CULTURALLY RELEVANT TEACHING REMIX: A STUDY OF MIDDLE SCHOOL TEACHERS’ DEVELOPMENT OF YOUTH CULTURAL COMPETENCE THROUGH TECHNOLOGY INTEGRATION AND APPLICATION

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ABSTRACT

The purpose of this study was to examine technology integration and the application of Culturally Relevant Teaching (CRT). This inquiry evolved as a result of trying to understand the unique intersectionality of student identity, which is inclusive of youth culture, and whether teachers understood this dynamic and hence leveraged it in the classrooms and school communities they taught. Given that youth culture is a “mash-up of cultures and the membership transcends ethnic and racial lines,” there was evident value in exploring how youth cultural competence is unpacked and applied by educators to both deliver content and build relationships (Keuss, 2012). Understanding that a major youth cultural referent is technology, the study observed how teacher’s Technological Pedagogical Content Knowledge manifested itself in the classroom and the types of technology students shared they were exposed to, in addition to their perceptions of teacher competence of technology and/or youth culture. This exploration was further framed by using a Culturally Relevant Teaching framework to analyze teacher-student interactions, based on the principles, behaviors and mindsets outlined by Ladson-Billings in her construction of defining the characteristics of a CRT educator (2009). This was a qualitative study that included 10 teachers and 20 student participants that were members of a technology-rich middle school in an urban environment. Teachers participated in classroom observations, interviews, and CRT reflective tasks. Students participated in grade-level focus groups that leveraged interactive and reflective tasks. As a result of the data analysis, implications from the study presents school leaders with practical insights on how technology integration can be woven into the fabric of the school to strengthen
teacher development, support content delivery and enhance the quality of student learning experiences. Additionally, there is evidence of a need for commitment by schools to train teachers in Culturally Relevant Teaching practices in order to attend to the whole child, operate with a more student-centered approach, and adequately prepare scholars for the digital world.
DEDICATION

To my great-grandmother, in her absence, Drusilla N. Wilson, I dedicate this body of work to you for inspiring me to be a woman of faith, hard work and good teachings. You have been my inspiration throughout life, and the imprint you have left on my world has shaped me into the person I am today.

To my husband, best friend, and partner, Joshua P. Thomas, I also dedicate this body of work to you. Your support in my journey to explore my passions has been unconditional and meaningful as I persevered through this experience. I also believe that your narrative as a former student of an urban K–12 school environment has encouraged me to engage in this work as a means for advocating for students to have quality learning experiences from quality and caring teachers. I hope to continue to magnify the needs and voices of students in your honor, telling their students, unearthing their needs and giving the space to share the voice as the primary consumers of public education. Thank you for inspiring me to be a better me and supporting me in my journey to becoming a true servant leader to our family and my students.
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Lastly, to the other members of my community of support, which include current and former colleagues, mentors, current and former students, and study participants, I thank you for participating in my pursuit of higher education and passion for being a servant-leader. You each have made a difference in my life and in my practice, and I promise to continue to engage in the work on your behalf. You all have helped me understand the true meaning of the words of former State Representative John Lewis that speaks to the urgency of my work: “If not us, then who? If not now, then when?” And for those reasons, I choose ME, and in this moment, I choose NOW.
# TABLE OF CONTENTS

ABSTRACT..............................................................................................................................II

DEDICATION................................................................................................................................IV

ACKNOWLEDGMENTS ...........................................................................................................V

LIST OF TABLES ..................................................................................................................XII

LIST OF FIGURES ................................................................................................................XIII

CHAPTER

1. INTRODUCTION ..................................................................................................................1

  Historical Background ............................................................................................................1

  My Journey in Context ...........................................................................................................4

  Problem Statement: The Need for Expanding Culturally Relevant Teaching to be Inclusive of Youth Culture .................................................................6

  Research Questions ...............................................................................................................7

2. LITERATURE REVIEW .......................................................................................................9

  Revisiting Culturally Relevant Teaching with a Youth Culture Mindset ..................... 9

  Culturally Responsive Teaching Framework: Major Voices within the CRT Community ..................................................................................................................11

    The Foundational Elements of Culturally Responsive Teaching ..............................12

    Deeper Dive into Cultural Competence .............................................................................16

    CRT Mindset is Inclusive of Multidimensional Caring ..............................................18

  Unpacking Youth Culture: Its Size, Characteristics, Power and Impact on Society and the Classroom .....................................................................................21

  Addressing Cultural Conflict by Advocating for Bicultural Competence .............. 24
<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>RESEARCH METHODOLOGY AND DESIGN</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>Introduction</td>
<td>49</td>
</tr>
<tr>
<td></td>
<td>Research Design</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Site Participation and Selection</td>
<td>51</td>
</tr>
<tr>
<td></td>
<td>Researcher Role and Issues of Validity</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>Data Collection</td>
<td>56</td>
</tr>
<tr>
<td></td>
<td>Teacher Questionnaire</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>Classroom Observations</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>Teacher Interviews</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>Student Work Artifacts</td>
<td>62</td>
</tr>
<tr>
<td></td>
<td>Student Focus Groups</td>
<td>63</td>
</tr>
<tr>
<td></td>
<td>Data Analysis</td>
<td>64</td>
</tr>
<tr>
<td>4</td>
<td>RESULTS AND DISCUSSION</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>Introduction</td>
<td>70</td>
</tr>
</tbody>
</table>
Q1: To What Extent, in What Ways and to What Purposes do Teachers Integrate Technology into Their Teaching Practice? ..................71

Good Intentions & Buy-Ins ............................................................................71

Q2: To What Extent, in What Ways and to What Purposes do Teachers Integrate Technology into Their Teaching Practice? ..................81

Classroom Management Conveniences ..................................................81

Emerging Technology Leaders and Opportunities for Teacher Exploration ........................................................................86

Content Knowledge (CK) ........................................................................94

Pedagogical Knowledge (PK) ..................................................................97

Pedagogical Content Knowledge (PCK) .................................................100

Technology Knowledge (TK) .................................................................101

Technological Pedagogical Knowledge (TPK) .......................................105

Technological Pedagogical Content Knowledge (TPACK) .................109

The Absence of Consistent Opportunities for Student Technology Choice and Autonomy .........................................................112

Q3: To What Extent are Teachers Leveraging Technology as an Element of Youth Culture to Build Relationships with Their Students? ................115

Making Connections Between Youth Cultural Needs and a CRT Mindset ..................................................................................115

Building Relationships without Technology, Learning Who You Teach and Creating a Sense of Belonging ..................................116

Building Relationships with Youth Culture as Priority .......................121

Building Relationships with Technology as Priority ..........................125

Q4: How Do Students Respond to Teachers’ CRT Practices Including Their Use of Technology? .................................................................131

Cultural Competence: Reshaping the Curriculum for Youth Culture ....133
Building Student’s Sociopolitical Consciousness: By Making Connections between their Community, National, and Global Identities ................137
Academic Success: The Support of the Teacher as Facilitator ..............141
Summary ...........................................................................................................147

5. DISCUSSION AND RECOMMENDATION .............................................148
   Introduction .................................................................................................148
   Implications for Practice: School Leaders ..................................................149
      Adoption of A School Technology Agenda .............................................154
      Investing in Building Teachers’ TPACK Skills and Prioritizing Application of ISTE Standards ..................................................157
      Expanding Professional Development Agenda to be Inclusive of CRT Framework ..........................................................160
   Implications for Theory ..............................................................................164
   Implications for Research ..........................................................................167
   A Research Practitioner's Reflection ..........................................................170
   Future Research and Recommendations ..................................................172
   Final Thoughts ...........................................................................................175

REFERENCES CITED .......................................................................................176

APPENDICES
A. TEACHER TPACK QUESTIONNAIRE .....................................................185
B. TEACHER OBSERVATION PROTOCOL ..................................................189
C. TECHNOLOGY INTEGRATION TEACHER INTERVIEW QUESTIONS ......192
D. CRT-TPACK STUDENT FOCUS GROUP QUESTIONS ............................196
E. CULTURALLY RESPONSIVE MINDSETS AND BEHAVIORS FOR TEACHERS ................................. 198

F. DEDOOSE DATA ANALYSIS OF TPACK-CRT CODE CO-OCCURRENCES .... 200

G. DEDOOSE INTERVIEW AND FOCUS GROUP MEMOS ............................... 201

H. GALLERY WALK ARTIFACT PICTURES ................................................. 202

I. INFORMED CONSENT: PARENT PERMISSION FORM ................................ 203

J. INFORMED CONSENT: ASSENT FORM FOR STUDENTS UNDER 18 .......... 205

K. TEACHER CONSENT SUMMARY AND CONSENT ............................................. 207
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ladson-Billings Foundational Elements of Culturally Responsive Teaching</td>
<td>13</td>
</tr>
<tr>
<td>2. ACOT Stages of Technology Integration</td>
<td>40</td>
</tr>
<tr>
<td>3. Participant Demographics from Teacher Questionnaire</td>
<td>45</td>
</tr>
<tr>
<td>4. Focus Group Examples of Expression-type Technology Experiences</td>
<td>79</td>
</tr>
<tr>
<td>5. Comparative Table of Focus Group Teacher Facilitator Types</td>
<td>145</td>
</tr>
</tbody>
</table>
**LIST OF FIGURES**

<table>
<thead>
<tr>
<th>Figure</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Technological Pedagogical Content Knowledge Infographic</td>
<td>36</td>
</tr>
<tr>
<td>2. Conceptual Framework Part 1</td>
<td>47</td>
</tr>
<tr>
<td>3. Conceptual Framework Parts 2 and 3</td>
<td>47</td>
</tr>
</tbody>
</table>
CHAPTER 1
INTRODUCTION

Historical Background

Over the decades societal changes have required all communal stakeholders to be adaptable to the ongoing trends and paradigm shifts. These changes have been in the form of political tidal waves, drastic educational reform, employment stability fluctuation, increased demand for a more skilled workforce, and the increased cultural diversity in communities due to ongoing immigration and domestic migration. One of the sectors most impacted by these changes is education. These forces have inadvertently impacted the widening of the achievement and opportunity gap, heightened the demand for high stakes testing, and put those responsible for educating today’s youth in the accountability hot seat.

To combat these pressures, schools of education have constantly been turned to as a resource that can assist in equipping current and future teachers with the tools needed to manage the struggles while also redirecting the trajectory for both students and educators. These instructional needs have resulted in institutions making a concerted effort to ensure the pedagogical toolkit of teachers is responsive to the needs of students and society. Therefore, teachers are constantly being challenged not only to obtain new content knowledge, but also to include social-emotional learning resources, evidence-based strategies that are developmentally appropriate, diverse assessments, data driven instructional moves, and most of all, integration of technology. All these demands have
been identified as critical strategies that educators need to deploy in order to be seen as attending to their students’ needs and those emerging educational trends of the field.

However, one of the most influential factors that have impacted teaching and learning relates to student diversity. As of 2019, the youth population ages 10-19 accounts for 13% of the total U.S. population (U.S. Census Bureau, 2020). Additionally, the racial demographics of this population display an upward progression in diversity given that now only 50% are white youth and 49.5% are youth of color, with the latter group estimated to be at 56% by 2024 (Annie E. Casey Foundation, 2020; King et al., 2016). It is evident that the student diversity is consistently increasing, while the public school teacher population continues to mirror more of a homogeneous make-up of predominantly White and female educators. The U.S. Department of Education confirms this in their 2016 teacher workforce report that states that the teacher workforce is made up of 82% White educators and 2% Black males (King et al., 2016). Such teacher diversity shortages, coupled with non-supportive teacher mindsets due to ethnic or racial conflict and/or lack of cultural competence and awareness, can yield adverse impact on students’ “academic content and classroom instructional experience” which in turn only further widens the academic gaps among diverse peer groups (Calabrese et al., 2005, p. 438). This illustrates that the education narrative still needs researchers and teacher educators to work in order to better equip practitioners to be knowledgeable of the needs of the students they educate, this includes academics, communal and social emotional.

One particular pedagogical framework that has been introduced to educators to address the agenda item of teaching diverse students was culturally responsive teaching (CRT). In 1990s to early 2000s, the groundbreaking work of Ladson-Billings, along with
the scholarship of Delpit (1995), Nieto (1999), and Gay (2000), opened the door for how pre-service and in-service teachers could be trained to better serve their culturally and linguistically diverse students. Ladson-Billings (1994, 2009) introduced scholars to eight culturally responsive teachers that had demonstrated the art of cultural competence in their teaching of African American students. These teachers did this by creating high learning expectations for all students as opposed to operating from a deficit lens, while also being intentional about the connections they made to their students’ local, national, and global worlds. The educational field was welcoming of CRT and its encompassing tools, given that it served as a viable option that could help educators connect to their students on a personal and developmental level, while carving out a pathway towards academic achievement for these students.

However, since then the complexity of student’s diversity has expanded beyond cultural and linguistic traits, and other elements of student diversity are becoming just as influential, such as class, geography, youth membership and interactions, especially those technology affiliated activities. The youth dimension of student identity has many components, one of them being technological interests. Given the technological advancements that are being made globally and domestically, how youth culture is defined and membership is achieved is more fluid and less restrictive by location and has transcended race, ethnicity, or linguistic differences. Students today can have friends they have never met in other countries, are able to communicate their lives and whereabouts to strangers with a touch of a button and have redefined what it means to be creative and innovative by launching app development companies in middle school, or by creating YouTube channels to host tutorials on slime making or website development.
Once again a paradigm shift has occurred, and that shift presents a new challenge for educators to expand their awareness about and competence in another dimension of a student’s culture group. From personal experience as a former technology educator, I have witnessed how youth culture is vastly different from the youth era I was a part of. With today’s tools, devices and applications becoming easily obsolete and new ones emerging daily, catching the attention of my students requires me to stay alert to their youth interests and the impact of such trends on their learning. With youth culture being such a dominating force within student identity, learning about it and the associated cultural referents such as technology only seems appropriate for educators to find ways to authentically integrate it into the classroom. In the end, this will only help them enhance their teacher toolkit and develop a strategy for responding to the ongoing societal changes that place demands on education.

**My Journey in Context**

In my educator journey I have increased my competency in youth culture, and it has impacted my classroom in positive ways as it relates to classroom management, sense of community in and outside of the classroom, and my growth mindset towards learning from my students and giving more autonomy to them in their learning process. As my students inform me of the latest technologies, I do not move to rapid adoption of their technology recommendations but instead take time to delve into the resource’s potential instructional impact and possible added value for the learning experience. Taking this approach ensures that I am not quick to adopt trending tools or approaches that might not meet the needs of my students. The New Media Consortium (NMC) and Consortium for School Networking (CoSN) speak to the thoughtfulness that educators must engage in
when embarking on the journey to becoming digitally fluent in their 2017 K–12 Edition NMC/CoSN Horizon Report:

   Fluency in the digital realm is more than just understanding how to use technology. Learning must go beyond gaining isolated technology skills toward generating a deep understanding of digital environments, enabling intuitive adaptation to new contexts and co-creation of content with others (Freeman et al., 2017, p. 4).

   Educators that understand this report’s warning recognize that building one’s competence in youth culture is not about adopting what they like or find entertaining, but rather is about a deeper dive into how the cultural tool connects the user to the culture and in turn offers the educator with the opportunity to collaborate through common experiences and knowledge base to foster meaningful learning experiences.

   This literature highlights my own educator journey of working towards making intentional instructional moves that include awareness and respect of my student’s youth culture. I have been committed to applying the tenets of culturally responsive teaching by harnessing my youth cultural competence in the classroom. In my practice I have worked to expand my understanding of student’s background beyond ethnic and racial differences and to consider their youth cultural tools such as technology in order to provide the optimal learning experience. Based on these individual experiences, this study comes from a place of personal passion, interest and exploration. While the aforementioned experiences have been professionally rewarding, I have learned I cannot assume my fellow educators are engaging in the same practices. Therefore, I am called to further investigate whether these experiences play out in other learning environments, and if not, what the barriers are and how they can be addressed to best impact student outcomes.
Problem Statement: The Need for Expanding Culturally Relevant Teaching to be Inclusive of Youth Culture

Despite the push for teachers to become competent in the ethnic and/or linguistic backgrounds of their students, educators still struggle with the authentic application of CRT. Some educators attempt to apply CRT to address these challenges but fall short by over-simplifying CRT and engaging in superficial integration of student backgrounds. Examples of this range from assigning cultural icon book reports, brief monthly celebrations of racial and cultural groups, and/or random inclusion of hip hop colloquialisms all in an effort to be trendy instead of authentically relevant to their students’ identity and development (Ladson-Billings, 2014).

However, youth culture is also another part of student background, and its wide net is inclusive of all youth diversity factors, not just the unique nuances of their ethnic culture. In a study of urban at-risk youth in a Midwestern high school, the researchers explored school diversity, most particularly exposure to youth diversity. A teacher in the study shared that engaging in youth focused experiences “helped her to understand the nature of adolescence and that it transcends racial and ethnic differences” (Calabrese et al., 2005, p. 441). The opportunity to enhance what it means to be culturally competent by extending it to youth culture provides an additional entry point for educators to authentically connect with students and offer instructional experiences that still capture another part of their student’s background. If the framework of culturally responsive teaching can assist teachers in gaining a new entry point into their student’s background, it only seems appropriate for further exploration to take place. This would include
examination of youth members, the educators they learn from, and those cultural referents that youth most identify with, such as technology.

However, within schools, teachers’ use of technology and technology integration ranges from sporadic to daily use, and teacher abilities range from basic to advanced. To what degree a teacher falls within the range impacts their ability to use technology effectively in conjunction with youth cultural elements. The success of marrying these two elements together depends on their ability to make a strong connection between pedagogy and technology use (Okojie et al., 2006 as cited in Kolb, 2017, p. 10). Therefore, the real challenge arises when it relates to whether a teacher has the ability to contextualize technology integration within a pedagogical approach such as CRT, which has the potential to offer added instructional value when paired together.

Just as there are challenges to applying CRT to ethnically diverse groups as a means to connect with them, build relationships, and educate them based on this cultural dimension, there are barriers to be addressed if CRT principles are to be applied to youth culture. Therefore, the problem at hand is how to account both for the cultural mismatching between teachers on an ethnic and generational level, and for the variance of technological skill sets possessed by both groups that impact the learning environment. Essentially, the process of how youth cultural competence is achieved, and whether teacher technology integration helps build student-teacher relationship dynamics, are all areas that need further study.

**Research Questions**

This study will use a qualitative research approach to explore the ways middle school teachers at Anchorage Community Charter School (a pseudonym) leverage
technology in their classrooms. The study examines how teachers deploy culturally responsive teaching practices, integrate youth cultural elements into the learning environment, and utilize technology for both instructional delivery and student application. The study will focus on four research questions:

Question #1: To what extent, in what ways and to what purposes do teachers integrate technology into their teaching practice?

Question #2: To what extent, in what ways and to what purposes do teachers demonstrate cultural competence and call on their knowledge of youth culture as a resource in their practice?

Question #3: To what extent are teachers leveraging technology as an element of youth culture in order to build relationships with their students?

Question #4: How do students respond to teachers’ CRT practices including their use of technology?
CHAPTER 2
LITERATURE REVIEW

Revisiting Culturally Relevant Teaching with a Youth Culture Mindset

One pedagogical approach that has been identified as essential for teachers to utilize is culturally responsive teaching (CRT). CRT is “a pedagogy that empowers students intellectually, socially, emotionally, and politically by using cultural referents to impart knowledge, skills, and attitudes” (Ladson-Billings, 1994, p. 18). Ladson-Billings discusses how cultural referents should not just be seen as a means to an end, but part of an experiential learning opportunity for both students and teachers. Therefore, CRT as a pedagogical framework should be used in the development of pre-service teachers to prepare them for teaching culturally complex students. This is in addition to “re-educating” those in-service teachers to subscribe to a more expanded version of pedagogy that encompasses CRT as well as adopting a fluid definition of what constitutes as culture (Ladson-Billings, 1995, p. 483; 2014, p. 74).

Ladson-Billings (1995), however, was not alone in her advocacy for teacher education and training that includes cultural awareness and competence, respect and value for cultural contributions to learning and the purposeful integration of such elements into learning. Delpit (1995) asserted that knowledge of student culture is one of many tools that can be useful to schools that are educating diverse students. Gay (2013) advanced both scholars’ perspectives about culturally relevant instructional strategies by asserting that it must also be coupled with curriculum that is rich in cultural relevance to the learner, that is, a curriculum inclusive of ethnically and linguistically diverse stories
and perspectives. This student-centered approach to both instructional delivery and content exposure is seen by scholars as critically necessary if the goal is for students to connect to the material—both engagement-wise and cognitively (Paris & Alim, 2017).

Yet, some teachers are still struggling to connect to the youth in their classrooms, despite being exposed to this innovative pedagogical tool of CRT. The reality is that students are not just composed of their ethnic background, but there are other elements that define their cultures, such as the tools they use, processes they engage in and distinct innovations they create. While past training and development has been highly focused on catering towards the needs of ethnically and linguistically diverse youth, there could be an opportunity for educators to formally recognize and explore the other cultural dimensions of the youth in their classroom (Delpit, 1995; Ladson-Billings, 2001; Nieto, 1999).

Youth culture is inclusive of those nuances that result from modernization and the radical shifts that individuals of this developmental stage experience and engage with on a daily basis. It behooves any educator to take notice of and consider adopting any of these resources and/or decide to leverage the positive impacts of these external forces (Bucholtz, 2002). Such instructional resources can connect to youth interests and value systems through project-based approaches, work-based projects, and/or service-learning opportunities.

Youth culture is essentially a “mash-up of cultures drawing on diverse sources for meaning-making—without critical reflection or discrimination” (Keuss, 2012, p. 41) and therefore membership transcends ethnic and racial lines. A primary interest of most youth for the past two decades has been technology, which has prompted school leaders to
invest in these resources and has required educators to be knowledgeable in the use of technology to build teacher skill sets, enhance knowledge of youth-oriented tools, and expand their educator mindset (Wood & Ponsford, 2014). In theory this seems like a seamless process; however, when put into practice it has yielded much variance in the field in terms of practicality.

Some educators accept this technology integration challenge and eventually evolve into what some researchers call the “TechnoTeacher,” while others dabble with technological devices in the classroom, treating them as add-on resources or another school-mandated manipulative (Wood & Ponsford, 2014). While the status of TechnoTeacher is not a requirement for authentic technology integration to take place, there are accounts of positive impact on student experiences when educators have consistently adopted technology to assist with instructional delivery, manage content-specific tasks, or out-of-school programming (Polly, 2014; Scott & White, 2013; Turgut, 2012). Such evidence makes a compelling argument that technology can bring added value to the learning environment. Although this is not without considering technology intent, level and range of use and student receptiveness to the experience as factors to recognize when seeking to expand a teacher's instructional toolkit.

**Culturally Responsive Teaching Framework: Major Voices within the CRT Community**

The harnessing of technology tools and their many benefits to student engagement and/or product creation is not enough, if it is not contextualized within a framework that elicits student empowerment and transformation. Kolb (2017) advocates for this type of instructional design by encouraging educators to engage in simultaneous professional
development, which includes learning about authentic technology applications and the pedagogical framework that can enhance such application. I find that CRT lends itself to being a pedagogical framework that can transform both the educator and the student, hence the need to explore its dimensions and applications.

The spectrum of scholars that have added to the body of work around CRT range in terms of application in various contexts; however, major contributors to the framework include Ladson-Billings (1994, 2009), Gay (2000; 2002), Banks (1999) and Delpit (1995). These scholars have laid the groundwork for why student achievement is closely tied to a teacher’s cultural competence and awareness of the student cultures in his or her classroom in addition to how that is managed through instructional delivery, content management, and experiential learning. The classroom environment, according to these scholars, must be strategically set-up and organized to meet the needs of all student backgrounds.

**The Foundational Elements of Culturally Responsive Teaching**

Ladson-Billings (1994; 2009; 2014) lays the groundwork for culturally responsive teaching framework by setting up three domains to organize the practitioner phenomenon she initially studied. Then there are eight principles that further flesh out these domains as action-oriented classroom elements, and lastly five behavioral and mindset traits that CRT practitioners should possess and be able to demonstrate. Table 1 illustrates these foundational elements. During Ladson-Billings’ multi-year study of eight teachers of African American students, the construct was birthed to demonstrate how these teachers engaged in understanding the students they were teaching and the scholar environment they had developed and were educating them in.
Table 1

Ladson-Billings Foundational Elements of Culturally Responsive Teaching

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<tr>
<th>Three Domains</th>
<th>Eight Principles</th>
<th>Five Behaviors/Mindsets</th>
</tr>
</thead>
</table>
| • Academic success - Any academic growth that occurs as a result of instruction and classroom learning. | • Communication of High Expectations  
• Active Teaching Methods  
• Teacher as Facilitator  
• Inclusion of Culturally and Linguistically Diverse Students  
• Cultural Sensitivity  
• Reshaping the Curriculum  
• Student-Controlled Classroom Discourse  
• Small Group Instruction and Academically Related Discourse | • Teachers with culturally relevant practices have high self-esteem and a high regard for others.  
• Teacher sees her/himself as part of the community and teaching as giving something back to the community, encourages students to do the same.  
• Teacher believes all students can succeed.  
• Teacher helps students make connections between their community, national, and global identities.  
• Teacher sees teaching as “digging knowledge out” of students. |
| • Cultural competence - Being able to help students celebrate and appreciate their cultures while also gaining knowledge of other cultures. |                                                                                  |                                                                                        |
| • Sociopolitical consciousness - Extend the classroom walls by applying in-class knowledge and skills to assist with real-world problems and the higher order thinking skills needed to address them. |                                                                                  |                                                                                        |

The CRT framework elements alone are not sufficient to educate diverse learners.

However, the mindset of the educator must also be transformed both professionally and personally. The success of the eight teachers is largely attributed to their having high self-esteem, a high regard and respect for others, and strong bicultural competence, which Ladson-Billings (1994) believes evolved from the educators being competent in their own background and the value of culture in general. The eight teachers’ demonstration of high self-esteem, which Lee (2002) identifies as strong self-efficacy, involves the evolution of beliefs about personal competence, which turn into behaviors because of
four contributing sources: “mastery experiences, vicarious experiences, verbal persuasion, and physiological and emotional states” (p. 68).

To increase one’s self-efficacy, there has to be a constant engagement in self-reflection relating to attitudes, beliefs, and abilities (Lee, 2002). Once educators have engaged in some type of introspective process to assess their own cultural needs, they can better understand how their positionality impacts their engagement with students. Engaging in this process can assist educators in identifying what they need to learn and engage in, in order to best serve their students and meet them where they’re currently at. Teachers’ being able to dig deep within themselves can assist with the same kind of academic and relational digging the students will be required to do under the CRT framework, but the transformation must first start with the educator.

Once the teacher reflection has commenced, it must consistently continue. Ladson-Billings (1994) encourage educators to find connections between their background and the students as part of learning how to integrate students’ “cultural referents to impart knowledge, skills, and attitudes” (as cited in Aronson & Laughter, 2016, p. 165), which is essential to the process of building relationships, creating communities of care and developing culturally relevant learning experiences (Ladson-Billings, 2009). Therefore, the CRT framework is not only meant to engage the student in “deep digging” of knowledge and self, but also the educator, as they too, engage in lifelong learning and socio-conscious development.

Such a multifaceted agenda promotes the notion that the education students receive must go beyond the superficial and allow for more transformative experiences to take place. This means that the learning being delivered should push learners to be
critical of various societal systems, be reflective in their decision making, and be able to effectively take action in different parts of their lives (Aronson & Laughter, 2016).

Furthermore, Aronson and Laughter assert that the teacher’s involvement in the learning space is not confined to the role of teacher, but also expands to being a member of the classroom and school community, thus promoting fluidity of roles, allowing teachers and students to learn from one another. Another success of the inaugural eight teachers relates to their flexible teacher-civic leader role, which involves teachers becoming civically engaged with the student’s local community (Ladson-Billings, 1994). This includes taking on extracurricular roles within the school to build relationships with students, visiting neighborhood events and/or organizing community building experiences for students to see their teachers in other elements of their lives outside of the classroom, which expands the notion of caring outside of the classroom into the real-world.

While CRT requires the educator to apply the framework in all facets of their classroom and instructional design, it also calls on school leaders to also take stake in how instruction is being cultivated in their schools in order to be culturally relevant. Therefore, culturally relevant school leadership needs to be just a transformative as teachers’ practice if we want the CRT framework to transcend all levels of the schools and permeate through every classroom. Khalifa et al. (2016) assert that school leaders have to be committed to the cultural work by their advocacy of it being woven into their school infrastructure, which models to teachers the importance of it as well. Furthermore, these scholars state that school leaders have to invest in CRT practices, mindsets and policies as a crucial component of their educational reform (Khalifa et al., 2016). This makes it evident that CRT is not an isolated framework that can exist in select classrooms
but requires intention adoption by teachers and school leaders if we want to elicit real change in the learning experiences of diverse learners.

_Deep Dive into Cultural Competence_

The realities of being a culturally relevant practitioner has proven to be an art that many seek to master or even manage as part of their instructional practice. A major component of CRT is this notion of understanding cultural competence as a core principle of this framework. Ladson-Billings (2006) makes it clear that cultural competence is not to be misconstrued as a practitioner's efforts to only be culturally sensitive towards cultural taboos but digs deeper and is inclusive of the practitioner's mindset and understanding of the construct of culture and its purpose. In this context, cultural competence “refers to helping students to recognize and honor their own cultural beliefs and practices while acquiring access to the wider culture, where they are likely to have a chance of improving their socioeconomic status and making informed decisions about the lives they wish to lead” (Ladson-Billings, 2006, p. 36). This means that teachers are committed to providing students with a 360-degree view of culture that is inclusive of both school life and that of the external environment in addition to exposing them to those cultures that are dominant in society and/or have been oppressive to them (Ladson-Billings, 2006, p. 36). Such evidence of cultural competence is not to be restricted to special occasions or specific curricular topics but seamlessly woven into everyday experiences, which demonstrates authenticity, purpose and commitment of the educator to teach the whole child.

Recognizing youth culture as a cultural dimension of student identity that a practitioner can become competent in leads us down a new path that allows teachers to
better understand yet another dimension of their students’ lives. However, learning of youth culture does not mean resorting to highlighting nostalgic moments of the teacher’s youthful pastimes, but rather developing an awareness, a strong knowledge base and even genuine interests in what defines current youth culture. Therefore, such youth cultural competence must move past just knowing the names of trending social media platforms and tools, but also understanding the reasons why students are consumed by social media outlets and what intrinsic motivation it provides them, is how one is able to understand their purpose and authentically leverage these tools in the classroom.

Building youth cultural competence has a dual agenda; it encompasses not only building your knowledge based of the cultural group but also helping students/members of the community understand how to contextualize their culture within the larger societal infrastructure. Students must be taught that although they may be the dominant culture now, when the next version of youth culture emerges, they too, will have to accept the paradigm shift and learn to adapt into their new roles in society. This experience will help them analyze and understand the dynamics of their own cultural referents and their impacts on their lives and futures. This is essential part of providing them with a 360-degree view of their own cultural competence and societal role. In essence, such investment on the part of the practitioner to learn about youth culture shows another level of commitment and care by making an effort to expand the CRT framework and mindset beyond ethnicity or race as a result of them working on their youth cultural competence and recognizing the whole child.
**CRT Mindset is Inclusive of Multidimensional Caring**

Essentially, the basic presence or involvement in CRT or youth-oriented activities is not sufficient on its own. The CRT framework requires that educators both believe and demonstrate actions that communicate that academic success is achievable by all. If the teacher does not possess a philosophical belief that all students can succeed, which is inclusive of genuine demonstrations of care for their whole well-being, then the youth will not see the teacher as fully invested, thus creating a loose coupling between teacher mindset about care and actual actions of care. As a result, a culturally responsive learning environment has to be inclusive of “teacher attitudes, expectations, and behaviors about students’ human value, intellectual capability, and performance responsibilities,” which are seen as the manifestation of teacher care for their students (Gay, 2000, p. 45). In his study of school culture and management, Casas (2017) reaffirms this theme of care through his four principles for promoting positive school culture. He asserts that all school member; leaders, educators, and staff should be a “champion for all students” by showing genuine care for every student, taking notice of their skills and abilities, and using those unique student gifts to serve as the basis of the strategies they develop to help their students thrive, despite any challenges the student may be experiencing externally (p.14). It is very common for students to come from homes or environments where examples of success are limited; therefore, having a school environment where success is defined and promoted as flexible and individualized is critical to developing a strong school and caring classroom culture.

When teachers demonstrate multidimensional caring, it permeates the learning environment, both physically and instructionally. It translates to instructional moves that
promote student autonomy and voice in learning spaces, prioritizes youth current events to help contextualize content, or integrates emerging technologies to demonstrate to students the teacher is aware of their culture and interests outside of the classroom, and is willing to bring in into the classroom world, because they see the value. By personalizing the learning for students, a teacher communicates through such actions a strong commitment to care, which can increase a student’s willingness to complete learning activities and feel supported by their teacher to subscribe and/or engage in high achievement behaviors (Soto, 2005; Walker, 1993). Exhibiting such care for their students communicates that their teacher’s definition of success is both inclusive and individualized.

Furthermore, culturally responsive teaching requires that a high-quality teacher carves out opportunities for students to make meaningful connections at various levels of their identities, such as locally, nationally, and globally. The teacher helps the students understand they are part of a larger narrative, which extends beyond the classroom. In Ladson-Billings’ (2009) study, she uses teacher vignettes to show how the educators challenged students to engage with content beyond regurgitation, connect it to current events in their lives, find similar instances in society and explore the social-emotional impact such events have on their learning. These teachers did not rest at students’ repeating what they had told them but required them to find personal meaning and relevance in what was being taught.

Such efforts can help teachers meet the demand of achieving Ladson-Billings’ (2009) CRT framework, which includes treating teaching as a way to dig knowledge out of students. These types of teachers encourage productive struggle in their classrooms
and do not accept failure of their students. Instead, they see barriers to comprehending content as a challenge to work harder in applying strategies to insure all students succeed (Brown-Jeffy & Cooper, 2011). These learning challenges may require a teacher to create multiple pathways for accessing the content material that speak to the students’ background. Gay (2000) would see this as being done by “using...cultural knowledge, prior experiences, frames of reference, and performance styles” as a way to “make learning encounters more relevant to and effective” for the learner (p. 29). This may require the educator to bring in complementary texts to which the student can relate to, find cultural scenarios to serve as the student’s entry point, and connect to the student’s unique experiences.

The work accomplished by culturally relevant teaching can be seen as having an impact on the larger classroom culture, but even more specifically on individual students and their relationship with the teacher. Brown-Jeffy and Cooper (2011), have identified five thematic areas of impact which result from the implementation of CRT: identity and achievement, equity and excellence, developmental appropriateness, teaching the whole child and student-teacher relationships. The theme of student-teacher relationships includes care, relationships, interaction and classroom atmosphere (Brown-Jeffy and Cooper, 2011). An educator committed to CRT educator is seen by their students as being accessible, supportive and adaptive by their students, which only strengthens the student-teacher relationship dynamics (Gay, 2000). Therefore, the CRT framework not only presents a road map for helping educators possess more relevant strategies for helping students connect to content, but it also assists in helping teachers enhance relational dynamics with their students that are reciprocal and meaningful.
Although there is a long list of benefits to adopting CRT, researchers have reported a disconnect between theory and application and that CRT is not always implemented with fidelity, leaving educators still struggling to connect to their students and build positive relationships with them (Ladson-Billings, 2014; Paris & Alim, 2017; Paris, 2012). If this is the case, further exploration is warranted as it relates to barriers to CRT being implemented effectively in addition to investigating other elements of student cultural make-up that could serve as opportunities to build common experiences and inform the educator of their students’ abilities and cultural contributions.

**Unpacking Youth Culture: Its Size, Characteristics, Power and Impact on Society and the Classroom**

In order to see the value in becoming culturally competent in youth culture, the power and impact of the cultural group must be understood. According to the 2019 Census, there are 42 million people living in the United States between the ages of 10 to 19 years old (U.S. Census Bureau, 2020). Individuals in this age group are considered adolescents, which commonly are seen as the drivers of youth culture. This population is steadily growing and is projected by 2040 to have a population of 77 million.

Scales et al. (2010) surveyed more than four million adolescents, reported that these youth identified some of their cultural values as having relationships with adults that featured meaningful and healthy conversations, finding value in respecting cultural differences, being allowed to contribute their talents to a larger societal/communal goal, being authentically valued for their opinions, and being encouraged to do and be their best. The report also shed light on common youth cultural beliefs which were situated around leadership: having a certain level of autonomy over their life to make things come
to fruition for themselves; belief in self-advocacy; and being civically involved at any
level, local, state or national. Although youth values embody elements of independence,
youth still have cultural preference for having strong youth-to-youth connections and
youth-adult relationships. The study also showed the following were the outcomes of the
student feedback on how they valued youth-adult relationships:

Teens’ relationships with adults play a critical role in their successful
development and thriving. The absence of a broad and deep web of adult
relationships beyond parents hampers their growth and makes it difficult
for them to thrive. But when those relationships are in place, it makes it
easier for them to discover and give voice to their own passions or sparks
(p. 50).

This speaks volumes to how youth find value in their culture’s unique elements, and they
still find merit in being connected to individuals older than they are.

Scholars such as Sefton-Green (2006) speak to another element of youth culture,
which are their products or creations. Sefton-Green asserts that youth culture is able to
bring its beliefs and values to life through the new technologies that evolve from every
generation, since youth culture regenerates itself, as some individuals age out and others
migrate in, seeking to resist the restrictions of older and dominating generations. By
virtue of being digital natives and citizenship, youth are not only consumers of the media
and technological advancements of the time, but also active creators of content and
products, which is another cornerstone of their culture. Although these can be seen as
traditions of youth culture, what is unique about youth culture is the wide spectrum of
technological access, involvement and use, youth can opt to engage in and/or be exposed
to, by virtue of their fluid membership.
According to the Pew Research Center, 95% of U.S. teens own a smartphone, while 88% of teens have access to a desktop or laptop computer at home (Anderson & Jiang, 2018). This is complemented by their access to other technology-driven cultural practices such as consistent internet use by 45% of teens age 13-17. In addition, 84% of them have game console access and over 51% of them have social media access, particularly to YouTube, Instagram and Snapchat (Anderson & Jiang, 2018). Such data speak to how technology is a critical cultural marker for youth culture. In her work studying the online socialized lives of teens, Boyd (2014) states that teens subscribe to the various technology tools, gadgets, applications and social media networks for opportunities to create content, share their lives, relax and socialize with individuals without geographical boundaries. Furthermore, Turkle (1995) complements Boyd’s assertions about the influences of technology on humans, particularly youth, who are still developing their identity and confirming their role in society. Turkle (1995) states that “technology changes us as people, changes our relationships and sense of ourselves” (p. 232). Hence, given that technology is a major cultural component of youth culture, understanding technologies’ power and being able to harness technology can serve as an added-value resource to any person’s relationship with members of the youth culture.

Based on these youth cultural practices, these individuals have been labeled as the “New Century” students who are well versed in social media, advanced technology devices, and trending communication platforms (Ladson-Billings, 2012). Because it transcends ethnic boundaries, it is evident that youth culture is complex and inclusive of all students. Therefore, in order to engage with the New Century student or youth culture member, educators and/or other adults have to be aware of the contributing elements of
youth culture and possess tools that will help them to best leverage the students’ multidimensional backgrounds. Culturally responsive teaching is one proposed tool to assist adults in building meaningful relationships youth are seeking from them, while leveraging the cultural elements that make youth culture unique. By more teachers recognizing that CRT is a powerful paradigm that helps teachers, this can only increase the pedagogical merits of the framework and increase the instructional value of technological tools that are paired with it.

**Addressing Cultural Conflict by Advocating for Bicultural Competence**

Currently, schools embody extreme ethnic and racial differences when it comes to students and teachers, with student populations becoming increasingly diverse and the teacher pool maintaining a majority White and female dynamic. These demographic differences affirm why CRT is a critical strategy for all educators, given that most educators entering spaces where they lack cultural competence about the individuals they are responsible for educating. Hence, CRT advocates that competence outside of one’s own culture is essential in breaking down classroom barriers that impede learning and student-teacher relationship building.

While the challenges that teachers face are countless, one of the most concerning is teacher-student relationships, which many scholars assert impact instructional delivery by the teacher and content reception by the student (Casas, 2017). Therefore, employing strategies such as culturally responsive teaching can serve as both an instructional and relation-building strategy to help teachers address the disconnect between them and their students. However, an educator must first recognize his or her own cultural competency deficits as it relates to student background.
The majority of U.S. students are people of color being taught by an 82% White teaching force (King et al., 2016). This makes the lack of an ethnically diverse teaching population very evident within schools, thus creating disconnects between students and staff. Delpit (1995) asserts that this leads to cultural conflicts or cultural clashes between school culture and student’s at-home culture. Delpit defines this clash:

When a significant difference exists between the students’ culture and the school’s culture, teachers can easily misread students’ aptitudes, intent, or abilities as a result of the difference in styles of language use and interactional patterns. Secondly, when cultural differences exist, teachers are at odds with community norms. (p. 166).

In explaining this dynamic, Delpit provides the example of the European-American teacher that sees African American students as being aggressive or non-compliant, and therefore makes requests that are more implicit in nature, versus a more stern, direct and explicit command that is common in African American homes. Delpit also presents examples from the Alaskan Native sub-group known as Athabaskans, who felt disrespected in courses with Caucasian students and teachers, where it was the norm for individuals to interrupt your presentation to give live feedback that was abrupt, which was seen by the Alaskan Native students as rude. Once again, Delpit found that there was a significant difference in cultural expectations and norms between school culture and at-home behaviors of the students, thus causing tension and discomfort between students and the teacher.

Delpit’s (1995) notion of cultural conflict could be applicable to other cultural constructs not just ethnicity. Youth culture is seen as being a broad and boundless cultural construct, causing it to be overlooked as a typical cultural context that individuals can gain cultural competence in. However, Ladson-Billings (2014) reiterates in her
scholarship that youth have a membership construct that is identifiable by typical cultural traits such as language, art, beliefs and value system, common tools and/or experiences. This confirms that they, too, are a cultural group that must be recognized, learned about, and understood by those who wish to engage with them and build relationships with their members. Such cultural conflicts could arise as it relates to youth culture if a teacher is always telling students to refrain from using their phones during class. The priority of using their smart device and the level of engagement it is providing to the youth is in direct conflict with the teacher’s belief that the mobile device lacks learning value. However, these cultural conflicts could be mitigated if the teacher could harness the technology; a youth tool, to meet an educational goal or task.

The reality is that 48% of the teaching community is between the ages of 40 and 59 years old, which is a large contrast in age, compared to the millions of students sitting in classrooms, who are under 21 years of age (Organisation for Economic Co-operation and Development, 2016). While age is the most evident difference between the two groups, the ultimate differentiating factor is experience. Such experiences include, but are not limited to, using social media as a main source for socialization, battling with internet addiction, cyber bullying, virtual relationships and realities, and becoming YouTube sensations and online entrepreneurs prior to graduating high school (Boyd, 2014). Those outside of today’s Generation Z community are typically part of the Millennial and Generation X groups. As generations age out of the youth category, the disconnect between youth and older generations will only progress and widen, due to the experiential differences of each group, which adds to the disconnect between current youth generation and future adult groups. This misalignment of cultural beliefs, values, preferences,
products and tools between student/youth culture and teacher culture makes common experiences very distant from one another in more than one dimension. This in turn leads to cultural conflicts between the two groups (Delpit, 2002; Gay, 2002).

While teachers of older generations attempt to engage in trendy practices such as hip hop pedagogy or even strive to adopt certain technologies such as 1:1 device use or social media integration, in an effort to be seen as “‘hip’, ‘cool’ and ‘with it’”, they are still viewed by the student population as unable to completely connect with the youth of today (Ladson-Billings, 2012, p. 107). The lack of deep cultural competence in youth culture adds to the disconnect and inability of educators to relate to their students on yet another level outside of ethnic and racial diversity.

To combat these cultural conflicts advocating for bicultural competence is critical. This would serve as a strategy to assist in building authentic relationships with the youth in the classroom and connecting the content to students’ needs and diverse backgrounds. Essentially, this is what Ladson-Billings (2014) is advocating for in her recent “remix,” or re-evaluation, of culturally responsive pedagogy over the past 20 years. She states, “This is the secret behind culturally relevant pedagogy: the ability to link principles of learning with deep understanding of (and appreciation for) culture” (p. 77). Hence, appreciation of student culture should not be limited to their ethnic background, but should also inclusive of other dimensions of their student identity, such as their youth cultural membership, which is an influential element in their learning, process as well.
Building Youth Cultural Competence: Leveraging Technology as an Instructional and Relationship Building Tool

The scholarship involving the role of technology in the classroom is diverse in terms of functionality: educators use it as a learning tool, for engagement purposes, to serve as a learning management system, to create personalized products, or to present new content. Examples of such diverse technology application was discovered in an analysis of 25 peer reviewed studies, across content areas (science, language arts, math, and vocational) and after-school programs. As a result of face-to-face or online-based learning, the analysis found that technology served as a tool for communication and for creating new pathways for dialogue for all student groups and across all the content areas studied (Harper, 2018). Individual studies within the literature analysis demonstrated themes of activating student voice, collaborative teacher-student classroom work, experiences of feeling authentically cared for by teachers, and better management of curricular content in a way that was meaningful to the student. Such experiences not only exhibit positive impact on student interactions, which can decrease cultural conflict, but also show evidence of culturally responsive teaching being applied within the context of technology-infused instruction. The previous cultural clashing experienced by these teachers was decreased as a result of the teachers learning to leverage technology as an element of youth culture in the classroom that essentially served as the entry point and mediating element.

This meta-analysis of technology and teacher-student interactions provides evidence of the need for educators to integrate technology into the classroom, both as a learning tool and relationship building strategy. Harper’s (2018) content analysis of the
selected literature also revealed that educators felt that technology allowed them to be able to accomplish a variety of goals using technology: (1) to further explore specific instructional goals in an in-depth manner; (2) to improve communication because the technology allowed for new channels of dialogue that allowed for more reserved students to have a less intimidating format to participate; (3) to foster collaboration tools, and (4) to increase opportunities both for teacher and student management of content goals and for co-facilitation of problem solving. Furthermore, it is expressed in the literature that technology is also seen in the following way:

as a shared resource, teachers can engage with students individually, which created student-centered learning environments. Teachers gained opportunities to serve as facilitators of students’ explorative learning experiences which for these educators allowed them to maximize the full benefits of technology and the positive impact it could have on their learning relationship with their students. (p. 223).

In essence, by using technology teachers reported gaining certain instructional and relational affordances to their practices overall.

Various studies have highlighted how technology is being used to create new spaces for instruction. Polly’s (2014) study of iPads in three elementary mathematics classes revealed that the lessons were technology rich and increased collaborative use of technology in groups and small group instruction, However, the complexity of math tasks being required by the students was low-level such as computation-based or algorithmic. In another study conducted by Scott and White (2013), underrepresented minority girls were recruited to participate in a two-year cohort program called COMPUGIRLS. The program provided these students with STEM-based courses, both after school and during the summer. The researchers highlighted that there is an assumption of teachers and/or
researchers, that as adolescent girls they would have high technological acuity; however, this was not the case given their limited access to technological resources, consistent exposure, and in-class training. The participants shared in interviews how people in their community made judgments, asserting that girls like them “didn’t do technology” based on their cultural background. However, programs such as COMPUGIRLS enabled these girls to go beyond basic technology applications (e.g. word processing, and keyboarding) and learn computer literacy, become exposed to STEM careers, and explore elements of their identity in the context of a strategically infused technology environment. In both the Polly and Scott and White studies, the students were exposed to frequent and high-quality technology learning and instruction.

Each of these studies’ participant groups embraced technology as a way to develop learning spaces that are imaginative and engaging throughout all the student’s courses, which prompted the teachers to change their mindset around teaching New Century students (Ladson-Billings, 2012). Similar moves have the potential to provide more technology-rich learning experiences if planned and designed appropriately. However, without an intentional agenda to situate the technology within a content-rich experience that takes into consideration youth cultural interests, educators could miss an opportunity to build a meaningful learning experience and enhance their student-teacher relationship. In the end, all of these factors are authentically linked to the various youth cultural traits and interests that are worth exploring in order to integrate into the classroom, especially the element of technology.
An Operational Definition of Technology within an Educational Landscape

In order to leverage technology in the classroom and meet students where they are, an educator must understand its meaning and purpose as an instructional tool. Therefore, adopting an educational agenda inclusive of technology integration as a teacher requires having both a commitment and understanding of what technology is. This requires possessing an operational definition of the term “technology” as it relates to the educational climate. The essence of what technology can be confirmed by Spector (2016) in the following defining statements:

- “...practical application of knowledge for a purpose”
- embraces the element of “change” meaning “Technology changes what people do and what they can do”
- “Technology makes possible affordances” or opportunities to do a specific task or engage in a particular experience (p. 5).

Such defining characteristics can be applied when referring to technological processes, machinery and/or applications that allow individuals to take advantage of specific affordances in everyday life. An example of this definition applied would be if a youth or adult uses various kitchen appliances to help create a culinary creation to share with friends as part of a larger meal. Or an architect might leverage the software application AutoCAD to help develop a rendering of a project as part of the design process for an upcoming building project.

However, when integrating into the field of education, technology’s role provides specific advancements or affordances based on the users and setting. The primary consumers of technology in education include teachers and students, and the setting is
typically the classroom. Therefore, expanding the term to educational technology which Spector (2016) defines as “the disciplined application of knowledge for the purpose of improving learning, instruction and/or performance” (p. 10). Roblyer (2006) expands this definition by explicitly stating that it is “a combination of processes and tools involved in addressing educational needs and problems, with an emphasis on applying the most current tools: computers and other electronic technologies” (p. 9). Operating from this combined definition helps give perspective on the role of technology in education and how it should be leveraged, integrated, and viewed by all of its users.

Having an operational definition of what educational technology is further contextualizes the study and provides clarity on my research focus and intended claims. Recognizing the affordances that educational technology can provide the educational field in turn unearths the reality around what teachers need to possess in order to meet the demands that educational technologies place on its users. Wood and Ponsford (2014) assert that in order for educators to leverage educational technologies, there are three aspects of teaching that must complement these technologies: skills and tools, content and mindset. This includes a teacher being able to cultivate the ability or skill to use educational technologies, having access to those tools and/or systems, understanding the process to integrate technology into the content with intentionality, and possessing the mindset to welcome use of technology, which may include stepping outside the practitioner’s comfort zone. Accepting these three aspects of teaching and adopting the definitions of technology and educational technology as part of the learning agenda offers new learning affordances for all users, especially the student user and learner.
Educator Acceptance of the Paradigm Shift: Moving Towards Authentic Technology Integration

By building the foundation for the defining traits of youth cultural competence and educational technologies, the transition towards explaining the reasons for such competence and acceptance of youth culture must also be confirmed. Therefore, the rationale for why this should be a significant focus in the classroom must also be dissected as well. First, in order to connect, educate and learn from youth, it is essential for every educator to find an entry point into a youth’s world. Secondly, it is understood that student identity is complex, composed of multiple intersectionalities that relate to the various cultural groups youth are connected to. This encourages educators to not limit their cultural competence to that of only a student’s ethnic and/or racial identity, but to expand the notion of learning about a student’s culture to be inclusive of youth culture as well. Lastly, such youth cultural competence development leads to learning of their interest in technology and can help understand and transform it into use of educational technologies. This in turn, creates an additional entry point for teachers to learn about their students and leverage their background in the classroom.

This approach supports the acceptance of two paradigm shifts: 1) that youth culture is a significant component of youth identity and therefore should be a priority in the classroom, and 2) that there is a need for instructional practices to be inclusive of both technology and educational technologies in all facets of the school settings. Recognizing the emergence of these two paradigms welcomes added value to the learning environment for all stakeholders and such impact is confirmed through various studies related to technology integration in educational settings.
The work of Harper (2018) and other scholars identifies schools and educators utilizing educational technologies in innovative ways and the successes they have had. However, it is not enough that only a handful of teachers and/or schools engage in technology integration; the stakes are too high to not encourage all educators to explore the potential added-value education technology can have on the classroom environment.

On an annual basis, the New Media Consortium (NMC), EDUCAUS, and Consortium for School Networking (CoSN) solicit the expertise of 61 experts to compile the NMC/CoSN Horizon Report, which reports out the current and projected education trends, many of them educational technology focused. For the 2017 K–12 Edition, they listed the top 18 considerations schools must entertain as part of a school’s five-year growth plan. One of them was “Fluency in the Digital Realm,” which they define as:

more than just understanding how to use technology. Learning must go beyond gaining isolated technology skills toward generating a deep understanding of digital environments, enabling intuitive adaptation to new contexts and co-creation of content with others (Freeman et al., 2017, p. 4).

This report also shared that the digital environment has to be coupled with good teaching which identifies the role of an educator as evolving and that there has to be a balance between tools and instructional strategy.

No matter how useful and pervasive technology is, students will always need guides, mentors, and coaches to help them navigate projects, generate meaning, and develop lifelong learning habits. School cultures must encourage, reward, and scale effective teaching practices. (p. 4).

Such statements confirm that technology cannot just be a tool to entice classroom youth, but it must also be used as an instructional game changer that provides added value to the
learning experience, and educators must be the ones deploying it with intentionality and purpose.

Therefore, it is evident that there cannot be a loose coupling between youth cultural competence, educational technologies, and educator intentionality of such resources. A teacher’s integration has to be meaningful, in order to transform the learning environment and provide specific learning affordances. Just as the culturally relevant teachers that Ladson-Billings celebrated were able to do when attending to ethnic and racial cultural differences, so to do teachers appealing to youth culture have to have a genuine interest in using educational technology in rich and added-value ways. I believe to meet these expectations, engaging in ongoing learning of technology application is essential. Various scholars assert that this can be done by an educator growing their Technological Pedagogical Content Knowledge (TPACK), which is a construct to help us understand how teachers develop and build their technology skill set over time. While this provides a framework to assess teacher technological growth, measuring the impact on the student as a result of a teacher’s integration of TPACK can be measured by the amount of exposure to the International Society for Technology in Education (ISTE) Standards for Students that students are receiving.

Mishra et al. (2011) developed TPACK, as an integrated model, depicted in Figure 1, that recognizes that quality technology infused teaching “requires a nuanced understanding of the complex interplays between three key sources of knowledge: technology, pedagogy, and content, and addresses how they play out in specific contexts” (p. 23). Therefore, the advantage of this model is that it advocates for the educator to
adopt a technology integration approach that takes into consideration authentic technology use based on specific content needs and goals.

Figure 1. Technological Pedagogical Content Knowledge. From *TPACK Model* by Parkinson, 2009, Flickr (https://www.flickr.com/photos/geographypages/8280963584). CC BY-NC 2.0.

The five fundamental components of TPACK as defined by Mishra and Koehler (2006) are as follows:

- Content Knowledge (CK): The knowledge related to given subject matter being taught (e.g. math, social studies).
• Pedagogical Knowledge (PK): The in-depth knowledge an educator possesses about various teaching methods and foundational education elements (e.g., classroom management, lesson planning)

• Pedagogical Content Knowledge (PCK): The knowledge of particular pedagogy that is specifically connected to the content the teacher is teaching (i.e., math teacher using manipulatives in teaching distributive addition).

• Technology Knowledge (TK): The knowledge inclusive of standard and advanced technologies (e.g., Blackboard, multimedia applications, Web 2.0 tools, word processing)

• Technological Pedagogical Knowledge (TPK): The knowledge of the different technologies that are used for teaching and in specific settings and the understanding of their impact on instruction (i.e., using Google Classroom as learning management system for assignments, attendance and assignment feedback versus Canvas).

While each of these can be achieved and managed independently by a teacher, in order to achieve optimal impact, the literature advocates for these elements to be built upon one another, in order to create optimal Technology Pedagogical Content Knowledge (TPACK). TPACK is the culmination of content, pedagogy and technology, in conjunction with knowing “how technology can help redress some of the problems that students face; knowledge of students’ prior knowledge and theories of epistemology; and knowledge of how technologies can be used to build on existing knowledge and to develop new epistemologies or strengthen old ones” (Mishra & Koehler, 2006, p. 1029). This teacher learning model recognizes that educators have to be strong in the five
aforementioned areas independent of each other in order for meaningful implementation of selected technologies with specific content areas to be achieved.

Although TPACK provides the model that teachers can subscribe to for technology development, I believe ISTE Standards for Students present a rubric to assess the impact of technology integration on the student’s learning. There are seven standards within this framework, which include:

1. Empowered Learner
2. Digital Citizen
3. Knowledge Constructor
4. Innovative Designer
5. Computational Thinker
6. Creative Communicator
7. Global Collaborator

Each of these standards has action-oriented anchors that detail how the technology use the student is involved in should engage them, assist them in finding their voice, expand their knowledge base, allow them to create or manipulate resources and empower them as learners. The ability of the educator to leverage their TPACK to achieve these student outcomes is one pathway to measure meaningful technology integration.

Various studies have sought to explore TPACK’s five elements within one-to-one laptop programs and district wide technology initiatives; however, very few have measured impact using ISTE Student Standards or any type of standardized rubric of impact on student learning and experience (Peterson & Scharber, 2017; Dwyer et al., 1990a, 1990b). One of the first attempts to create intentional, technology-infused classrooms was the Apple Classrooms of Tomorrow (ACOT) Program, which ran from 1985-1995 in seven K–12 classrooms in the U.S. providing every participating teacher
and student with an at-home and school computer (Dwyer, 1995). Within the first five years, the program had expanded to over 20 teachers participating and hundreds of students receiving computers and using technology daily, in addition to teachers receiving professional development on educational technologies use. These experiences speak to teachers building their Technology Knowledge (TK) by learning how to use the devices and become familiar with the advanced technologies. Dwyer et al (1990a, 1900b) also described the teacher participants as evolving into more of a guide or mentor in the classroom instead of lecturers. Additionally, Dwyer and his fellow ACOT associates noted that in observations the student role began to transform with students leading the classes, engaging in peer tutoring and working collaboratively. In these instances, the study showcases examples of Pedagogical Content Knowledge (PCK).

As the program evolved the researchers identified five stages of technology integration supported by evidence-based practices that were exhibited throughout the study, which include: Entry, Adoption, Adaptation, Appropriation, and Invention, all represented in Table 2 (Wood & Ponsford, 2014). This captured the evolution of the teacher’s Technological Pedagogical Knowledge (TPK), in conjunction with the content they were teaching and relevant pedagogy they were already using to deliver their curriculum.

Teachers in the study discussed their ability to “enrich the curriculum and revise their focus of instruction” while making the class more student-centered (Dwyer et al., 1990a, 1900b). This stemmed from the teachers’ valuing the student’s technology ability as a type of learning expertise to be utilized in the classroom, while also seeing it as a means to provide support to peers and the teacher (Levin and Wadmany, 2006)
Eventually, the success of ACOT^1 led to ACOT^2, being launched in 2008 through a three-phase roll out. Overall, the ACOT program stages captured the teacher growth that assists in building their TPACK.

**Table 2**

*ACOT Stages of Technology Integration*

<table>
<thead>
<tr>
<th>Stage</th>
<th>Examples of What Teachers Do</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entry</td>
<td>Learn the basics of using the new technology</td>
</tr>
<tr>
<td>Adoption</td>
<td>Use the new technology into traditional classroom practice. Here teachers often focus on increased student productivity and engagement by using word processors, spreadsheets, and graphic tools.</td>
</tr>
<tr>
<td>Appropriation</td>
<td>Focus on cooperative, project-based, and interdisciplinary work-incorporating the technology as needed and as one of many tools.</td>
</tr>
<tr>
<td>Invention</td>
<td>Discover new uses for technology tools-for example, developing spreadsheet macros for teaching algebra or designing projects that combine multiple technologies.</td>
</tr>
</tbody>
</table>


The initial successes achieved in ACOT were ahead of the paradigm of that era, and hence served as an exemplary study for how to begin a teacher’s technology integration development. However, what was missing in the ACOT program, and what Kolb (2017) confirms that today’s classrooms are still struggling with, is the ability of educators to find an approach that fuses content, pedagogy and technology integration.
together. Hence, Technology Pedagogical Content Knowledge (TPACK) is a skill set and knowledge base that meets all those needs and must be cultivated in order to have the greatest impact on a teacher’s instructional design, delivery, and application with students (Landroth, 2013). Educators cannot get lost in the hype of following trends to purchase the newest technologies in an effort to entertain or appease their students. Instead, the focus should be on being properly trained on how to integrate educational technologies in the classroom, use content specific tools based on discipline needs, and engage in colleague-to-colleague support groups (Peterson & Scharber, 2017). Such efforts move educators in the direction of engaging in intentional and sustainable integration of educational technology within their classroom.

However, depending on how educators approach their technology integration journey, I believe the role of educational technology could take on two different roles. The first relates to the possibility of technology serving as a vehicle for the teacher to implement principles of CRT. In this instance the level of TPACK the teacher possesses could range from low to high, however would serve as a means to an end, with the end being to become a more culturally relevant teacher. The second role of educational technology could potentially still operate with a CRT approach, but through advancing the teacher’s cultural competence as it relates to youth culture. In this instance the measurement of success would be based on the application of ISTE Standards for Students. In either instance I recognize that application of the CRT framework is being done, although in different ways. Furthermore, technology is the common denominator in both approaches but also applied in varying degrees.
Plan of Study

There is a sizable amount of literature related to how culturally relevant teaching has been effective in assisting educators with backgrounds different from their students in building stronger relationships and in having a positive impact on academic success. Given the complexities of student backgrounds, the evolving cultural traits of today’s youth community, and ongoing societal changes influencing education, there is an urgency to revisit past practices like CRT in an effort to enhance teachers’ skills to meet the current needs of students. This requires expanding the culture criteria that CRT currently covers to be more inclusive of additional student cultural dimensions that have emerged as being valuable and worth being integrated into the classroom. Therefore, my interest in embarking on this journey of inquiry, was with the intention of expanding the application of culturally relevant teaching. The goal was to examine how teachers develop and apply their youth cultural competence by exploring the range of technology integration teachers engage in, and the ways in which students respond to it.

Study Environment

To investigate these activities, my study was situated in a technology-rich urban K–8 charter school that includes a population of 700+ students. Student racial/ethnic demographics were 60% White, 19% Hispanic, 15% Black and 5% Asian. The school most recently expanded its technology infrastructure to include a middle school 1:1 laptop program. During the year of the study, the school was in its third year of the 1:1 laptop program that permitted 7th and 8th grade students 24/7 access to their own personalized Chromebook. Students used this in the classroom and were allowed to take them home. The 6th grade student population also had increased access to technology by
having more access to the two mobile laptop carts and a fully equipped Mac lab. The school is an authorized GAFE-school (Google Apps for Education), which means both students and teachers have access to the Google Suite for interactive tools, digital communication and as a learning management system (LMS), which are powered by Google Classroom. Overall, the middle school consisted of 254 students that participated in an inclusive learning model and received instruction from a team of 10 middle school core content teachers and 7 specialty/elective teachers.

The school’s commitment to technology infrastructure development and digital literacy management included annual purchases of student and staff hardware, support to curriculum expansion, and increased staffing support. In addition to the laptop program, the middle school curriculum offerings included general technology courses and a Project Lead the Way-certified elective course in Introduction to Computer Science as well as STEM extracurriculars through robotics club and digital media club. The staff investment included two full-time IT specialists, one K–4 technology educator and one hybrid teacher that served as 6-8 technology educator and part-time technology integration specialist that assisted with 1:1 laptop management and technology integration support K–8.

The study participants included teachers and students from Anchorage Community Charter School. The first participant group was middle school teachers. There was a total of 18 teachers at this school that supported middle school students, between core subjects and specialty. However, the study consisted of 10 teachers from the entire middle school teacher population. The school’s overall teaching community is predominately a White male and female staff, which also dominated the teacher participant demographics. Upon
enrollment in the study teachers completed a Teacher TPACK Questionnaire that had them report on their personal and professional background, in addition to answering a series of questions related to technology use, abilities and awareness (Table 3).

The student participation was a total of 20 students: 8 being in the 8th grade focus group and 13 students being in the 6th/7th grade focus groups. Students were not required to self-report age or racial/ethnic demographics. The recruitment of student participants included making presentations each middle school class, reviewing the study and expectations of participants. Additionally, an email was sent out to parents through the grade level listservs providing parents with the information. There was a two-week window for students to bring back the Statement of Consent and Statement of Assent. However, students had the option to decline participation prior to the focus groups launching. The initial participation total after the recruitment window closes was 21 students, however at the start of the 6th/7th grade focus group one student declined participating, bringing the total participation to 20.
### Table 3

**Participant Demographics from Teacher Questionnaire**

<table>
<thead>
<tr>
<th>Content Area</th>
<th>Pseudonym</th>
<th>Teaching Certification</th>
<th>Years Teaching</th>
<th>Age Range</th>
<th>Race/Ethnicity</th>
<th>Biological Children</th>
<th>Children’s Age Range</th>
<th>TPACK Avg. Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS-ELA1</td>
<td>Janet</td>
<td>Bachelor’s</td>
<td>10+</td>
<td>30–39</td>
<td>Caucasian</td>
<td>1+</td>
<td>5–9</td>
<td>2.83</td>
</tr>
<tr>
<td>MS-ELA2</td>
<td>Madison</td>
<td>Bachelor’s</td>
<td>0–4</td>
<td>22–29</td>
<td>Caucasian</td>
<td>0</td>
<td>N/A</td>
<td>3.69</td>
</tr>
<tr>
<td>MS-ELA3</td>
<td>Alice</td>
<td>Graduate</td>
<td>10+</td>
<td>30–39</td>
<td>Asian American</td>
<td>0</td>
<td>N/A</td>
<td>4.14</td>
</tr>
<tr>
<td>MS-ELA4</td>
<td>Jaime</td>
<td>Graduate</td>
<td>5–10</td>
<td>30–39</td>
<td>Caucasian</td>
<td>0</td>
<td>N/A</td>
<td>3.71</td>
</tr>
<tr>
<td>MS-SS1</td>
<td>John</td>
<td>Bachelor’s</td>
<td>5–10</td>
<td>50–59</td>
<td>Caucasian</td>
<td>1+</td>
<td>22+</td>
<td>3.86</td>
</tr>
<tr>
<td>MS-Math1</td>
<td>Sean</td>
<td>Graduate</td>
<td>10+</td>
<td>30–39</td>
<td>Caucasian</td>
<td>1+</td>
<td>5–9, 10–12</td>
<td>3.97</td>
</tr>
<tr>
<td>Spc1-SPA</td>
<td>Isabella</td>
<td>Bachelor’s</td>
<td>10+</td>
<td>40–49</td>
<td>Other/2 or more</td>
<td>1+</td>
<td>16–18</td>
<td>3.49</td>
</tr>
<tr>
<td>Spc3-ES</td>
<td>Judith</td>
<td>Alternative</td>
<td>5–10</td>
<td>40–49</td>
<td>Caucasian</td>
<td>0</td>
<td>N/A</td>
<td>4.31</td>
</tr>
<tr>
<td>Spc2-J&amp;M</td>
<td>Gene</td>
<td>Bachelor’s</td>
<td>5–10</td>
<td>40–49</td>
<td>Other/2 or more</td>
<td>0</td>
<td>N/A</td>
<td>3.49</td>
</tr>
<tr>
<td>Spc4-Art</td>
<td>Agatha</td>
<td>Bachelor’s</td>
<td>5–10</td>
<td>30–39</td>
<td>Caucasian</td>
<td>0</td>
<td>N/A</td>
<td>3.77</td>
</tr>
</tbody>
</table>

Data Collection and Analysis Overview

My study included several data collection methods. I administered a teacher questionnaire to learn of teacher instructional values and how they encompassed technology exposure and understanding of youth cultural referents. Additionally, teachers participated in classroom observations, semi-structured interviews, and an independent CRT Mindset and Behavior Inventory activity. Lastly, I engaged in two student focus groups to help in understanding students’ perceptions of their teachers’ youth cultural competence, relationship dynamics and technology integration. This was done in an effort to further investigate my research questions and reveal any best practices from teachers that could possibly result in a more enriched learning experience for students.

Summary

The intention of this study design was to not only explore the current practices taking place in this urban school environment, but also unearth any emerging topics, themes, or additional inquiries to assist in guiding future research. By leveraging a three-dimensional conceptual framework, I was able to unpack each of my research questions relative to my research methodologies. In Figure 2, I outline the Culturally Relevant Teaching domains, which served as my lens to understand what I observed teachers doing during classroom observations, and how I processed their dialogue when engaging in post-observation interviews.

In Figure 2, I outlined the dimensions of TPACK or Technological Pedagogical Content Knowledge, my second component of my conceptual framework. I used this model to understand teachers’ technology levels and skill set within the content of their discipline. Lastly, Figure 3 captures the third component of my conceptual framework,
which was the International Society for Technology Education (ISTE) Standards for Students. This set of academic standards allowed me to assess the quality and types of technology-infused projects students were being exposed to, because of their teacher’s TPACK levels. I also was interested in understanding the student perspective and response to such experiences as well. In essence, this overall conceptual framework provided meaningful to my study design, selected methodologies and approach to data analysis, in order to answer my research questions and make meaning to address my initial inquiries.

Figure 2. Conceptual Framework Part 1.
Figure 3. Conceptual Framework Parts 2 and 3.
CHAPTER 3
RESEARCH METHODOLOGY AND DESIGN

Introduction

The current landscape in education is inclusive of schools that can be referred to as ecosystems that are impacted by environmental shifts that bring about transformation among the stakeholders (species) and contributing systems (Zhao & Frank, 2003). When emerging trends and/or influences engage with these ecosystems, it requires the associated stakeholders to adapt and integrate these changes into the current system to survive the change. In education, technology has served as an influential factor requiring constant paradigm shifts to take place in the larger societal ecosystem and the sub-ecosystem of school environments. This relates most specifically to instructional delivery and design, in addition to the integration of technological resources into the classroom for student use. It has prompted the scholarly community to further investigate the technology integration movement as it pertains to teacher use and student application.

There is compelling evidence that thoughtful technology integration can have a positive effect on education, which includes “closing gaps in testing between advantaged and disadvantaged populations, fostering collaborative learning processes, and providing access to information and simulations. Indeed, the increased use of technology in schools has resulted in the use of more student-centered, constructivist-based pedagogies” (Zheng et al., 2016, p. 63). In an effort to add to this body of scholarship, my qualitative study investigated technology integration within a technology-rich school as a means to understand how both general technologies and educational technologies enhance the
educator toolkit and transform student learning experiences. As I noted earlier, my study was designed to answer four research questions:

1. To what extent, in what ways and to what purposes do teachers integrate technology into their teaching practice?
2. To what extent, in what ways to what purposes do teachers demonstrate cultural competence and call on their knowledge of youth culture as a resource in their practice?
3. How are teachers leveraging technology as an element of youth culture in order to build relationships with their students?
4. How do students respond to teachers’ CRT practices including their use of technology?

By taking a CRT approach to my research design, I have placed equal value on the two participant groups in my study: students and teachers. I have done this by using research tools that capture teacher and student perspectives in addition to allowing for participant reflection to help expand on observation data from classroom visits. This has informed my method selections and study design to ensure I could collect sufficient data from both teachers and students. Several scholars have leveraged the methodology of using teacher questionnaires, in-depth interviews with a self-reflection task, and classroom observations to extract lessons learned from their studies (Ladson-Billings, 2009; Song & Owens, 2011). For my student participants, I utilized focus groups to gather student perspective in answering my various research questions. Schwandt (2007) states that deploying a variety of data collection methods is done by researchers to meet the standards of “truth value, applicability, consistency, and neutrality,” which are highly
valued within the social sciences (as cited by Creswell & Poth, 2018, p. 40). It was my goal to reinforce these standards in my study while also respecting the confidentiality of the participants.

**Research Design**

*Site Participation and Selection*

To respect and protect the identity of all participants and the school that gave permission for this study to take place, I have assigned pseudonyms for the participants and the school. The study took place at Anchorage Community Charter School, where I served as a full-time educator for 5th to 8th grades during the implementation of the study. I also served in various teacher-leader capacities, including service learning curriculum facilitator, K–8 instructional coaching team member, and technology integration specialist, which includes management of the 1:1 laptop. I had relationships with teachers at every grade level and a strong relationship with families of the school. The proposed study was approved by the current school principal at the time. It is understood that the results were to serve a dual purpose in helping the school reform their plans for technology programming as they sought to engage in future expansion with purpose and alignment to overall school goals.

The study’s student element focused on 6th–8th grade students. This population of participants is considered a convenience sample because I had consistent contact with these students through direct teaching or programmatic involvement. Additionally, this group of students had a high level of technology hardware access in the form of laptops, computer labs, smart boards, and desktop computers in the classrooms as well as mobile iPad carts. There are a total of 18 teachers that teach the 254 middle school students.
I included all 10 teachers in the middle school that responded to the recruitment outreach, which was managed via email and included follow-up meetings for any potential participant that had questions. This was based on all the teachers having access to a sizeable amount of technology resources and teaching across a variety of subjects within the middle school community. This number of teachers is the norm for middle schools and thus allows for more generalization of the results to similar populations as the school being studied. From the 10 teachers, I observed one of each of their classes, which resulted in engaging with 250–270 students throughout all 10 observations. The teachers had the flexibility to select the class and lesson that I observed.

The original plan for student focus group participation was to utilize stratified sampling by having 30 students (10 from each grade level) invited to participate in the focus groups, which would include sharing student work that was completed with technology resources. However, the selection process was altered due to request of the school for student recruitment and based on students’ response. After the presentation of the study opportunity was delivered to individual classrooms and email outreach to families, there was a two-week window for students to submit their consent and assent forms. While the goal was to have 30 student participants, with an equal distribution across all three grades, the final participation included 8 eighth graders, 11 seventh graders and 1 sixth grader.

Having the students participate in the focus group format was not an unfamiliar experience to the students because the school regularly engaged students in focus group activities for both internal and external projects that most students attended voluntarily. The final list of students was presented to the principal and director of programs to
review to ensure a diverse student population was selected across the middle school. However, the final list was not presented to the ten teachers for input and validation at the request of the school to protect student’s confidentiality and maintain positive teacher-student relationships. Implementing these measures to involve multiple forms of cross-checking with developing a participant database reinforced triangulation and strengthened the credibility of results (Schwandt, 2007). This process was not only applied in the participant selection, but also with the method choices.

Given that teacher’s daily instruction was observed for the purpose of this study, no analyzed data in the study included any identifying information. The same measures were taken to protect the identities of student participants to ensure their sharing would not cause conflict with their teachers or their in-school activities. Prior to participation, consent forms were requested from the parents/guardians of each student, and teachers also filled out a consent form and confidentiality agreement. I also required assent forms to be submitted by students to gain their consent as well. For all students involved in the classroom observations, given that I did not reference their individual comments but only focused on the spirit of their interactions with the teachers as related to CRT and technology integration, I did not use a numbering system (e.g., Teacher Jaimie’s students identified as A1-A27, and Teacher Sean’s students identified as B1-B27). This was originally outlined in the proposal but was not necessary for study implementation.

**Researcher Role and Issues of Validity**

Qualitative research enabled me to extract complex meaning from rich participant contributions and perspectives, as well as operate with a responsive research structure that was adaptable to the community of focus and that allowed the researcher to engage
in full immersion within the researched environment (Creswell & Poth, 2018). As a qualitative researcher, I recognize that my positionality carries weight and that given my proximity to the work, I had to make efforts to address any bias.

When I first came to the school five years prior to the implementation of the study, I taught Technology Education to grades K–8, which was a total of 717 students. However, since the adoption of the school’s 1:1 laptop program for 7th and 8th graders, I was released from teaching grades K–4 (providing only mentoring to my replacement), and only responsible for teaching 5th to 8th grade students in Technology Education and Introduction to Computer Science. I served as a teacher coach for the K–8 staff as it related to technology integration, which was how my time was spent when not teaching or managing the 1:1 Laptop Program.

My interactions with students were more frequent than in the past because I transitioned from a schedule of seeing them two times every six days to seeing them almost daily in both teaching and non-instructional capacities. The format of my teaching schedule included only seeing the two different groups of 7th graders assigned to my class during the first half of the year and the second group the second half of the year. Eighth grade student specialty selection choice was mirrored after high school; therefore, I only taught 25% of the 8th grade population since they take one specialty course for the entire year. I also connected with students through clubs, service learning programs, school community garden management, STEM programming, and/or home and school events. I also built rapport with students' families, which created indirect relationships with students because I had supported families that needed social service connections, special education resources for their students and/or financial aid counseling
for post-secondary planning, which also allowed me to build student/family connections. I believe this shift in my teaching capacity allowed my daily impact to be more targeted and meaningful to the students I was assigned to serve and support throughout the middle school.

Recognizing my closeness to students, I believe there was value in having my focus groups run by me as the lead and observed by an external peer. This way I could compare the external peer’s notes with my notes on the focus groups’ transcriptions to address any evidence of bias from my write-up. This measure is known as interobserver reliability, which is a method to prove that there was agreement of themes or trends in the data collected and that it was not subjectively developed. By taking this measure, I recognized that my positionality within the student community could have an impact on the range of comfortability for sharing that students have, both about other teachers and their own work.

Within the staff community, I was involved in a wide range of initiatives and programs at the school, and as a result, teachers viewed me as a resource for information and feedback on a variety of topics including instruction, resource opportunities, technology integration, student behavior, relationship insight, and program planning. This impacted my research, given that I manage a critical programming component for middle school teachers, the 1:1 Laptop Program. This responsibility includes device management, program design, and expansion efforts. My wide range of school involvement provided me with heightened awareness of the school’s systems and processes; it also impacted the perceived social capital teachers believed I had within the school community. I employed two methods to address this perceived power that
members of the teaching community may believe I have. First, I solicited the assistance of an external peer to engage in peer debriefings to maintain the credibility of the study and to assist me in staying faithful to the research questions and scope of the work (Schwandt, 2007). Secondly, I integrated at least one round of member checks with three of the ten teacher participants. This commenced after the semi-structured interviews. I allowed the respondents to review my summary from the post-observation reflection I completed, and share any concerns with me, which assisted in addressing any misconceptions I captured and insured accuracy of data shared and observed (Schwandt, 2007). These measures helped manage the impact of my positionality on the study’s data collection process and analysis.

**Data Collection**

I utilized several qualitative research methods to collect data for this study. These methods included: (1) teacher questionnaire with items that focus on teacher professional background, demographic information, and dimensions of Technological Pedagogical Content Knowledge (TPACK); (2) teacher semi-structured interviews; (3) classroom observations with structured observer reflection; (4) student focus groups; and (5) evaluation of student work and teacher unit plans. Engaging in such diverse and prolonged engagements as previously mentioned, helps identify notable trends that are typically emergent in environments with similar conditions and experiencing the same phenomenon (Schwandt, 2007). The rationale for collecting data from both teachers and students was to ensure that the research is not only studying CRT but also operating from a culturally relevant framework as part of the study design (Ladson-Billings, 2009). This methodological approach to collecting data ensured that there were not any lost voices,
which is a risk when studies are examining instructional practices, and when there are typically more data collection methods focused on teachers rather than students, despite the students being the main consumers of the instruction (Mertens, 2015). Therefore, intentional efforts were made to select data collection methods that were common in similar research studies and perpetuate a CRT philosophy.

**Teacher Questionnaire**

The Teacher TPACK Questionnaire I developed, as shown in Appendix A, assisted in establishing a baseline for the teacher’s current TPACK level and building context for how teachers demonstrated their TPACK-oriented behaviors during classroom observations and communication of TPACK mindset during the semi-structured interviews. The questionnaire included teacher professional history, demographics sections in addition to 38 items related to five sections categorized by technology exposure, Technology Knowledge, Technological Content Knowledge, Technological Pedagogical Knowledge and Technological Pedagogical Content Knowledge. The items in this questionnaire were constructed based on studies that explored TPACK among pre-service and in-service teachers, and/or technology integration programs (Schmidt et al., 2009-10; Hosseini & Kamal, 2012; Hsiao, 2015). My goal for using the multi-dimensional questionnaire was to gain insight about teacher attitudes, beliefs, instructional style and mindsets towards technology use and exposure to youth cultural elements. This assisted with data analysis to identify study themes in relation to aggregated teacher data based on teacher sub-groups, experience, content areas and age range. I also leveraged the questionnaire data when developing probing questions
for the teacher semi-structured interview sessions as a means to clarify mindsets reported in the questionnaire.

**Classroom Observations**

Once the teacher questionnaires were completed, I scheduled teacher observations. There was only one classroom observation per teacher, and the average class was 45 minutes in length. Interviews were scheduled to take place within 48 hours of the observation; this way, the teachers were able to recall elements about the lesson while it was still relevant to practitioner. I operated as a complete observer, which helped me manage my positionality dynamics as a teacher in the school community during the duration of the study (Mertens, 2015). There was no second round of observations after my student focus groups, which was updated in the original study design submitted to IRB. My goal for utilizing observations was to evaluate where along the spectrum of technology integration the teachers fell, how they implemented CRT practices, how they demonstrated youth cultural competence, and whether any of these elements contributed to recurring themes across the teacher population.

To manage classroom observations, I constructed a Teacher Observation Protocol (Appendix B). This is adapted from Chou et al.’s (2012) Classroom Observation Form used in their case study regarding a pilot mobile learning project. The observation protocol allowed me to take ethnographic notes of lesson activities and tasks, time spent on lesson segments, and teacher or student behaviors that align with ISTE Student Standards and/or the three domains of CRT. I also took descriptive notes of classroom layout and decor/visuals. I had two systems for coding lesson episode outputs during classroom observations, which included:
• **ISTE (2016) Student Standards**: The seven ISTE Standards for Students captured instructional outputs that encouraged inclusion of student voice and offer student-driven learning experiences as a result of any authentic and effective technology integration applied by the teacher. Identifying instructional episodes based on these standards helped capture the type of impact the teacher’s technology use was having on students, while also offering insights on gap experiences or missed student learning experiences as well.

• **CRT Codes**: These Culturally Relevant Teaching codes used in the observation protocol were constructed to allow for observer identification during lesson episodes that reinforce those instructional and relational principles relevant to CRT (Ladson-Billings, 2009). Each code was assigned to one of each of the three dimensions, which include:
  
  • CRT 1: Cultural competence—Being able to help students celebrate and appreciate their cultures while also gaining knowledge of other cultures.
  
  • CRT 2: Academic success—Any academic growth that occurs as a result of instruction and classroom learning.
  
  • CRT 3: Sociopolitical consciousness—Extend the classroom walls by applying in-class knowledge and skills to assist with real-world problems and the higher order thinking skills needed to address them.

Having a coding system to help capture instructional elements, environmental setting, student organizations, student behaviors, teacher and student language, and verbal and nonverbal actions aligned to my selected study constructs was critical to ensuring a well-
rounded observation experience (Mertens, 2015). I requested that teachers send me a copy of their unit and/or lesson plan prior to the lesson so that I could have context in addition to asking them to share what I should expect to see during the learning session. However, teachers only provided the latter via email and summarized their lessons and activities during the day prior to the observation.

Following each observation, I completed an observer reflection task. This included 17-items on which I rated the teacher as related to classroom environment, student interactions, instructional design, and delivery. These items have been adapted from a preservice/in-service teacher questionnaire for culturally responsive teaching (Aganza & Bilingual Trainees, 2009). The second part of the reflection consists of Observation Reflection Scales that have been aligned with my research questions. I plotted where the educator fell within this scale as it related to the question it aligned with. Both of these reflective activities allowed me to readily reflect on observation experiences at a macro and micro level in addition to assisting my individual evaluation of teacher abilities as related to technology integration. Engaging in this reflective practice after each observation also assisted in my analysis when making meaning of observations and connections between data collection sources.

**Teacher Interviews**

The average teacher interview lasted 50 minutes. The semi-structured interview was composed of structured questions that required the teacher to reflect on the lesson observed and provide clarification on instructional philosophies and abilities (Mertens, 2015). The teacher semi-structured interview (Appendix C) included 17 items divided into the following sections: Lesson Reflection (Part I), Teacher Application of CRT (Part
II), Student and Teacher Technology Use and Interactions (Part III), and One-to-One Laptop Program (Part IV). During the semi-structured interviews, teachers engaged in one self-reflective task, which was embedded in the interview during Part III. In Part III, the teacher was given a copy of the ISTE Standards for Students and asked to identify the standards and/or anchors they utilized during the project that they shared as a technology-infused student artifact.

This semi-structured interview was adapted from the Technology-using Teachers’ Interview Protocol, developed by Ottenbreit-Leftwich et al. (2015) as part of their research to assess teacher education programs and how they prepared pre-service teachers in integrating technology. This tool has also been used to examine technology educators and how they use technology and work to advance their technology skill set. The protocol’s originating expert team consisted of university faculty members, K–12 teachers, and educational evaluators, all chosen by the U.S. Department of Education. Additional experts were used to strengthen validity by constructing additional probing questions to supplement each of the questions, and the protocol was piloted and refined prior to full application.

Engaging in a semi-structured interview is seen as being informative for the participants of the study, giving them an opportunity to reflect on their practice and dig deeper as to the “why” behind their instructional moves, supporting continuous instructional growth. It also helps expose possible recommendations for future technology integration activities both at the classroom and school-wide level, which has been the case in previous studies (Peterson & Scharber, 2017). The more loosely structured portions of the interview related to follow-up questions that arose from teacher
responses to the structured questions. In similar fashion to the aforementioned study, teachers were asked to bring a student artifact they had assigned that was produced using technology, which was used as part of the discussion and self-reflection portion of the interview related to ISTE Standards for Student (Ottenbreit-Leftwich, et.al., 2015; Churches, 2008; ISTE, 2016). According to Stake (1995), having the interviews along with the classroom observations and questionnaires assists with data source triangulation, while having multiple sources for assessing technology use by using student artifacts, observations, and interviews serves as a form of methodological triangulation (as cited in Ottenbreit-Leftwich et.al., 2015). Essentially, the interviews also helped build the protocol for the student focus group protocol and gave insight on the teacher’s instructional moves regarding technology use, integration, and whether youth culture is taken into consideration (Ottenbreit-Leftwich et.al., 2015). The interviews were also recorded to help with analysis later on, and all teachers gave consent to being recorded.

*Student Work Artifacts*

The goal of reflecting on student artifacts during interviews with teachers was to understand the teacher’s rationale for designing instruction with the integration of technology. Additionally, having student artifacts and representation of learning provided real exemplars of student output as a result of teacher-led technology exposure, youth culture integration, and CRT application. I was also able to see the variability in technology abilities and application within the middle school cohort while gaining more insight on how much of the instructional design takes into account student background and interests, particularly youth culture. It must be noted that 70% of the teacher participants provided student artifacts. Having access to student work prior to the focus
group also helped me have context for the type of projects teachers highlighted, and then I was able to probe students to understand if these types of projects were the norm and/or if other assignments similar to the teacher selected ones resonated with their understanding of teacher technology integration.

However, the motivation behind asking for student work during the focus group was to give space for students to report which lessons provided them the most technologically engaging lessons in their opinions, which was compared to the teachers’ choices. Furthermore, the student artifacts served as a discussion piece to facilitate the conversations with students and support their meaning-making process during the focus groups to have a reference point that represents a product of learning that they have engaged in.

**Student Focus Groups**

After the data from the teachers was collected, I conducted a semi-structured focus group with the selected 20 students. The semi-structured format for the focus group protocol was implemented so that if I needed to integrate questions for clarification based on other instruments used, I would be able to do so.

The nature of a focus group is not to promote the same formality as a one-on-one interview, but rather “is designed to elicit more of the participants’ points of view” by relying on the natural interaction between participants to foster rich discussion (Mertens, 2015, p. 382). Therefore, given the complexity of the study’s research questions and the ages of the youth involved, I thought it would be more appropriate to utilize a focus group data collection method as a way for students to expand my understanding of how technology is utilized in their learning spaces and understand their perspective of teacher
competence as it relates to technology and youth culture. My first student focus group with 8th graders took place in two parts each lasting 45 minutes, given that it was done during student lunches and they needed more time to read task instructions and respond to gallery walk prompts. The same experiences were applicable to the 6th/7th grade focus group, which was combined due to enrollment numbers of 6th grade being so low. The CRT-TPACK Student Focus Group Questions can be found in Appendix D (Chou et al., 2012; National Institute for Urban School Improvement, 2005).

The focus group experience consisted of engaging students in two gallery walks. The first focused on the students fleshing out types of technology experiences related to four pathways: communication, product development, information access and expression. The second gallery walk had students report on learning experiences involving technology that related to the 7 ISTE Standards for Students and/or any of the supporting standard anchors. In between the individually paced gallery walk tasks, I led the students in whole group discussions to debrief their gallery walk responses. This allowed students to explain their thinking or project submissions during either gallery walk and share interest and desires related to learning with technology and/or having teachers teach them based on their cultural preferences.

Data Analysis

My data analysis process had to be adapted given the large volume of data collected from my five data collection sources. I set up my questionnaire using Google Forms, which exported the data into an Excel file and provided a digital format that was easy to manipulate into a chart communicating teacher participant demographics. Student demographics were not collected via questionnaire; therefore, similar analysis was not
done for the students.

For the classroom observations, I took notes of each individual episode within the teacher’s classroom and applied an a priori coding system as described in the previous section, and I marked the episodes for displaying any of the three CRT principles and/or any of the seven ISTE Standards (Creswell & Poth, 2018). The notes were taken on my Rocket Notebook, a reusable digital notebook that allowed me to scan in the observation notes, maintain security of the notes through password protection, and later review and compare classroom observations.

For the interviews and focus groups, I was unable to use an external peer researcher due to restrictions of the school; therefore, I managed the recording of information by note taking and audio taping. I used Rev.com as my transcription service and compared this with my own notes that I filled in on paper using the semi-structured protocols. This allowed me to not be solely dependent on my notes, but instead be attentive to the participant and have the opportunity to reflect on the data collected via the audio transcription. Once the audio recordings of the interviews and focus groups were transcribed, I utilized the digital research tool Dedoose. This allowed me to create a password protected account, create primary and sub-codes, upload each interview and focus group, and then code participant turns or segments that aligned with the meaning of specified codes. A total of 16 primary codes captured the four research questions and seven ISTE Standards and addressed areas of concerns or perceived gaps in practice that had not been accounted for in the original questions. A total of nine sub-codes helped flesh out meaning-making as it related to teacher and student mindsets, behaviors, or experiences within the larger context of ISTE Standards, specific research questions,
and/or focused on specific CRT application. Appendix F is a table of Dedoose Data Analysis of TPACK-CRT Code Co-Occurrences, which captures the coding system used to analyze the qualitative data and extract emerging themes. This approach was guided by the literature on CRT and how other scholars have operationalized their qualitative process in other instruments. This process helped me identify themes across individual teacher and student data collection points and apply open coding for any emerging themes that were not already constructed prior to the data collection.

Given that I was unable to utilize an external peer researcher to support data triangulation, I was able to utilize the memo feature of Dedoose (Appendix G). This practice allowed me to create digital memos during my coding analysis of interviews and focus groups. The memos included rhetorical questions that emerged during my review of data, reflective statements regarding specific participant statements, and initial connections between participant statements that I would identify while analyzing. These memos helped create additional sub-codes as certain similar experiences began to trend, while other memos helped flesh out my own interpretation of the data. The memos were also complemented by member checks with the teacher participants that opted to participate in this. This Memos were utilized as a form of collective interpretation to review preliminary meaning constructions that I had developed with the teacher participants post-observation interview. Ladson-Billings (2009), engaged her participants in collective interpretation and analysis during her 1984 study of the eight culturally relevant teachers featured in *Dream Keepers*. This was done as a way for educators to be reflective of their practice, which is a benefit to the participant, helps resolve any misconceptions made by the researcher, and explains nuances that may have been
overlooked and were actually rich data points (Ladson-Billings, 2009). I provided this opportunity to all participants to increase credibility of results and respect the contributions of my participants. However, only three of the participants engaged in this practice.

Lastly, I used the Culturally Responsive Mindsets and Behaviors for Teachers tool (Appendix E). I did not fill this out for teachers; instead, I gave this to teachers as post-interview task that allowed them to self-report the significance of these CRT mindsets and behaviors to their practice. These evaluative statements are aligned with Ladson-Billings (2009), five dimensions of mindsets and behaviors that are demonstrated by CRT educators. This analysis tool assisted me in understanding teachers’ CRT application within their own teaching philosophies and the types of mindsets they operate with when educating students of diverse backgrounds. This mindset and behavior analysis assisted in contextualizing the larger data sets by grouping teachers with similar mindsets and identifying trends among the participant population and middle school community.

Lastly, for the student focus groups, I used Dedoose to code the audio transcription. However, for the artifacts from the two gallery walks, during which students used colored Post-It notes to record their answers and post them in the respective categories (Appendix H), I transferred all Post-Its to two Google Docs, one for each grade-specific focus group. Then I assessed for trends in student reporting based on types of technologies used, activities and tasks assigned through the Google Classroom platform, types of multimedia projects students were exposed to, and any evidence of youth cultural referents applied during learning. This information was leveraged in
Chapter 4 to answer research questions about student perception and response to teacher technology integration and CRT application and clarify teacher reporting from interviews to make connections and identify themes.

**Study Limitations and Revisions**

In most studies, researchers encounter limitations and/or are presented with challenges that require adaptations to take place in an effort for the study of inquiry to continue. In my study, limited time, strict population parameters, and my positionality added uniqueness to the study. In order to address my proximity to the teacher participants, as their colleague and as a school-based instructional coach, I sought ways to be evaluative of only the classroom observations they selected me to participate in. I had them share lesson plans and/or summaries of the lesson I was going to visit and any prior day activities to help provide context. By being aware of those specific elements of their practice, I was able to probe during the interview surrounding context they may have overlooked in providing me, which in turn allowed me to manage the interview better. Additionally, since my professional background included technology education, my keen sense of the content area and in-depth technology knowledge gave me an expert perspective to help sift out non-exemplars while also still being critical of examples teachers attempted to offer.

I had originally intended to utilize an external peer observer to help with reliability and interobserver and coder agreement as part of the data collection and analysis (Creswell & Poth, 2018). However, due to school restrictions I was unable to bring in an external peer. To counter this, I did engage in memo-writing as part of the analysis of interviews and focus groups and attempted to include member checks with
some of the teacher participants. Although it is evident that the results of the study will not be generalizable, they will provide insight and deeper perspective on whether technology as a youth cultural component can be leveraged by educators for both instruction and relationship building within the classroom.

Lastly, given the vast amount of qualitative data that was collected through classroom observations, interviews, and student focus groups, I had to adapt my plans to use partially ordered meta-matrices as my data analysis tool. My original intent to use meta-matrices would have allowed me to include all relevant data from all individual data collection points when comparing and contrasting individual sets against one another (Miles et al., 2020. I had planned to divide the large data sets and then cluster data based on similarities and aligned with my variables of interest. This process, however, had to be adapted to a digital tool, which resulted in me using Dedoose to engage in similar analysis. Such tools are commonly used by researchers engaging in qualitative research, especially in studies using categorical data types.
CHAPTER 4

RESULTS AND DISCUSSION

Introduction

The purpose of this study was to examine Culturally Relevant Teaching as it relates to how teachers harness the principles of this framework through different technology mediums as a means to leverage a youth cultural referent for various classroom purposes. The current CRT construct is grounded in how the educator builds cultural competence and leverages it in relation to ethnic and cultural affiliation. However, this study has embarked on expanding that construct to include youth cultural competence, which allows for an unpacking of how youth culture is defined in terms of membership and the essential activities or experiences of the group. Hence, the focus on technology use by both teacher and student is at the center of this study given its relative importance to the main population being focused on in this study, which are youth.

By exploring the world of middle school teachers and their students, the hope was that a better understanding of their leveraging of technology in their classrooms for what purposes, reasons, and to what extent, would help unearth phenomena and/or make connections between the CRT practices these teachers integrated and their comprehension of youth cultural elements. Technology therefore serves as the common denominator between both teacher and student in this study. However, understanding the dynamics of use, application and rationale of this medium are the realities this study is hoping to expose through the multiple data points collected.
Q1: To What Extent, in What Ways and to What Purposes do Teachers Integrate Technology into Their Teaching Practice?

Good Intentions & Buy-Ins

In examining the interviews across the 10 teachers, a recurring theme emerged, which was that teachers demonstrated an awareness of youth culture but their cultural competence in this area was superficial for the majority of the educators. The common trending topics that they “dabbled in” throughout their classes were social media, music, movies (e.g., Disney, Marvel), societal concerns (e.g., LGBTQ, recycling/Earth preservation), home life, and geographical commonalities, in terms of Philadelphia neighborhood pride. Some teachers delved deeper into these topics by not only integrating them into the daily warm-up activities, but also by allowing these topics to permeate the classroom daily discussions and content-based assessments. Such efforts showed good intentions by the teachers to demonstrate to students that they were aware of their youth cultural elements and nostalgia; however, much of what was expressed used such youth cultural elements as a “hook” to reel students interests in but was not always a sustaining factor throughout their lessons and/or classroom environment.

For example, the Social Studies teacher demonstrated a strong passion for the Marvel franchise, which was expressed through his classroom decor that included posters, figurines, and other movie paraphernalia. In discussing how he leveraged movies and multimedia showings into the classroom he shared the following:

Jessica: Okay. In any ever reference to youth culture.
John: Me?
Jessica: Yeah. I mean, I noticed that you have a lot of Marvel and different characters-
John: Yes.
Jessica: ... around the room, but ever pull anything like that into your lessons or make references?
John: That's a good question. Sometimes yes.
Jessica: Okay. I only asked that just because I'm like, [inaudible 00:09:48] Marvel. But just looking over everything.
John: You know what I do use a lot? I'll use a lot of movie references, or TV shows, and I'll ask them if they have seen a scene of a particular movie or a TV show where an event occurred that might help them understand what we're talking about. I don't specifically go after Marvel movies or anything like that, but I do use a lot of movie references.
Jessica: Now, you just talk about them or do you ever show a video clip or anything like that?
John: You know what? I don't show a lot of video clips. I suppose, some of these movies, they shouldn't be watching. No, I shouldn't say that. I would never reference the movie I know that they can't watch.

It was evident that the teacher possessed a considerable amount of knowledge of TV shows and movies that would overlap with student interests. However, the integration of such topics and multimedia resources in order to connect to students and/or make content connections was restricted to classroom décor and was seen as an entry point for leveraging youth cultural referents into the daily learning.

While it is understood not all movies are school appropriate, there is enough movie content in the world that could lend itself to a social studies class to reel students in, capture their attention, build their interest in the learning topic or tasks and make them buy-in into the learning experience. From Avengers to Gladiators, the opportunity to show clips, dissect them for their educational value, and help activate a point of reference relevant to their youth cultural interests was a potential opportunity in this classroom. This would have extended the good intentions of the teacher beyond the superficial allusions to these movies and moved onto to the intentional integration of this youth
cultural element into the learning environment, to activate sustainable buy-in.

At the other end of the spectrum, the 6th grade ELA teacher expressed youth cultural awareness at a higher level. This demonstrated her interest to go beyond the random youth cultural connections and make a larger investment in wanting to understand the student culture and its elements while also celebrating its value in the learning environment.

Jessica: In just thinking of this lesson in particular where you were having the students type their story and it was about heroes or villains, how do you feel this lesson either connected or leveraged the students backgrounds and interests?
Madison: This is the second time that I've done this sort of narrative. I find that, especially with sixth grade, they need an avenue to go down. We decided that we wanted them to write a narrative to apply the skills from our fiction unit, and I didn't feel like this specific group I could say, "Pick any topic or write about anything." So Amy and I kind of discussed and decided that let's give them something specific like a superhero/villain story, which we know is very popular amongst our kids with all the new Marvel movies. That connection to them, I think they were excited about it, especially starting with showing the videos where they got to see some of that, some clips from new movies or the connection to the Disney movies, that really excited them.
Madison: They still had a lot of freedom as far as, I think you were talking to some of them, some of the superheroes were just somebody who stood up to a bully. We had that discussion like, "You don't have to write a story about somebody who can fly. You're not a superhero just because you have a superpower. Maybe your superpower is being a great friend or standing up to a bully." Although we gave them this avenue of thinking about a superhero or villain, we did let them kind of decide on their own what makes a superhero, a superhero, and what makes a villain, a villain.
Jessica: So it sounds like they had some level of autonomy throughout the project.
Madison: Oh yeah, most definitely.

During this exchange, the teacher recognized that a cultural reference point among the youth in her class is movies. Therefore, to create buy-in from students for the unit summative writing assessment, the teacher first introduced movie clips at the start of the
lesson to introduce the writing assessment and set the tone. However, this youth cultural referent was also sustained by allowing students to integrate this theme into their writing by exploring the dynamics of superheroes and villains as part of the assessment theme.

The same teacher also demonstrates awareness of another youth cultural element, social media. The following example highlights her application and purpose for the instructional moves she engaged in for the superhero-villain writing project.

Jessica: Well, I'm hoping that I can come back and be a part of that lesson. That sounds pretty dynamic. I think you kind of touched on it a little bit, about youth culture, by you bringing for this current assignment with the Marvel movies and the theme of hero and villains. Any other references that you do where you bring in youth culture, whether it's social media or other aspects of youth culture?

Madison: I try to do that any little way that I can. For example, when we started talking about dialogue for this past unit, we were talking about speaker tags, we talked about what it means to tag people in a post or tag people in a photo. We did kind of a whole introductory lesson on what that means, whether you're tagging somebody in a quote, or a picture, or an experience, or whatever that is. Then we kind of tied that into, okay now how do we do that in our writing. I think just little ways, and sometimes it's not anything that's even planned, but just on the fly, here's a connection that we can make.

Madison: Sometimes the kids even do it for me. They're like, "Oh, Ms. Madison, that's like that YouTube video that everybody is watching, or that TikTok," or whatever. I do a lot as well with when we talk about figurative language and sensory language. We talk about song lyrics and we do a whole two day lesson on figurative language in song lyrics where the students are able to pick any song of their choice, as long as it's not completely inappropriate, they do have to get it approved, but then they actually dive into that, the language of that artist. And really we're practicing figurative language, but they're also thinking about what's the message of the story, why did this rapper choose this specific language, what does that tell us about them. Maybe now you can do some background research as to learn more about them and maybe why they chose to use this language instead of this language.

Here the ELA teacher shows how she has engaged in in-depth exploration of the social media dynamics as it relates to tagging followers in social media posts in order to paint a
picture students can relate to in terms of literary devices. Such references were not just
done in that moment but revisited over the multiple days of the lesson to sustain student
buy-in. This demonstrates that the reference to social media was not just a good intention
effort, but an intentional effort to weave this youth cultural referent throughout the
learning experience to give students a learning reference point relative to their youth
cultural background.

However, such efforts to call upon youth cultural knowledge was not limited to
the core subjects. In the specialty courses that were more interdisciplinary, teachers also
exhibited good intentions to have student buy-in for the learning experiences. Some even
integrated youth culture as a consistent theme in their courses to give students autonomy
and power to choose topics relative to youth interests and concerns, while others were
intentional in allowing students’ background play center stage in a project or assignment.

The Middle School Music and Journalism teacher exhibited these intentions.

Jessica: Any other interesting topics? Anything that relate to like youth
culture, things that might be trending right now?
Gene: Well, we do a presentation earlier, on a social issue. Okay. They
can pick whatever social issue they want. And, that had a lot of personal,
you could tell they all made it personal. [inaudible 00:07:23] whether it
was a women's rights, whether it was LGBTQ rights, and there's a lot of
different stuff there. Recycling is always a big one. Clean water was one.
Jessica: Now, how much does that expose youth culture, like your class in
terms of like, your exposure to music and journalism, and how does that
bring up the topic of youth culture, or expose elements of youth culture?
Gene: I try to make as connection as I can from the music that, especially
in the music class of, the music of the 60s, 70s and 80s of how it's affected
and shaped and influenced the music that they listen to today. I try to
make the connection as well as I can. And, I try to show them as much as I
can when we talk about Tupac, or Run-DMC, or anybody else from them
is, I try to make the connection of how Tupac has influenced PnB Rock, or
how he has influenced Kendrick Lamar to stuff that they would know. I
tried to introduce as much music as I possibly can, and music they've not
heard of, so they can make a connection in today's music.
Jessica: When you say their culture, which culture are you referring to?
Gene: It could be their home life, their family life. There's a couple of kids on their midterms, who they did their family as the topic for the mid term. [Amani 00:14:44] and [Sandra 00:14:44] they both to their family. They said, here's my grandparents. This is where my grandparents came from. Willow talked about her grandfather who was in the Vietnam war. And, Sandra k talked about her family, how her parents met. So, all the kids in the class learned about the kids, which was actually really cool because, the kids all turned to Willow afterwards, and were asking her about how she got her name, and how she, you know, it was really cool. So, there's a connection there.

The Music and Journalism teacher was intentional in his efforts to leverage students' background to unveil additional dimension of youth culture, such family dynamics, musical choices, personal interests, and overall preferences. Similar good intentions were also exhibited by the Middle School Green Architecture and Environmental Science Teacher. She regularly had students designing prototypes from basic to complex layouts based on personal style or home experiences. However, to prepare them for their larger projects she had them work on smaller segments one at a time, meaning room-by-room.

During the bedroom and furniture segment prototype build, she allowed students to bring pictures or pieces of their home bedrooms to school to help inspire them. This exchange shares additional details on what she did and the purpose behind this instructional move.

Jessica: And anything about youth culture that you ever bring in?
Judith: Youth culture in respect to what? Their age and...
Jessica: However you define youth culture.
Judith: I often ask them to come back with things that they themselves have experienced. So, when we talked about what does your bedroom look like, how does your bedroom differ from somebody else's that you know, like a friend or a family member, and what their likes and dislikes are about architecture. Some people think that glass windows and a lot of metal is very cold, and having a house with big, comfy furniture is more of a friendly atmosphere.
Jessica: So Judith, thank you for sharing with me on the project. So furniture project, they're using Google Slides Google Draw. So, how, in this project, is student background and student voice incorporated?
Judith: So, student background and student voice so shouldn't background. A lot of things I noticed is sometimes the students bring a piece of their own viewpoint into the furniture project. I had students that, they really like bean bag chairs but they wanted to design their own that wasn't round and circular. They had one in their house, they made it look more like a chair, like almost the cushions off of a chair, and put them together that way, and made them look like pillows that were actually sewn together, and not just one individual giant circle filled with beanbag pods. And you said student...

Jessica: Voice.

Judith Voice. So, after they do their project and make their drawing of it, and they actually create it using found objects either in the room or stuff they bring in, they have to do a small presentation on it and tell why they chose that project, how the whole process went about occurring, things that went well, things that did not go well, how they might change their ideas for the future and if they could see them actually selling this to a client or somebody who would be interested in the future.

It is evident that this teacher valued students having a say or voice in their learning, including design and implementation of the learning tasks. Judith alluded to how the students were willing to share about themselves and/or bring a piece of their lives into the classroom during the multiple projects. Such trust is needed between student and teacher for students to be willing to share not only with the teacher but also the classroom community. It was evident that the behaviors of the music and interdisciplinary science teacher were not one-time efforts or activities but were evidence of intentionality by the educators to allow the students’ youth background to shine through in the classroom community and individual learning experiences.

These three examples demonstrate the wide range of youth cultural competence in the middle school, given that the remaining teacher participants fell somewhere in between these individuals. It was evident that the majority of teachers saw the value in making youth cultural references to either hook students in or pique their interest. However, there was not consistent integration of these referents that supported
sustainable student buy-in to the use of various youth cultural referents during learning episodes.

Furthermore, during focus groups, the students provided complementary feedback regarding teachers’ good intentions and sporadic attempts to integrate youth preferences and/or interests. These student exchanges highlight the student perspective of how teachers recognize their background and/or youth culture, in addition to how these elements are able to be exposed or integrated into the classroom. During the 6th–7th grade focus group two students shared the following insight.

Jessica: Any other ways that you want to share about how you be able to express yourself in a project, show off who you are. Be creative?...
Jasmine: Last semester in my technology class, every once in a while our teacher would give us a warm up and asking us how our day went and that would give us a chance to express if our day was or not good.
Jessica: Thank you for sharing. Anything you would change about that experience?
Jasmine: No.
Jessica: Okay. Anything else about your background in terms of who you are. Do you think teachers could... Jasmine?
Brianna: I think that we should learn more about different cultures or ethnicity backgrounds.

Here the students expressed the good intention efforts of a teacher to include warm-up exercises that sought to get to know them and allow for sharing of self, but it was highlighted as a “once in a while” activity. Furthermore, the second student expressed wanting to know more about other backgrounds during their learning experiences. During each focus group discussion, student participants engaged in two activities. It was evident that students were aware of their teacher’s attempt to learn about them, but also recognized there was still missing components in their learning experience as it related to making the learning culturally relevant.
Additionally, during the focus group students participated in a gallery walk task where they individually reported out on post-it notes on four types of technology application they might engage in within their classrooms: communication, product development, information, access, expression. Table 3 highlights student responses under the expression category, where they reported on teachers’ efforts to incorporate their background and other youth cultural elements.

Table 4

*Focus Group Examples of Expression-type Technology Experiences*

<table>
<thead>
<tr>
<th>6th–7th Grade Focus Group</th>
<th>8th Grade Focus Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>• How to find grammar mistakes on Memories by Adam Levine</td>
<td>• 8th grade I can change my profile picture on gmail to let people know who I am</td>
</tr>
<tr>
<td>• Music- I was able to create a song online on Garage Band as my expression</td>
<td>• I have been able to personalize my school laptop background</td>
</tr>
<tr>
<td>• ELA- When we have to write a paragraph about something that we don’t like show I feel on my face</td>
<td>• Designing my slides or presentations how I would like them</td>
</tr>
<tr>
<td>• Career Exposure- learning about business</td>
<td>• When the school gives us surveys on how we feel about the school</td>
</tr>
<tr>
<td>• I have my own personal cite where I share problems in the world and I spend time thinking of actual good solutions</td>
<td>• Instagram people describe who they are and many people from school put NFCS and the year they graduate</td>
</tr>
<tr>
<td>• Cheer team, Orchestra, HEAT, Student Council</td>
<td></td>
</tr>
<tr>
<td>• ELA- For a warm up I was able to express my feelings in an online journal</td>
<td></td>
</tr>
<tr>
<td>• Art- We used technology to express our creativity via ipads</td>
<td></td>
</tr>
<tr>
<td>• ELA- In ELA because we write essays and we do creative writing in there sometimes</td>
<td></td>
</tr>
<tr>
<td>• Music- For my music class for making a song</td>
<td></td>
</tr>
<tr>
<td>• ELA- Grammarly in ELA because we all got to write what we want (6th)</td>
<td></td>
</tr>
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Most of the 6th–7th grade feedback took place in two types of classes, ELA or specialty,
connected to specific content and/or projects. The majority of 8th graders, however, shared youth cultural elements being integrated at a macro level with efforts being made by the school to gain youth interests, involvement and buy-in on specific initiatives. Although the students could give instances where their youth cultural referents were integrated, their examples were reserved to the same types of educators amplified earlier, which were ELA and specialty teachers. These teacher sub-groups were seen also by students as being at the higher end of the spectrum for good intention and consistent integration of youth culture.

Overall, the middle school teachers through many of their projects, classroom routines and procedures exhibited good intentions to learn about their students’ backgrounds and highlight youth cultural referents during lessons. However, being able to harness youth cultural competence in the classroom requires a deeper understanding and awareness of youth cultural referents in order to be intentional in its integration into the learning environment. Ladson-Billings (2009) asserts cultural competence is not just about cultural awareness, but also about celebrating and appreciating the culture an individual is seeking to become competent in. This means the teacher must dig deeper by altering their practitioner mindset as it relates to respecting the role of youth culture and understanding the elements that construct any culture, which make youth culture unique and valuable.

It is evident that students are eager and willing to share parts of their youth identity with their community of learners, they just need the space and support. Similar sentiments were expressed by the Spanish Teacher Isabella, about having students being able to bring parts of themselves into the class helps “...students celebrate and appreciate
their culture while also gaining knowledge of other cultures”. Therefore, the various middle school teachers’ recognition of the multifaceted components of student culture such as family life, musical preference, beliefs, interests, and passions all demonstrate their awareness of the various dimensions of student’s youth culture. However, there is evidence that more in-depth development of youth culture competence is still needed for this to completely permeate the teachers’ classrooms, mindsets, and overall instructional practices.

Q2: To What Extent, in What Ways and to What Purposes do Teachers Integrate Technology into Their Teaching Practice?

Classroom Management Conveniences

The focus of the second question was to unearth the many ways teachers used technology and the reasons behind their use and integration of various technology tools and platforms into their classrooms, daily routines, and instructional design. In essence, this was to help understand whether technology was being leveraged in a way that “spoke” to the cultural needs of youth culture, given that technology is such a huge element of the current youth cultural community. However, the common theme shared among teachers regarding their rationale for using technology was that of teacher-centered conveniences as it relates to classroom management. Secondly, some teachers shared the new opportunities available to them due to increased technology access, which included student project autonomy and creative expression, while only a few expounded on the academic added value of some technologies as it relates to content and curriculum benefits. Since classroom management conveniences were emerging, that is where the
first set of examinations will begin.

Almost every middle school teacher, regardless of if they were core content and/or specialty teachers, discussed the ease of managing their classrooms as a result of having access to the learning management system Google Classroom. Teachers shared that its enabled features of immediate sharing, being able to provide 24-hour access of content materials to students, accurate record of student work, and multiple pathways to communicate to students about their courses were just some of the many abilities the technology platform provided them. Three teachers in particular, the Middle School Math and two Social Studies teachers shared insights on how Google Classroom has changed their interactions with students in terms of communication outlets and disseminating information.

The MS Math Teacher shared:

Jessica: In terms of the One-to-One Laptop Program, for Google Classroom particularly, how has that been helpful as a management tool and an instructional tool?
Sean: It's made a lot of things very easy. Whereas before it was either type in this link or I would've had to email each student individually, I can just post it into Google Classroom and you saw, they were all there in five seconds. It's made it a lot easier to instantly share links, videos, notes, anything that I have to share with my class.
Sean: A few years ago before that, I was using a tiny URL a lot so that they didn't have to type in whole 50 character web address. I don't have to use that anymore. You can just share it to Google Classroom. It's made a lot of things more convenient communicating with parents too.

Eighth Grade Social Studies Teacher John shared the advantages in his class due to the implementation of Google Classroom:

Jessica: Okay, so these standards that you highlighted, it seems like there's different things that students are exposed to. In reflecting on technology overall, how has technology use provided any added value to
your instruction?

John: Oh, I think it has. Absolutely. Is that what you're asking?

Jessica: Mm-hmm (affirmative). If yes, in what ways?

John: Well, communication. The fact that I can assign something and regardless of whether a student is here or not, they still get that information. It makes the communication world so much easier. I don't have to worry about printing out instructional rubrics. I can share them. Saving the world, saving the planet one tree at a time [inaudible 00:26:54] Right. Yeah, I can share out what I want them to learn. I could share out my unit, all my stuff. So, if a student is not here on a particular day, they still have it. Because I share out my entire unit at the beginning. Here it is. It's all here. So, if you miss a day, you still have it.

John: So, definitely and communication-wise, announcing tests, quiz dates, project dates, all of that stuff. Now, to be honest, it took a while to get used to it, though. It took a while to remember to do it that way. And so, one of the things I did was that was going back when Google Classroom started, and we had a website. Remember when we had websites we used to do?

Jessica: Yeah.

The experiences of these two teachers touches upon defining element of technology.

Spector (2016) asserts that a defining element of technology is that it “… makes possible affordances or opportunities to do a specific task or engage in a particular experience” (p. 5). This characteristic of technology is being maximized by the middle school teachers.

However, an additional defining element of technology that Spector (2016) references, is that technology “embraces the element of “change” meaning “Technology changes what people do and what they can do” (p. 5). Capitalizing on this defining feature and its benefits is captured by several teachers during the interview when discussing the change in giving student feedback. The 6th and 7th Grade Social Studies Teacher also shared additional affordances in terms of student feedback management and general benefits due to using Google Classroom as well.

Jessica: Has technology use provided any added value to your instruction? And if so, in what ways?

Janet: Technology has definitely ease in paperwork, because its a lot less
I have to physically collect. The feedback part is really good...there just isn’t the time to sit down with every single student, and say, and go over every single part of the project. So like last year when we had Foundations [a class], and I taught the whole grade and I did a TDA and it was electronically so the whole simple part of making the comments on the Google Doc, because I was not going to have the time to talk to all 79 kids about their essay. And I always tell them if you don’t understand a comment you need more to explain that, I was able to do that...I can come and I will explain it. They are just getting so much more tech savvy, like I just really want to give them other means for expression and its allowed me to bring things in, and even just the simple act of documentaries and post to Google Classroom, if they want to watch it again.

These sentiments expressed by Janet about the ease of student feedback was a recurring benefit shared by the teachers across the middle school. One of the 8th Grade ELA teachers shared similar sentiments about being able to give “real time” feedback to students as a way to manage their productivity and address student’s management of the learning process:

Jessica: Then how has Google Classroom helped with instruction?
Jaime: A way Google Classroom has helped me with my instruction is it allows me to provide feedback more privately. If I see a student's distracted and I know they should be on a Google document, I can easily load up that document and see what they’re typing and either add comments, address it across my whole class because it's a theme, or really praise the ones who are doing the right thing.
Jessica: It sounds like you have different ... Throughout what I'm hearing so far is that it's like you're experiencing different levels of feedback that you're able to give.

Similar benefits to providing digital feedback through the platform is also reinforced in the specialty classes as well. As stated before, teachers embraced how Google Classroom changed what it meant to give timely and direct feedback, by posting digital comments on online assignments and using comment features within the Google Classroom system.

Another convenience of having access to the Google Apps for Education Suite was the opportunity to allow teachers to digitize assignments that were once limited to
pencil and paper. The Middle School Art Teacher explained:

**Jessica:** Right. So Emily, in particular about you were talking about the student using the one-to-one laptop program, my questions now have to do with that. What non-digital activities did you use to do that you now do digitally because of the program?

**Agatha:** The essay was always done on paper. For students who needed accommodations, I used to give them the third grade version, which was a graphic organizer and they would just fill in words. A word for what you did, a word for how you felt, a word for what you did. I would have to do that. Then for some kids, I would just print it off without it saying third grade on it. Because they would feel a certain way about having it accommodated down and having it say third grade.

**Agatha:** Some kids are just like, oh, okay, I get to grab that one. But now I'm able to accommodate in a way that's a lot easier. I can give them feedback while they're in process. I always tell them I peek on it while you're working on it and then give you feedback. If they didn't do it right or there was some things wrong, I can return it to them and then they can keep working on the same one rather than having to rewrite it all. Which in the past if they did the essay wrong, they'd have to rewrite it. Now they can just go to the line that they missed something and add things in.

Her ability to adapt learning tasks for students and insert feedback into the student’s live Google Doc she assigned via the Google Classroom platform proved to be a game changer for her classroom management and her instructional delivery. The Music Teacher identified that Google Classroom is a game changer for him as well.

**Jessica:** In what ways has Google Classroom been helpful either as hand or as a management tool, or an instructional tool.

**Gene:** Management more than anything. Management.

**Jessica:** In what way?

**Gene:** When I ask kids their opinions on stuff, about what they want in the class.

**Jessica:** And, how does that... It would be done through Google Classroom?

**Gene:** Make a poll on there. Write down what you want to do, write down, you know. It's helped with, here's the topic for tonight, here's... When we do interviews, especially for the journalism class, when we do interviews, the kids always just ask me, "Wait, what questions do we have to do again?" Because, they didn't write it down. And, I'd put it on Google cloud service, you have to have this. So, if they interview a family
member, there's five questions there, they've to hit on. Putting on a Google Classroom allows them to, when they invariably forget it, to go on there and they'll remember the questions.

The Music Teacher also reflects on the teaching days of when pen and paper in some instances slowed down the ability to get certain classroom management tasks completed more efficiently and limited quick student insight on learning activities. However, the added value of Google Classroom to his classroom management and that of his peers is evident and trending across the middle school team.

Yet, in all of these exchanges and observations, the middle school teachers barely touched upon the third defining element of technology, the “...practical application of knowledge for a purpose” (Spector, 2016, p. 5). This means that the technology’s integration provides an opportunity for knowledge to be extracted and applied for a specific purpose that is greater than the original purpose when technology was not applied. This type of affordance could have been actualized if a teacher had developed an interactive digital graphic organizer that had embedded external links to help students explore content from various primary and secondary sources. In this instance technological knowledge is being applied to access learning, and the purpose of the technology integration is being leveraged to extract knowledge from resources. However, this type of affordances outlined by Spector (2016) is not a dominant benefit of technology integration shared by the middle school teachers.

**Emerging Technology Leaders and Opportunities for Teacher Exploration**

Although a common trend that emerged from the data was teacher-centered technology conveniences, there were some outliers in the sense that some teachers began to integrate other technology tools to support classroom management, student
engagement and build added value to content delivery. This emerging theme exposed how some teachers within specific content areas/departments took risks to try out new technology tools, utilized different websites than their peers for instruction, and designed digitally-infused assignments in order to shift the benefits from teacher-centered to more student-centered when it came to technology integration. My examination of this unique theme is captured during different interviews and included teachers beginning to use more diverse technology-infused classroom management tools as well as others who engaged in app-smashing activities. App-smashing is when educators layer multiple technology tools to maximize user outputs and build-in more student-centered benefits into their lessons. when using technology.

Examples of these instructional risk takers begin with the Middle School Spanish Teacher. She used a Web 2.0 website to assist in altering her classroom management style to provide more opportunity for students to participate and meet new peers. She shared why she uses a Web 2.0 tool called Flippity to support managing her class:

Jessica: Thanks for letting me be a student. And so jumping right into just thinking about your lesson, can you describe how you used technology in today's lesson and why you made those choices? So if you want to kind of explain to me how you used technology maybe on Friday in the lesson before and then how that might have changed, or was that the same as today?

Isabella: Basically the same. I use Flippity to assign seats to the students as we were coming back from the holiday, and I feel that every time we come back there should be some kind of change. They have asked, can we change seats, so there's a seating chart in Flippity.com and I just use that to arrange their seating.

Jessica: So you kind of talked about Flippity. Now, have you used that just with this class or with all your classes?

Isabella: The classes I see more regularly, so seventh and eighth grade classes. I plan to use it with sixth graders is well because I feel that it really helps with the spinner.

Jessica: And then seeing…
Isabella: Like calling their name, and when it comes to grouping them up, like groups of two, groups of three. I feel that with junior high, having them choose their partner is not always the best, so I feel that.

Jessica: No, really?

Isabella: And then if I say, "You are with this person," then it becomes an argument. Whereas with Flippity, they can clearly see their names in a wheel as groups of two, groups of three, and this is just generating the groups. But groups of two.

Jessica: Oh, I might have to borrow this.

By using the Flippity Web 2.0 tool, Isabella was able to be more diplomatic in her cold calling while also allowing for flexible grouping. While in some ways the tool serves as a teacher convenience, it begins to transition into a student-centered benefit because the students can see the spinner move in live time on who will be called on, and the teacher is being transparent about her decision-making process of selecting respondents, assigning groups, and helping them meet new people when working together. Such efforts by the Spanish Teacher reinforce the defining characteristics of technology in addition to explaining the purpose and rationale for why some teachers integrate technology into their daily teaching practice.

Moving past the classroom management affordances, another teacher began to leverage the Google Classroom platform as a way to increase student accountability and allow her students to move through the instructional tasks at their own pace. The Middle School 6th Grade ELA Teacher that explains the classroom management conveniences she has taken advantage of with her 6th grade students:

Jessica: So that's the management side, how about instructionally? I guess you can speak more to eighth grade, how has Google Classroom impacted your instruction?

Madison: I use it for a couple of things. One, all of our notes are digital now, I think I mentioned that yesterday. I find that it's easier to keep things organized, it's easier to hold them accountable as to whether or not they turned something in or they completed an assignment on Google
Classroom versus handing something in to my bin system, so it's helped in that way. I am able to post videos. I like to make my notes sometimes interactive, especially if it's a day that I'm absent. I'll plan for everything to be through their laptop. So they go in, they can see the agenda just like a normal day if I were here, and then they can move through the lecture or the notes, watch the videos that are embedded, and then submit their assignment for the day directly into Google Classroom. Kind of like an online course for the day or a few days.

**Madison:** And I think that I've seen a lot more... This is a discussion that we've had as a middle school team, when we give them something to do, even yesterday the lesson that you saw, they knew that they had four or five things on that computer. So although they get distracted sometimes and there's some chattiness, when they know "I have all of these things that I need to do and it's all right here, I can kind of move at my own pace," I think that that does motivate them instead of me handing out the first handout or the first activity for them to do, and then finishing that and then collecting it, and then giving them the next thing.

Although the tasks explained by the teacher during her class sessions provided the teacher with specific conveniences allowing her to plan in advance and disseminate assignments more efficiently, it also encouraged students to become self-motivated to manage their time and individual learning tasks. As discussed in the literature review, the youth community values opportunities to engage in independent activity, allowed to have a certain level of autonomy over their life in order to make things come to fruition for themselves, and be encouraged to self-advocate (Scales et al., 2010)). The efforts of the ELA 6th grade teacher integrated such youth culture values in both the integration of technology and purpose of technology use. Furthermore, her approach to using technology to encourage student accountability also freed her up to work the room and support all students. Once again, we gradually see different teachers moving beyond the teacher-centered benefits, to transition to more added-value experiences for students by leveraging technology in different ways.

I noticed a few next level efforts made by certain teachers to go beyond just
leveraging technology for routine changes and classroom management revamping. Some teachers were looking to give students a new entry point to their learning experiences and alter how they approached certain learning tasks to better grasp concepts and make sense of what they were being taught. In my interview with the Middle School ELA Teacher for 7th and 8th, she shared the following.

Jessica: That kind of talks about some of the things that benefits to you. Any instructional value in terms of what it gives to the students in their instruction, like the delivery of it?

Alice: I feel like there's more opportunities for them to manipulate and interpret the content in different ways. Sometimes if I start out with a concept map on the board, I can take a picture, upload it, and they can still reference it. For my Google slideshow, sometimes I'll leave it open ended with examples and then type out those examples with students so that they can personalize it. Then with other websites like Padlet where they can see and compare with their peers, that often motivates them to either elevate their understanding or find new examples because they already see what's being used.

Alice’s purpose for engaging in app-smashing when using Google Slides and Padlet during the same lesson was to allow students to collaborate with her in order to build knowledge and examples for future reference. Furthermore, Alice confirms that her use of Padlet was not an isolated experience but that she found value in using it in different ways. Alice shared the benefits and value of the digital tool:

Jessica: In talking directly about the lesson today, I saw you use a variety of different technology. I'm just going to mention a couple, if you can kind of share with me why you chose to use that technology and its impact on the lesson. The first thing I saw you use was Padlet.

Alice: That's correct. Padlet I've used a few other times. One time was for an activity center, another time was for an exit ticket, but I like it because it allows students to see student feedback, but it's a little more sleek than posting a Google classroom discussion. The other element about it is it can utilize some other websites. If they found a link or a picture and they wanted to include it, it's a lot easier to show on a Padlet.

Jessica: Basically, it has some versatility?

Alice: That's correct.
Alice’s actions demonstrate her comfortability with branching off from the basic amenities of Google Classroom. Additionally, it showcases her understanding of the various Web 2.0 tools’ value in terms of instructional delivery, knowledge construction, and student application. Furthermore, her intentional use of such Web 2.0 tools also demonstrates her ability to incorporate the ISTE (2016) Standards for Students, most specifically opportunities for students to use technology to become knowledge constructors and empowered learners.

Similar moves were also made by Judith, the Middle School Environmental Science and Green Architecture Teacher, given that she leaned towards integrating new educational technologies into her classroom in an effort to use technology for student manipulation and benefit. She shared how moving away from print versions of engineering notebooks and allowing students to take advantage of the Google Draw app enhanced her students’ work output and quality:

Jessica: …Okay. And so, are you not using the Project Lead The Way notebooks this year?
Judith: No, we used it the first half of the year, semester one, and I noticed a lot of kids were struggling with it.
Jessica: Okay.
Judith: Just drawing in general and keeping track of it and where they're at and the dimensions of things. And after doing a couple of furniture designs with them in Google Drawing, I saw that they were more successful with that. So, I wanted to try and switch it for this half of the semester and see if it helped out students who are a little more drawing challenged, to use shapes that are already there through Google Drawing, and kind of pull them and flip them where they need them.
Jessica: All right.
Judith: And I noticed that, like I said, in the furniture project, the first half of the year, the kids had more success with it than just sitting there and trying to draw the shapes on their own in the book.
Jessica: Okay. Thank you for sharing that information. So, I noticed during the lesson, when they were using Google Draw for the activity, the
students use this to do the compare and contrast with the inserting of the images and then designing it with the shapes. What do you plan on doing with that artifact that they created today?

**Judith:** So, the artifact fact they created today is going to be kind of used as a visual reference for them. So, when they’re doing their actual tiny house design, they have a reference to refer back to, and have it as a resource, so that, if they don't remember right off the cuff, they can go back and they can check their notes.

**Judith:** So, like I said, we did doors and windows one day. Today we did bathrooms and kitchens. So, when they designed their kitchen and bathroom, they have a reference sheet or a resource to go back to and use. I like to build on things and make sure that they always have some kind of study guide or information that they can go back to and not just be like, "Help me, help me, help me.

Such impact on the learning experience was not only seen as valuable by Judith as the instructor, but also by the students in her class that participated in the focus group. In having the opportunity to choose any project to share during the focus group, one student chose Judith’s class and referenced the same project during this discussion portion of the focus group.

**Jessica:** All right, thank you for sharing. Go ahead.

**Chelsea:** So the project that I decided to use was something from the architecture and I think that’s about close to being an innovative designer because we were [inaudible 00:24:16] a furniture piece and it was a question like what is the difference between your furniture designing your prototype?

**Jessica:** Okay.

**Chelsea:** So we have to create our design and then we created our prototype and then we also put our dementias and our teacher asks us questions and we had to answer them on the... Right.

**Jessica:** And now what app did you use to design this?

**Chelsea:** Google drawings.

**Jessica:** Google drawings.

**Jessica:** Now does this teacher allow you to do that a lot? Like use this app a lot in that class?

**Chelsea:** Yes.

The student affirms that the teacher regularly uses Google Draw, and another student in the focus group that took Judith’s class prior to that semester also confirmed the project
and the ease of learning the green architecture basics by using the Google Draw app. Although using such an app provides advantages for the teacher in terms of creating adaptable templates and having the ease to assign individual copies via Google Classroom, the ultimate win in this endeavor is the ability to offer added value to the students as a result of using the technology tool. Furthermore, this teacher is also integration the ISTE Standards for Students by allowing them to engage in technology-infused experiences that reinforces being an innovative designer.

Providing students with digital reference resources, building student’s digital literacy skills by using various editing tools within an educational technology, and allowing them to construct their own learning artifacts are all actions that demonstrate the process of leveraging technology for multiple learning benefits. Such a shift is necessary if the goal is that these teachers’ efforts not just serve as the exception within the school community, but rather become the norm within this middle school team of teachers. By the data unearthing the benefit of teachers being digitally fluent beyond the basic educational tools (i.e. Google Classroom and Google Docs), and the positive impact such actions can have on technology-infused student experiences, this encourages for such skill set development for other teachers. It must be understood that digital fluency is not restricted to just understanding technology use but extends to having a “…deep understanding of digital environments, enabling intuitive adaptation to new contexts and co-creation of content with others” (Consortium for School Networking, 2017, p. 4).

Therefore, technology integration for teachers must not be driven by convenience to their classroom management needs, but include actions related to offering well-rounded instructional design and delivery. Therefore, I see benefit to these emerging teacher-
leaders with high digital fluency and advanced TPACK levels being used to support their peer’s development and expanded use of technology in the classroom. This in turn could result in more consistent technology-infused experiences across the middle school environment. If this is prioritized, then teachers can see the benefits and understand the rationale behind integrating technology into their teaching practice at higher levels and for more consistent amounts of time.

Content Knowledge (CK)

While the data did expose these emerging technology leaders in the middle school that were more progressive in their technology integration efforts, overall, teachers exhibited varying degrees of TPACK management. Some teachers exhibited proficiency in content knowledge and general pedagogical knowledge but not mastery in pedagogical content knowledge, which is the art of understanding and applying teaching strategies relevant and specific to their trained content area. Being unable to go beyond pedagogical content knowledge makes it challenging for a teacher to leverage technology knowledge to advance content knowledge and use it as a pedagogical added value.

Through their self-reporting in the TPACK Teacher Questionnaire, content knowledge is what the majority of all teachers learned in their teacher preparation programs. This is the knowledge related to the given subject matter being taught. Many teachers showed passion for their subject matter and what they hoped students would learn from them about it. The following excerpts show elements of strong Content Knowledge across disciplines. The 8th Grade ELA Teacher recounted her instructional approach to teaching the literary device of illusion in the context of an assigned fictional text and the technology infused summative assessment she assigned.
Jessica: If we can shift focus to the technology project that you wanted, the artifact, is that something you're going to send to me?
Jaime: I can send it to you and I show it you.
Jessica: Show you. Okay.
Jaime: Yeah. The project, would you like me to introduce it?
Jessica: Sure, I'm ready.
Jaime: The project is called Illusions, Illusions Everywhere and as you can see-
Jessica: It's for ELA or for?
Jaime: This is for ELA.
Jessica: Okay.
Jaime: Students were asked to take four literary illusions from the novel we're reading.
Jessica: Fahrenheit 451?
Jaime: Students were asked to take four literary illusions from the novel we're reading.
Jessica: Fahrenheit 451?
Jaime: You got it. Their goal is to, or their challenge was to, create a Google Slides presentation. One slide for each illusion, and there were four. Each illusion had the page number listed so they could see the context for what was said. The first one was a salamander, second was a phoenix, third was Dante as in Dante Alighieri, and four was Uncle Tom's Cabin. These were statements made by characters in the book.
Jaime: Their first job was to explain the cultural or historical reference listed in their own words. Secondly, they needed to discuss what meaning Bradbury was trying to communicate to us, his readers, by using this reference. Then third, their task was to include any websites or resources they consulted. I made sure to add that any work copied and copied ... more than three words in a row verbatim ... should be put in quotation marks. Any instances of plagiarism will not be accepted. Then to write in complete sentences, to read their work for errors, and that there was a three to five sentence expectations for each illusion.
Jaime: Students made different designs. Some of them picked out pictures. Some of them, this one is a little less than snazzy, but some people-
Jessica: I mean, they were supposed to explain the illusion?
Jaime: Yeah. Their goal was to ... It wasn't a long project. It was just part of a class period in homework. Why did Bradbury allude to this thing and what meaning was he trying to communicate to us by referring to it? Students did research and were able to find out that salamanders come from old mythology. There was an idea that salamanders could survive fire. If students could put together that there was a reason that salamanders were stitched onto the fireproof coats of the firemen in this community. Whereas before they thought it was like a logo lizard, right?
Jessica: Yeah.
Jaime: And the phoenix, right? There's reference to a phoenix. At the end of the book, the students don't know this yet, but the setting is going to be completely bombed, but the kids don't know yet. Montag, thank you, don't tell. Montag and his new found community are going to walk into the ashes and start a new utopia where people are allowed to think for the first time, so they don't know.

Jessica: That connects to the rise of the phoenix?

Jaime: That's right, from the ashes. Then Dante, they get to think about Dante Alighieri's work on hell and fire. Without knowing who Dante is, they overlook, they pass, right? The problem with illusions, if you don't know the context, you miss the meaning meant for you. If Bradbury makes an illusion to Dante and the kids don't know who Dante is or what he's known for, they miss the whole point of the message that Bradbury was trying to hint at for them.

Jaime: And then *Uncle Tom's Cabin*, one of the main characters, Beatty says that one of the ways they've numbed the masses is to get rid of anything that offends anyone or creates controversy. One of the quotes is, "White people don't like *Uncle Tom's Cabin*? Burn it. Black people don't like Little Black Sambo? Burn it. Cat lovers don't like things about dogs? Burn it. Baptist don't like things about Presbyterians? Burn it." Until you have such a sterilized society that there's really no texture or controversy to even talk about. But the kids don't know what *Uncle Tom's Cabin* is, so they don't know until they research why white people might not like *Uncle Tom's Cabin*.

In addition to this teacher’s demonstration of in-depth content knowledge, the 7th Grade Social Studies teacher also expressed a firm understanding of her content as it pertained to the Industrial Revolution, labor strikes and union developments over time.

Jessica: Can you describe how you used technology in today’s lesson and why you choose to use it in that way?

Janet: The current unit is Industrial Revolution and the lesson they have been working on for the week is a supplemental topic looking at unsung heroes of the Industrial Revolution such as Tesla. Technology was used by having students submit the do now online via Google Classroom…Sometimes I grade and sometimes I don’t. I had students identify terms and match the people, creates a study guide, started off on paper first and then move to the computer. I use Google Classroom for ease and tracking.

Jessica: How do you plan on using technology moving forward in this unit/lesson? And why?

Janet: This current lesson was a breakaway from the lesson on corporations, because inventors like Tesla and Edison are still closely
related to the Industrial Revolution. However, I have done the same thing with the topic of Labor Unions/Strikes, and we have used technology resources like 1x-2x CNN clips or discuss student-interests current events, that go beyond social media news.

This firm understanding of content is essential in developing TPACK, because the goal is to not allow the content material to be lost when technology tools and platforms are integrated, but rather support deeper learning because of the educational tools being integrated into the learning process.

**Pedagogical Knowledge (PK)**

Once an educator has mastered content, they must couple that with an in-depth knowledge of various teaching methods and practitioner best practices (e.g. classroom management, lesson planning, differentiation, scaffolding). For most educators they receive this training first through teacher preparation programs and then by engaging in experiential learning and ongoing professional development. During my classroom visits I observed teachers display best practices as it relates to classroom management such as demonstrating established routines, having procedures for students to follow to find assignments when absent, locating supplemental resources in the classroom, and handling specific behaviors. Student engagement ranged from basic think-pair-share activities to flexible grouping dynamics for content reviews and test preparation.

While some teachers exuded stronger classroom management styles than others, the majority of the teachers students showed respect for the classroom environment and were compliant even if this did not translate to authentic engagement and participation.

However, for those that had strong pedagogical knowledge, the teachers had become more of a facilitator of learning, and the classrooms were student-driven in terms
of learning task management and accountability. The teachers in those instances were aware of their students’ needs and were able to keep that in mind when designing their daily instruction and adapting during instructional delivery. Additionally, they could explain rationale and benefit of their pedagogical moves. The Middle School Art Teacher exemplified this when explaining Digital Exploration Days and how she managed students’ learning as they worked independently on their digital art portfolios.

**Agatha:** But most of their last class was them finishing their project. But they’ll use the computers to find images and do inspiration images, and they’ll use it to look up videos for how to draw things, and an artist will do research to compile their ideas.

**Jessica:** Okay. So can you kind of explain to me what are you planning on doing with the artifacts that they created today? They have the daily log, the essay, and the Google Form.

**Agatha:** So all of those items are graded, and then they go into their digital portfolio that they have at the end of the class, which will also be available for them to help write their artist statements for their show. They have a show in May where they have to present all their artwork. These components are really helpful for them to reflect back and remember what they did back in September.

**Jessica:** Okay. Do you regularly use all of these tools?

**Agatha:** Like I said, I use them for each unit, and then they use their computers daily in the class to look up images, to do research, to watch YouTube videos on how to do procedures, how to draw videos. They’ll even use it to listen to music as they’re working to help put them in the right mindset.

**Jessica:** So they're allowed to listen to music?

**Agatha:** They are allowed to listen to music. I find it actually makes a much quieter classroom because the students who need the noise are able to give it to themselves.

**Jessica:** So in what ways did your lesson today relate to your students' background and interests?

**Agatha:** It gives them the opportunity to work in a way that best works for them. Some kids need silence, some kids needs noise. It also scaffolds for students that need IEP. Some students don't do the essay, they just do the daily log because essays are extremely hard for them. But they can still express themselves using the graphic organizer and can still get their ideas and get everything down that they need to complete their end of year. Then there are other kids that need practice writing essays for their
standardized tests and other components of other classes, so this gives them another chance to practice their essay skills.

The art teacher utilized various review formats such as reference sheets and tutorials to support attending to student learning styles while also be flexible in adapting student assignments based on their IEP goals or accommodations. Furthermore, she applied best practices in terms of balancing their learning experiences with performance-based assignments in terms of a digital art portfolio with writing exercises through their artist statements. It was evident during her classroom observations and during our interview that she had keen pedagogical knowledge within the larger context of her instruction.

In addition to the Middle School Art Teacher, the Green Architecture Teacher was also capable of planning her instructional delivery to include routine experiences as well as using instructional best practices to deliver content and help students connect to the concepts being taught. She reviewed some of the instructional moves and rationale from the lesson I observed:

**Jessica:** All right, Judith, thank you for letting me come into your class today. Green Architecture with seventh grade students. It was a pleasure to be a fly on the wall and just get a chance to see you in action. I wanted to start our conversation off with, can you describe how you used technology in today’s lesson and why you chose to use it in that particular way?

**Judith:** First of all, it's a pleasure having you, Jessica. I like to reinforce a lot of things with my students. First, we usually start with an opening activity of a recall session. Sometimes there'll be an opening question that's in Google Classroom. Sometimes it'll just be a quick talk, depending on what they learned last time, and kind of like a refresher before we move on to see where everybody's at, and on the same page.

It is evident that both teachers were in tune with their students’ learning styles and how to design the learning environment. Having such strong pedagogical content knowledge can
positively affect students’ learning while also supporting students’ level of engagement and interest in the content being taught.

**Pedagogical Content Knowledge (PCK)**

Typically, pedagogical best practices relevant to a teacher’s content is learned during their pre-service experience and/or through targeted professional development. However, understanding which instructional moves and strategies are most appropriate is necessary in order for educators to communicate key elements of their content, unpack specific academic standards, and help students connect to their specific content in meaningful ways. During my observations I noticed trends among similar clusters of content areas related to the type of PCK teachers displayed. The Science, Math, and Technology teachers started their lessons with problem-oriented warm-ups that allowed for productive struggle to pique student interests. When assigning summative assessments, this same group of teachers assigned project-based learning activities and multi-tiered individual tests. Social Studies and ELA teachers resorted to open-ended discussion posts to start their classes off and hook students’ interest, integrated small group activities or centers for classwork, and individual writing tasks (e.g. journaling) and mini writing projects for summative assessments. Many of the similarities in teachers’ pedagogical approaches stemmed from team and/or departmental unit planning and/or collaboration. It was also common for teachers to share pedagogical content knowledge because of teaching a subject within the same content cluster, such as Science and Technology being in the STEM cluster and ELA and Social Studies being in the Humanities.
However, during the student focus group, students did not communicate unique strategies and/or experiences that proved to be content specific. Additionally, they rarely highlighted being fully engaged by the aforementioned learning experiences that I observed and discussed with teachers. Notes from the gallery walk debrief highlighted students’ feedback on how teachers could engage better with specific content. The students shared they wished more teachers would use different approaches to maintain their interest during class, understand their strengths and weaknesses and how it impacts their learning, and teach them the different content areas in ways that connect to their interests and lives outside of school.

*Technology Knowledge (TK)*

While PCK presents an area for teacher growth in the middle school environment, so does the dimension of Technology Knowledge (TK). During observations and interviews, there was a wide range of TK among the middle school teachers. This relates to their awareness of relevant and trending tools, understanding of affordances that technological resources provide the learning environment, and knowing when it is appropriate to integrate specific tools. In essence, TK is relative to a person’s knowledge of both standard and advanced technologies (e.g. Blackboard, multimedia applications, Web 2.0 tools word processing) in order to use and apply them for a range of purposes.

Using Google Forms to administer quizzes and tests, Google Docs for basic word processing tasks like typing an essay, and Google Slides to present information such as lecture notes were common Google Apps for Education activities that the majority of middle school teachers used daily for both delivering content to students and collecting learning artifacts. Some teachers had daily Google Slides presentation to serve as their
running agendas through which they shared with students the daily objective, content
goals and expected learning activities of the day. Many teachers expanded on their use of
Google Slides by creating interactive notes, which involved some pre-planning on the
teacher’s side. This means the teachers built their lecture note slide deck first and then
created a similar version that had fill-in the blank sections and/or textboxes for students
to add additional notes that showed their building on the knowledge provided by the
teacher or opportunities to express their understanding by answering built-in reflection
questions.

The following two teachers shared how they utilize Google Slides and/or Google
Docs for either a classroom management purpose or student learning artifact. The first
excerpt relates to classroom management.

Jessica: Okay. Then for Google Slides, I saw you use it for the agenda, do
you used Google Slides in any other kind of way?
Madison: I use Google Slides for all of my notes. We do mostly notes for
the grammar portion of the block, so I have six grammar units that break
down all of the language standards. In each Google Slide, each unit, there
are slides that have interactive notes. What I do is I project them on the
board, but I also print them three to a page with room for notes, and that's
how my kids take grammar notes and do grammar practice, is always
through Google Slides.
Jessica: Now are you only doing this for sixth grade?
Madison: Eighth grade as well.
Jessica: Eighth grade. Now do you print theirs out too, or do you-
Madison: I do.
Jessica: Okay. Now do they have the option to type them in to Google
Docs?
Madison: They do, yes. They have a grammar section in Google
Classroom where they can access them as well, so they do have the option.
For my eighth graders specifically it is an interventional level class and a
lot of them benefit from paper and pencil, they're easily distracted by the
technology I think sometimes, so there are days where I say, “We're
teaching gerunds, they're already difficult enough, let's put the laptops
away and try paper and pencil today.” But there are times where they do
use the technology for notes.
Jessica: Okay. All right, so you offer them both options in the eighth grade.

Madison: Yep.

This ELA teacher provides student choice in terms of how they record grammar notes—whether it is Google Slides or Google Docs—even though she delivers the information through Google Slides. It is evident this teacher is aware of specific tools that lend themselves best to word processing and easy manipulation by users, which are both considerations that demonstrate strong TK. However, the Green Architecture Teacher takes it a step further and uses a variety of Web 2.0 tools in one lesson. She exposes students to research-based activities using various search engines and has students use Google Slides to organize their extracted online information in addition to using more advanced Google Apps for Education like Google Draw to demonstrate their learning of architecture principles through digital drawing.

Jessica: Yeah, I can imagine. Now, I'm going to let you hold onto that packet and we're going to touch in different ways about those topics. I also have a mindset document. It takes those three principles and flushes them out to statements. I'm going to give this to you now. However, just hold onto it, and after the interview, take some time to fill it out and you can just put it in my mailbox. So, we're going to move on to talk about technology infused project. I mentioned in my email for you to either bring or be prepared to talk about one particular project. Can you describe that project to me that you selected?

Judith: So, the project that we're going to infuse a lot with technology is their furniture project, which, after the tiny house research and design we go into, the students look up different furniture from different eras from, the 60s up until now, the present time. And they kind of pick out things that they like, things they don't like, and then they have to submit some ideas for at least three to four items on Google Slides, and a list of materials using a text box on a slide and some pictures of research items that they would use to build their project.

Judith: And then, after discussing with their table members and myself, they're going to finally decide on a final project, submit a final slide, what they've decided on. And then they will be doing a Google Drawing to draw it out using different shapes and colors. And once again, have a
project list of materials and a list of sizes, and then they will finally start to do their project.

Judith is aware of Google Draw’s amenities and user purpose, thus leveraging it for optimal student use. Outside of the GAFE tools, middle school teachers shared some additional Web 2.0 tools and web-based programs they used for content review, classroom engagement and student data collection. This included Kahoot, Quizlets, individual WebQuests, and Padlet. While these technologies shared by teachers demonstrated a basic to developing level of TK, students reported during focus groups that they felt teachers had a more basic level of TK. During the focus group students shared their perception of teachers’ use and understanding of computers, smart phones, and social media. Students felt that specialty teachers like Journalism and Technology knew of social media and its purpose more than their content areas. However, when it came to students assessing teachers’ awareness of common advanced technologies, 8th grade student Selena student shared, “…I think they are not knowledgeable, not very,” when speaking about teachers’ awareness of smartphones. It was evident that the students were able to list the same technology tools I observed in the classroom and discussed in teacher interviews. However, the students did not feel the current efforts of their teachers to apply TK was completely engaging even though the efforts still presented better alternatives to writing work out by hand. Although they appreciated the conveniences afforded by the increased technology access, they still desired their teachers to offer more opportunities to use and engage with technology resources, particularly at the advanced level.
Technological Pedagogical Knowledge (TPK)

The difference between Technology Knowledge (TK) and Technological Pedagogical Knowledge (TPK) is that this is the knowledge of the different technologies that are used for teaching in a specific setting and/or for a specific purpose and to understand the impact on instruction. This can translate into knowing the difference between LMS’s and their benefit to specific learning environments. In the middle school, the middle school community used Google Classroom for assignment delivery and assignment feedback, while in the high school, students transitioned to Canvas for their LMS due to the added features that provided more post-secondary amenities that high school students need exposure to. Some of the middle school teachers were able to explicitly state that their selection of certain Web 2.0 tools and integration of specific tools were based on the needs of students (e.g., academic levels, grade level maturity) in a particular setting or based on a specific content goal. Technology that teachers integrated in their classes relative to content included Pearson Realize, IXL and Desmos for Math courses, and CommonLit, Newsela and Padlet for ELA. These types of educational technologies are in the moderate to advanced technology resources. The Social Studies Teachers for 7th and 8th graders stayed at a basic level, only using GAPE tools like Google Slides and Google Docs. The Social Studies teacher for 8th grade had just recently adopted Newsela in his classes after being introduced to the tool by their colleague, whom had been using it for months prior.

To understand the tool selection based on content affordances, I asked teachers about the types of tools they have used, typically use and why. Therefore, when
interviewing one of the ELA teachers she shared with me on why Padlet served as a viable Web 2.0 tool in her ELA class.

**Jessica:** In talking directly about the lesson today, I saw you use a variety of different technology. I'm just going to mention a couple, if you can kind of share with me why you chose to use that technology and its impact on the lesson. The first thing I saw you use was Padlet.

**Alice:** That's correct. Padlet I've used a few other times. One time was for an activity center, another time was for an exit ticket, but I like it because it allows students to see student feedback, but it's a little more sleek than posting a Google classroom discussion. The other element about it is it can utilize some other websites. If they found a link or a picture and they wanted to include it, it's a lot easier to show on a Padlet.

**Jessica:** Basically, it has some versatility?

**Alice:** That's correct.

However, in specialty courses like Technology, Green Architecture, Art and Journalism, it was evident that TPK was beyond the surface level, and the teachers had made efforts to learn new technologies to increase the added value for student learning and overall positive impact to their class experiences. During the 6th–7th grade focus group, two students share how having student choice was an appreciated element during two project-based learning experiences. The first student talked about a business plan project he completed with a teacher in an extracurricular activity, and the second student discussed her Green Architecture class. The experience of her teacher using Google Draw helped her overall learning and project mapping.

**Jessica:** Oh my goodness! All right. And our last one is product development you guys. So opportunities where you've been able to create content knowledge, projects or resources. You now you guys all have the one on one laptops, any opportunities? Aiden and then Emma.

**Casey:** Well so far as development, over the summer [inaudible 00:13:01] and makeup like... You and a couple other group mates wanted to help some kids that were kind of in [inaudible 00:13:18] so you're kind of drawn with the make up something that helps those kids. So me and my group made this kind of... I guess you could pick up this center where you could go and basically the parents drop off their kids and basically it's kind
of like a focus group but...

Jessica: So you guys developed a plan?
Casey: Yes.
Jessica: All right. So you developed a plan over the summer with some other students and this was a school based experience.
Casey: Mm-hmm (affirmative).
Jessica: And the goal was that you guys made something to serve a need for other students. What kind of technology did you use?
Casey: Oh we use laptops, because they actually made us look over how much it would cost to market that program or something.
Jessica: Okay. Did you have to do any research? And if so, where did you go for your research?
Casey: We just Googled websites that we could use the local phone and we use that.
Jessica: Okay. All right. Thank you for sharing. Anything that you want to change about that?
Casey: If we could choose what we would have wanted to do instead of one specific thing.
Jessica: Okay. All right. Thank you for sharing. Anything that you want to change about that [referring to the previous project discussed]?
Casey: If we could choose what we would have wanted to do instead of one specific thing.
Jessica: All right, so having choice in your topic. Oh thank you for sharing. I see something that you guys wrote about science projects, math projects. Can you guys share a little bit for me or the tiny house project in green architecture? I'm not aware of what these means so can you elaborate and share, Lisa?
Lisa: [inaudible 00:15:00] architecture it was our first week there and the teachers said that we were going to create a house with shoe boxes and before doing that we had to map out what we were going to plant in the structure on grid paper and then we actually went on to Google drawings and created a diagram.

The teacher elaborated on this same project, explaining her rationale behind using Google Draw and why it was impactful to teach the smaller concepts for Green Architecture.

Jessica: Okay. Thank you for sharing that information. So, I noticed during the lesson, when they were using Google Draw for the activity, the students use this to do the compare and contrast with the inserting of the images and then designing it with the shapes. What do you plan on doing with that artifact that they created today?
Judith: So, the article fact they created today is going to be kind of used as a visual reference for them. So, when they're doing their actual tiny house design, they have a reference to refer back to, and have it as a
resource, so that, if they don't remember right off the cuff, they can go back and they can check their notes.

**Judith:** So, like I said, we did doors and windows one day. Today we did bathrooms and kitchens. So, when they designed their kitchen and bathroom, they have a reference sheet or a resource to go back to and use. I like to build on things and make sure that they always have some kind of study guide or information that they can go back to and not just be like, "Help me, help me, help me."

**Jessica:** And do you regularly use Google Draw?

**Judith:** So, this is the first time I used it with... Actually no, this is the second time I used it with these students. I regularly use it in other courses that I have, environmental science and in the previous green architecture class, for the first semester, and then in some technology classes as well.

**Jessica:** And why did you select particularly Google Draw?

**Judith:** It gives a lot more flexibility. If you try and insert a picture into Google documents, it has to be inline with the text or break the text, or above or below the text. In Google Drawing you can overlap text and images and add shapes and other items onto it, and it's a lot more user friendly, and more forgiving for students who aren't used to having to manipulate Google documents.

It is evident that Judith was intentional, thoughtful, and mindful of her educational technology choice to meet learning objectives and support student learning preferences. The Art Teacher also made it clear that she did not resort to only using pre-made resources found on Google but instead adapted resources. This was done by using video editing software and even personalized videos to offer multimedia resources to support student understanding of art techniques through digital tutorials. This interview excerpt exposes her rationale for such actions.

**Jessica:** Moving forward for your next lesson, how do you plan on using technology?

**Agatha:** In the next lesson we will be watching PowerPoints and videos that I've edited using iMovie and YouTube on art history. I have condensed art history into themes. They'll take notes from the PowerPoints and the videos, and then based on what they've learned about those pieces of art and the theme of storytelling, they'll develop their own projects. Again, they'll use the technology for inspiration images, looking up tutorials, color schemes, then they will also do the same reflection pieces afterwards.
Such efforts by the specialty teachers to advance their own TPK to meet the needs of the learning settings was common across their classroom observations, interviews and even during student focus group sharing. Although these teachers did not make up the majority, it did show that there was potential within the middle school teachers for this level of TPK to be increased if peer training was encouraged and/or specialty teachers mentored core content teachers to help advance their Technological Pedagogical Knowledge.

**Technological Pedagogical Content Knowledge (TPACK)**

In reaching the pinnacle of the model, Technological Pedagogical Content Knowledge is when educators have fully embraced all components of TPACK both together and interdependent of one another. If an educator can understand the intersection between technology, content, and pedagogical knowledge to strategically connect them together to offer a meaningful technology-infused learning experience, then they are becoming a strong TPACK educator. Furthermore, according to Koehler et.al (2011) and Polly (2011c), teachers with a progressive knowledge base of this intersection also integrate technology in a more effective way than their colleagues (as cited in Polly, 2014). However, possessing such a skill set takes a growth mindset towards technology use, commitment to authentic integration, and consistent practice and use.

It was evident that there were middle school teachers that were not completely at this point but approaching this level. Although students were unable to dig deep and fully articulate during the focus groups to help identify TPACK-oriented teachers, the classroom observations did reveal which teachers were emerging as TPACK educators.
Two educators that were approaching full TPACK-level of instruction were Agatha the Art Teacher and Alice the ELA Teacher of 8th grade students only. The Art Teacher had recently secured funding with the support of the Technology Teacher to pilot the integration of a new app into her class. The Procreate app was used to teach a myriad of art concepts as part of a larger project-based learning assignment. In her explanation of the project elements, she was able to communicate the app components and its role in the learning process and art content learning goals.

Jessica: So can you just give me a brief description of the digital art?
Agatha: Well, it's an upcoming project, and we'll be using the Procreate app to help students learn multiple level thinking skills, because they have to think several steps ahead and it's using layers. So it's kind of like painting on layers of glass so that you can see, you can move, you can turn things around. Having to think in that way helps them with their higher level thinking skills. It's kind of like asking a kid to do a complicated puzzle in art.

She not only possessed a strong understanding of her content, but she also recognized the pedagogical moves she needed to make while using the app in order to teach the intended concepts, and how the selected app would help students access the concepts and demonstrate their learning. The same can be said of the 8th grade ELA Teacher, who shared how she went beyond the basic use of Google Forms but adapted it to collect qualitative data for her instructional design, student learning, and to help students self-manage their learning journey to support their content comprehension process.

Jessica: Then outside of Google Slides, I also saw that you utilized Google Forms. Can you speak to your choice to use Google Forms for the partner activity?
Alice: Yeah. I had mentioned that our novel is Fahrenheit 451. Something new I'm trying this year is having students build their own notes while they read to boost comprehension. They had two separate graphic organizers that were available on print as well as electronically. A few students prefer the traditional method of writing in their notebooks, and
then a few others have started utilizing sticky notes. Ultimately the Google Form that was used today was for partners to swap notes, compare, and then summarize what their partners are using in terms of their note taking.

**Jessica:** Okay. Would you say that using Google Forms had a dual purpose?

**Alice:** Yeah, definitely anytime I use a Google Form it’s for collecting information. Typically that data I use to drive either reteaching, follow up with individual students who might be lacking in effort, or developing trends among students. If I notice that a lot of students are typing electronically, then I can enhance some of the skills there, whereas if students are still working electronically, we can utilize some other tools if they ever decide to go beyond that.

**Jessica:** Then, so you kind of speak to like the fact that with the Google Forms you’re able to use what they create as a way to reteach. With the Padlet, what are your plans to do with that data?

**Alice:** I always do Fridays for activity centers. Ultimately, between Monday and Thursday I have a variety of ELA concepts to review, and then Fridays are either for application activities, extension activities, or I often incorporate a catch up section. Every so often I like providing students a platform for giving ideas, because if there’s something already in my framework of ideas that I know they want to do, I would prioritize it. Then every so often I happen to get a new idea. One such example that evolved from the Padlet today was students are doing homework options and two students asked if they can do a Padlet as their homework activity. Had I never offered up that option, it would have stifled their learning, but now they have something that they’re invested in trying out.

**Jessica:** Oh, that just happened today.

**Alice:** Yeah.

Such efforts on the part of the ELA teacher to utilize Google Forms in a variety of ways demonstrated her understanding of the tool but also its impact on learning and delivering content. She was aware that her design and delivery had to be well planned, which shows her keen sense of pedagogical knowledge to support such an intentional instructional move. During the observation of this in her class, she operated more as a facilitator of learning for much of the class, which allowed her to circulate the room and provide targeted support to her students since her choice of technology integration was used both for classroom management and learning support. The same could be said of the Art
Teacher; after her guided instruction, students were given space to manage their learning based on the built-in classroom routines using technology tools and devices. This allowed her to circulate the room and gave her an opportunity to provide mini re-teach lessons on Procreate features and address student questions regarding content and app use needs.

**The Absence of Consistent Opportunities for Student Technology Choice and Autonomy**

In many of the aforementioned examples, it was evident that technology tool selection was made primarily by the teachers. There was some autonomy given when it came to note-taking tasks, where students could choose between digital or non-digital outputs; however, that was the extent to which choice was given. During my discussions with teachers, opportunities for student choice were integrated as it related to content-based activities and particular assignments such as choice boards or improvising rubric expectations. However, students were not regularly given freedom to explore alternative types of technology application to diversify the types of learning expression and/or product development. Instead, the exposure and/or application of technology tools and platforms were managed by the teacher, based on their comfort level, exposure, willingness to advance their Technology Knowledge and/or overall Technological Pedagogical Content Knowledge level.

As addressed in the literature review, being able to leverage youth cultural elements, such as technology, which is of extrinsic value, is not enough, but there are intrinsic youth cultural values that are also essential and meaningful to the classroom. The intrinsic cultural elements may include values related to having opportunities for student voice to be heard and valued, presenting them with choices, and building
relationships with them to show care and support. These extrinsic youth values can be manifested in the classroom by providing students space to learn and use technology (basic and emerging) across content areas, a chance to produce their own content or artifacts, and express themselves openly, and opportunity to explore parts of their individual identity within the context of a specific assignment. Being able to incorporate such youth values requires the teacher to be intentional in their integration of a specific pedagogical framework and mindset that understands the intersectionality between content, technology, and student needs. Okojie et al., (2006) affirmed that having a strong connection between pedagogy and technology is necessary, and coupling this with youth cultural elements like choice can serve as a meaningful learning experience for students (as cited in Kolb, 2017, p. 10).

During the focus group it was evident students were interested in having these types of experiences where their voices were valued through choice of assignment output, technology choice, and topic selection. To understand what type of technology-infused activities they believed highlighted student voices in the classroom, I asked students to identify the ISTE Standards for Students they thought captured these sentiments. They reported on the following standards.

- ISTE 7-Global Communicator
- ISTE 6-Creative Communicator
- ISTE 4-Innovative Designer
- ISTE 1- Empowered Learner

Much of their reasoning was based on these standards and their associated anchors that
encouraged technology-infused tasks and/or activities that provided space for student choice and voice. Many of the students felt that these standards would allow for the showcasing of diverse peer perspectives, individual expression, and sharing of ideas with peers, which seemed like a trending interest across both focus groups. However, such experiences, according to students, were not regularly offered when it came to selecting specific tools to present their work or demonstrate their unique understanding of the learning.

Instead, autonomy was given to students in terms of content-specific assignment requirements. Examples of this included allowing students to select which illusions they would highlight in their Fahrenheit 451 project or which musical beats they would select for their inspiration during their music class’ Garage Band project. Essentially, this is an area of growth in terms of how student choice could be woven throughout the learning process and enhanced overall in order to help with content access, show respect towards youth cultural values, and provide value added technology integration. However, this would require teacher commitment to increasing their TPACK, leveraging the ISTE Standards for Students, especially those that prioritize student voice, seeing students as having keen technology knowledge, and leveraging their expertise within the learning environment.
Q3: To What Extent are Teachers Leveraging Technology as an Element of Youth Culture to Build Relationships with Their Students?

Making Connections Between Youth Cultural Needs and a CRT Mindset

The literature review demonstrated that the rationale behind a teacher’s pedagogical mindset, instructional framework, and daily moves is complex and multifaceted. Teachers must balance teaching their content, applying the associated tools to help access content (digital and non-digital), and the various student needs in order to build an environment of learning for everyone. However, such efforts typically cannot be done without a strong sense of classroom community, which is built on the relationships teachers cultivate with their students.

As discussed previously, Ladson-Billings (1994) asserted that educators need to find connections between their background and their students as part of learning how to integrate students’ “cultural referents to impart knowledge, skills, and attitudes” (as cited in Aronson and Laughter, 2016, p. 165). This is seen as essential to the process of building relationships, creating communities of care, and developing culturally relevant learning experiences (Ladson-Billings, 2009). As expressed in the literature review, this is all a part of building and demonstrating multidimensional caring and ensuring it permeates the learning environment, both physically and instructionally, which in turn feeds into engaging in culturally relevant educator behaviors and mindsets. For some educators, showing care can translate to the instructional moves they make such as promoting student autonomy in learning experiences, including youth current events to help contextualize a content focus, and integrating social media components to demonstrate to students you are aware of their culture and interests. On a personal
relationship level, teacher care can increase students’ willingness to complete learning activities and feel supported by their teacher to subscribe and/or engage in high achievement behaviors (Walker, 1993). Exhibiting such care for students communicates to a student that their teacher’s definition of success is inclusive of all parts of their background as well as individualized.

However, the “how” or process behind showing care and building student relationships has always been left to varying interpretation. The how-factor in this study reflected how teachers demonstrated care towards their students, how they specifically built relationships within their own learning environments, and how this care was exhibited with and without technology tools. In my interviews with teachers, focus group discussions with students, and observation of classrooms, I was able to explore the how and the why. In most instances when technology was used as the vehicle to support relationship building between teacher-students, it was not always done as a primary thought, but rather out of teacher convenience and/or comfortability with a specific tool. However, most teachers appreciated the payoff when technology was used as the vehicle to learn about their students and teach their content. Therefore, my examples demonstrate how relationships were built in the middle school with and without technology and the type of caring it infused into the learning environments overall.

Building Relationships without Technology, Learning Who You Teach and Creating a Sense of Belonging

Developing care for someone or a group of people does not happen overnight. It takes commitment, consistency, and intentionality. Overall, the majority of the middle school teachers demonstrated such efforts to develop intentional ways to get to know
their students and committed to doing this daily or weekly through learning tasks or socio-emotional activities. Essentially, these consistent efforts created a sense of belonging in most classrooms that stimulated the bond between teacher-student, student-student, or both. These efforts manifested in different ways based on the content area and comfort of the teacher. Some of the examples included:

- An ELA Teacher identifying every section of their English classes’ “book club members” and celebrating and recognizing their diverse perspectives relative to the literature explored between classes.

- Teachers leveraging the Roll Call approach for attendance, which include low-stakes topics everyone could relate to (i.e., favorite foods, movies, books) in order to have fun facts about the students.

- Having opportunities for individualized relationship building by creating artifacts like a Time Capsule Project for students to share their most precious items and reflect on them.

- Teachers utilizing the convenience of being able to communicate with students in a more timely way due to students having Google-powered emails and access to the Google Classroom platform for learning support.

While these are only a few examples of how teachers built relationships with students, it was evident that having an entry point for the student to feel as though they belonged to the classroom community was necessary. However, the extent to which teachers leverage technology as a means to build these relationships with their students was not present. From the interviews with teachers and classroom observations, there is evidence that relationships building was happening; however, there were few examples
that intentionally integrated technology to assist with building relationships across classroom stakeholders. Nevertheless, teachers were still making a concerted effort to learn about who they were teaching and how they could make the students feel a part of the learning community in various ways to build strong relationships with the students. I observed the Middle School Spanish Teacher created a safe space for her 8th grade students to practice their language skills with their peers. I witnessed students practicing their language skills as a whole group and in pairs. She expressed that students were regularly paired with one another to practice certain phrases or read in Spanish and were required to give feedback to one another on their enunciation of the words, writing composition, and application of Spanish conjugation. Her reflection on that below addresses the benefits.

**Isabella:** Yes. I mean, when they get to hear themselves and get to hear others and rooting for each other and even complimenting each other, or telling each other like, "That's okay, I was in your shoes, too. I know it feels uncomfortable." That feeling, being able to put themselves in someone else's shoes, that's huge to me.

The level of academic vulnerability she is asking them to engage in on a daily basis required a foundational level of community that she had to inspire and cultivate in order for the students to want to support one another. I witnessed students speaking in Spanish, receiving constructive feedback from a peer, applying it, and trying again. I also saw students struggling with their language fluency and the teacher coming over to them respectfully and offering support that did not single the students out but respected their struggle and assisted them appropriately. The level of trust they had with one another was evident in the observation and within her own reflection.

When visiting the English classrooms, I observed a trend of a strong bond
between teachers and their individual students. These classrooms also had a sense of community that demonstrated strong peer rapport and belonging. In the 8th Grade English Teacher’s classroom, Jaimie, the teacher, confirms the importance of getting to know the students as a teacher as a means to model care and interest in the students’ identity and personality. This is her attempt to build rapport with her students, which in turn helps her connect the students to one another based on interests, commonalities, and values. In this excerpt she speaks to why she starts her classes off with a roll call approach to attendance, which I witnessed during her classroom observation.

Jessica: Or even, like you said, with the pre-warm-up with having that question. Is that the norm in your class?
Jaimie: Mm-hmm (affirmative).
Jessica: Okay.
Jaimie: Yeah.
Jessica: Prior to the brain yoga?
Jaimie: Allowing students opportunities to be themselves and then drawing on that. Keeping that repertoire of knowledge about the kids and then pulling it out to relate to particular lessons. I can talk about the fact that this particular student really only likes Double Stuf Fed Oreos because of a roll call. I can refer to that later. It’s weird random knowledge, but you could see kids get really excited when you know that stuff. I can recite their siblings to them. They get excited when if there’s a no-name paper that I know they’re handwriting by heart. Right?

Jaimie also shared why it was important to provide space for students to talk and have their ideas and thoughts heard. This not only reaffirms how important developing a sense of belonging is to class dynamics, but also the significance in communicating a student’s value to the overall classroom community based on their presence and participation. The teacher’s roll call experience also echoes the sentiments of (Scales et. al 2010, p. 50), which asserted that adolescent relationships with adults and their peers that create interconnectedness, allow youth to discover themselves, and identify their passions. This
teacher is not only providing experiences relevant to their backgrounds, but also responding to their cultural needs to be heard and received. This is evident when she discusses classroom exchanges.

**Jaimie:** But I think babies have to talk. They have to be heard. You have to let go of control and let the class be messy. Let them share. Sometimes it means letting them roast each other a little. Let them roast each other a little bit. We have a break in class, too, and in the break we dance together. We definitely dance to Richard Simmons, which at first was like one girl who thought it was funny because it is. But now it's, I kid you not, the entire class. I was like grown black men doing Richard Simmons. I have girls who want Richard to be their boyfriend, but they don't really know that that's probably not going to work out for them. There's community in that, in being messy and laughing. In letting people make connections. Getting off track is really important. I mean, don't tell my boss that, but I think it's crucial to the culture of a class. It's like ... I don't know if that answers your question. My gosh.

**Jessica:** No, it gives me great insight to not just your practice but to your mindset and it's making connections. You not only gave me an answer, but having the examples help me to understand what you mean by some of your terms.

Ms. Jaimie’s “get messy” approach was intentional in developing a classroom dynamic where students felt they could be themselves, be vulnerable at different levels, and feel they were a part of a special community within their larger school infrastructure. As mentioned before, this sense of belonging was strongly present in classes like ELA and even the Specialty courses. These teachers had created a sense of community without depending on any specific technology tools and used basic and non-conventional classroom management techniques to do so.

However, in classes like Math and Social Studies, during my observations it was evident there was room for growth in terms of building a sense of belonging. While the teachers demonstrated care for the students’ overall success in learning the material, the display of strong student–teacher rapport was not exemplified throughout these classes.
Many of the students in these classes had a strong connection from peer-to-peer, but not as an entire class of peers or with the teachers. These teachers at times tried a few social-emotional icebreakers; however, consistent integration of community-oriented activities was not present in these courses. This exposed the need for additional collaboration with their colleagues to help in this area in order to cultivate a sense of belonging and build classroom level and individual student relationships.

**Building Relationships with Youth Culture as Priority**

As mentioned before, relationship building in a classroom is multifaceted with several options for entry. While some teachers take a “tech-less” approach, others attempt to use different student-centered approaches, which includes tapping into youth culture, one of the dominant dimensions of a student’s background. The teachers in the middle school integrated a range of youth cultural referents such as social media, music preferences, trending movie interests, youth jargon (i.e., slang) and individualized expression. These elements were leveraged in the classroom for instructional purposes and building classroom community. The degree of youth culture integration ranged from teachers using a remix of a Lil Jon song as a mnemonic learning strategy to remember the Spanish verb conjugation patterns to teachers having 7th graders completing peer-to-peer digital artwork critiques through a Google Form application. In both instances, purposely using youth cultural elements showed teachers’ interests in the students’ preferences and interests, reinforcing the effort to build a relationship with their students at varying levels. The following excerpts show examples of how teachers prioritized non-technology youth cultural elements.

The 6th grade ELA teacher developed an entire summative assessment with her
colleagues around the theme of superheroes and villains, a common interest of the youth in their classes at the time given the many movies that had recently been released in theaters such as *Avengers*, *Black Panther*, and another *Spiderman*. This interview highlights her process with her colleagues to intentionally design the narrative writing project centered around student choice and interests.

**Jessica:** In just thinking of this lesson in particular where you were having the students type their story and it was about heroes or villains, how do you feel this lesson either connected or leveraged the students’ backgrounds and interests?

**Madison:** This is the second time that I've done this sort of narrative. I find that, especially with sixth grade, they need an avenue to go down. We decided that we wanted them to write a narrative to apply the skills from our fiction unit, and I didn't feel like this specific group I could say, "Pick any topic or write about anything." So Amy and I kind of discussed and decided that let's give them something specific like a superhero/villain story, which we know is very popular amongst our kids with all the new Marvel movies. That connection to them, I think they were excited about it, especially starting with showing the videos where they got to see some of that, some clips from new movies or the connection to the Disney movies, that really excited them.

**Madison:** They still had a lot of freedom as far as I think you were talking to some of them, some of the superheroes were just somebody who stood up to a bully. We had that discussion like, "You don't have to write a story about somebody who can fly. You're not a superhero just because you have a superpower. Maybe your superpower is being a great friend or standing up to a bully." Although we gave them this avenue of thinking about a superhero or villain, we did let them kind of decide on their own what makes a superhero, a superhero, and what makes a villain, a villain.

**Jessica:** So it sounds like they had some level of autonomy throughout the project.

**Madison:** Oh yeah, most definitely.

**Jessica:** And now after this component of this, does this wrap up the unit or is there another lesson after this?

**Madison:** This is pretty much it after they turn them in. There was also a visible aspect so they had to create a visual of what their superhero or villain would look like, so that's going to be handed in along with their essay. Then they took a very brief 10 question Google Form quiz today as well, and that was again just something supplemental where they had to decide which piece of dialogue was punctuated correctly, or if we said that "her eyes were shining as brightly as the sun," then they had to know that
that was an example of figurative language. Besides that, we'll share, we'll do some peer feedback and praise, and then we'll be moving on to our next unit.

There is so much intentionality in the teacher’s designing of the instructional tasks associated with this project and its presentation to the students. Using movie clips to set the stage for the writing experience to encourage student buy-in was essential to getting students invested in the learning. It also demonstrated the level of commitment by the teacher to let the learning experience be guided by youth cultural elements of independence, autonomy, and management of their outcomes. The teacher summarizes that after the writing element of the project, students still had remaining learning tasks to assist in addressing their mastery of the content through leveraging various educational technologies such as Google Forms. This part of the interview provided evidence of how the teacher integrates student choice, designs learning tasks with youth media interests, and amplifies student voice as another example of teacher integration of youth cultural elements. This exchange also exhibits the teacher’s proficiency in Content Knowledge and Technology Knowledge, critical components with the TPACK model.

This teacher also demonstrates her openness to allow students to teach her about their culture and her ability to leverage it to connect it to the content specific skill she is teaching.

Jessica: Well, I’m hoping that I can come back and be a part of that lesson. That sounds pretty dynamic. I think you kind of touched on it a little bit, about youth culture, by you bringing for this current assignment with the Marvel movies and the theme of hero and villains. Any other references that you do where you bring in youth culture, whether it's social media or other aspects of youth culture?

Madison: I try to do that any little way that I can. For example, when we started talking about dialogue for this past unit, we were talking about speaker tags, we talked about what it means to tag people in a post or tag
people in a photo. We did kind of a whole introductory lesson on what that means, whether you’re tagging somebody in a quote, or a picture, or an experience, or whatever that is. Then we kind of tied that into, okay now how do we do that in our writing. I think just little ways, and sometimes it’s not anything that’s even planned, but just on the fly, here’s a connection that we can make.

**Madison:** Sometimes the kids even do it for me. They're like, "Oh, Ms. Madison, that's like that YouTube video that everybody is watching, or that TikTok," or whatever. I do a lot as well with when we talk about figurative language and sensory language. We talk about song lyrics and we do a whole two day lesson on figurative language in song lyrics where the students are able to pick any song of their choice, as long as it's not completely inappropriate, they do have to get it approved, but then they actually dive into that, the language of that artist. And really we're practicing figurative language, but they're also thinking about what's the message of the story, why did this rapper choose this specific language, what does that tell us about them. Maybe now you can do some background research as to learn more about them and maybe why they chose to use this language instead of this language.

Here the student made the connection between the purpose of a speaker tag and the way young people tag individuals in pictures or videos via social media. The teacher allowed the students to bring in their youth cultural connection and she continued to integrate such elements in other lessons. This not only takes planning, but also commitment to understanding the youth cultural element and intentionally integrating it into the lesson all while displaying to students that the teacher values their cultural elements. This type of prioritization of youth culture in the classroom contributes to the relationship building process between teacher and students while also benefiting the student learning experience.

However, these examples were limited during the teacher interviews. Additionally, during the student focus groups, students shared their perceptions of teachers’ inability to relate to them as a result of their limited use and/or knowledge of social media platforms, which is an element of youth culture. In the 7th grade focus
group, the students shared that they believed many of the teachers had limited knowledge of social media. They knew that the school had social media accounts like Facebook, which allowed them to post and share information to families and parents, but outside of the school use, they felt teacher use and knowledge was not consistently used. The students felt that teachers knew how to use the internet for projects or assignments and even computers or laptops, but only to this extent. Similar sentiments were expressed in the 8th grade focus group about device knowledge; however, those students felt that the teacher knowledge around social media was more moderate and when it came to understanding smartphone devices the teachers lacked knowledge. This insight from students demonstrates there is room for improvement in this area within the middle school community to become more knowledgeable of youth cultural referents. This can be addressed by collaborating with peers already making efforts in this area in order to connect to students and reinforce that the teachers value all elements of the student background and see it has merit in the learning process, thus enhancing their relationships with the students.

**Building Relationships with Technology as Priority**

While the previous examples demonstrated teachers leveraging youth cultural referents that were not inclusive of technology devices, there were teachers that leveraged technology hardware and online platforms to engage and connect with students. These efforts also manifested in different ways based on the content area and comfortability of the teacher. Some of the examples included:

- Offering collaborative assignments and/or team building tasks by using Google Apps to learn friend dynamics and/or extract future topics for specific
instructional units.

- Using Friday Activity Centers as a check-in session and leveraging Google Forms and Padlet as the platforms to share ideas and build peer learning partners during the centers.

- Analyzing music choices and beats in the Garage Band project to uncover student music preferences and lyrical connection.

- Utilizing Google Draw to allow students to make digital drawings of their rooms to share their style and explore architectural differences of their homes.

With technology being a key element of youth culture, understanding its purpose, application, and benefit is critical to leveraging it in the classroom as an instructional tool and relationship-building resource. In the middle school environments I observed, this was done at varying levels. The following two examples demonstrate the mash up between multiple youth cultural elements including technology. The final example shows the potential for leveraging technology to build relationships with students through including them in the design of the learning experience.

Given that the school has adopted a 1:1 laptop program for grades 7th and 8th, and the program was in its 3rd year, administration had increased the expectations of technology use across the board. This included the implementation of the learning management system known as Google Classroom. Therefore, teachers had basic requirements of how they had to use it in addition to having the autonomy to go beyond the requirement. In asking all the teachers about the impact the laptop program and Google Classroom had on their practice, it was also discussed how it supported the classroom community. While the majority of responses related to classroom management
conveniences, some touched upon the benefits of the questioning feature that permitted teachers to set up one-way online discussion boards between the teacher and the entire class, and three-way online discussion boards where the students and teacher could all see the comments and respond. This 8th Grade English Teacher shares how this was a game-changer for her classroom community.

Jessica: Then when we think about the laptop program, not just in the quality of work but also you started to talk about it in terms of them collaborating together. But can you speak to how the laptop program or even Google Classroom has assisted in building relationships with your students or creating classroom community?

Alice: Yeah. The forum, the question option in Google Classroom has created really great opportunities for dialogue. Often students are required to post ... similar to a college class that is online, when you have to respond to a couple of classmates ... so there's dialogue that's created. The ability to post personal comments to students on their work so much as an encouraging note that's attached to their assignment when you return it to them. That's been really helpful too.

This type of experience allowed for the teacher to highlight youth cultural elements such as the need to share student voices, build connections with people (adults and peers), and allow them to use technology to express themselves.

Similar actions are being implemented by the 8th grade English/6th Grade Social Studies Teacher. She found her project meaningful both from an instructional standpoint and socio-cultural perspective based on the approach she took. She explained one of her projects that could be seen as a mash-up integration of youth cultural elements.

Jessica: Okay. I just wanted to make sure. You said for the book album project, is this ... Are they choosing songs that already exist? Are they creating original lyrics? Can you speak a little bit more about the soundtrack project?

Jaime: Absolutely. They are not creating original songs unless they choose to. They are creating a piece in that they're creating a whole, a new soundtrack. It's being presented as a whole, like an album would. They're carefully selecting and justifying why they picked these particular songs to
play ideally or imaginatively during particular parts of the book or that are inspired by certain parts of the book. In that way, it is original, but the songs themselves are, you could say, curated by the students. They have already existed.

**Jessica:** They have to do the writing portion of the justification. Where do they have to do the writing for that?

**Jaime:** They have the option to do it on Google Docs, and they have the option to do it handwritten, whatever is best suited for them.

Jaime incorporated student choice by allowing them to select the songs relative to the book they read, autonomy in choosing music of the times or creating original lyrics, options in technology applications for the output of their reflection (Google docs or handwritten), and exposure to additional technology tools by requiring Google Slides as the final output of the soundtrack. The effort exerted into designing such an experience proves how deeply ingrained the commitment to making the learning tasks and environment be student-centered and youth-oriented. By taking this approach the teacher learns about the student background and communicates to the students through her instructional design that she values the cultural elements they can contribute to the learning experience, which reinforces the element of care and strengthens the bond between student and teacher.

The same is to be said of this teacher’s colleague, who also found ways to diversify her daily instructional moves to encompass the youth cultural element of technology. This was evident in her choice to use Google Slides, Google Forms and Padlet to offer varying experiences for students to receive feedback, annotate their readings, develop notes, and share learning resources with peers. This excerpt highlights these moves and provides rationale for them.

**Jessica:** Okay. Then, with this as our framework in looking at like the standards and what the different roles technology can take, and reflecting
on your own use of technology, how has technology use within your instruction provided added value? If so, in what ways?

Alice: I like the added value of providing immediate feedback for students. Often when things were traditionally paper and pencil based, it’d be the process of collecting everything, reading through, adding my own notes, but with a lot of tech tools I can copy and paste comments, I can highlight or annotate really important details, and then I can also research and reference if there’s possible plagiarism or other concerns that I identify.

Jessica: That kind of - talks about some of the things that benefits to you. Any instructional value in terms of what it gives to the students in their instruction, like the delivery of it?

Alice: I feel like there’s more opportunities for them to manipulate and interpret the content in different ways. Sometimes if I start out with a concept map on the board, I can take a picture, upload it, and they can still reference it. For my Google slideshow, sometimes I’ll leave it open ended with examples and then type out those examples with students so that they can personalize it. Then with other websites like Padlet where they can see and compare with their peers, that often motivates them to either elevate their understanding or find new examples because they already see what’s being used.

Although her rationale is implicitly known by students, she is able to explicitly state the “why” behind each of her moves and the payoff for herself and her students. She recognizes that if technology is a valuable cultural element to the youth of her class and the school has made the resources available, there should be no reason for her not to maximize the use of the technology resources. In turn, the technology supports her instructional objectives, fulfills the intrinsic values of the students, and continues to provide added value to her overall classroom community morale.

However, during my interview with one of the Specialty teachers, she provided a more advanced exemplar of technology integration that showed how she expanded her instructional design of the course to be inclusive of student contributions of knowledge and interests. She shared the benefits she and her students had taken advantage of in her Green Architecture and Environmental Science courses due to the technology access and
Jessica: And just thinking about the classroom community that you've created, can you share how has the one to one laptop program or Google Classroom assisted with building relationships or classroom community with your students?

Judith: definitely think that it has increased it. I have students that, maybe once or twice a week, are commenting on how they're excited about a project, how they found ideas online. Can they share them? Can we talk about them? Can we email pictures? Is there any way that they could change a project because they realized they saw something else they liked. Judith: It's definitely more of a give and take as opposed, before, where they were expecting to be spoon fed the information. They're actually going out and taking the initiative and coming back with more ideas than I ever thought they would. And the Google Classroom, too, having the ability to correspond with each other has both positive and negative things. But for the most part, I've had positive comments going back and forth, and very little of the ladder, negative comments.

In this reflection, the teacher shares that she integrated three youth cultural elements: technology, choice and voice. This altered the dynamics of her class by encouraging students to take a more participatory role in their education. She allowed students to become comfortable in taking academic risks, sharing their learning, and being at ease with discussing the course activities outside of traditional class times.

Other teachers referenced above have also created similar experiences, and other colleagues not engaging in consistent and intentional youth culture element integration could explore this approach as well. The payoff is not just related to the learning activities, but also to the classroom community and relationship dynamics between student–teacher and student–student. Each of the teachers highlighted proved that being intentional and willing to incorporate youth cultural elements resulted in added-value experiences. They each exposed their approach to making students feel as though they belonged to the classroom community, which addresses the how-factor. The teachers
explained how this changed their practice, impacted student learning, and altered the level of engagement in the class, which serves as the rationale or “why-factor” behind their actions.

From my classroom observations, it was also evident the teachers highlighted in these examples were able to build relationships with their students with and without the application of technology. In general, teachers learned to build relationships and classroom community long before technology advancements joined the scene. However, it is important for a teacher’s practice to evolve with the educational paradigm shifts and the needs of the cultural group they service, which includes the consistent integration of technology in the classroom. Therefore, when educators become aware of youth cultural elements, celebrate them, and prioritize them when developing instructional planning and delivery, the ability to build relationships with students becomes a more organic process and yields results that are long-term and beneficial to the overall learning environment. However, in settings where technology is readily available and accessible, it is evident from these experiences that prioritizing technology as a youth cultural element gives multiple entry points to building impactful relationships with students. This, in essence, is an area of classroom management and instructional design worth exploring by all teachers in order to adopt in the classroom.

**Q4: How Do Students Respond to Teachers’ CRT Practices Including Their Use of Technology?**

Most scholars and practitioners would assert that there are certain ingredients that contribute to the recipe of good teaching. This could include content knowledge, experience, and authentic care for students, in addition to many other abilities a teacher
must cultivate in order to meet the needs of their students. Ladson-Billings (1984), in her qualitative research, alluded to what “good teaching” encompassed based on the sentiments of educational consumers from her study:

These parents indicated that they had a dual agenda for those they considered good teachers. They wanted them to help their children succeed at traditional academic tasks (reading, writing, mathematics, and so on), but at the same time they wanted them to provide an education that would not alienate their children from their homes, their community, and their culture. (p. 30)

Parents look to educational experience and the affiliated educators to play a dual role in their child’s life. In their eyes, content knowledge is not enough; a certain level of pedagogical ingenuity that allows educators to attend to the whole child is what parents wanted their children exposed to. This speaks to the spirit of culturally relevant teaching practices and mindsets.

However, it is understood that some teachers are doing the “CRT work” without even knowing they are. Meanwhile, others are not engaging at all, and it is evident in their classroom environment and morale. The lack of CRT practices results in these classes having stagnant engagement and underdeveloped relationships with students. Such inconsistencies in the application of CRT were evident in the middle school environment based on the 10 teachers I observed and interviewed. There were teachers that consistently carried out CRT behaviors and mindsets and reinforced CRT domains and principles. In other instances, the teachers were primarily focused on teaching their content and had not tapped into the duality of their role, which also included teaching to the needs of the whole child, not just the intellectual dimension.

As referenced in the literature review, I considered the CRT framework’s domains,
principles, behaviors, and mindsets, while engaging in data collection for my study (Table 1). While I did not observe or collect data related to each element of the CRT framework, I did collect data on some of these elements, which include students’ response to teacher moves and behaviors. The following excerpts and themes highlight what I extracted from these qualitative experiences.

**Cultural Competence: Reshaping the Curriculum for Youth Culture**

Cultural competence in the context of the CRT framework refers to the ability of an individual to be able to help students celebrate and appreciate their cultures while also gaining knowledge of other cultures outside of their own (Ladson-Billings, 2006). During my observations, there were not a variety of encounters where I observed teachers explicitly demonstrating their cultural competence as it related to ethnic, racial, or youth culture. In instances where it did occur, it was with the same teachers, who also shared during their interviews about their practice and their selected projects for the interview experience. It was evident that there was alignment between the observations I made of their classroom where their cultural competence was woven into the class dynamic and their interview responses that included a reflective narrative of their practice and its rationale.

In an effort to celebrate an element of students’ youth culture, which includes sexual orientation and variety of socially trending topics, the middle school Music Teacher engaged students in a targeted journalism project. This allowed him to learn about student lives and incorporate topics of interest that aligned to youth values such as musical preference and expression, recycling and the environment, women’s rights and the LGBTQ community.
Jessica: So, thinking about like, you hear a lot of different standards in just this one project, do you believe that these are standards that are typically addressed in your class in different ways, whether it's seventh or eighth grade?

Gene: Yeah, I mean eighth grade does, because there's a lot of copyright stuff in there. You know, they can't steal, they can't copy and paste things. I know when they copy and paste things in eighth grade of course, because they do a presentation and then they come across a word that they've never seen before. Obviously they've copied and pasted. We do discuss a lot, because we talk about in music class in seventh grade music class, we do talk a lot about copyrights, and about trademarks, and about intellectual property. We do talk about that a lot.

Jessica: Okay.

Gene: And then, I like this one too, seven A, use digital tools to connect with learners from a variety of backgrounds and cultures, engaging with them in ways that broaden mutual understanding of learning. I like that because, music is cultural. And, music comes from a lot of different places including your background. It's what your parents listened to, it's what you were exposed to musically as a kid. And, different people from different cultures will create a different song, they will. They just... Because, music is cultural.

Gene: Now, how much does that expose youth culture, like your class in terms of like, your exposure to music and journalism, and how does that bring up the topic of youth culture, or expose elements of youth culture?

Jessica: If you want to go ahead and look at the second principle.

Gene: I try to make as connection as I can from the music that, especially in the music class of, the music of the 60s, 70s and 80s of how it's affected and shaped and influenced the music that they listen to today. I try to make the connection as well as I can. And, I try to show them as much as I can when we talk about Tupac, or Run-DMC, or anybody else from them is, I try to make the connection of how Tupac has influenced PnB Rock, or how he has influenced Kendrick Lamar to stuff that they would know. I tried to introduce as much music as I possibly can, and music they've not heard of, so they can make a connection in today's music.

The teacher’s non-traditional approach in comparison to other peers in his grade group demonstrates that the instructional redesign of his curricular approach is worth engaging in because it allows him to get to know the students at a deeper level, build rapport, and expand their knowledge base around certain topics. The music teacher avoids falling into the pitfalls of cultural conflict that Delpit (2002) and Gay (2002) warn against as a result
of cultural mismatching that can happen between teachers and students. Instead, he builds a common ground between him and his students through music and offers up musical content of the past and present to show appreciation of the youth cultural preferences and to educate youth on prior generation’s influences.

The Music Teacher also explained how giving students autonomy in research topics yielded great results for celebrating and understanding youth culture as well.

**Gene:** So, being able to help students celebrate and appreciate their cultures while also gaining knowledge of other cultures. So...

**Jessica:** So, yeah. What ways do you incorporate?

**Gene:** Yeah. So, you know, I think that this midterm here is a good example of that, because really it's about what they want to do. So, they pick their own topic. And, because they picked their own topic, it really shows me what's important to them. And also, when we do the social issue, it really exemplifies what's important in their culture.

**Jessica:** When you say their culture, which culture are you referring to?

**Gene:** It could be their home life, their family life. There's a couple of kids on their midterms, who they did their family as the topic for the midterm. [Racquel 00:14:44] and [Amy 00:14:44] they both to their family. They said, here's my grandparents. This is where my grandparents came from. Raquel talked about her grandfather who was in the Vietnam war. And, Amy Sterling talked about her family, how her parents met. So, all the kids in the class learned about the kids, which was actually really cool because, the kids all turned to Raquel afterwards, and were asking her about how she got her name, and how she, you know, it was really cool. So, there's a connection there.

Here he allows students to explore these topics, which helps him understand students’ upbringing and family dynamics while also exposing the class to the rich history of their peers’ stories. This unique approach to teaching the journalism curriculum demonstrates the teacher’s effort to reshape his curriculum based on student needs and interests to make it a more meaningful learning experience that students can relate to academically and personally. Such efforts were reaffirmed as being meaningful to the students during the 8th grade focus group. A student shared how the music teacher’s projects not only
allowed for student expression but also how it reinforced ISTE Standards that they identified as important and relevant to their interests.

**Jessica:** Anybody else have a project that related to any of the standards that they want to, put up here that they want to discuss?

**Chelsea:** Our project part of an extra designer. It was in journalism class and we had to pick like a society issue that we didn't agree with and how we could fix it.

**Jessica:** Okay. And you said what classes is?

**Chelsea:** Journalism.

**Jessica:** Journalism and what standard did you connect to this project?

**Chelsea:** Probably just let me use a few tools to plan and manage the design process.

**Jessica:** Which standard is that? What number?

**Chelsea:** Four

**Jessica:** Innovative designer. And what technology did you use to put that project together?

**Chelsea:** I did, I used to Google slides to market here.

**Jessica:** Google slides. Were you required to do any research using certain websites? Did you get to choose your own websites?

**Chelsea:** Yes.

**Jessica:** And why does that project stick out for you?

**Chelsea:** Because it helped like open up to a lot of people showing them like there troubles that people go through.

It is evident that the students appreciated the autonomy to choose topics, but also found value in the teacher’s approach to let them share about themselves and bring parts of their identity into the classroom. The music teacher’s innovation in curriculum was not just reserved for his own instructional activities, but also extended to his student’s in providing them freedom in selecting technology tools to address curricular topics.

Teacher behaviors that make an effort to reshape not just curriculum but instructional design and delivery also communicate to students that the practitioner has made a conscious mindset shift to build and apply their cultural competence and engage in technology integration. The 8th grade ELA Teacher Alice shared an instance where
she allowed students to express themselves through an online platform to share their
learning experiences and takeaways from a recent unit.

**Jessica:** Have you been able to connect your content or how you use
technology to like social media or to anything local in Philadelphia?
**Alice:** One of the first times I had used Padlet was to make up memes
based on what they had learned over the week. Some students were really
tech savvy and they were taking faculty photos and adding commentary. A
lot of other students will use their real world connections, so whether it’s
local sports or rappers and other people in the media. I know Tik Tok has
been really popular with most students, and I’ve encouraged a few of them
to make a Tik Tok for their vocab. I am yet to see an artifact related to it,
but I would not suppress any of that sort of creativity.

Allowing students to express themselves outside of traditional pencil and paper or a
discussion post, shows she is in tune with student values and knowing they yearn to
express themselves in school similar to how they share in online spaces like TikTok and
Instagram. Giving students permission to showcase their youth identity in an academic
space was empowering, but the fact that this teacher had done this consistently in her
classes also communicated to students that she cared and was aware of their youth culture
and the need for it to be included in the school space. In both instances, students
responded positively to the teachers’ culturally responsive efforts to leverage the youth
cultural dimension of their identity in the classroom and for learning purposes.

**Building Student’s Sociopolitical Consciousness: By Making Connections between
their Community, National, and Global Identities**

Another behavior teachers can engage in to demonstrate cultural responsiveness is
helping students make connections between their community, national, and global
identities. This is done by extending the classroom walls, applying in-class knowledge
and skills as a way to address and understand real-world problems and/or experiences.
Such efforts will expose students to higher-order thinking skills that will allow them to analyze and make sense of the topic and how they relate to it. The Spanish Teacher and the 6th–7th grade focus group provided examples of developing real-world connections.

In her lesson on school routines across the world country, the Spanish Teacher exposed her students to the diversity of school routines based on cultural norms. Given her diverse upbringing in various Spanish speaking cultures and exposure to other countries, she was aware that the school routine her American youth engaged was drastically different from other cultures despite their assumptions that everyone had the same schedules and it only differentiated by grade level. She shared why she exposed them to school routines, in an effort to prepare them for their Spanish essay about their routine and final oratory exam.

Jessica: And I'm assuming once you kind of find that, when you find out some background knowledge through these conversations with students, how do you bring that back into the discussion with them?
Isabella: Yeah, for example, it could be something as simple as a visual. Like if I have something from the lesson and I have a picture of something that I know is going to be on this lesson, I can ask a simple question, like, "How do you relate to this?" Or, "Is there a way you can relate to this? Has this ever happened to you?" Or something silly, sometimes something silly. And then just have them share their experiences with each other. Or, "Have you ever been to a place like this? Would you like to be at a place like this?" You know what I mean?
Jessica: Right, okay.
Isabella: Just to see-
Jessica: The fact that their thought's percolating?
Isabella: Mm-hmm (affirmative), mm-hmm (affirmative).
Jessica: I guess I think that kind of connects to the next question, which is when you prompt them or you ask them questions about their background, that's about them individually. Are there times where you connect what you're teaching to either local events or national events or global themes, things that might be happening outside the classroom?
Isabella: Yeah, for instance when we were just talking about classes that they liked and talking about their schedule, school schedule. We first started talking about schools around the world and how their schedules are
different, why are they different? What are the pros, the cons about coming home later or coming, you know what I mean?

Jessica: Oh, okay.

Isabella: And have them have that discussion. I actually had a slide show of schools that I visited while I went to Portugal and France, when I asked permission to take a few pictures of the schools, and I talked about my experiences as a student in Portugal and in France and how different their schedules are. Just being able to walk out at any moment, at any time. Their age, these kids could, in Portugal, the doors, once we walk in our school the doors are closed and you can only leave at 3:00, correct?

Jessica: Right.

Isabella: In Portugal, they have their student pass. They can swipe in and swipe out as they wish. The doors are always open for students.

Jessica: Wow.

Isabella: That concept to them was like whee!

Jessica: I can leave! After lunch I can leave.

Isabella: Or they could go have lunch, they could choose to have lunch either in the cafeteria or across the street at McDonald's or one of the coffee shops, you know?

Jessica: That part I can relate to because when I moved to Philadelphia I was surprised that kids couldn't leave campus to go get lunch. That was a huge thing for us. Now you're in high school, you can leave. As becoming a young adult you should be able to make the decision that you want, your learning's important enough to come back to.

Isabella: So you can, yes, yes. It's their own responsibility and they're like, "We're still walked to lunch," you know what I mean? Very different.

Teacher Isabella is able to share the student’s reactions to learning that not all cultures have the same school schedule. They were also able to share their “aha” moment of realizing how much more freedom other cultures gave their students at school versus American institutions. She shared how this started a discussion with the students on why they think this is the case in the United States and not in other countries.

Students were able to research and discuss this topic, and were not just expected to take notes or listen to the lecture but were encouraged by the teacher to think deeper about the topic to understand what contributes to their school and daily routine and how that differs from others. Their learning was presented in both a printed format and digital
audio version using the program Screencastify to record their oratory explanation of their routine in Spanish over a graphic-based slideshow/mini-cartoon representation of their lives. This exposure to different cultures’ daily and school routines helped students become more aware and critical of their own routine, which in turn helped them flesh out their own routine for the project with a deeper understanding of cultural experiences and an appreciation of their own background.

During the 6th–7th grade focus group, a student shared a project she favored during technology class that exposed her to global issues and had her collaborate with peers and the teacher. This excerpt demonstrated her understanding of the project components.

Selma: The standards that I think relates… project relates to is number four innovative designer. Students use a variety of technology in the design process identified.
Jessica: Okay. Can you say the name of the project?
Selma: It is called the germ guide app I guess, and how I use it is I will go on in your reader.
Jessica: Is that an app?
Selma: No, it's like a phone but on a computer.
Jessica: Okay. What's the app that allows you to run emulator.
Selma: MIT App Inventor.
Jessica: What class was this in?
Selma: In my technology class.
Jessica: All right and then go ahead. Can you explain the project to us?
Selma: Okay. So the project is about diseases associated with natural disasters, water-borne diseases. Diseases associated with crowding and vector-borne diseases. So if I can connect to emulator and I click on one of the buttons, it would say... It's hard to explain. It would say what I put into it. If I go to crowding screen, how I have a mover and I'm going to try this button. If I pick the measles button, it’ll tell me facts about measles and how you can get all the other stuff. And then meningitis is the same thing.
Jessica: So you were able to design this yourself?
Selma: No, I had help from my technology teacher.
Jessica: Okay. Did you work in a team and with other people?
Selma: I have worked with some other people but I would... So yes and no at the same time.
Jessica: Okay, thank you for sharing. Who else has the project?

The student was able to express how she had the opportunity to be an innovative designer and leverage the technological elements of the educational technology known as MIT App Inventor. The 7th grader shared how it exposed her to developing a community-based application to learn about global diseases. Although the student did not go into additional detail about the experience, the sharing of such an experience shed light on the type of learning experiences she was being exposed to in this class and how she aligned the experience to number four of the ISTE Standards for Students, becoming an innovative designer.

It is evident that experiences like these, when crafted strategically, can yield whole class and individual benefits. When a teacher allows students to explore their identity, background, and communities within the context of other cultures and/or circumstances, this helps students learn about themselves and in turn be able to share it with others and have a deeper understanding of who they are and their role in the larger society. However, these efforts cannot be done only by one teacher in a large school community, and it cannot be done sporadically, but must be consistently woven into the fabric of every classroom and throughout the entire school community if we want students to develop the higher order skills to process such complex topics and better understand themselves.

**Academic Success: The Support of the Teacher as Facilitator**

A foundational domain of CRT is academic success, which includes the practitioner’s effort to promote and support any academic growth as a result of instruction and classroom learning. In the field of education, we understand that both
general success and academic success are typically based on the abilities or achievement of the majority population (i.e., white students), either through standardized test scores or definitive grades. However, a teacher that abides by the CRT principles and engages with such a mindset understands that success is relative to the individual student and based on their overall growth. Such success is inclusive of academic growth and personal growth. CRT practitioners seek to develop the whole child, not just their academic identity.

Having a teacher that supports this means that the educator is both an instructor and facilitator of the classroom. According to Ladson-Billings (2009) the educator should be able to “...facilitate student learning by capitalizing on the students’ own social and cultural backgrounds.” (p. 11). When an educator serves as a facilitator of learning, the teacher is working to make the learning process easier for the students through their actions, daily moves, supports, and structuring of the learning process and environment. I was able to witness this in the middle school by several teachers, in addition to receiving feedback from students on how this was actualized.

My first encounter with a facilitator-type instructor was when I observed and interviewed the middle school Art Teacher. This was the students’ weekly digital portfolio day, and they a routine for self-paced learning. I observed Agatha’s pre-established routines that helped students manage their time and allowed her to support individual students based on their individual learning styles and needs. Students worked on actual artwork or the reflective writing pieces that accompanied each art piece. Students worked in these invisible silos, which meant they carved out space in the large physical classroom space to get in the zone by listening to music and having their own set
of supplies, project rubric, and Student Learning Objectives (SLOs) to guide their activities. The teacher gave her rationale for her approach.

**Agatha:** Well, I have my students create their own student learning objectives in the beginning of the year, and every other project they reflect on how they have been growing in those objectives. So I also let them choose what elements, principles, and rules of composition they want to be graded on. So I'm giving them some control and I'm letting them set their goals so that they feel they're more achievable, and that helps them try harder, and it helps them feel more accomplished. Sometimes in art it can be very defeating to a kid because they don't feel like it looks right or it looks good, and allowing them to have that kind of control over it really helps them feel successful.

**Jessica:** So would you say that's how you define success based on the SLO that they put forth, and then you evaluate from there?

**Agatha:** I have a rubric for each project, but they get to pick three components of that which are their elements, principles, and rules of composition. So there are six of each of those, I let them choose the three they want to be graded on. So that's 15 out of the 50 points they get to choose what I'm grading them on. So letting them have a little bit of control really lets them narrow in on what they want to do well on, and then it's not as much noise. They're able to concentrate on those items. The SLOs are graded outside of the project. Currently they're only being graded on did I complete it, did it make sense, was it a complete sentence? Practicing test taking skills in that way. At the end I will be having an interview with them, looking at their evidence from all the projects, and reflecting back with them. In that moment, I will be getting them a grade on whether they actually had achieved what they felt like they achieved.

**Jessica:** Okay, and you do this interview at the end of the year, or this is every project?

**Agatha:** At the end of the year.

Agatha had not only created a strong classroom management foundation, but also developed learners with foundational art skills that could be independent managers of their learning. She also created a learning environment that is conducive to all student learning needs (i.e. individualized, small group, manageable pace, flexible), in addition to being guided by the predetermined SLOs, which capitalized on the student backgrounds and learning goals.
Agatha also utilized technology devices, apps, and the school’s LMS to help manage this experience as well. I observed her providing a device station with mini-lamps for students to have at their desk to focus on their work, since the lights were dimmed in the room, creating an art studio ambiance. She also had a class iPhone available for students to upload quality pictures of their artwork to a shared folder and include in their digital portfolio. Students could listen to music via their laptop devices with headphones. Google Apps used included Google Docs and Slides while the LMS housed the assignment posts where specific project components were to be submitted. This increased the autonomy of the students to work independently, while allowing her to engage on a 1:1 level with students and specialize her support. The student response was positive based on my observations of their high level of engagement, strong productivity and their ability to communicate to me the rationale behind their projects and overall art pieces. In essence, her responsiveness to their needs was woven throughout her instructional design, delivery, and environment, making her facilitation both authentic and valuable to the student learning experience.

When exploring the facilitator-educator role, I also found examples of this discussed from the student perspective. Many of their examples highlighted the teacher’s ability to attend to their youth cultural preference of using technology to learn, extract, and apply knowledge. This comparative quote table highlights the grade level focus groups, where students shared about various projects and/or classes that provided them with the space to use technology to further explore what was taught to the whole group. I have identified facilitation themes extracted from their examples and that expressed by their teachers during the interview.
Table 5

Comparative Table of Focus Group Teacher Facilitator Types

<table>
<thead>
<tr>
<th>Group</th>
<th>6th–7th Grade</th>
<th>8th Grade</th>
<th>8th Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theme</td>
<td>Innovation</td>
<td>Peer-to-Peer Learning</td>
<td>Discovery of Self</td>
</tr>
<tr>
<td>Sample Text</td>
<td><strong>Jessica:</strong> Can you share with us which standard the project that you're going to share with us relates to? <strong>Brianna:</strong> I said I'm like number four, innovative designer… it was on my laptop… You could use docs or slides, so I use slides. So we basically had to come up with an idea or an invention <em>per se</em> that was needed in the world. So I did a closet that mixes your outfits, like all the clothes you already have. Sometimes it's really hard to find your own clothes and you know you have it but you just know where it is. I was like, well that should be really good. So then we did slides and like you had to do like… We basically based it off of the show <em>Shark Tank</em> so everybody had to come up with idea and then we had people come in and we pitched ideas to them. We kind of just pretended that we were actually making businesses ideas and we had to see who would invest in it and if they did like how can we improve it?</td>
<td><strong>Chelsea:</strong> For our history test, I sometimes will make a study guide and I'll be able to share with friend and help them study. <strong>Jessica:</strong> So making your own study guide.”</td>
<td><strong>Jessica:</strong> How do you wish you could express yourself in the classroom with your assignments or your projects?… <strong>Caleb:</strong> So for Project wise, I feel like the school really led to like what's the- you're like- <strong>Clare:</strong> Your ancestry project. <strong>Jessica:</strong> Okay. Was that in sixth grade? <strong>Clare:</strong> Yes. I think so. And basically you can express yourself through like knowing your past of your family and knowing like example types of races you are and where your family came from.</td>
</tr>
</tbody>
</table>

Given that facilitating during learning includes capitalizing student culture, it is appropriate to highlight the theme *Facilitating Innovation*, given that youth culture is
inclusive of personal expression and both technological and general innovation. The *Shark Tank* project-based learning promoted students’ interests in developing new solutions to real world problems, leveraging technology, and demonstrating through a popular TV show simulation. This theme is also captured in projects in ELA where teachers created a soundtrack for a novel they read and a time capsule of writing samples and personal artifacts to educate people of the future about their communities of the past.

Other students shared examples of teachers *Facilitating Peer-to-Peer Learning*, which included carving out space for students to collaborate with their peers to learn from each other and/or work together to extract content knowledge. In the quote the student discusses how in 8th Grade Social Studies it was common for students to be allowed to collaborate to create study guides to prepare for assessments by using Google Slides or Docs. The same peer-to-peer support was also embedded in ELA classes where teachers integrated collaborative digital note taking using Google Forms. This allowed students to review content, take notes, review notes with a peer and exchange via Google Forms.

Lastly, the students exposed a final theme of *Facilitating Discovery of Self*. In the example, students elaborated on how during their 6th Grade Interdisciplinary Service Learning Project they had to create a genogram that helped them discover elements of their cultural identity and then develop a scheme to demonstrate it to their peers. This included them engaging in online research and family interviews. The Music Teacher engaged students in a similar learning experience through a public speaking project about family heritage in addition to the Green Architecture instructor helping students become comfortable with bringing elements of their home decor and lifestyle into the classroom when making architectural renderings. Such exemplars of facilitation-type educators,
showed commitment of some teachers to promote varying levels of academic success.

**Summary**

Throughout the study, several teachers deployed various CRT practices and utilized technology as their vehicle to deliver such pedagogy, provide learning value and impact overall experience. Students generally had a positive response as a result of the culturally responsive moves outlined below:

- Cultural Competence: Reshaping the Curriculum for Youth Culture
- Building Student’s Sociopolitical Consciousness: By Making Connections between their community, national, and global identities.
- Academic Success: The Support of the Teacher as Facilitator

Although the use of the teachers’ technology was not complex or advanced in tool selection, the affordance of technology autonomy presented great added value to students due to their cultural need to use technology to express themselves and demonstrate their learning. However, this was not consistently offered across grade levels and/or content areas, which created missed opportunities for students in some learning environments and an inequity of exposure to authentic technology integration and CRT-infused learning environments. Yet, there is room to suggest that similar positive student responses would be yielded if CRT-driven practices were integrated into the instructional design, learning environment, and classroom management of all middle school teachers.
CHAPTER 5
DISCUSSION AND RECOMMENDATION

Introduction

This study sought out to understand how teachers are implementing culturally relevant teaching (CRT) practices, identify the ways teachers integrate technology because of their TPACK level, and learn how educators apply youth cultural competence and the students’ response to such moves. This was done in an effort to contribute to the existing body of knowledge as it relates to CRT and technology integration. By engaging in qualitative methodologies and a multi-tiered conceptual framework I was able to unpack my original inquiry utilizing my four research questions:

1. To what extent, in what ways and to what purposes do teachers integrate technology into their teaching practice?

2. To what extent, in what ways, and to what purposes do teachers demonstrate cultural competence and call on their knowledge of youth culture as a resource in their practice?

3. To what extent are teachers leveraging technology as an element of youth culture in order to build relationships with their students?

4. How do students respond to teachers’ CRT practices including their use of technology?

For each of these questions emerging themes were extracted that provided insight on teacher behaviors and mindsets as well as student perception of such actions and beliefs.
I recognized that due to the nature of my study consisting of a small sample size, results are not completely generalizable. However, the overall study and the aforementioned research questions do expose implications for school leaders, offer consideration for expansion of theory, and presents opportunity for future research in the field related to these topics. I have identified such next steps based on my findings and interpretations of such data. This is all in an effort to enhance the work of my field and support all school stakeholders.

**Implications for Practice: School Leaders**

School leaders are in a unique position within the evolution of teaching and learning as it relates to technology integration. Today, technology integration involves trending terms such as synchronous, asynchronous, online learning, remote learning, digital and media literacy, digital citizenship, digital fluency, digital equity, and educational technology. These terms are commonly used in educational discourse as schools attempt to build more well-rounded scholars and quality teachers. However, the application of these terms with real students and staff is varied across schools and classrooms. A school leader can be swept up by the terms and can easily overcommit to technology-based initiatives without ever taking a step back, conducting a school needs assessment, and making a collaborative agenda with various stakeholders as it relates to the school’s technology vision that would best impact student outcomes.

To avoid such pitfalls, a school leader must be aware of the needs and current abilities of both teachers and students to best develop a plan for strategic technology integration. From my study it was evident that teachers’ rationale for integrating technology stemmed from good intentions but was not always done consistently, with the
intention to provide added value to content access, and/or with a student-centered mindset. Teachers’ management of their Technological Pedagogical Content Knowledge ranged from basic to advanced throughout the middle school, which resulted in varying qualities of technology-infused experiences. When attempting to unpack the reasons why teachers had stagnant or limited development in specific TPACK dimensions, various teachers shared regarding their needs in terms of supports in order to develop and/or feel more knowledgeable about Technological Content.

- Dedicated common planning time to collaborate with peers to review shared technology resources received by school leaders and/or technology educators, to practice using them in their respective content areas, and encourage more interdisciplinary collaboration.
- Education on how to teach students about digital health as it pertains to balancing technology use and engaging with technology in appropriate ways.
- Support around educating students about the role of digital culture within the context of their lives, and how to understand and manipulate the culture for certain purposes without being consumed by it.
- Training on technology integration balance in order to prevent teachers from being too dependent on the tools, and instead promoting intentional use of tools based on need.

Furthermore, several of the emerging technology teacher leaders highlighted in Chapter 4 expressed they had taken the initiative to help peers with limited Technology Knowledge (TK). Therefore, they also expose the need for more formal spaces for peer-to-peer support and/or school-based professional development to assist in strengthening teacher
TPACK levels.

As for students, they expressed more of their needs and interests as it related to the types of technology-infused learning opportunities they desired and the culturally relevant moves they wanted teachers to engage in. The students showed appreciation for teachers that integrated their interests as they pertained to a variety of youth cultural referents such as social media, pop culture icons and events, sports, local issues and/or trending topics within their community. Students across all age groups during the focus groups felt that their learning would be more fun or interesting if teachers only connected it to students’ backgrounds, interests, passions, future and/or career aspirations.

Students in both focus groups also shared that they wanted more opportunities to create and produce content and products of work as a result of using more advanced technologies. In my observations it was evident that students were technologically savvy in that they could get past the school’s firewall to access blocked sites and play online games with their peers across the room and even create digital notes using various Web 2.0 tools as a means to discuss social drama. Such innovation and manipulation of technology tools for social use demonstrates that students are capable of advanced technology application and interested in being challenged in the classroom through the leveraging of more complex technologies.

Such realities around the state of affairs for teachers and students can inform any school leader in how they assess their own technology landscape and reflect on their efforts to be a culturally relevant leader as a way to initiate progress. To help leaders think more in-depth about how they build their technology agenda and the educational technology choices they make, they must be informed of the factors that influence these
decisions. The New Media Consortium’s (NMC)/CoSN published a three-series Horizon Report for 2021 that outlines several considerations school leaders should be aware of as they plan to enhance technology integration in their schools. In the first report of the series, the authors caution school leaders to be mindful of just making a plan that will “digitize” their schools. This is when the focus is on completely replicating brick and mortar learning experiences digitally and/or online without recognizing the additional work it takes to make the transformation for both teachers and students.

Instead, the report encourages that technology integration efforts should consider how to transform teaching and learning practices by leveraging pedagogical models like the SAMR Method and the TPACK Framework while using technology to support student learning across all disciplines (NMC, 2021). Leaders that engage in this type of thoughtful planning are working towards developing more digitally equitable schools where “...students experience curriculum-rich learning opportunities that are meaningful to them” and delivered by the knowledgeable teachers that support them (NMC, 2021). To build these rich learning experiences requires attention to the individual content areas, the educational tools that support them and the teachers that must deliver the education by leveraging these tools.

However, when it comes to addressing areas of growth as it pertains to CRT, school leaders then must address how they manage their own culturally responsive school leadership (CRSL). Scholars express that a paradigm shift in teacher pedagogy and mindset as a result of CRT cannot be done in isolation but must be complemented by a transformative leadership style such as CRSL. Khalifa et al. (2016) advocated for this need for simultaneous shifts for teachers and school leaders by stating that: “…Surely, if
teachers should adjust their craft in ways that respond effectively to children’s cultural learning and social needs in the classroom, as Gay suggested, then school administrators must have a similar mandate regarding the entire school culture and climate” (p. 1273). These scholars also advocate for culturally “responsive” leadership because it solicits an action-oriented response and conveys a certain level of urgency among school leaders (Khalifa et al., 2016, p. 1278). Much of what the students were advocating for in their focus groups related to integration of student background and interests requires the teachers to make a shift in their practice and mindsets. However, this also requires school leaders to lead the charge by being responsive to their student and staff needs and setting a precedence for change by making culturally relevant practices a priority across the school.

My study attempted to provide practical insight from the classroom that would assist with the considerations outlined in the Horizon Reports and CRSL literature. Through my study I learned that if we seek to impact student outcomes as school leaders, we must start with a well-informed plan that addresses the diverse needs of all stakeholders.

Therefore, my recommendations for school leaders as a result of this study include:

- Adoption of a school technology agenda in order to communicate school commitment and expectations around technology integration,
- Development of professional offerings inclusive of ongoing training for all teachers in educational technologies to build their TPACK skill set and application of ISTE Standards for Students as a way to promote meaningful
technology-infused learning experiences.

- Creation of well-rounded professional development sessions that expose teachers to the CRT Framework and strategies for implementation, in order to support the relational dynamics between teacher and students and further develop cultural competence of various student cultures.

School leaders that subscribe to these recommendations have the opportunity to grow technology integration programs at their schools that would enhance student learning and develop schools that are more digitally equitable and culturally responsive.

*Adoption of A School Technology Agenda*

In my interviews with teachers there was inconsistency on what the teachers communicated as the purpose of technology in their classroom, how they viewed the school’s perspective on technology integration, and the expectations the school had of both student and teachers as it related to use. This carried over into their observations, where I witnessed a variability of technology integration across grades and content areas. Additionally, there were differences in teacher intentionality when using educational technologies in their lessons. During observations there was a noticeable difference between technology integration in the humanities courses versus science and math courses. It was typical in the humanities to see some type of technology consistently used, even if it was at varying degrees (i.e., typing notes in Google Docs vs. creating a multimedia presentation as a summative assessment for a novel). However, in the middle school math and science classes technology was commonly used as a way to entertain students or “spice up the lesson” with a quick tech-remedy. The other sub-group of teachers that served as a model group for technology integration within the school were
the specialty teachers that taught music, world language, art, green architecture, and environmental science. These teachers also exhibited a more consistent integration of technology than the core subject middle school teachers, especially math and science teachers.

Not all stakeholders are aware of the school’s focus or vision for technology integration, goals, and expectations, and their belief of potential impact on student outcomes. Therefore, such experiences pivot our attention to lessons learned by the one-to-one laptop study initiated by Peterson and Scharber in 2017. In their recommendations from an ongoing study of district technology integration initiatives they advocate for the following:

Begin with your vision for learning, not the technology. Bring together a committee of faculty, staff, administration, students, and community members to discuss pedagogical and curricula implications, connections to long-term district plans, and the types of preparation you want to provide students for the contemporary world (69).

Therefore, as school leaders it is essential to involve stakeholder representatives in the school’s technology integration agenda and vision. This will ensure the goals are representative of all stakeholder needs and that there are outlined expectations for full adoption by teachers and students in order to transcend all aspects of the school environment including the classrooms. This will in turn mediate a more well-rounded decision-making process relative to the technology integration moves required (i.e. tool selection, processes, training and implementation).

The New Media Consortium’s (NMC)/CoSN, provides additional recommendations in their second report of the three part series of the Horizon Reports for 2021. The following elements are technology integration agenda items school leaders
must consider:

1. **Conduct comprehensive needs assessments** of stakeholders’ needs, perspectives, skills and knowledge of educational technologies and technologies to help assess gap areas and areas of focus.

2. **Plan to build Digital Collaboration Environments** that “…encompasses systems, tools, broadband connectivity, and practices for online collaboration—including synchronous and asynchronous communication tools,” which takes into account that learning environments are fluid and inclusive of in-person and online experiences (p. 6).

3. **Identify Educational Technologies** that align with school-wide curricular goals. This should be aligned to learner skill sets that are expected to be developed as a result of the goals and initiatives. This ensures intentionality when selecting tools for specific content areas and grade levels, while balancing overuse and premature adoption of gadgets versus selection of added-value tools.

4. **Prioritize consistent messaging and communication** to teachers and students around the school’s technology integration mindset. This helps with stakeholder buy-in and adoption of the mindset and could be influential in student outcomes.

If school leaders can infuse these elements into their technology integration agenda, then this in turn can create school environments that are prepared to meet the needs of students and capable of preparing teachers to meet the demands of the ongoing paradigm shifts within the emerging technology world.
**Investing in Building Teachers’ TPACK Skills and Prioritizing Application of ISTE Standards**

In chapter 4, the examples of teachers that engaged in exemplar technology integration activities in an effort to offer more student-centered experiences were outliers among their peers. They had bought into the original premise the school offered, which was that use Google Classroom can make your life easier. However, after seeing the payoff with that platform, they went a step further and dabbled in a few other tools and integrated additional educational technologies in order to enhance their instructional program. Yet, such instructional behavior should not have been only adopted by a few; it should have been the adoptive mindset of each middle school teacher. However, due to the varying levels of the middle school teachers’ Technological Pedagogical Content Knowledge (TPACK), this resulted in outlier behaviors opposed to being normed expectations.

Exposing teachers to the TPACK model constructed by Mishra et al. (2011) serves as a road map for how teachers can professionally engage in quality technology infused teaching by first building themselves as professionals. However it “requires a nuanced understanding of the complex interplays between three key sources of knowledge: technology, pedagogy, and content, and addresses how they play out in specific contexts” (Mishra et al., 2011, p. 23). The educator must show efforts to adopt a technology integration approach that takes into consideration authentic technology use as it relates to the specific content needs and goals, while offering an array of student learning affordances.
The level of TPACK among the middle school teachers showed a continuum from those only possessing the first domain, Content Knowledge, to only a few that were emerging to possessing all the elements of Technological Pedagogical Content Knowledge. Given that there were gaps within teachers’ Technology Knowledge base and misconceptions of how technology can be more of a core instructional feature to their teaching, this presents room for growth and targeted school support.

As school leaders, we are expected to address these gaps in our teacher knowledge base and provide targeted support to cultivate quality teachers. Just as teachers need to continually develop their skill set in response to the evolving needs of students and the paradigm shifts of society, school leaders are responsible for being aware of these evolving student needs and support the management of teacher development. Therefore, engaging teachers in consistent development to build their Technological Pedagogical Content Knowledge (TPACK) is essential to advancing teachers’ technology skill set over time. TPACK provides school leaders with a model to assess their teacher's TPACK as well as understand the areas of improvement in order to prepare for staff professional development. I also learned in my interviews with teachers that some attributed their increased technology integration to having opportunities to collaborate with peers and learn their best practices. This gave them ideas and the confidence to take instructional risk with educational technologies to best support student learning.

Having teachers that are well equipped with a strong understanding of both content knowledge and technological pedagogical content knowledge is essential to educating digital natives and preparing them to be well-rounded learners. Since such
student outcomes are largely impacted by the quality and rigorous instructional experience they receive, it is necessary for school leaders to invest in offering professional development that is practical and reinforces strategic instructional design. Chou et al. (2012)’s study of mobile 1:1 programs and district technology integration efforts provides directives on the type of approach that should be taken when developing targeted technology professional development:

In addition to the emphasis on the pedagogical and technological contents, faculty performance is also an essential part of professional development. Technology integration is more than just using the tools. It requires careful instructional design that links learning objectives to specific learning tasks or activities that lead to measurable outcomes. Not all faculty members have the technology expertise to create technology-enriched learning experiences. In assisting faculty adopting new technology, one should also consider the effectiveness of the adaptation (i.e., how well can faculty integrate iPads in the classroom). The process involves multiple stakeholders and faculty cannot do it alone (p. 16).

To manage this heavy lift, school leaders can invest in staffing additions that include technology educators, technology integration specialist/coaches, and technology directors, depending on the size of the school community. Then, school leaders can elicit the advice and expertise of these experts in creating school-based professional development that trains teachers on the educational technologies and platforms that align with the school’s technology integration agenda and with the student learning needs.

However, the teacher education provided by schools can also influence student learning and instructional delivery by training teachers in the integration of International Society for Technology in Education (ISTE) Standards for Students. This set of technology standards is equally as important as the teacher’s content standards and should be woven in teachers’ content-specific instructional planning. Schools that adopt
ISTE Standards train teachers on how to integrate them in instructional design and apply them for student application and can better assess the types of technology-infused learning students are exposed to. Then schools will be able to understand how the investment in teacher TPACK development is connected to student outcomes and/or experiences.

The student perspective from the study also affirms this move as well. During my focus groups with students, they reflected on their in-class learning experiences that related to ISTE Standard infused activities. Many of their examples came from courses such as ELA and specialty courses. Students shared having technology tool autonomy, opportunities to express themselves and incorporate their background, and opportunities to demonstrate their mastery of learning in formats more natural and representative of their youth interests. This type of student feedback only reaffirms why school leaders should require incorporation of the ISTE Standards, which is an additional support for developing teacher TPACK. Therefore, I advocate for school leaders to make their teacher training offerings inclusive of TPACK-focused professional development and intentional incorporation of the ISTE Standards as a move to bring added-value to school environments and academic programming.

**Expanding Professional Development Agenda to be Inclusive of CRT Framework**

This study not only provided perspective about the macro-level planning that needs further exploration by school leaders related to technology integration, but also exposes additional efforts school leaders need to make in order to support students. The study also demonstrates a need for school leaders to commit to creating culturally relevant and responsive school environments. In several classes, technology was used as
a vehicle to enhance relational dynamics between teachers and students, allowing students to feel comfortable expressing themselves and sharing parts of their background. The teachers found an advantage in being able to use the school’s LMS, Google Classroom, as a way to consistently communicate with students, build classroom community, exchange curricular ideas, and foster collaboration within the classroom.

However, these actions were not a consistent theme in every class, and therefore in classes where these types of engagement were not present, the student–teacher rapport was limited, student commitment to the learning experience was minimal, and the teacher showed elements of frustration with the learners and the expectations of having to use technology daily. These teachers missed out on the successes their colleagues were having with students because they had not fully committed to the technology integration mindset and were not operating from within a CRT framework. Had these teachers been exposed to the CRT framework, its domains, principles, behaviors and/or mindsets they could have tapped into the same best practices as their colleagues that leveraged, both with and without educational technologies.

In addition to missing CRT behaviors, there was also variability in application of CRT mindsets and beliefs throughout the middle school community. This is based on the Culturally Responsive Mindsets and Behaviors for Teachers (Appendix E), a reflection task teachers completed after the interview. While 7 out of 10 teachers reported that the statement “Teacher believes all students can achieve” was a number one priority, this did align with many of the teachers’ responses during the interview related to how they defined academic success. Many had reduced success to grades and other standardized measures of success, with few sharing a more holistic approach to assessing student
success that would align with the CRT framework. Other mindsets that reinforced a connection to being youth culturally competent and/or responsive to youth needs was, “Teacher–student relationship is fluid, humanely equitable, extends to interactions beyond the classroom and into the community” and “Teacher demonstrates a connectedness with all students”. However, the first statement only elicited one teacher respondent identifying it as a number one priority, while the second statement yielded three teachers identifying it as a number one priority.

Such a disconnect between actions, beliefs and mindsets among teachers opens room for additional wonders, in addition to a need for supporting teachers in learning the benefits of operating within a CRT framework to promote better alignment between practice and theory. It is also worth noting that CRT promotes teachers operating from a student-centered mindset; therefore, when unpacking how knowledge is conceived in the classroom, the CRT framework sees that as being a collaborative and shared process between teacher and students. However, in the teacher reflection task, many teacher respondents identified the statement, “Teacher is passionate about content” as the number one priority in the conception of knowledge. If instruction is to be driven by student needs, interests, and values, then their role in the conception of knowledge has to be equally shared with the teacher. This first starts with a mindset shift from mere celebration and/or highlighting youth culture for scholastic entertainment but allow for knowledge construction to be inclusive of youth cultural referents and contributions, which is shared by both students and teachers alike.

Therefore, school leaders are encouraged to create a professional development agenda that prioritizes a CRT framework and teaches the components that support it. By
creating well-rounded professional development sessions that expose teachers to the CRT framework and strategies for implementation, school leaders are supporting the strengthening of relational dynamics between teacher and students and further developing their teachers’ cultural competence of various student cultures. Such an investment in school culture could in turn build more communities of authentic care across individual classrooms and develop teachers that can be culturally competent in not just ethnic cultures but also youth culture. Teachers’ knowledge of youth cultural referents would be inclusive of technology knowledge and would align with the school’s technology.

The CRT framework does not lend itself to supporting classroom management but can permeate all elements of teaching including instructional design and delivery. By school leaders adopting a professional development agenda infused with CRT and TPACK development, this could ensure that the use of technology is “…in service of learning, fostering human connection, furthering collaboration, and developing empathy and social emotional learning in the digital environment” (NMC/CoSN, 2021). Therefore, teachers must receive a holistic professional development experience that includes training related to their specific content, educational technology integration and culturally relevant teaching practices in order to meet the technological and cultural needs of students. Essentially, school leaders can make the best choice and potentially positively impact instructional design and delivery, classroom management, peer-to-peer connections, teacher–student rapport, and incorporation of student voice and expression in learning by taking into consideration the lessons learned from this study.
Implications for Theory

As societies progress, citizens create new emerging trends, develop new customs and traditions, and make new advancements to provide additional societal affordances. The various sub-cultures around the world all play a part in this societal evolution, most importantly youth culture. As youth culture evolves with each generation, their referents become more complex, which impacts how they engage with adults, their peers, and the larger societal construct. The impact of youth culture has intensified so much that it spills over into all facets of society including education, most particularly the classroom.

Ladson-Billings (2013) identifies these young people as “New Century” students because of their relationship with the global world and technology. These youth or New Century students that occupy current classroom spaces have had access to digital resources from the womb. They have learned how to use an iPad simultaneously with learning their alphabet, as well as being cultivated to create YouTube channels with the same ease as riding a bike. With students having such advanced digital skill sets, their interests are more complex as is how they engage in day-to-day tasks.

This youth cultural referent of technology has not only dominated their personal lives but has also spilled over into the classroom creating a new challenge for educators and schools. Ladson-Billings (2013) says it best in the following statement, where she articulates how high the stakes are for teachers to step up their game in order to support the youth of today’s classrooms.

When our students can access information and knowledge through iTunes U…and other open access online classrooms we must create more imaginative and engaging spaces in our courses and think differently about what it means to teach. (p. 107)
The teacher moves she is advocating for include having a diverse skill set that is inclusive of transformative pedagogy, relevant instructional tools, and a complementary mindset to that of students, that are both progressive and innovative.

My study shares the same sentiments as Ladson-Billings in that educators have to develop their skill set to be responsive to student needs and relevant to their interests and backgrounds. My study unearthed which youth cultural referents took priority, with one of them being technology, and most importantly how to use technology to create and express oneself. Boyd (2014) provides additional insight into how teens value technology as an integral component of their identity and their culture’s contribution to society.

Through their experimentation and challenges, today’s teens are showcasing some of the complex ways in which technology intersects with society. They don’t have all of the answers, but their path through this networked world provides valuable insight into how technology is being integrated into and shaping everyday life. (p. 212)

She further explains the power by which youth can yield when given the opportunity to leverage their cultural referent without restriction.

At the same time, teens are as they have always been, resilient and creative in repurposing technology to fulfill their desires and goals. When they embrace technology, they are imagining new possibilities, asserting control over their lives, and finding ways to be a part of public life. This can be terrifying for those who are intimidated by youth or nervous for them, but it also reveals that, far from being a distraction, social media is providing a vehicle for teens to take ownership over their lives. (p. 212)

Just as Boyd advocated for the understanding and recognition of youth cultural elements, so did the students of the study as they shared which elements of their youth culture they wanted included in their learning, one of the major ones being technology.

This presents a new opportunity to respond to student needs with and by expanding current theory. Therefore, I advocate expanding the framework of CRT to be
inclusive of teachers becoming competent in youth culture. Given that this element of student identity is such a major component of the experience and background, it requires targeted attention and unconditional commitment by educators to learn about, have awareness of, consistently celebrate, and authentically integrate into student academic programming. Just as we jumped at the opportunity to learn how to become culturally relevant educators for ethnic and linguistically diverse students based on their unique backgrounds, the complexities of youth culture require the same level of commitment, because the stakes have risen yet again.

The potential impact for expanding the CRT framework could be seen manifesting itself in classrooms in a myriad of ways. First, in addressing instruction, teachers that have high Technology Knowledge could deliver instruction with new flexibility. Teachers could create pre-recorded lessons on special content topics that students could view and take on product creation challenges after watching an extension video and being called to engage in action-oriented task. Secondly, teachers could allow for more diverse summative assessment options that allow students to demonstrate mastery in more creative formats such as YouTube tutorial, digital art, or original musical compositions. Lastly, by leveraging youth cultural referents, teachers could also extend the boundaries of classroom, allowing for students to bring in current social topics such as non-traditional career aspirations or even discussing trending youth socialites while also showcasing their classroom learning on social media, which feeds the need for youth societal clout.

In each example, the case for advocating for teacher’s development of youth cultural competence reverts us back to how we can better attend to the needs of New
Century learners. In the end, the recognition of building and appreciating youth cultural competence is inclusive of technology and all youth cultural referents that students have identified as important to their community. While additional studies will need to be conducted in order to flesh out the nuances of the expanded framework, in the end this research must be done if we want to continue to be both relevant and responsive to the ever-changing needs of learners.

Implications for Research

In an effort to add new knowledge to the field of education and inform the decision-making process for school leaders, my qualitative study sought out to explore the following (4) questions:

1. To what extent, in what ways and to what purposes do teachers integrate technology into their teaching practice?

2. To what extent and in what ways and to what purposes do teachers demonstrate cultural competence and call on their knowledge of youth culture as a resource in their practice?

3. Are teachers leveraging technology as an element of youth culture, in order to build relationships with their students?

4. How do students respond to teachers’ CRT practices including their use of technology?

I embarked on my research journey to explore these four questions by utilizing the following research methods: (1) teacher questionnaire with items that focus on teacher professional background, demographic information, and dimensions of Technological Pedagogical Content Knowledge (TPACK); (2) teacher semi-structured interviews; (3)
classroom observations with structured observer reflection; (4) student focus groups, and (5) evaluation of student work and teacher unit plans. I believe my ambitious efforts were with good intentions, and having several stakeholder contributions through various data collection formats allowed me to triangulate my data.

I found that the teacher semi-structured interviews and classroom observations with structured observer reflections were most impactful in answering my first two research questions. The student focus groups were helpful in reaffirming some of the reflections by teachers of their instructional moves and also shed light on disconnects between teachers’ intentions with technology integration and students’ receptiveness to it and interpretation of such intentions, which relates to question four. These two data sources were rich, and I believe could have been sufficient with a few minor adjustments to the structuring of the focus groups and their overall format.

However, the areas for revision for my data collection methods relate to the analysis of student work and teacher lesson plans. I received 4-5 student work artifacts and teacher lesson plans to analyze and give context to the lessons I observed and the interviews where teachers discussed their projects. I think these data collection methods would have been more appropriately aligned if the main focus of the study was only on ISTE Standards for Student application. Additionally, there also needed to be a more structured analysis tool to assist in evaluating the teacher lesson plans for TPACK elements, ISTE integration and CRT elements and the student artifacts for incorporating ISTE Standards.

In retrospect, I would have also redesigned the focus groups to be more sensitive to the participant’s maturity level and inability to effectively communicate their
educational experiences. Students struggled at times to answer the focus group reflective questions that attempted to breakdown examples of projects related to ISTE Standards or perspectives on classroom dynamics, academic interests and needs. Additionally, the focus group was also offered during lunch time and this seemed to conflict with some of the student’s social interests during that time period and impacted consistent and fully dedicated participation. In the future maybe offering it during class times and/or after school would have been more appropriate. Lastly, some students struggled to express themselves in front of other peers, and therefore maybe having students write out their responses in a questionnaire similar to the teachers could have also elicited more detailed responses as well.

In retrospect, I understand that qualitative research requires the researcher to play a subjective role, especially in instances where it is a convenient sample being studied. In the future, I would have preferred to conduct the study at a location outside of my own school community and possibly additional schools to compare trends and findings. Nevertheless, such a study does still offer researchers insight on how to conduct similar studies through a qualitative approach to help give insight on perceived connections between educational tools and practice. In the end, the study has served as an informative experience for me as a scholar practitioner by helping me understand the need to stay grounded in scholarship, the benefits of exploring personal classroom phenomenon through formal inquiry and the impact such an experience can have on my school leadership development and future decision-making processes.

Given the dual nature of this study it has yielded implications not just for school leaders, but also researchers of the field. Engaging in qualitative research that seeks to
explore academic inquiry connected to classroom observations and experiences can help inform a scholar practitioner’s theory-to-practice integration. For researchers in the field of education, this type of study can also shed light on gaps in the literature as it relates to teacher education programs and their integration of educational technology preparation, training of teachers in CRT practices, and the need for training school leaders in strategic technology integration planning to support student outcomes.

This study started off with an interest in exploring the intersectionality of technology integration with CRT practices and soon transformed to unearthing additional discoveries as related to the need for further exploration related to collaborative school planning for technology integration, targeted teacher training, and further exploration of CRT framework adoption across school settings and for all professionals. Essentially, the study was an enlightening experience for me, as the lead researcher, and I believe it has opened the door for fellow researchers to continue the line of inquiry as well as provided potential next steps for the participants and the school community at-large.

A Research Practitioner's Reflection

I began this journey, with the belief that teachers have difficulty becoming culturally competent through the traditional pathway through the ethnic and/or racial culture of a student’s identity. I found that many of the teaching spaces I engaged and taught in included a predominantly white teaching force paired with a more diverse student body. Educators commonly struggled to relate with such culturally different students that had drastically different life experiences. When serving as an instructional coach/technology specialist, I observed teachers using harmful and misguided language, designing lessons with minimal integration of student background knowledge, and
attempting to use ethnic colloquialisms in an effort to connect or be seen as relevant to their students but instead only inflicting more pain on the already oppressed and misunderstood students.

Therefore, in my own school-based leadership capacity, I have attempted to operate with a Culturally Responsive Leadership style by sharing best practices with teachers that are grounded in CRT. In the past, I have had an open-door policy to allow teachers to observe my instruction to see how I engage with students and build relationships. I also shared resources with teachers to help them make connections with the students based on my participation in community happenings since I lived in the school’s surrounding neighborhood. On a weekly basis I held conferences with teachers on specific strategies I used for classroom management and instruction that conveyed to students my fluid and relative definition of success as a means to support their learning and overall growth. In these experiences, I witnessed firsthand the struggles educators had with their instructional design, classroom management, and overall mindset, which impacted their teacher efficacy and development.

However, I found that as a result of my former dual role, which included being a classroom educator and technology specialist, individuals were first more receptive to my support when it came to incorporating educational technologies, and then any additional support I would provide to them related to CRT practices.

As I examine my own process, I discovered the successes I was having in the classroom were due to my use of technology as a vehicle to leverage CRT, but also as a tool to build and demonstrate a variety of cultural competences related to the various dimensions of my student’s background, particularly youth culture. I thought it would be
helpful to explore and understand if this was a trend across my former school community. I felt this would be useful data to the school leaders of my former school, given that they had just transitioned into the third year of the middle school 1:1 laptop initiative during the execution of the study.

Therefore, my study attempted to observe and understand the complexities of technology integration and how CRT practices were leveraged in these experiences where technology was made available to both teachers and students. This study is meant to shed light on CRT and technology integration in an effort to help school leaders make informed decisions around technology integration plans and teacher professional development.

**Future Research and Recommendations**

Given that not all of my research questions were fully answered, I believe there is room for additional research to further explore my original inquiries and explore additional research topics that also surfaced. First, in addressing my research topics, I believe that there is additional work to be engaged in as it relates to studying technology integration in schools, especially in urban school environments where educational technology access varies and full equity has not been achieved. Inconsistent and/or limited access to such tools can impact teacher exposure and TPACK development while also potentially limiting student tool exposure and lessening the overall quality of education received. This was somewhat alluded to by teachers in the study that taught both 6th and 8th graders and recognized the limited digital literacy skills the 6th graders possessed, which they attributed to not having access to 1:1 Chromebooks as their older counterparts in 8th grade.
Those same teachers shared the struggle of being able to consistently incorporate technology resources for student collaboration or creation of learning artifacts due to having to share resources with other teachers and having limited availability to the shared technology resources. Teachers of 7th and 8th graders shared positive reviews on how access to educational technologies allowed for more flexible instructional plans and student’s 24/7 access to digital learning resources. Therefore, studying the impact of educational technology access is a necessary topic to explore as it has weight on the overall quality of learning schools in the digital age have to deal with.

Secondly, the topic of CRT and expanding its application beyond ethnic cultural competence and applying it towards youth culture, another dimension of student identity, is worth exploring further. This is because my study focused primarily on one youth cultural referent, technology. However, there is room for further research to look at teachers’ youth cultural competence as it refers to all aspects of youth culture and how knowledge and incorporation of any of the youth cultural referents strengthen teacher–student relationships and help students best connect to their learning environment. I believe studying this concept independent of TPACK and ISTE application would allow for a greater focus on studying this possible framework expansion and help give insight on whether youth cultural competence is a potential entry point for teachers as they seek to develop their cultural responsiveness with students.

Lastly, I believe an area for additional research has to do with research that could inform and guide school leaders. Therefore, I would recommend continued research on how technology integration plans have to be developed for school-wide adoption and how such commitment impacts student outcomes and experiences. I believe such
exploration could inform school leaders to engage in more sustainable educational technology practices that could evolve with students and ensure the teacher workforce is well-equipped to support and educate students in any content area and/or at any age.

I also believe my study produced a large amount of data that brought to light several additional lines of inquiry around teacher development, management, and support. This was exposed during teacher observations and interviews, where several teachers struggled to explain their instructional moves and the intentionality behind them that was either grounded in evidence-based practices or stemmed from content best practices. Additionally, some teachers recognized their gaps in experience and/or knowledge and expressed a need and desire to learn from their peers. Many identified informal teacher leaders with a unique skill set in classroom management, content delivery, and/or technology application that they wanted to learn from, but they were unsure of how to manage this request for support.

Furthermore, in some observations it was evident that the teacher had missed opportunities to engage students in the learning experience due to minimal instructional rigor, unaligned technology integration, and having an under-developed classroom management structure. Therefore, this leads to my final recommendation for research around school leadership and their support in providing comprehensive coaching that is inclusive of general teacher best practices and the authentic technology integration that supports it. This has the potential to help school leaders in cultivating well-rounded teachers that are responsive to the emerging paradigm shifts in education and ongoing needs of diverse learners. In the end, this study represents a body of work that has been informative as well as enlightening for the principal researcher, participants, and
benefactors of this work, and that was the ultimate goal.

**Final Thoughts**

My sincerest hope is that my study and its findings will provide insight on the current successes within the community I am studying by providing them with insights and possible recommendations on how they can advance their daily instruction and technology integration efforts. At a macro-level, I hope my scholarly pursuits will shed a light on a topic that deserves attention from researchers, schools of education, teacher educators, and school administrators. If we are going to remain relevant and responsive to the ongoing societal challenges (i.e., increasingly diverse learner classrooms and introduction of emerging education technologies) that act as influential external factors, we must make a paradigm shift as school leaders in the way we develop our teachers and create school-wide agendas that are inclusive of various pedagogical frameworks.

However, I also hope that at the more micro-level and in the spirit of qualitative research I am able to provide an outlet for students to raise their voices and share their experiences regarding technology integration and application, as well as culturally responsive experiences that take place in the classroom. Essentially, their receipt, impact, and application of these practices are the true measures of a researcher’s inquiry, a practitioner's daily instruction, and a school leader’s collaborative and shared school vision. Lastly, my personal takeaway is that I believe this study will give me the space to pursue a scholarly interest that I have been passionate about for most of my career. I plan to continue this inquiry and welcome the various pathways on which it leads me.
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# APPENDIX A

## TEACHER TPACK QUESTIONNAIRE

**Teacher Initials** _____________________________  **Date** _____________________________

### Teaching History

**Teaching Certification:**  
- __4 year program__  
- __Alternative Certification__  
- __Graduate Program__

**Certification Areas:** ___________________________  **Years of Full-time Teaching** ____

**School Type:** Put the number of years you have taught at each school type  
- ___ Charter ___ Independent ___ Public ___ Catholic

**Teaching Environments:** Check all that apply.  
- ___ suburban ___ urban ___ rural

### Course Load:
- Grade 6th - Class(es): ________________________________  
- Grade 7th - Class(es): ________________________________  
- Grade 8th - Class(es): ________________________________

### Past Grades/Courses: What grades and courses have taught in the past?  
_______________________________________________________________________________  
_______________________________________________________________________________

### Teacher Demographics

**Age Range:**  
- ___22-29___  
- ___30-39___  
- ___40-49___  
- ___50-59___  
- ___60-69___  
- ___70+___

**In which groups do you identify with?**  
- ___ African American ___ Pacific Islander ___ African Descent ___ Caucasian  
- ___ Asian ___ American Indian or Alaska Native ___ Latino/Latina ___ Other/2 or more groups

**Family Structure:** Check all boxes that apply in terms of your current family structure for your immediate family at home.  
- ___ no biological children ___ 1+ biological children ___ foster children ___ adopted children

**Age Range of Children:** Please check all boxes that apply.  
- ___ N/A ___ 0-4 ___ 5-9 ___ 10-12 ___ 13-15 ___ 16-18 ___ 19-21 ___ 22+
**Scale: Use for questions 1-3**  
Does not apply to me=1, Disagree=2, Agree=3

**Technology Exposure**

1. I have a smartphone (i.e. a mobile device that performs similar functions of a computer, includes downloaded applications, internet access, socializing functions outside of basic talking). (1) (2) (3)

2. I own the following devices  
   a. Computer (laptop or desktop) at home. (1) (2) (3)  
   b. Tablet/iPad device at home. (1) (2) (3)  
   c. Game System (i.e. Wii, Xbox, Playstation, Kinect). (1) (2) (3)

3. I have an active on the following social media platforms:  
   (Check the level of frequency for each social media platform)

<table>
<thead>
<tr>
<th>Social Media Platform</th>
<th>Daily</th>
<th>Weekly</th>
<th>Rarely</th>
<th>Don’t have an account</th>
</tr>
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<tbody>
<tr>
<td>Facebook</td>
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**Scale: Use for questions 4-38**  
1 = Strongly Disagree 2 = Disagree 3 = Undecided 4 = Agree 5 = Strongly Agree

**Technology Knowledge**

4. I know how to solve my own technical problems in the classroom (e.g. internet connection, connecting cords, troubleshooting my computer). (1) (2) (3) (4) (5)

5. I can learn technology easily. (1) (2) (3) (4) (5)

6. I keep up with important new technologies. (1) (2) (3) (4) (5)

7. I frequently play around the technology. (1) (2) (3) (4) (5)

8. I know about a lot of different technologies. (1) (2) (3) (4) (5)
9. I have the technical skills I need to use technology. (1) (2) (3) (4) (5)
10. I have had sufficient opportunities to work with different technologies. (1) (2) (3) (4) (5)
11. I can use technology tools to process data and report results. (1) (2) (3) (4) (5)
12. I can use technology in the development of strategies for solving problems in the real world. (1) (2) (3) (4) (5)
13. I have ability to design webpages and to use authoring software. (1) (2) (3) (4) (5)
14. I understand the legal, ethical, cultural, and societal issues related to technology. (1) (2) (3) (4) (5)
15. I conduct research when I am unable to complete a technology-specific task. (1) (2) (3) (4) (5)

**Technological Content Knowledge**

16. I know about technologies that I can use for understanding (the particular content) (1) (2) (3) (4) (5)
17. I know how to use of specific software and Web sites about (the particular content). (1) (2) (3) (4) (5)
18. I can find and evaluate the resources that I need for (the particular content). (1) (2) (3) (4) (5)
19. I can use technology for presenting (the particular content). (1) (2) (3) (4) (5)
20. I can use technology tools and resources for managing and communicating information of (the particular content). (1) (2) (3) (4) (5)

**Technological Pedagogical Knowledge**

21. I can choose technologies that enhance the teaching approaches for a lesson. (1) (2) (3) (4) (5)
22. I can choose technologies that enhance students' learning for a lesson. (1) (2) (3) (4) (5)
23. I am thinking critically about how to use technology in my classroom. (1) (2) (3) (4) (5)
24. I can adapt the use of the technologies that I am learning about different teaching activities. (1) (2) (3) (4) (5)
25. My teacher education program has caused me to think more deeply about how technology could influence the teaching approaches I use in my classroom. (1) (2) (3) (4) (5)
26. I can use technology resources to facilitate higher order thinking skills, including problem solving, critical thinking, decision-making, knowledge and creative thinking. (1) (2) (3) (4) (5)
27. I can use technology tools and information resources to increase productivity. (1) (2) (3) (4) (5)
28. I can infuse technology to strategies of teaching. (1) (2) (3) (4) (5)
29. I can use technology for more collaboration and communication among students and with the teacher too. (1) (2) (3) (4) (5)
30. I know how to use technology to facilitate academic learning. (1) (2) (3) (4) (5)
31. I can use technology resources to facilitate higher order thinking skills (e.g. create, manipulate, and evaluate information) (1) (2) (3) (4) (5)

**Technological Pedagogical Content Knowledge**

32. I can teach lessons that appropriately combine (the particular content), technologies and teaching approaches. (1) (2) (3) (4) (5)
33. I can select technologies to use in my classroom that enhance what I teach, how I teach and what students learn. (1) (2) (3) (4) (5)
34. I can use strategies that combine (the particular content), technologies and teaching approaches that I learned about in my coursework in my classroom. (1) (2) (3) (4) (5)
35. I can provide leadership in helping others to coordinate the use of (the particular content), technologies and teaching approaches at my school and/or district. (1) (2) (3) (4) (5)
36. I can choose technologies that enhance the learning of (the particular content) for a lesson. (1) (2) (3) (4) (5)
37. I can evaluate and select new information resources and technological innovations based on their appropriateness to specific tasks in (the particular content). (1) (2) (3) (4) (5)
38. I can use (the particular content)-specific tools (e.g., software, simulation, environmental probes, graphing calculators, exploratory environments, Web tools) to support learning and research. (1) (2) (3) (4) (5)
APPENDIX B

TEACHER OBSERVATION PROTOCOL

Teacher Code: ________  Interview Date: _______________  Interviewer: ______

Demographics:  Class Size: ___  Grade:____  Gender: ___: ___(female: male)

<table>
<thead>
<tr>
<th>Description of Task or Activity</th>
<th>Time</th>
<th>ISTE Student Standards 2016</th>
<th>CRT Codes</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>□ Empowered Learner</td>
<td>□ CRT 1</td>
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<td>□ Citizen</td>
<td>□ CRT 2</td>
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<td>□ CRT3</td>
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<td>□ Innovative Designer</td>
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<td>□ Computational Thinker</td>
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<td>□ Creative Communicator</td>
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<td></td>
<td></td>
<td>□ Global Collaborator</td>
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<td>□ Global Collaborator</td>
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</table>
### Classroom Visuals/Decor (Types of materials on the ways, language of posters, colors, imagery, etc)

### Observer Reflection Part 2: Scale: Use for questions 1-17  
Not present=1, Occasionally= 2, Balanced= 3 Regularly=4

#### Classroom Environment
1. Student seating arrangement is organized in team-based formats during classroom activities/daily instruction. (1) (2) (3) (4)
2. Classroom contains visuals that represent student background, interests or heritage of the students (1) (2) (3) (4)
3. Classroom decor highlights student artifacts such as completed work, in progress work and/or personal or academic forms of expression. (1) (2) (3) (4)
4. Individuals or groups of people that students identify as relevant cultural icons are displayed in the classroom. (1) (2) (3) (4)
5. Individuals or groups of people that are relevant icons to the content are displayed in the classroom. (1) (2) (3) (4)
6. Posters or signs of classroom norms, expectations or academic expectations are visible on the wall, and framed using student relevant language.

#### Student Interactions
1. Student reflection of lesson experiences are incorporated to solicit students feedback, concerns, misconceptions and perceived expectations of learning activities and goals (1) (2) (3) (4)
2. Participation is encouraged and incorporates cooperative learning strategies that allows you to circulate and engage with small groups of students during daily instructional time. (1) (2) (3) (4)
3. Students have an opportunity to have one-on-one consultation with you during class, lunch, after/before school to discuss individual success or content support. (1) (2) (3) (4)
4. Communication between yourself and students is open and includes more than one method to connect to students (i.e. not just talking, but email, Google Classroom, Remind app, or other). (1) (2) (3) (4)
5. Current events related to student backgrounds (i.e. culture, age, social media) are integrated into discussions to build common experiences between students and teacher. (1) (2) (3) (4)

6. Activities to build classroom culture, respect and positive interactions are integrated in each unit. (1) (2) (3) (4)

**Instructional Design and Delivery**

1. Arrangements are made to allow students to showcase expertise during instruction by sharing experiences, knowledge or background relevant to content topics. (1) (2) (3) (4)

2. Technology is used to present content material, demonstrate activities and/or share relevant instructional materials. (1) (2) (3) (4)

3. Incorporates supplementary material to the text and/or standards that relates to various cultural events / experiences / activities with the intent to engage students’ background or experiences. (1) (2) (3) (4)

4. Use a variety of assessment techniques, such as self-assessment, portfolios, performance-based tasks and others on, to evaluate students’ performance in favor of cultural diversity (1) (2) (3) (4)

5. Instructional style uses delivery modes that are visual, interactive and movement-based as a way to cater to the diverse student learning needs in the classroom. (1) (2) (3) (4)

**Observation Reflection Scales Aligned with Research Questions**

<table>
<thead>
<tr>
<th>Q1: To what extent, in what ways and to what purposes do teachers integrate technology into their teaching practice?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignored student cultures</td>
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</table>

<table>
<thead>
<tr>
<th>Q2: To what extent and in what ways and to what purposes do teachers demonstrate cultural competence and call on their knowledge of youth culture as a resource in their practice? Are teachers leverage technology, as an element of youth culture to build relationships with their students?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology Use</td>
</tr>
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<table>
<thead>
<tr>
<th>Q3: How do students respond to teachers’ CRT practices including their use of technology?</th>
</tr>
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<tbody>
<tr>
<td>Disengagement</td>
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</table>
**APPENDIX C**

**TECHNOLOGY INTEGRATION TEACHER INTERVIEW QUESTIONS**

Teacher Code: _________  Interview Date: ________________

Interviewer: ___________________________  Time/Duration: __________

Key = *Italicized* = teacher direct quote  Regular font = summarized thoughts from teacher

| Interview Part I: Lesson Reflection  
these questions will be repeated for each episode |
<table>
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</thead>
<tbody>
<tr>
<td><strong>Questions</strong></td>
<td><strong>Response</strong></td>
</tr>
</tbody>
</table>
| 1. | 1a. I noticed in the beginning of class that you did [list the observed episode], can you tell me why you did that(goal)? Did you think about doing it any other way?  
1b. To what extent does that resemble what you typically do?  
1c. Do you ever use any sort of technology to achieve that goal?  
---If yes, then Explaining Purpose: Why did you select that technology [device/application/tool]? |
| 2. | 2a. I noticed in the beginning of class that you did [list the observed episode], can you tell me why you did that(goal)? Did you think about doing it any other way?  
2b. To what extent does that resemble what you typically do?  
2c. Do you ever use any sort of technology to achieve that goal?  
---If yes, then Explaining Purpose: Why did you select that technology [device/application/tool]?
3a. I noticed in the beginning of class that you did [list the observed episode], can you tell me why you did that(goal)? Did you think about doing it any other way?

3b. To what extent does that resemble what you typically do?

3c. Do you ever use any sort of technology to achieve that goal? ---If yes, then Explaining Purpose: Why did you select that technology [device/application/tool]?

4. End: I really enjoyed seeing what you did today, can you tell me how you will pick up on what I saw in your future lessons?

---

**Interview Part II: Teacher Application of CRT**

5. **CRT 1 Domain:** That’s really interesting, when you are going along in future lessons, how will you define academic success for all students in your classroom?

6. **CRT 2 Domain:** When you are doing your planning for this lesson or similar lessons, how do you factor in your students’ background?
   - Geographic Affiliation (e.g. Philadelphia)
   - Ethnic Culture
   - Youth Culture

7. **CRT 3 Domain:** As part of your instructional planning are there ways you connect their learning to their local experiences, such as current events, national news and/or global themes?
<table>
<thead>
<tr>
<th></th>
<th><strong>CRT Behaviors and Mindsets:</strong> Rank the following beliefs in order of importance relative to your teaching. [SEE BELOW/ATTACHMENT]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Part III: Student and Teacher Technology Use and Interactions</td>
<td></td>
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</tbody>
</table>
| 9. | **Types of Technology Use:** In addition to the planning process, I am interested in understanding how technology assists you as an instructional and/or learning tool. I see you brought a student artifact, can you share how you decided to include a technology-infused project into this particular unit?  
   - How was student background or voice incorporated into the design of this project? |
<p>| 10. | <strong>Meeting Standards:</strong> Upon reflecting on this project, which of the ISTE Student Standards/Anchors do you believe students had an opportunity to demonstrate or apply through this project? |
| 11. | <strong>Student Perception:</strong> Based on these student experiences captured in the ISTE Standards, what do you perceive student’s perception of technology’s role in the classroom is? |
| Interview Part III: One-to-One Laptop Program |
| 12. | <strong>Current Use:</strong> Now, outside of this project, what activities do you use the 1:1 laptops for that you previously completed in a non-digital way? |</p>
<table>
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<tbody>
<tr>
<td>13. <strong>Student Work Quality:</strong> Have you seen any changes in the quality of student work due to 1:1 laptop access?</td>
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</table>
| 14. **LMS Feedback:** One benefit of having laptops consistently, includes access to a digital platform such as Google Classroom. In what ways do you use it as:  
  - A learning management tool  
  - Instructional tool |   |
| 15. **Building Community:** Has the 1:1 Laptops or Google Classroom assisted with building relationships or classroom community with students?  
  - Why or why not? |   |
| 16. **Collaboration/teamwork:** Now when thinking outside of student use, how has technology changed how you work with peers?  
  - Can you think of a specific time when you worked with a colleague using technology, since you have been here at [school name]? |   |
| 17. **Future Recommendations:** Lastly, can you share any final thoughts on the type of considerations that need to be reviewed for the 1:1 laptop program to best support teacher’s instruction and student learning? |   |
APPENDIX D

CRT-TPACK STUDENT FOCUS GROUP QUESTIONS

Opening Statement
The purpose of this focus group is to gather information that will help us understand how technology is used in your classroom, how teachers build safe and collaborative learning spaces and how they include your interests and background in your school experience. This focus group will last for 1-hour. Whatever you say here will remain confidential. That means that we won’t reveal what was said here by individual name, although we will share the information that you share as a whole group. It also means that all of you agree not to share the comments made here with others outside this group. It is extremely important that we all understand the nature of this confidentiality since it will help us to get as clear an honest picture of the learning taking place at the school. I will tape this focus group and transcribe the recording. Where needed, fictional names will be substituted for your real names mentioned here. Since each of your perspectives is important, we need to make sure that everyone gets a chance to express their opinions and no one takes too much of the group’s time. I will take responsibility for time keeping and making sure that we address all of the questions. Use your best strategies to express your opinions without making others feel uncomfortable. I have invited a peer of mine from Temple University to take notes of the focus group, just in case I do not capture everything, as well as helping me manage time. They too, understand the confidentiality requirements.

Focus Group Questions
INDIVIDUAL TASK 1: Students will respond to the questions below by using a colored post-it note assigned to their grade level. After writing they will post their answer on the chart paper.

1. In what subject was your favorite project using technology and why? (Student writes FP in bottom corner of post-it)
2. In what subject was your least favorite project using technology and why? (Student writes LFP in bottom corner of post-it)
3. How do you use technology on a daily basis in your classes and outside of school? (Student writes DT in bottom corner of post-it)

WHOLE GROUP:

4. Can someone share (1) of the FPs they wrote about? How do you enjoy using technology in the project?
5. Can someone share (1) of LFPs they wrote about? How do wish technology could have been used in this project?
6. How has the 1-to-1 learning with laptops or middle school technology in the classroom assisted you with projects like these and/or in other ways?

7. Have there been any disadvantages to the 1-to-1 learning with laptops or middle school technology in the classroom?

INDIVIDUAL TASK 2: Students will engage in a gallery walk experience, walking around to 7 Chart Papers and with a set of post-it notes to record on. Each post-it will have 1 of the 7 ISTE Standards for Students with a student friendly statement to describe the standard’s theme.

8. Directions: I want you to use the post-it notes to list tasks, activities and/or projects you have completed in any of your subjects/classes that relate to the topic listed on the chart paper. Each chart paper has a TOPIC/STANDARD related to how technology can be used in the classroom to help students develop and a descriptive statement that explains the topic. Each post-it should have example(s) and the name of the subject it was completed in. When done you may transition to the next chart paper. The topics are:

   a. Being An Empowered Learner
   b. Being A Digital Citizen
   c. Being A Knowledge Constructor
   d. Being An Innovative Designer
   e. Being A Computational Thinker
   f. Being A Creative Communicator
   g. Being A Global Collaborator

WHOLE GROUP

9. Did anyone bring a project artifact that connects to any of the STANDARDS/TOPICS?

10. Which one of these STANDARDS encourages using student background or voice?

11. Take a poll: How knowledgeable do you think your teachers are when it comes to:

   a. Computers, laptops, tablets
   b. Smartphones
   c. Social media
   d. Internet
   e. Other technologies

12. Do any of your teachers use these devices and/or applications to learn about your interests, backgrounds and then use it in class for learning?

   Transcribe on Poster for all to see: What about your background either as a youth or as a person in general do you wish teachers would include more into your learning?

Closing Statement: Thank you for your participation; your input will be helpful in understanding how you are learning and how your teachers are supporting you. Remember that what has been shared here is to be kept confidential.

Survey Adapted From various resources included in:
National Institute for Urban School Improvement - Conducting Focus Groups to Develop a Comprehensive School Portrait, 2005
http://www.niusileadscape.org/docs/FINAL_PRODUCTS/LearningCarousel/conductingfocusgroupsfinal.pdf
### Conceptions of Self and Others

<table>
<thead>
<tr>
<th>Statement</th>
<th>Rank</th>
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<tbody>
<tr>
<td>Teacher sees self as artist, teaching as an art</td>
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<tr>
<td>Teacher sees herself as part of the community and teaching as giving</td>
<td></td>
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<tr>
<td>back to the community, encourages students to do the same</td>
<td></td>
</tr>
<tr>
<td>Teacher believes all students can succeed</td>
<td></td>
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<tr>
<td>Teacher helps students make connections between their community, national and global identities</td>
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</tr>
<tr>
<td>Teacher sees teaching like “pulling knowledge out” – like “mining”</td>
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### Social Relations

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<th>Statement</th>
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<tbody>
<tr>
<td>Teacher-student relationship is fluid, humanely equitable, extends to</td>
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<tr>
<td>interactions beyond the classroom and into the community</td>
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<tr>
<td>Teacher demonstrates a connectedness with all students</td>
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<tr>
<td>Teacher encourages a “community of learners”</td>
<td></td>
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<tr>
<td>Teacher encourages students to learn collaboratively. Students are</td>
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<tr>
<td>expected to teach each other and be responsible for each other</td>
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### Conceptions of Knowledge

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<th>Statement</th>
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<td></td>
<td></td>
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<tr>
<td>Statement</td>
<td>Reference</td>
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<tr>
<td>--------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Knowledge is continuously recreated, recycled and shared by teachers and students it is not static or unchanging</td>
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<tr>
<td>Knowledge is viewed critically</td>
<td></td>
</tr>
<tr>
<td>Teacher is passionate about content</td>
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<tr>
<td>Teacher helps students develop necessary skills</td>
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<tr>
<td>Teachers sees excellence as a complex standard that may involve some postulates but takes student diversity and individual differences into account</td>
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</table>

These are statements outlined in the book *The Dreamkeepers: Successful Teaching of African-American Children* (2009) by Gloria Ladson-Billings
APPENDIX F

DEDOOSE DATA ANALYSIS OF TPACK-CRT CODE CO-OCCURRENCES
APPENDIX G

DEDOOSE INTERVIEW AND FOCUS GROUP MEMOS

Jessica: So when you lo... ISTE Standards that amplify student voice

Jessica: Thank you. So L... Students use alot of the tools to compile information and present it, but not necessarily to repurpose work or tech added instructional value

Jessica: Leveraging their background in terms of tech preference, socialization needs and general interests

Jessica: Youth culture = voice = ISTE Standards that support this

7th Grader 7: "hard to explain" - student was able to showcase work but struggled communicating the work and purpose. Should students be able to communicate the use of tech and the purpose of tech

Jessica: Okay, Y... Focus on ease of doing work online and having unlimited access to their classes

7th Grader 2: [inaudible] CRT-Tech Focus: Product development and expression

Jessica: Okay, if ... Are there tools provided for these projects? What requirements are embedded in the projects to increase digital literacy and tech tool management and use on the student side?

7th Grader 4: Mine, I s... This quote is all from student #4:

"Developing own pathway of PD caning out space to learn tech tools"

Jessica: Okay, in any w... Marvel Connections: How would the benefit of showing the clip provide added value to the academic experience opposed to just talking about it? How about if there are students that have never seen it but need to

Jessica: Could you share... No Connection: Citizen rights => student background

Jessica: Then yo... Book Club: Building Community

Jessica: In book... WAKE UP THEIR PEERS

Jessica: Then ho... Reflect I asked about added value of Google Classroom to instruction, however response went back to teacher management activity of feedback. Thought: do teachers understand "instructional value" vs "tool management value"?

Jessica: You kin... Opportunities to build community outside of the community by being more accessible.

Jessica: You kin... Potential for student ambassadors, peer supports to help with variability in students/ technology skills.

Jessica: ELA2 Teacher... Teacher Collaboration

Jessica: Now it's... Missed opportunity: technology is used as an incentive. You gain access to social benefits of the tool as a form of motivation to complete work.

Jessica: The teacher was asked how do you use this as an instructional tool (reference: Google Classroom). The response reverted back to classroom management benefits vs instructional activities and outcomes.

Jessica: Now do ... Assumptions about student technology ability, equated youth membership/ tech savviness = tech knowledgeable

Jessica: And in L... "I don't even have to say it" referencing racial issues in Lancaster, PA. The teacher alludes that she does not have to go into detail about this issue because I understand where she is going with the example.

Jessica: And no... The students made a visual supplement to the narrative by hand and did not use technology to draw their hero/ villain creation.

Jessica: Okay, T... The teacher mentions that she avoids using technology was some students (intervention 8th grade) because they are easily distracted, especially with the complex content.

Jessica: Okay, a... The teacher expressed that no technology was used because resources were limited and 8th grades have limited access. However the teacher did supplement with videos from Youtube to drive home specific concepts to students and to pi...

Jessica: Particularly ab... Instead of taking a picture of the calendar, why want a Google calendar shared and then students could save it to their accounts and have access to it

Jessica: Tl: At... Here the teacher appreciates the convenience technology has provided her class, especially for certain students. There are numerous other teachers that share similar sentiments. The question to further examine is whether this is a theme of "te...
APPENDIX I

INFORMED CONSENT: PARENT PERMISSION FORM

Informed Consent: Parent Permission Form

Dear Parent or Guardian,

I am writing to ask for your consent to your child to be a part of a research study that focuses on how and why teachers use technology in their classroom and how students feel about the different ways that technology is used. As an educator and active doctoral student at Temple University, I would like to learn more about students’ experiences using different types of technology. Your child’s feedback will assist educators and other school professionals in understanding the experiences students have when using technology in school.

The title of this study is: Culturally Relevant Teaching Remix: A Study of Middle School Teachers’ Development of Youth Cultural Competence Through Technology Integration and Application. The primary researchers are Professor Michael Smith and Doctoral Candidate Jessica Thomas, both from Temple University’s College of Education.

Here are some things you should know about this research:

- Someone will explain this research study to your child.
- Your child would have to volunteer to be a part of the study.
- Whether your child take part is entirely up to them.
- If your child doesn’t want to take part, it won’t be held against them.
- Feel free to ask all the questions you want before and after your child participates.

Please understand that your child’s choice to participate or not participate in the focus group will not impact their grade and/or interactions with myself. Their participation is completely voluntary and has no impact on school involvement and/or academic standing.

Participating in the study will require participating students to be involved in a focus group discussion that will be approximately 55 minutes in length. Students also have the option to bring in an example of class work to share as part of the discussion. The discussion will be held either after school or during lunch, so students won’t have to miss any class time. Whether students participate or not, they will still be doing the same class work as they normally do.

This research is being overseen by an Institutional Review Board (“IRB”). An IRB is a group of people who perform independent review of research studies. You may talk to them at (215) 707-3390 or irb@temple.edu.

Confidentiality: To the extent allowed by law, we limit the viewing of your child’s information to the people who have to review it (i.e. myself, my dissertation chair). We cannot promise complete secrecy. The IRB, Temple University, Temple University Health System, Inc. and its affiliates, and other representatives of these organizations may inspect and copy your information. However, your child’s name will never be used in reporting the results of this study.
Statement of Consent

I have read the above information and have received answers to any questions I asked. I consent to my student participating in a focus group with other peers and sharing any of their academic artifacts.

Your Student Name: ____________________________________________________________

Your Signature: ___________________________ Date: ______________________

Your Name (Printed): _________________________________________________________

Individual Obtaining Consent Signature: ___________________________ Date: __________

Individual Obtaining Consent Name (Printed): __________________________________

Because the research requires recording your child’s voice, please indicate if you are willing to allow your child to be audio recorded by checking Yes or No below. If you check No please understand that your child cannot participate in the focus group.

___ Yes

___ No

I give my permission for these recordings to be used from: October 2019 to completion of the study.

Data will be stored for three (3) years after completion of the study.

I understand that I can withdraw my permission at any time. Upon my request, the audio recordings will no longer be used.

Yes ____ No_____
Informed Consent: Assent Form for Students Under 18

Dear Student,

I want to find out how students feel about how teachers use technology in their classroom. Therefore, I would like to talk to groups of students so I can hear what they have to say about this topic. Your feedback will help me and other educators understand the most effective ways we can use technology.

If you are interested in sharing your views I will ask you to participate in a discussion with other students. The discussion will last about 55 minutes and will be scheduled after-school or during lunch, depending on when people are available. I, Jessica Thomas, Student Investigator will be running the focus groups.

I am working on this study as part of my doctoral program at Temple University. The title of this study is: Culturally Relevant Teaching Remix: A Study of Middle School Teachers’ Development of Youth Cultural Competence Through Technology Integration and Application.

Here are some things you should know about this research:

- Someone will explain this research study to you.
- You have to volunteer to be a part of the study.
- Whether you take part is up to you.
- If you don’t want to take part, it won’t be held against you.
- Feel free to ask all the questions you want before you decide whether or not to participate.

Please understand that your choice to participate or not participate in the focus group will not impact your grade and/or interactions with myself. Your participation is completely voluntary and has no impact on school involvement and/or academic standing.

This research is being overseen by an Institutional Review Board (“IRB”). An IRB is a group of people who perform independent review of research studies. You may talk to them at (215) 707-3390 or irb@temple.edu.

Confidentiality: To the extent allowed by law, we limit the viewing of your information to the people who have to review it (i.e. myself, my dissertation chair). We cannot promise complete secrecy. The IRB, Temple University, Temple University Health System, Inc. and its affiliates, and other representatives of these organizations may inspect and copy your information. However, your name will never be used in reporting the results of this study.
Statement of Assent

I have read the above information and have received answers to any questions I asked. I assent to participate in a focus group with other peers that include sharing an academic artifact.

Your Name: ________________________________

Your Signature: ___________________________ Date: ________________

Your Name (Printed): ____________________________

Individual Obtaining Consent Signature: __________________________ Date: __________

Individual Obtaining Consent Name (Printed): ____________________________

Because the research requires recording your voice, please indicate if you are willing to be audio recorded by checking Yes or No below. Yes or No below. If you check No please understand that you cannot participate in the focus group.

___ Yes

___ No

I give my permission for these recordings to be used from: October 2019 to completion of the study.

Data will be stored for three (3) years after completion of the study.

I understand that I can withdraw my permission at any time. Upon my request, the audio recordings will no longer be used.
APPENDIX K

TEACHER CONSENT SUMMARY AND CONSENT

CULTURALLY RELEVANT TEACHING AND TECHNOLOGY

TEACHER CONSENT SUMMARY

Why am I being invited to take part in this research?

I am writing to ask for your consent to participate in a study that focuses on how and why teachers use technology in their classroom. I am especially interested in talking with you because you are teaching in a school that has expanded its technology infrastructure.

The title of this study is: Culturally Relevant Teaching Remix: A Study of Middle School Teachers’ Development of Youth Cultural Competence Through Technology Integration and Application. The primary researchers are Professor Michael Smith and Doctoral Candidate Jessica Thomas, both from Temple University’s College of Education.

What should I know about this research?

- Someone will explain this research to you.
- Taking part in this research is voluntary. Whether you take part is up to you.
- If you don’t take part, it won’t be held against you.
- You can take part now and later drop out, and it won’t be held against you.
- If you don’t understand, ask questions.
- Ask all the questions you want before you decide.

What happens to me if I agree to take part in this research?

If you decide to take part in this research study, you consent to the following:

- Completing a digital questionnaire that will take approximately 30 minutes.
- Allowing me to observe you teach a lesson in which you use technology.
- Participating in an audio recorded interview after the observation that will take approximately 45-60 minutes.

- Participate in (1) member check after the interview, which includes reviewing the typed data collected from the interview for accuracy. This will be provided within a month of the interview.

Could being in this research hurt me?

There is no physical or financial risk to participating in this study.

Will being in this research benefit me?

The most important benefits that you may expect from taking part in this research are that you will have the opportunity to reflect on your practice. You will also be contributing to the field’s understanding of how and why teachers use technology.
What happens to the information collected for this research?

We limit the viewing of your personal information to people who have to review it. We cannot promise complete secrecy. The IRB, Temple University, Temple University Health System, Inc. and its affiliates, and other representatives of these organizations may inspect and copy your information.

For this research, all records of the interview will be stored on a password-protected personal computer and shared only with my dissertation committee. I may publish the results of this research. However, I will keep your name and other identifying information confidential.

Who can answer my questions about this research?

If you have questions, concerns, or complaints, talk to the research team at the phone number listed above on the first page.

This research is being overseen by an Institutional Review Board ("IRB"). An IRB is a group of people who perform independent review of research studies. You may talk to them at (215) 707-3390 or irb@temple.edu if:

- You have questions, concerns, or complaints that are not being answered by the research team.
- You are not getting answers from the research team.
- You cannot reach the research team.
- You want to talk to someone else about the research.
- You have questions about your rights as a research subject.

- Confidentiality: To the extent allowed by law, we limit the viewing of your information to the people who have to review it (i.e. myself, my dissertation chair). We cannot promise complete secrecy. The IRB, Temple University, Temple University Health System, Inc. and its affiliates, and other representatives of these organizations may inspect and copy your information. However, your name will never be used in reporting the results of this study.
Statement of Consent

I have read the above information and have received answers to any questions I asked. I consent to completing the digital questionnaire, to allow the researcher to observe a lesson in which I make use of technology, and to participate in an audio recorded interview.

Your Signature: ___________________________ Date: ___________________________

Your Name (Printed): __________________________________________________________

Individual Obtaining Consent Signature: ___________________________ Date: __________

Individual Obtaining Consent Name (Printed): ______________________________________

Because the research requires recording your voice, please indicate if you are willing to be audio recorded by checking Yes or No below.

___ Yes
___ No

I give my permission for these recordings to be used from: October 2019 to completion of the study.

Data will be stored for three (3) years after completion of the study.

I understand that I can withdraw my permission at any time. Upon my request, the audio recordings will no longer be used.