article, “Organizing for relational equity: Insights from a Scottish youth development program,” I explored the tensions and possibilities of learning for learning’s sake in the contemporary neoliberal era through an examination of one program’s humanizing and anti-instrumental approach to youth work.

Across these three articles, I aimed to lift up the interwoven relation between social inequality, human relationships, and practices of teaching and learning. Always with a keen attention to the social organization—of activity, discourse, or relationships—my analysis proceeds with an understanding of the unequal ways in which contemporary institutions,

opportunities, and interactions are structured to privilege some while marginalizing others. In doing so, my work contributes to scholarship that bring together sociocultural learning theory with more critical perspectives of power, adult-youth relationships, and youth work more broadly. In the present work and moving forward, I hope to contribute to contemporary conversations within the Learning Sciences around how to design for equitable learning opportunities for youth from nondominant communities.

A Final Note on Relational Equity

Relational equity can emerge when educators design experiences to enable youth to discover new goals and possibilities through joint engagement with peers and adults in tasks where they make, produce, and critically reflect on new understandings of themselves, the world, and their relation to the world. Relational equity is *consequential* (Beach, 1999) to the extent that these activities also change people's relation to the world. Working toward relational equity does not free adults or youth from being a part of relations of power, but by critically reflecting on their relation to the world, it can make what is taken for granted something human-made and malleable.

Traditional participant structures within educational contexts tend to be characterized as primarily teacher (or adult) led, in that it is the adults who organize how participation ensues on the part of the youth. As lead designers of learning activity through lectures, assignments, and/or ask-and-answer-like scripts (Gutiérrez, Rymes & Larson, 1995), adults often struggle to sustainably organize learning activity in more symmetrical and equitable ways (Kafai, Desai, Peppler, Chiu & Moya, 2008). To support the development of relational equity in practice, adults need to establish a participant structure in learning tasks where adults and youth work side-by-side, rather than remain within more fixed traditional teacher-as-expert, student-as-

novice roles. Indeed, the extent to which youth can “shift their participation over time” in authentic learning practices matters for the extent to which they can learn and develop in meaningful ways (Rogoff, 1994). Shifting one’s participation in a structured practice, such as the designed activities of a classroom or an afterschool program, becomes accessible to youth only insofar as the adult-lead has created the conditions that allow for such movement through the shifting of roles and responsibilities among its participants of mixed age and ability.

When adults follow and support youth’s initiative in activity, rather than lead, they move in the direction of creating the conditions for relational equity to emerge in practice. Attention to positional arrangements and relational engagements in learning activity is emphasized by Rogoff (1995) in her discussion of the “interpersonal plane” of learning and development, which

focuses attention on the system of interpersonal engagements and arrangements that are involved in participation in activities, by promoting some sorts of involvement and restricting others...[and]...stresses the mutual involvement of individuals and their social partners, communicating and coordinating their involvement as they participate in socioculturally structured collective activity (p. 30).

In other words, attention to the discursive organization of one’s engagement with another in activity matters for the other’s ability to transform their participation, or learn. Especially given the power-laden nature of typical adult-youth relations within educational contexts, it becomes necessary to think carefully about activities that encourage adults to support or follow, rather than lead, in the development of a shared understanding or practice. Within such activities, youth are given opportunities to make visible their understandings and discuss their ideas while receiving open-ended feedback from perhaps more experienced near peers or adults. Creating

room for this type of unscripted movement on the part of the youth to inform the direction of the activity is critical to supporting relational equity.

Implications for Future Research

My dissertation research drew on my experiences in designed informal learning spaces in school-based child and adolescent programs. Through these experiences, I have documented, for example, the potential of particular types of designed activities, such as making and tinkering activities, to trouble the historically rooted and highly asymmetrical power dynamic that exists between pre-service White teachers and elementary age Latino students. While I find incredible potential in such work, I remain wary of the temporal dimension of any certain activity, space, or program as a long-term stimulator of equitable, consequential change in practice. And, I recognize that my research to date has been primarily focused on the social organization of relationships within informal learning environments—whose practices of teaching and learning can look very different due to the absence of high-stakes accountability assessments.

In my future work, then, I aim to investigate the ways in which adult-youth relationships mediate learning opportunities in more formal school settings among young people. To do so, I will need to begin with developing more precise *indicators* of relational equity in school-based settings. Based on my dissertation research and my participation in a number of policy-related projects as a graduate research assistant (such as Ford’s More and Better Learning Time Initiative or Spencer’s Measuring Youth Policy Arguments Initiative), I am confident that my approach to the development of indicators of relational equity will employ a design and community-based, mixed methodological approach. I can imagine that this work will involve the co-design of tools in the form of ethnographically-informed surveys, interviews, and

observation protocol that can be used to measure the degree/extent to which youth experience relational equity in teaching and learning environments.

It is my hope that these tools might be used in both formative and summative ways. For example, I can image that educators might want to better understand the ways in which the youth in their classrooms experience the teacher-student relationship as one that is equitable.

Alternatively, a principal may hope to gain insight into levels of relational equity experienced on the part of students in relation to other valued indicators of college, career, or community readiness. I understand that for this type of work to become a possibility, there requires a shift in the normative ways of conceptualizing the role of an adult-youth relationship in a classroom. Often taken for granted as principally benign or neutral, a teacher's positionality in relation to the youth with whom they work is in fact central to the provision of equitable learning opportunities.

As a field, we can no longer remain content to design the most innovative learning spaces, activities, or technologies—as their potential to enable consequential and equitable learning for youth still depends in large part on the social organization of the human relationships that surround such spaces, activities, and technologies. In this way, it is my hope that in the coming years, research on learning and development will foreground the political dimensions of learning, taking central the ways in which historically rooted and contemporaneously instantiated “social hierarchies of power” intersect with practices of teaching and learning (Philip, Bang, Jurow, Vossoughi & Zavala, under review).

Conclusion References

- Beach, K. (1999). Consequential transitions: A sociocultural expedition beyond transfer in education. *Review of research in education*, 101-139.
- DiGiacomo, D. & Gutierrez, K.D. (in press, 2017). Seven chilis: Making visible the complexities of leveraging a cultural repertoires of practice approach in a designed teaching and learning environment. *Pedagogies: An International Journal*.
- DiGiacomo, D. K., & Gutiérrez, K. D. (2016). Relational equity as a design tool within making and tinkering activities. *Mind, Culture, and Activity*, 23(2), 141-153.
- Gutierrez, K., Rymes, B., & Larson, J. (1995). Script, counterscript, and underlife in the classroom: James Brown versus Brown v. Board of Education. *Harvard educational review*, 65(3), 445-472.
- Kafai, Y. B., Desai, S., Peppler, K., Chiu, G. & Moya, J. (2008). Mentoring Partnerships in a Community Technology Center: A Constructionist Approach for Fostering Equitable Service Learning. *Mentoring & Tutoring*, 16(2), pp. 194-201.
- Philip, T., Bang, M., Jurow, A.S., Vossoughi, S., Zavala. (under review). The role of the Learning Sciences in an era of US nationalism. Journal tbd.
- Rogoff, B. (1994). Developing understanding of the idea of community of learners. *Mind, Culture, and Activity*, 1, (4), 209-230.
- Rogoff, B. (1995). Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In J.V. Wertsch, P. del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind* (pp. 139-164). Cambridge, UK: Cambridge University Press. Reprinted (2008) in K. Hall & P. Murphy (Eds.), *Pedagogy and practice: Culture and identities*. London: Sage.

Comprehensive References

- Baldrige, B. J. (2014). Relocating the Deficit: Reimagining Black Youth in Neoliberal Times. *American Educational Research Journal*, 0002831214532514.
- Barton, A. C. (2001). Capitalism, critical pedagogy, and urban science education: An interview with Peter McLaren. *Journal of Research in Science Teaching*, 38(8), 847-859.
- Barton, A. C., & Tan, E. (2010). We be burnin'! Agency, identity, and science learning. *The Journal of the Learning Sciences*, 19(2), 187-229.
- Barron, B. J., Schwartz, D. L., Vye, N. J., Moore, A., Petrosino, A., Zech, L., & Bransford, J. D. (1998). Doing with understanding: Lessons from research on problem-and project-based learning. *Journal of the Learning Sciences*, 7(3-4), 271-311.
- Banks, J., Au K., Ball A., Bell, P., Gordon, E., Gutiérrez, K., Brice Heath, S., Lee, C., Lee, Y., Mahiri, J., Nasir, N., Valdes, G., Zhou, M. (2007). Learning in and out of school in diverse environments: Life-Long, Life-Wide, Life-Deep. The LIFE Center (The Learning in Informal and Formal Environments Center), University of Washington, Stanford University, and SRI International.
- Beach, K. (1999). Consequential transitions: A sociocultural expedition beyond transfer in education. *Review of research in education*, 101-139.
- Bransford, J., Brown, L., & Cocking, R. (Eds.). (1999). *How people learn: brain, mind, experience, and school*. Washington, D.C.: National Academy Press
- Brown, A. (1992). Design experiments: Theoretical and methodological challenges in creating complex interventions in classroom settings. *The Journal of the Learning Sciences*, 2(2), 141-178.
- Brown, J., Collins, A. and Duguid, P. (2012). Situated cognition and the culture of learning.

- Educational Researcher*, 18 (1), 32-42.
- Carspecken, P. F. (1996). *Critical ethnography in educational research: A theoretical and practical guide*. Psychology Press.
- Cazden, C. B. (2001). *Classroom discourse. The language of teaching and learning*. Portsmouth, NH: Heinemann.
- Carter, P. L., & Welner, K. G. (2013). *Closing the opportunity gap: What America must do to give every child an even chance*. Oxford University Press.
- Chang, H. J. (2012). *23 things they don't tell you about capitalism*. Bloomsbury Publishing USA.
- Cole, M. (1996). *Cultural psychology: A once and future discipline*. Cambridge: Harvard University Press.
- Cole, M. and Engeström, Y. (1993). A cultural-historical approach to situated cognition. In G. Salomon (Ed.), *Distributed Cognitions: Ecological and Educational Considerations* (pp. 1-46). New York: Cambridge University Press.
- Cole, M., & Griffin, P. (1986). A sociohistorical approach to remediation. *S. deCastell, A. Luke, & K. Egan (Eds.), Literacy, society, and schooling*, 110-131.
- Cole, M. & the Distributed Literacy Consortium. (2006). *The fifth dimension: An after-school program built on diversity*. New York, NY: Russell Sage Foundation.
- Cooper, C. (2011). *Bridging multiple worlds: Cultures, identities, and pathways to college*. New York: Oxford University Press.
- Del Razo, J. L., & Renée, M. (2013). Expanding Equity through More and Better Learning Time. *Voices in Urban Education*, 36, 23-34.
- DiGiacomo, D. K., & Gutiérrez, K. D. (2016). Relational equity as a design tool within making and tinkering activities. *Mind, Culture, and Activity*, 23(2), 141-153.
- DiGiacomo, D. & Gutierrez, K.D. (in press). *Seven chilis: Making visible the complexities of*

- leveraging a cultural repertoires of practice approach in a designed teaching and learning environment. *Pedagogies: An International Journal*.
- Duncan-Andrade, J. (2013). Keynote speech for the Teachers of Color and Allies Summit at University of Colorado at Boulder.
- Duncan-Andrade, J. (2007). Gangstas, wankstas, and ridas: Defining, developing, and supporting effective teachers in urban schools. *International Journal of Qualitative Studies in Education*, 20(6), 617-638.
- Eccles, J. & Gootman, J. (2002). Community Programs to Promote Youth Development. Washington, DC: National Academies Press. Ch. 4: Features of Positive Developmental Settings, pp. 86–118.
- Edwards, A. (2011). Building common knowledge at the boundaries between professional practices: Relational agency and relational expertise in systems of distributed expertise. *International Journal of Educational Research*, 50(1), 33-39.
- Engeström, Y. (2004). From design experiments to formal interventions. University of Helsinki, Finland, 1-29.
- Erickson, F. (1985). Qualitative Methods in Research on Teaching. Occasional Paper No. 81.
- Erickson, F. (1986). Qualitative methods in research on teaching (pp. 119-161). *Handbook of research on teaching*.
- Engeström, Y., & Sannino, A. (2010). Studies of expansive learning: Foundations, findings and future challenges. *Educational Research Review*, 5, 1–24.
- Espinoza, M. L., & Vossoughi, S. (2014). Perceiving learning anew: Social interaction, dignity, and educational rights. *Harvard Educational Review*, 84(3), 285-313.
- Gutiérrez, K.D. (2016). Designing Resilient Ecologies: Social design experiments and a new

- social imagination. *Educational Researcher*. 45(3), 187-196.
- Gutiérrez, K. D., Baquedano-López, P., Alvarez, H. H., & Chiu, M. M. (1999). Building a culture of collaboration through hybrid language practices. *Theory into practice*, 38(2), 87-93.
- Gutiérrez, K. D., Izquierdo, C., & Kremer-Sadlik, T. (2010). Middle Class Working Families' Beliefs and Engagement in Children's Extra-Curricular Activities: The Social Organization of Children's Futures. *International Journal of Learning*, 17(3).
- Gutiérrez, K.D., Bien, A., & Seland, M. (2011). Polylingual and Polycultural Learning Ecologies: Mediating Emergent Academic Literacies for Dual Language Learners, *Journal of Early Childhood Literacy*, 11(2). 232-261.
- Gutiérrez, K.D. & Jurow, S. (2016). Social design experiments: Toward equity by design. *Journal of Learning Sciences*.
- Gutierrez, K.D. (2005). Intersubjectivity and grammar in the third space. Scribner Award Lecture. American Educational Research Association. Montreal, Canada.
- Gutiérrez, K., Rymes, B., & Larson, J. (1995). Script, counterscript, and underlife in the classroom: James Brown versus Brown v. Board of Education. *Harvard educational review*, 65(3), 445-472.
- Gutiérrez, K. D. (2008). Developing a sociocritical literacy in the third space. *Reading Research Quarterly*, 43(2), 148-164.
- Gutiérrez, K.D., & Vossoughi, S. (2010). Lifting off the ground to return anew: Mediated praxis, transformative learning, and social design experiments. *Journal of Teacher Education*, 61(1-2), 100-117.
- Gutierrez, K.D. Morales, P. and Martinez, D. (2009). Re-mediating literacy: Culture, difference,

- and learning for students from nondominant communities. *Review of Research in Education*, 33 (1), 212-245.
- Gutierrez, K.D. and Rogoff, B. (2003). Cultural ways of learning: Individual traits or repertoires of practice. *Educational Researcher*, 32 (5), 19-25.
- Halpern, R. (2002). A different kind of child development institution: The history of after-school programs for low-income children. *Teachers College Record*, 104(2), 178-211.
- Halpern, R. (2005). Instrumental relationships: A potential relational model for inner-city youth programs. *Journal of Community Psychology*, 33, 1: 11-20.
- Heath, S. B., & McLaughlin, M. W. (1994). Learning for anything everyday. *Journal of Curriculum Studies*, 26(5), 471-489.
- Howe, K. R. (1997). *Understanding equal educational opportunity*. New York: Teachers College Press.
- Ito, M. et al. *Hanging Out, Messing Around, and Geeking Out*. Cambridge: The MIT Press, 2010.
- Johnson, S. and Thomas, A. Squishy circuits: A tangible medium for electronics education. CHI 2010, Work-in- progress. Atlanta, GA, 4099-4104.
- Jones, R. H., & Norris, S. (2005). *Discourse in action: Introducing mediated discourse analysis*. London: Routledge.
- Jurow, A. S., Hall, R., & Ma, J. Y. (2008). Expanding the disciplinary expertise of a middle school mathematics classroom: Re-contextualizing student models in conversations with visiting specialists. *The Journal of the Learning Sciences*, 17(3), 338-380.
- Kafai, Y. B., Desai, S., Peppler, K., Chiu, G. & Moya, J. (2008). Mentoring Partnerships in a Community Technology Center: A Constructionist Approach for Fostering Equitable Service Learning. *Mentoring & Tutoring*, 16(2), pp. 194-201.

- Kirshner, B. (2015). *Youth activism in an era of education inequality*. NYU Press.
- Kirshner, B., Pozzoboni, K., & Jones, H. (2011). Learning how to manage bias: A case study of youth participatory action research. *Applied Developmental Science*, 15(3), 140-155.
- Kwon, S. A. (2013). *Uncivil youth: Race, activism, and affirmative governmentality*. Duke University Press.
- Ladson-Billings, G. (1994) *The dreamkeepers: successful teachers of African American children*. San Francisco: Jossey-Bass.
- Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. *American educational research journal*, 32(3), 465-491.
- Lareau, A. (2011). *Unequal childhoods: Class, race, and family life*. University of California Press.
- Larson, R. (2000). Towards a psychology of positive youth development. *American Psychologist*, 55 (1): 170-193.
- Lave, J. (1996). Teaching, as learning, in practice. *Mind, Culture and Activity*, 3, 149-164.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.
- Lave, J. & Rogoff, B. (1984). *Everyday cognition: Its development in social context*. Cambridge: Harvard University Press.
- LeDuc-Mills, B., Dec, J., and Schimmel, J. (2013). Evaluating accessibility in fabrication tools for children. Proceedings of the 12th International Conference on Interaction Design and Children - IDC '13, New York.
- Livingstone, S., & Sefton-Green, J. (2016). *The class: Living and learning in the digital age*. NYU Press.
- Mahoney, J. L., & Eccles, J. S. (2008). Organized activity participation for children from

- low-and middle-income families. *Disparities in school readiness: How families contribute to transitions in school*, 207-222.
- Matias, C. E., & Zembylas, M. (2014). 'When saying you care is not really caring': emotions of disgust, whiteness ideology, and teacher education. *Critical Studies in Education*, 55(3), 319-337.
- Mendoza, E. (2014). *Disrupting common sense notions through transformative education. Understanding purposeful organization and movement toward mediated praxis* (Doctoral dissertation). Retrieved from ProQuest Dissertations and Theses Database. (UMI No. 3635879)
- Michalchik, V., & Gallagher, L. (2010). Naturalizing assessment. *Curator: The Museum Journal*, 53(2), 209-219.
- Miles, Matthew B. & A. Michael Huberman. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.
- Moll, L. C. (1998). Turning to the World: Bilingual Schooling, Literacy, and the Cultural Mediation of Thinking. In *National Reading Conference Yearbook*(Vol. 47, pp. 59-75).
- Nakkula, M. J., & Ravitch, S. M. (1998). *Matters of interpretation: Reciprocal transformation in therapeutic and developmental relationships with youth*. Jossey-Bass.
- Nakkula, M. & Toshalis, E. (2006). *Understanding Youth: Adolescent Development for Educators*. Cambridge: Harvard Education Press.
- Nasir, N.S. (2008). Everyday Pedagogy: Lessons from Basketball, Track and Dominoes. *Phi Delta Kappan*, March 2008.
- Nasir, N.S. and Shah, N. (2011). On Defense: African American Males Making Sense of Racialized Narratives in Mathematics Education. *Journal of African American Males in Education*, 2, 1.

- Nasir, N. I. (2012). *Racialized identities: Race and achievement among African American youth*. Stanford University Press.
- Nasir, N. S., Rosebery, A. S., Warren, B., & Lee, C. D. (2006). Learning as a cultural process: Achieving equity through diversity. In R. K. Sawyer (Ed.), *Cambridge handbook of the learning sciences* (2nd edition, pp. 489-504). New York: Cambridge University Press.
- New York Hall of Science. (2010). Proceedings from the “Innovation, Education, and Maker Movement” Workshop. <http://www.nysci.org/media/file/MakerFaireReportFinal1122310.pdf>
- Oakes, J. (1992). Can tracking research inform practice? Technical, normative and political considerations. *Educational Researcher*, 21, 12-20.
- Oakes, J. (1995). Two cities' tracking and within-school segregation. *Teachers College Record*, 96, 681-681.
- Ochs, E. (1979). Transcription as theory, in *Developmental pragmatics*, ed. by E. Ochs & B. Schieffelin. New York: Academic Press, pp. 43-72.
- Ochs, E., & Kremer-Sadlik, T. (Eds.). (2013). *Fast-forward family: Home, work, and relationships in middle-class America*. University of California Press.
- Penuel, W. R. (in press). From designing to organizing new social futures: Multiliteracies pedagogies for today. *Theory into Practice*.
- Philip, T., Bang, M., Jurow, A.S., Vossoughi, S., Zavala. (under review). The role of the Learning Sciences in an era of US nationalism. Journal tbd.
- Polman, J. L., & Hope, J. M. (2014). Science news stories as boundary objects affecting engagement with science. *Journal of Research in Science Teaching*, 51(3), 315-341.
- Rampton, B. (2006). *Language in late modernity: Interaction in an urban school* (Vol. 22). Cambridge University Press.

- Reardon, S. F. (2011). The widening academic achievement gap between the rich and the poor: New evidence and possible explanations. *Whither opportunity*, 91-116.
- Renee, M., Welner, K., & Oakes, J. (2010). Social movement organizing and equity-focused educational change: Shifting the zone of mediation. In *Second international handbook of educational change* (pp. 153-168). Springer Netherlands.
- Resnick, M. and Rosenbaum, E. (2013). Designing for tinkrability. In Honey, M., & Kanter, D. (eds.), *Design, Make, Play: Growing the Next Generation of STEM Innovators*, pp.163-181. Routledge.
- Repenning, A., & Sumner, T. (1995). Agentsheets: A medium for creating domain-oriented visual languages. *Computer*, 28(3), 17-25.
- Rogoff B. (1990). *Apprenticeship in Thinking: Cognitive Development in Social Context*. New York: Oxford University Press.
- Rogoff, B. (1994). Developing understanding of the idea of community of learners. *Mind, Culture, and Activity*, 1, (4), 209-230.
- Rogoff, B. (1995). Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In J.V. Wertsch, P. del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind* (pp. 139-164). Cambridge, UK: Cambridge University Press. Reprinted (2008) in K. Hall & P. Murphy (Eds.), *Pedagogy and practice: Culture and identities*. London: Sage.
- Rose, M. (2014). *Why school?: Reclaiming education for all of us*. New Press.
- Scribner, S. & Cole, M. (1973). Cognitive consequence of formal and informal education. *Science*, New Series, Vol. 182, No. 4114, (Nov. 9, 1973), pp. 553-559. Published by the American Association for the Advancement of Science.
- Sukarieh, M., & Tannock, S. (2011). The positivity imperative: A critical look at the ‘new’ youth

- development movement. *Journal of Youth Studies*, 14(6), 675-691.
- Shor, I. (1993). Paulo Freire's critical pedagogy. In P. Leonard & P. McLaren (Eds.), *Paulo Freire: A critical encounter*. London: Routledge.
- Stone, L. and Gutierrez, K. (2007). Problem articulation and the processes of assistance: An activity theoretic view of mediation in game play. *International Journal of Educational Research*, 46 (1-2), 43-56.
- Tabak, I, and Baumgartner, E. (2004). The Teacher as Partner: Exploring Structures, Participant Symmetry, and Identity Work in Scaffolding. *Cognition and Instruction*, 22 (4), 393-429.
- Thomas, D. (2004). *Modern blackness: Nationalism, globalization, and the politics of culture in Jamaica*. Duke: Duke University Press.
- Tough, P. (2012). How Children Succeed: Grit. *Curiosity, and the Hidden Power of Character*. New York: Houghton Mifflin Harcourt Publishing Company.
- Torres, C. A. (2013). Neoliberalism as a new historical bloc: a Gramscian analysis of neoliberalism's common sense in education. *International Studies in Sociology of Education*, 23(2), 80-106.
- The Equality Trust. (2015). London, UK. Accessed through equalitytrust.org.uk
- Valdes, G. (1996). *Con respeto*. New York, Teachers College Press.
- Valenzuela, A. (1999). *Subtractive schooling: U.S.-Mexican youth and the politics of caring*. New York, SUNY Press.
- Vakil, S., McKinney de Royston, M., Suad Nasir, N. I., & Kirshner, B. (2016). Rethinking race and power in design-based research: Reflections from the field. *Cognition and Instruction*, 34(3), 194-209.
- Vásquez, O. (2003). *La clase mágica: Imagining optimal possibilities in a bilingual community of learners*. Mahwah, NJ: Lawrence Erlbaum.

- Villalpando, O., & Solorzano, D. G. (2005). The role of culture in college preparation programs: A review of the research literature. In W. Tierney, Z. Corwin & J. Colyar (Eds.), *Preparing for College: Nine Elements of Effective Outreach* (pp. 13-28). Albany: State University of New York Press.
- Vossoughi, S., & Bevan, B. (2014). *Making and Tinkering: A Review of the Literature*. National Research Center.
- Vossoughi, S., Escudé, M., Kong, F., & Hooper, P. (2013). Tinkering, learning & equity in the after-school setting. In annual *FabLearn conference*. Palo Alto, CA: Stanford University.
- Vygotsky, L. (1978). *Mind in society*. Cambridge: Harvard University Press.
- Wagster, J., Tan, J., Biswas, G., & Schwartz, D. (2007). How metacognitive feedback affects behavior in learning and transfer. In *Workshop on Metacognition and Self-Regulated Learning in Intelligent Tutoring Systems* (p. 33).
- Washor, E. and Mojkowski, C. Making their way: Creating a new generation of “Thinkers.” <http://www.handoc.com/documents/makersymposium.pdf>
- Wertsch, J. V. (1998). *Mind as action*. Oxford: Oxford University Press.
- Williams, Bianca C. "Introduction: #BlackLivesMatter." Hot Spots, *Cultural Anthropology* website, June 29, 2015. <https://culanth.org/fieldsights/688-introduction-blacklivesmatter>
- Willis, P. E. (1977). *Learning to labor: How working class kids get working class jobs*. Columbia University Press.
- Wilson, M. (2004). *Constructing measures: An item response modeling approach*. Routledge.
- Zeldin, S., Christens, B.D., Power, J.L. (2013). The psychology and practice of youth-adult partnership: bridging generations for youth development and community change. *American Journal of Community Psychology*, 51, 3-4: 385-397.