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Creating a Model and Professional Learning to Support the Design of Authentic Student Learning Tasks

Leah McConaughey
Lynn University

Paul Facteau
Lynn University

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Lynn University

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ABSTRACT

LEAH MCCONAUGHEY and PAUL FACTEAU:

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This purpose of this dissertation in practice is to develop a learning/technology framework called the Authentic Learning with Technology Model, and six professional learning modules to help teachers design more authentic student learning tasks in their classrooms. Research shows that student academic performance increases when students are cognitively engaged in the classroom, which occurs when they experience challenging, authentic learning tasks. Learning frameworks, technology, and ongoing professional learning experiences can support teachers design authentic learning tasks when used effectively. Unfortunately, research demonstrates 1) schools rarely use consistent learning frameworks, 2) technology is limited to traditional teaching practices, and 3) professional learning is limited and ineffective.

The study population of interest is New York City public school K-12 classroom teachers, principals, and academic coaches. Participants experienced six in-session professional development modules accompanied by additional online support resources in an iTunes U course. Participants selected and redesigned examples of their own student learning tasks to increase the level of authenticity, in part by the use of technology. Tasks were collected to demonstrate levels of authenticity before and after the professional development. 12 out of 15 tasks (80%) increased authenticity from learning and technology perspectives, 2 out of 15 tasks (13%) stayed at the same level of authenticity, and 1 task (7%) decreased in authenticity.

Participants completed qualitative surveys to ascertain whether or not the professional development modules supported a shift in their thinking towards learning, technology, and authenticity of their tasks. A majority of participants found the ALTmodel effective in helping them rethink the extent to which their tasks engaged students in deeper cognition and effective technology use. Participants also felt the modules inspired them to

change their short-term and long-term practice with respect to designing more authentic student learning experiences that effectively incorporate technology.

CREATING A MODEL AND PROFESSIONAL LEARNING TO SUPPORT THE DESIGN OF AUTHENTIC STUDENT LEARNING TASKS

McConaughey, Leah, Ed.D. Lynn University, 2017

Facteau, Paul A., Ed.D. Lynn University, 2017

CHAPTER 1

Purpose

The purpose of this dissertation in practice is to develop a framework and process with which teachers can design high-quality tasks to implement in their classroom. This work is premised on existing research which demonstrates that authenticity, engagement, and cognitive complexity are key characteristics resulting in higher levels of task quality (King, 2009; Weiss, 2004; Van't Hooft, 2005; Larson, 2014; Barber, 2015; Wiggins, 1998; Koh, 2009), and that technology must be used as a tool to drive deeper cognitive complexity (Weston, 2010; Herrington, 2007; Jonassen, 1998; Salomon, 1991). When teachers systematically design lessons for authenticity, engagement, and cognitive complexity in conjunction with technology, they will be more likely to design higher quality student tasks.

Teachers and administrators should be guided by a commonly agreed-upon model of high-quality task characteristics in order to consistently design high-quality tasks for school or district populations. Numerous researchers and theorists have debated the characteristics of such tasks (King, 2009; De Stasio, 2009; Salomon, 1991), and in response educational frameworks have been created to provide systematic, structured approaches to task design (Weston, 2010). Burton's (2011) analysis and synthesis of six frameworks for authentic assessment identified several common characteristics across all frameworks to describe high-quality tasks including "fidelity of task to the real world, [creation of a] polished product, higher order thinking seamlessly integrated with assessment, collaboration, [requiring] students to make judgements and choices, and complexity (Burton, 2011, p. 24)." This high-quality learning can be supported and propelled by technology when it is used as a cognitive tool to maximize engagement and achievement (Weston, 2010; Herrington, 2007; Jonassen, 1998; Salomon, 1991). Not only can frameworks lead to higher quality task design, but they can also lead to

systematic change across the larger learning organization. Studies have shown frameworks provide the necessary schema to create clarity and common conversation not simply within one individual teacher's classroom but across a school's or district's teacher population (Weston, 2010; Van't Hooft, 2005; Marion, 2015; Vasilijevic, 2011). Ultimately, if teachers are expected to design high-quality tasks to promote student engagement and academic performance they need a clear and common learning model and support in the design process.

Recent school reform initiatives have sought to address challenges of student engagement and performance by focusing on interventions from seat time and resource allocation to flexible scheduling and grouping. Technology has become a key component in many of these reform efforts (Bebell, 2010), but questions still remain about its long-term efficacy (Darling-Hammond, Zielezinski & Goldman, 2014). Research demonstrates technology is often used to simply replace traditional teaching and learning practices (Lam, 2012), rather than drive deeper cognition and creation (Darling-Hammond, Zielezinski & Goldman, 2014; Warschauer 2010).

An increasing number of states have adopted K-12 technology standards as many 21st century career paths will be influenced by or directly depend upon technology ("English Language Arts Standards," 2016; "ISTE Standards," n.d.). Schools have increasingly invested in student devices to provide a more comprehensive digital learning experience embedded within traditional classrooms. Teachers and administrators alike must consider how these devices play a role in supporting student learning through the intentional design of learning tasks, modern assessment, and collaborative experiences.

Statement of the Problem

Teachers' myriad job requirements - writing lesson plans, designing assessments, and communicating with parents - are often taxing and overwhelming even for veteran teachers (Womack, Pepper, Hanna, & Bell, 2015). Teachers often want to engage in designing higher quality curriculum (Handal, 2003; Womack et al., 2015) that incorporates technology efficiently and effectively (Alismail, 2015), but struggle with where to begin. Schools must capitalize on teachers' desires to improve learning tasks by providing them with explicit, systematic models and approaches to increase the effectiveness of their tasks. How can teachers design student-facing, high-quality tasks that align with their content standards and engage students in 21st century skill development?

Three primary issues prevent this systematic approach from happening. First, teachers often lack a framework to evaluate the characteristics of high-quality tasks, resulting in products that vary widely based on teacher interest, training, and the learning goals of the school ("The Three Essentials," 2016). If school districts have adopted a learning framework that addresses assessment, it reflects a more binary approach that simply acknowledges the existence, or lack thereof, of assessment aligned with standards ("Syracuse City School District Teaching and Learning Framework," "LAUSD Teaching and Learning Framework," 2012). Such an approach recognizes the importance of learning, but lacks the qualitative schema of a true learning framework. Second, teachers are often untrained on how to design high-quality tasks. Professional development typically consists of disconnected, fragmented, lecture-based experiences that do not resonate with teachers and their curriculum-design needs (John, 2006), often revolving around operational logistics, rather than systematic approaches to curriculum design (Darling-Hammond, 1999). Third, teachers have either limited access to technology, or they use technology absent or separate from learning (Jonassen, 1998; Herrington, 2007; Davies 2013). Lack of leadership and professional development, as well as a greater focus on distributing and managing devices rather than curriculum and instruction (Weston, 2010) lead to inconsistent classroom

adoption and negligible impact on student achievement and engagement. Unfortunately, teachers and administrators typically focus more on the functionality of technology rather than transforming learning with the device, which thereby masks the fundamental problem. Ultimately, these three challenges prevent teachers from systematically developing high-quality tasks for their students, thus limiting students' overall engagement and academic performance.

Background

Numerous states have developed a common set of content standards deemed essential to the success of K-12 students across the United States. While there have been mixed reviews regarding the initiative, 42 of the 50 states and the District of Columbia have come to conclude that common agreement on standards are appropriate and have become members of the initiative (Standards In Your State, 2016). That said, the nation does not have a framework to help teachers interpret the degree of complexity expected within that content. Specifically within New York City, heightened teacher autonomy allows teachers to individually interpret the definition of a high-quality task. One of New York City's principle challenges is the absence of a common framework for learning and technology integration. Schools have a common lens for teaching, as evidenced by the Charlotte Danielson Framework for Teaching ("Teacher Practice," 2016), but lack both a systematic lens to focus teachers on the characteristics of high-quality tasks, as well as a systematic process for designing them. This is evidenced by the Curriculum and Instruction materials provided to teachers by the New York City Department of Education (NYCDOE), which are individual scopes and sequences, tactical activities (i.e. literature circles), and sample lesson plans ("Curriculum and Instruction," n.d.). These individual resources provide teachers with helpful lists of content and activities, but lack a systematic framework that supports teachers to assess, select and design tasks based on quality measures. One exception to this approach lies within the NYCDOE Department of Science, Technology, Engineering, and Math (STEM), which recently released a qualitative

framework for embedding STEM principles in the school and classroom, specifically within assessment (Benn, n.d.). Unfortunately, the framework's limited scope and application to STEM classrooms only abbreviates its influence across all traditional math, social studies, science, and English classrooms.

Recent school reform initiatives have sought to address challenges of student engagement and performance by focusing on numerous variables from seat time, resource allocation, and differentiation to flexible scheduling and grouping ("What We Do," n.d.). This research focuses on the development of high-quality task design as numerous studies suggest an increase in task quality leads to an increase in student achievement as well as student engagement (Koh, 2009; King, 2009; De Stasio, 2009; Salomon, 1991; Finkelstein, Hanson, Huang, Hirschman, & Huang, 2010; Larson, 2014; Barber, 2015; Li, 2015; Lynn & Baker, 1996). Not only are students more engaged when presented with higher quality, more rigorous tasks, but they also perform better on both standardized and performance-based assessments. These higher quality and more rigorous tasks also have a positive impact on students' perceptions of learning (Van't Hooft, 2005; Finkelstein et al., 2010; Vasilijevic, 2011). Therefore, while myriad factors may play a role in transforming schools, this research focuses on task quality and the fundamental connection with student engagement and academic performance.

High-quality tasks involve students in authentic, engaging, and cognitively complex experiences (Burton, 2011). Authentic work meaningfully connects students with the content and context they will likely encounter outside of school. This work draws inspiration from and mirrors complex challenges and situations professionals experience in their daily work (Cydis, 2015; Wiggins, 1998; Shepard, 1996; Koh, 2009). Engagement provides an opportunity for students to connect with their work on a personal level, thereby driving ownership of their own learning process (Renninger, 2011). Technology can significantly impact the way students engage with their own learning process, from increasing their motivation and excitement, to helping them produce professional-level products to share with the outside community (Saulsburry, 2015). Cognitive

complexity requires students to independently select and apply learned content and skills to complex, unknown situations. Cognitively complex tasks require deeper levels of transfer and application than more straightforward, linear tasks do, and require students to draw upon a wider repertoire of knowledge and skills (Wiggins, 2011; Burton, 2011; Eddy, 2014). Ultimately, authenticity, engagement, and cognitive complexity are crucial design considerations for high-quality tasks, and must be included when designing tasks for increased student engagement and academic performance.

Dissertation in Practice Question

The analysis in this study will attempt to answer the following question: is teacher task design improved through the Authentic Learning with Technology (ALT) model and professional development? Based upon the research developed in Chapter 2 the authors designed the ALTmodel intersecting learning and technology frameworks, and a series of six professional development modules which support teachers in understanding and implementing the ALTmodel to design more authentic student learning tasks. Since academic culture is codified through commonly agreed upon frameworks (Van't Hooft, 2005; Marion, 2015; Vasilijevic, 2011), this work examines the extent to which professional development supports teachers to design and implement high-quality local tasks in order to drive more authentic learning.

Definition of Terms

It is necessary to define several key terms to provide context for this analysis.

- A *teacher-designed task* is any type of formative or summative assessment designed by the teacher and provided to the students to complete either during or outside of school. It does not include district-level, state-level, or diagnostic assessments.
- A *framework* represents a cognitive schema through which teachers and school leaders can make meaning of discrete pieces.
- A *one-to-one* is defined as each student having a personalized device specifically for use in that class as well as after school.
- A *high-quality task* is defined as an authentic task that uses technology effectively to produce a polished, professional-level product..
- *Authentic tasks* are those which demonstrate fidelity to a world outside of school, create a valued professional product, are inclusive of higher order thinking, collaborative, require judgment and choice, and are unstructured and non-linear.
- *Performance-based assessments* are realistic, complex tasks that require analysis, strategy, and the use of a repertoire of skills to self assess and self-adjust.
- *Project-Based Learning* is an approach to task and unit design that contextualizes learning within a task beyond traditional assessments, such as writing papers and taking exams. PBL units typically culminate in a performance-based assessment that requires students to apply learned content to a real situation or challenge.

Significance of this Dissertation in Practice

Many education theorists discuss frameworks for learning and technology, but most do so independent of each other. Studies that align learning and technology frameworks either 1) use Bloom's taxonomy as a foundation ("Our Philosophy," 2016; Moersch 2010) or 2) linearly align learning and technology, thereby implying that

high cognitive learning levels are always associated with high levels of technology, and low cognitive learning levels are always associated with low levels of technology (Puentadura, n.d.; Moersch, 2010). This study goes beyond previous work by simplifying the components to two axes - learning and technology - and providing a three-tiered learning framework based on Grant Wiggins's Acquisition/Meaning Making/Transfer approach rather than Bloom's verb-dependent, six-tiered framework.

This Dissertation in Practice and project is relevant for classroom practitioners, curriculum developers, building-level and district-level leadership including Superintendents and Assistant Superintendents of Curriculum and Instruction, as well as technology integrators. It will provide the foundational context and schema from which to design formative and summative student learning tasks that increase the level of academic rigor, while employing technology effectively to support and propel deeper learning.

CHAPTER 2

The Current State of Student Engagement and Performance

More than ever, American students see a disconnect between what they learn in school and what they encounter outside of school. In a 2011 national poll of over 7300 middle and high school students, an overwhelming 75.2% disagree with the statement that teachers make school work relevant and interesting to them (Wiggins, 2014). A straight 'A' student complained school "feels like going to a [restaurant] and only having one menu item and you have to eat it in a certain way or you fail (Wiggins, 2014)." Similarly, the 2010 High School Survey of Student Engagement found that 49% of high school students are bored every day, and 17% of students are bored every class ("Charting the path," 2010). High levels of disengagement have had deleterious effects on student performance, causing one student to drop out of school every 43 seconds (NASBE, 2015).

In addition to low levels of engagement, various high school performance indicators such as qualitative survey feedback and standardized ACT scores suggest American high school students perform poorly and are inadequately prepared for college work (Gigliotti, 2012). According to the National Assessment of Educational Progress (NAEP) (2015), the average 12th grade student scored 152 out of 300 on the most recent math assessment, which is troubling for several reasons. First, this average 12th grade score in 2015 is not significantly different than the average score from 2005 (150) when the current math framework was introduced. Second, only 25% of 12th graders rated at or above proficiency, indicating that students can only directly apply concepts in familiar settings rather than demonstrate in-depth conceptual and procedural knowledge, including the ability to transfer this deep level of awareness to unfamiliar situations. Similarly in writing, the 2011 scores demonstrated significant underperformance, with only 27% of 12th grade students rated at or above proficient. In reading, the 2015 scores showed only 37% of students rated at or above

proficient (NAEP, 2015). According to the NYC College Readiness Index, which includes state tests, SAT, ACT, and CUNY (City University of New York) Achievement Test data (NYC DOE, 2016), not even half of New York City's high school graduates are college ready, even though graduation rates have risen slightly in the past few years. CUNY data corroborates these results, revealing that 78.6% of incoming students need remediation in order to perform successfully on the collegiate level (CUNY, 2011).

Unfortunately, this ubiquitous student apathy and substandard academic performance are justified. An in-depth analysis of K-12 courses across the United States finds that American schools fall short of providing ideal high-quality mathematics and science education for students. Weiss's (2004) in-depth study classified only 15% of K-12 mathematics and science lessons as high-quality, 27% as mid-level quality, and 59% as low quality. While most classroom content was considered accurate, significant, and worthwhile, fewer than one in five lessons were intellectually rigorous, included effective teacher questioning, or guided students appropriately in making sense of the lesson's content. The same study found active student participation was also severely lacking in these classrooms. Active questioning techniques by the teacher, used specifically to monitor student understanding of new ideas and encouraging them to think more deeply, were found to be relatively rare in both math and science classrooms. In fact, teachers most often used low level fill-in-the-blank questions asked in rapid-fire fashion with an emphasis on getting the right answer and moving on, rather than helping students make sense of the concepts (Weiss, 2004; Weiss, Easley, Smith, Banilower, & Heck, 2003). Wiggins (2011) chastises the American education system for teaching facts and skills in isolation. The approach not only disengages students in the moment, but it prohibits long-term enduring understanding. This fact-based, content-driven, intellectually de-stimulating tasks do not adequately activate students within their own learning process, thus leaving them disengaged with the very concept of school.

This literature review provides an in-depth review of three primary characteristics of high-quality tasks -- engagement, cognitive complexity, and authenticity -- necessary to engage students and promote high levels of academic achievement. The review also discusses the importance of a framework to guide teachers in the design of such tasks. Finally, the review provides an overview of previously established frameworks regarding learning and technology, and reasons for selecting specific frameworks with which to work.

A More Effective Approach to Task Design

Prominent educators from Grant Wiggins (2008) to Tony Wagner (2008) to Robert Marzano (2002) assert the primary goal of schooling is to mirror the environment students will encounter outside of school, one based on complex thought, personalized interests, and authentic performances. In other words, school is not about what students know, but what students can do with what they know. Rather than assign students purely acquisitional, rote, paper-and-pencil content, their daily work should be aligned to the overarching purpose of school and provide students with novel, complex, meaningful work that requires them to understand and apply authentic content in order to solve problems (King, 2009; De Stasio, 2009; Salomon, 1991). Similarly, when educators include resources such as technology into the classroom, they should not implement it simply to meet a requirement or facilitate traditional classroom practices. Rather, devices must guide students to use technology as a cognitive tool to support meaningful, authentic, transference which will maximize the impact on their own engagement and achievement (Weston, 2010; Herrington, 2007; Jonassen, 1998; Salomon, 1991). Three crucial aspects of task design are necessary to achieve this high level of quality: engagement, cognitive complexity, and authenticity.

Engagement

Student engagement consists of three distinct but related themes - behavioral, emotional, and cognitive - which are directly connected with observable school factors such as time on task, attitudes towards school, and motivation to complete work (Bundick, 2014; Fredricks, Blumenfeld, & Paris, 2004; Pintrich & De Groot, 1990; Helme, 2001). These fluid, interrelated themes must be considered simultaneously to provide an accurate description of student perceptions and attitudes towards their educational experience (Skinner & Belmont, 1993). Behavioral engagement, the extent to which students participate in academic and social activities, is typically distinguished by positive (engaged) and negative (disengaged) actions (Birch & Ladd 1997; Skinner & Belmont 1993). Engaged students exhibit behaviors such as regularly attending classes, raising hands and sharing thoughts during class, and participating in after school activities (Fredricks, Blumenfeld, & Paris, 2004). They select cognitively appropriate tasks, persist through difficult situations, initiate requests for support when necessary, and maintain a generally positive disposition throughout the learning process (Skinner & Belmont, 1993). Behaviorally disengaged students may skip school, not pay attention during class, or potentially distract other students. They may show little desire to partake in activities, and can become bored, frustrated, or even outwardly aggressive (Skinner & Belmont, 1993).

Most researchers distinguish only between engaged and disengaged behavior; however, Finn (1989) provides depth by describing various levels of positive engaged behaviors ranging from passive responses, such as willingness to respond to teacher questions, to more active, student-driven engagement such as voluntarily joining extracurricular activities after school. Student engagement is maximized when their attention and focus is clearly directed towards learning and self-propelled by intrinsic interest, rather than external reward (Renninger, 2011; Munns, 2006; King, 2009). Therefore, in order to maximize student behavioral engagement,

educators should carefully distinguish whether the actions are driven by intrinsic (student) or extrinsic (teacher) stimuli.

Most research studies employ qualitative data to determine student behavioral engagement (Fredricks, Blumenfeld, & Paris, 2004; Skinner & Belmont, 1993; Pintrich & De Groot, 1990; Helme, 2001). Qualitative observations may indicate levels of student behavioral engagement, but may also mislead educators to erroneous conclusions. Peterson, Swing, Stark, and Wass (1984) found teacher observations did not always demonstrate an accurate depiction of a student's level of engagement during fifth grade math lessons; teachers observed that students were engaged in the work, when later students interviews proved otherwise. Conversely, some students were labeled off-task during observations, but in reality, they were engaged in the work and animatedly discussing the content. While behavioral engagement designations provide one lens of student interaction within school, educators must be careful not to mistake behavioral engagement for emotional or cognitive engagement. In addition, they should use multiple points of data to validate their conclusions.

Emotional engagement describes the connections developed and sustained with peers and adults within a school setting, manifested by both the quality and quantity of relationships (Fredricks, Blumenfeld, & Paris, 2004). These relationships may impact students' reactions and emotions towards school (e.g., happy, sad, frustrated, bored) and how they identify with school (e.g., whether they feel they belong, whether they appreciate school and its value) (Fredricks, Blumenfeld, & Paris, 2004). Researchers typically measure motivational engagement using a qualitative survey which inquires about positive and negative emotions, general feelings about school and teacher, and the extent to which school is valued. Similar to behavioral engagement, emotional engagement may be difficult to measure since the nature of the emotion may not be specified or recognized by the student and the quality and intensity of the emotion may vary depending on the context of the question (Skinner & Belmont, 1993).

Students' beliefs about themselves impact their level of emotional engagement, which ultimately impacts their level of academic success in school (Connell, Spencer & Aber, 1994). In fact, three emotional components - the level of parental support, students' own perceived sense of self, and students' emotional stability - impact academic outcomes more than their socio-economic status. Interactions with peers and teachers play an important role in helping children adjust to school both academically and socially (Birch & Ladd, 1997; Howes & Hamilton, 1992; Howes & Matheson, 1992; Lynch & Cicchetti, 1992; Pianta & Steinberg, 1992). If teachers develop strong relationships with students through open communication and rapport, students are more likely to have higher levels of emotional engagement and more positive attitudes about school. Conversely, teacher dependency and student-teacher conflicts negatively impact student attitudes toward school as well as academic performance. As such, it is crucial to consider students' emotional engagement, as developed from self-perception and interaction with peers and teachers, when considering their potential academic success in school.

The third type of engagement, cognitive engagement, concerns the extent to which individuals invest their energy to develop and refine complex ideas and skills (Fredricks, Blumenfeld, & Paris, 2004). This includes students' thoughtful, purposeful use of cognitive and metacognitive strategies, often referred to as self-regulated learning strategies, to further their own learning (Meece, Blumenfeld, & Hoyle, 1988; Blumenfeld, Mergendoller, & Puro, 1992). Students who are cognitively engaged plan and assess their work, use learning strategies to process and remember information, and maintain focus while minimizing distractions (Fredricks, Blumenfeld, and Paris, 2004). Students who are highly cognitively engaged demonstrate these behaviors to gain true mastery of the information, rather than simply completing their work. Students on the lower level of the engagement scale may demonstrate specific behaviors such as completing work and participating in class, but they may complete these acts simply to meet the minimum requirement of their school work. Students on the higher level of the effort scale may show similar behaviors, but their motivation is focused not on completing

the work, but gaining a true mastery of the information. Thus, educators should qualitatively distinguish between behavioral and cognitive engagement because their indicators could appear similar; this includes qualitative feedback from the students with respect to their strategies for problem solving, independent work styles, and ability to navigate failure and constructive feedback.

Corno and Mandinach (1983) developed a model of cognitive engagement which describes the highest level of student cognitive engagement as self-regulated learning, and the lowest level of cognitive engagement as recipience, or simple back-and-forth with teachers. This model parallels Finn's (1989) behavioral engagement model in that the lowest levels of engagement are teacher-driven and the highest levels are student-driven. The distinction between the motivation to perform and motivation to learn is crucial when considering the relationship between behavioral and cognitive engagement. Studies suggest students demonstrate greater cognitive engagement when their behavior is motivated by learning rather than extrinsic rewards (Skinner & Belmont, 1993; Meece et al., 1988). Studies also found that high levels of behavioral engagement do not necessarily lead to high levels of cognitive engagement (Blumenfeld et al., 1992; Helme, 2001), thus reiterating the need for teachers to discern between behavioral and cognitive actions.

Several factors influence cognitive engagement: first, the individual student's values, goals, and motivations; second, the culture of the learning environment to either hinder or promote student and teacher interactions; and three, the degree of complex, challenging, intrinsically interesting, and meaningful tasks in which students engage (Helme, 2001; Swing, Stoiber & Peterson, 1988; Clarke & Roche, 2010). With respect to the type of student work, Helme (2001) found that task characteristics such as novelty, context, and promotion of authentic connections, and students' ability to make sense of meaning within a task, significantly influence their level of cognitive engagement. Students must be engaged in meaningful, authentic, challenging tasks to maximize their

level of cognitive engagement, which is crucial because it may directly impact their potential to enter, persist in, and complete post-high school academic work (Finn & Owings, 2006).

Educators can use various models of engagement to support them in developing more engaging tasks because the models provide a clear framework and process for task design (Larson, 2014; Newman et al., 2009). Hidi and Renninger (2011) created a Four-Phase Model of Interest Development to promote high levels of student engagement. Their model parallels the teacher/student ownership continuum developed by previous researchers (Corno & Mandinach, 1983; Finn, 1989), and describes the depth and development of interest as it progresses from situational, where the first spark of student interest develops, to individual, where students self-initiate and intensify their engagement. Teachers can apply such models in the classroom to design tasks that increase engagement for students who typically struggle to maintain interest (Larson, 2014). Similarly, Schlechty (2002) drafted ten design parameters to align tasks with high levels of student engagement, which help teachers design tasks to promote student self-motivation and the intrinsic desire to persevere through challenging, complex tasks (Bowen, 2003). Dietrich (2014) applied Schlechty's engagement model to determine that students need tasks allowing control, choice, and authentic connections to fully engage them in learning. In each example, educators used an engagement framework to design tasks which encourage students to develop a deeper, sustained interest in what they are learning. Ultimately, increasing student engagement can be attributed to increases in academic performance, retention, matriculation and graduation from college (Bundick, 2014).

Technology may positively and negatively impact student student engagement within the classroom. Technology may detract from student engagement by increasing the amount of time they spend on non-academic work (Zhu, Kaplan, Dershimer, & Bergom, 2011), decreasing student interest in class (Mann, 2008), or decreasing the extent to which they understand and remember course material (Fried, 2008; Hembrooke & Gay, 2003). However, technology may play a strategic role in promoting and transforming student engagement

when used appropriately. Effective technology applications positively impact student engagement by promoting ownership over content selection, learning process, and final product creation (Bebell & O'Dwyer, 2010). Technology may also create more authentic opportunities for student work (Saulsburry, 2015), allow students to increase class participation, motivation, and willingness to take on challenging information (Clark, 2015), and allow for students' self-discovery, self-pacing, and interest-driven learning (Barber, 2015). Overall, technology's impact on student engagement levels has both positive and negative implications; however, overall sentiment appears that the most important consideration is not whether or not to use technology, but how to contextualize its integration to align with a student-centered learning experience (Lam, 2012).

Cognitive Complexity

The human brain's central structure of cognition, or knowledge, is its long-term memory. Long-term memory stores multiple depths of information, from discrete facts and skills to cognitively complex understandings necessary for solving problems (Kirschner, 2006). Various levels of cognitive functions are often referred to as cognitive complexity or academic rigor (Marzano, Pickering, & McTighe, 2002; Wiggins, 2011; McCollister, 2010). Cognitive complexity manifests itself in the classroom through student tasks, questions, conversations, and assessments (Matusevich, 2009; McCollister, 2010). While questions, conversations, and assessments are all crucial aspects of curriculum and instruction, this study will focus on cognitive complexity within student tasks.

Educators have developed learner-centered frameworks to distinguish between various levels of cognitive complexity; Wiggins (2011) and Marzano, Pickering, and McTighe (2002) each describe a framework articulating increasingly sophisticated levels of cognitive complexity centered around *acquisition* (basic facts and skills), *meaning making* (contextualizing and connecting content in meaningful ways), and *transfer*

(independent application of content and skills to new situations). Transfer requires students not only to deeply understand basic facts and skills, but to apply that knowledge in authentic performances and novel situations that are non-linear and multi-faceted (Wiggins & McTighe, 2006). Higher levels of the frameworks maximize the functionality of human cognition by fluidly combining content acquisition with complex problem solving.

Cognitive complexity frameworks may support teachers to design tasks aligned with higher levels of cognitive complexity (Barber, 2015; Eddy, 2014; De Stasio, 2009; Finkelstein et al., 2010). Finkelstein et al., (2010) and Lynn and Baker (1996) echo Wiggins (2011) and Marzano, Pickering, & McTighe's (2002) work by outlining several criteria for performance-based assessments (PBAs) which increase the level of cognitive complexity: content quality, curricular importance, and level of meaning. Both research groups describe teachers' use of PBAs to move from linear, acquisition-based tasks to a problem-based approach where students develop a set of strategic analytic steps to transfer their knowledge to other situations. The PBAs allow students to identify solutions to authentic problems based on content and skills learned in class. Similarly, students in Project-Based Learning (PBL) environments solve authentic problems in a non-linear, self-directed, and collaborative approach instead of focusing solely on rote acquisition of facts and skills (Barber, 2015). Teachers used the PBL model to encourage authentic student self-assessment, shift cognitive responsibility to the students, and provide students with the autonomy to engage in problem-based learning experiences. Overall, cognitive complexity frameworks may provide teachers with the necessary structure and guidance to develop more challenging, rigorous, cognitively complex tasks.

Technology supports various levels of cognitive complexity within the classroom. It supports lower levels of learning with support for note-taking (Weston & Bain, 2010), organization (Bebell & O'Dwyer, 2010), and expression of basic understandings of content and skills (Herrington, 2007; Jonassen, 1998). Students who use technology simply to socialize and communicate may perceive technology as limited to lower-cognitive

activities. This may be detrimental to their overall learning process because students will not fully comprehend the power of technology as a learning tool (Li, 2015). Alternately, technology may play a key role in supporting increased cognitive complexity. Jonassen (1998) developed the concept of Mindtools, digital functions such as applications and software programs, to support students' abilities to self-construct knowledge by manipulating content rather than consuming and regurgitating information (Jonassen, 1998). Learners use Mindtools to function as designers who analyze the world, access information, interpret and organize their personal knowledge and represent what they know (Jonassen, 1998). Mindtools actively engage learners in the creation of their own knowledge and allow them to generate thoughts that would be impossible without the tool. Educators who strategically use technology to drive deeper cognition will support students to engage in more complex thinking.

Ultimately, students experience increased academic performance when engaged in higher cognitively complex tasks (Larson, 2014; Koh, 2009; Vasilijevic, 2014). Talley (2013) employed a STEM framework to design transfer tasks using technology and design tools to solve problems and promote innovation. Students performed significantly higher in STEM class than in prior classes where such learning techniques were not used, thus determining that cognitively complex, performance-based tasks are crucial to increased student performance. In addition, Finkelstein et al. (2010) found that a specific project-based approach demanding deeper student cognition led to greater student achievement and success on both traditional and performance-based measures, including their ability to problem-solve and apply knowledge to authentic economic situations. Larson (2014) found that students demonstrated qualitative and quantitative learning improvements when tasks were highly challenging and demanded complex thought. This research ultimately demonstrates that students' academic performance and overall engagement increase when they complete tasks with higher cognitive complexity; therefore, teachers should design tasks that increase academic rigor in order to support better academic performance.

Authenticity

Authenticity describes appropriate, purposeful, and responsible connections to life. Authentic learning occurs in myriad places, from animal species in the wild who teach their young to hunt (Herrington, 2007) to human mothers who teach their young children to talk. Students in school may experience authentic learning through collaborative activities (Jonassen, 1991), teacher mentoring (Collins, 1989), authentic contexts (Brown, 1989), and authentic integrated tasks (Shepard, 1996). Newman (2001) developed the concept of Authentic Intellectual Work (AIW) to apply this concept to student work within a classroom. AIW requires students to construct their own process for learning, use disciplined inquiry, and ultimately create products that are valued outside the school. They must organize, interpret, and synthesize information, mimic professional content used in the field, and communicate effectively (King, 2009; Van't Hooft, 2005). This concept parallels higher levels of cognitive complexity (Wiggins & McTighe, 2006) and cognitive engagement (Helme, 2001) by providing students with complex challenges they will likely encounter in a post-academic environment. Unfortunately, Newmann (2001) argues teachers typically provide low-performance, paper-based, traditional work which fails to meet students' individual needs and interests, thus not engaging them in learning. Educators provide students with the content they need to cover, rather than challenging students to interpret and manipulate the material in authentic settings.

Splitter (2009) directly questions Newmann's work by asking whether school and out-of-school alignment necessarily makes school work authentic. He argues that adults' actions are not authentic simply because they occur outside of school. Additionally, Splitter states that simply connecting students' prior knowledge with current theory and knowledge narrow-mindedly leads students towards predetermined answers. Ultimately, Splitter concludes that a small but significant modification must be made to Newmann's model to provide truer authenticity; educators must convince students that what they learn fits into their own personal understanding of

the world, not just the world as general society views it. Therefore, even though Splitter raises questions about the nature of authenticity and its alignment to a world outside of school, he still believes students should consistently experience this type of work.

Kirschner (2006) questions elements of authentic learning by discussing the balance of direct instruction and student-driven learning. Some educators argue that students realize the full power of learning when constructing knowledge for themselves, and that teacher-driven instructional strategies interfere with students' natural ability to construct their own knowledge. Other educators argue that teachers should provide direct instruction to guide students in their discoveries. Kirschner (2006) supports the latter argument because entirely student-driven learning places an unnecessarily difficult cognitive load on students' memories, thereby not optimizing the learning process. Evidence has shown that minimally guided instruction is less effective and less efficient than teachers who provide specifically designed guidance to support authentic learning processes. He argues the inclusion of problem-solving and student-driven learning is positive, but to include them at the exclusion of facts and knowledge is detrimental. Therefore, teachers must balance between authentic, student-driven learning and appropriately-timed direct instruction.

Numerous educators have developed frameworks for authentic task development (Herrington & Herrington, 2006; Gulikers, 2006; Frey, 2007). Burton (2011) analyzed and synthesized several models to construct a general list of six characteristics of authentic tasks: demonstrates fidelity to a world outside of school, valued professional product, inclusive of higher order thinking, collaborative, requires judgment and choice, unstructured and non-linear. The synthesized list supports teachers in analyzing the level of authenticity within their tasks and identifying potential areas for improvement. These characteristics are similar to those discussed in the previous engagement and cognitive complexity sections, reiterating the interwoven nature of the three themes. The use of frameworks to increase authenticity may improve academic performance by furthering

students' problem solving abilities (Kocyigit, 2013), increasing attention and motivation (Losada, Insuasty & Osorio, 2016) , and deepening higher order thinking skills (Wenglinsky, 2001). However, the gains may be small and take time to develop (Shepard, 1996; Losada, Insuasty & Osorio, 2016).

Technology can be used at various levels of authenticity within the classroom. Lower levels of authenticity include efficient distribution of teacher-centered content such as videos, lectures, and homework (Clark, 2015), completion of homework (Dodson, 2014), and accessing online quiz grades (Dodson, 2014). Higher level examples build upon Newmann's (2001) work and drive authenticity by 1) supporting a transition to project-based assessment, 2) capturing student learning in authentic products, and 3) sharing student work with the larger community (Barber, 2015; Cydis, 2015). Teachers can use technology to create more authentic learning environments which include a realistic context, authentic activities, access to expert models and several other key characteristics that can only truly be provided using technology. As a result, students may see greater connection with their surrounding world and ultimately become more engaged in learning.

Professional Development and its Impact on Teacher Task Design

Research demonstrates teacher attitudes and professional abilities directly influence the transformation of classroom practice (Hammond & Ingalls, 2003), the long-term sustainability of learning initiatives (Garet, 2001), and the impact of student academic achievement (Wei, Adamson & Darling-Hammond, 2010). In fact, students whose teachers were engaged in 14 or more hours of professional development performed significantly better on academic tasks than those whose teachers were engaged in only 5-14 hours of professional development (Wei, Adamson & Darling-Hammond, 2010). Those students whose teachers were engaged in professional development for 49-100 hours focused on a single theme demonstrated the highest levels of academic achievement (Wei, Adamson & Darling-Hammond, 2010). Professional development impacts student

achievement in a three-step process: 1) it enhances teacher understanding of knowledge and skills, 2) better understanding leads to improved teaching, and 3) improved teaching leads to an increase in student academic performance (Wei, Adamson & Darling-Hammond, 2010). Therefore, professional development indirectly impacts student outcomes through its influence on teacher, administrator, and parents' knowledge and practice, all of which ultimately impact students' cognitive abilities, behaviors, standardized test scores, and attendance (Guskey & Sparks, 2002).

Unfortunately, coherent, consistent, collective, and reform-minded professional development is lacking in the United States (Wei, Adamson & Darling-Hammond, 2010). Most professional development activities remain episodic updates of information delivered in a didactic manner, separated from engagement with authentic work experiences (Gravani, 2007; Hawley & Valli, 1999; Murrell, 2001). This decontextualization essentially disregards the value of ongoing and situated learning, thereby reinforcing the perceived divide between theory, or what you learn in a course and practice, or what you do at work every day. The argument against this predominant training model, that learning cannot simply be transferred in a discrete package, no matter how flexible or well designed, has been raised in the educational literature for more than a decade (e.g., Darling-Hammond, 1999; Hargreaves, 2003; Lieberman, 1995; Webster-Wright, 2009). Reports indicate that while beginner teachers with five or less years of experience participate in more professional development than in recent years, most teachers experience less ongoing sustained intensive professional development than they did in previous years (Wei, Adamson & Darling-Hammond, 2010). The decline of professional development intensity is noteworthy because teacher perception of professional development effectiveness, and its ultimately impact on student academic achievement, has been closely linked with intensity (Wei, Adamson & Darling-Hammond, 2010). United States teachers often experience single day workshops that are isolated in content and non-experiential, focusing heavily on singular tips and tricks aligned with short-term acquisition of strategies

instead of promoting deeper understanding of practice (Garet, 2001). These one-time workshops are ineffective and have little to no impact on student academic performance (Darling-Hammond & Falk, 2013).

Alternately, effective professional development is continuous, active, social, and related to practice (Garet, 2001; Wilson & Berne, 1999). Teachers should experience PD activities that increase knowledge of new academic content, positive attitude towards self, students, and academic content, skill development, and the ability to consistently transfer content and skills learned towards own classroom (Joyce, 2002). PD effectiveness depends on content, process variables, and context (Guskey & Sparks, 2002). Content characteristics include constantly evolving academic information, skills, and specific pedagogies to teach particular content (Guskey & Sparks, 2002). Process variables include how PD activities are planned, organized, facilitated, and followed-through (Garet, 2001). Activities should stress the importance of active learning and include alternative forms of PD such as coaching, action research, demonstration, and modeling (Joyce, 2002; Louis & Miles, 1990). Demonstration and modeling, when combined with acquiring knowledge or skills, is more impactful than acquiring knowledge or skills in isolation (Joyce, 2002). Studies found that teacher transfer to their own classroom is significantly increased when coaching is added as part of the training experience, but not significantly increased when additional content is added (Joyce, 2002). Teachers who are coached develop greater skill more frequently that others who had the same initial training; they experiment and share findings more quickly, show increased long-term retention and refined their abilities to offer flexible, nuanced classroom practices, explain new teaching models to students, thus increasing students' own metacognition, and demonstrate more awareness of purpose of new strategies (Joyce, 2002).

Context characteristics include how teachers are grouped, when and how often they meet, and the larger context of how and why they will use the information they encounter (Joyce, 2002). Experiences should focus on problem-based, student-centered, inquiry-focused learning leading towards the development of more

performance-based assessments like projects and open-ended design constructs (Darling-Hammond & Falk, 2013). Overall, more progressive PD features long-term collaboration, alternative ideas and methods, and is grounded in student thinking, curriculum, and pedagogy. Sustained, intensive PD impacts teacher knowledge and skills, seamless integration of practice into school goals, and collective participation and coherence (Garet, 2001).

Joyce (2002) suggests several design characteristics when planning effective professional development, such as forming collaborative groups, identifying a collective problem to solve, and providing structured time to monitor implementation and measure impact. This collaborative inquiry process should include inter-visitations, collaborative research, and ongoing reflection, which are more responsive and have a greater potential impact on changing teaching practice. The professional development conversations should occur over time to give teachers opportunities to practice and receive feedback on their new strategies (Garet, 2001). This personalized, teacher-driven professional development model is crucial because it requires teachers to identify the crux issue and ways to solve it, identify resources to solve the problem, and decide upon their own final solutions. Ultimately, this supports teachers to actively collaborate to solve genuine problems within their professional practice (Boud & Middleton, 2003; Burbank & Kauchak, 2003; Lave & Wenger, 1991; Lieberman & Miller, 2001; Oakes & Rogers, 2007; Webster-Wright, 2009).

Previously Established Frameworks

Learning frameworks are crucial to support teachers in developing high-quality student tasks. Krathwohl (1992), Marzano, Pickering, & McTighe (2002), Webb (1997), and Wiggins (2011) have developed frameworks that describe depths of learning from basic procedural content and skills to increasingly complex applications of content. Lower levels require basic knowledge and skill acquisition and result in more linear, fact-based

learning. Middle levels require students to connect facts and skills, and understand the impact they have on each other. Increases in complexity result from the ability to link seemingly discrete information to form generalizations that can be applied to other situations, other subject areas, and the outside world (Marzano, Pickering, & McTighe, 2002). Facts and knowledge are not minimized, but rather given purpose, direction, and context. Deeper levels of learning, also called cognitive complexity, require students to independently apply their understanding of facts and skills to new, non-routine, complex situations. At this level students do not simply memorize facts and skills, nor do they just make connections between those facts and skills in a larger context. Rather, they transfer facts and skills to unique, novel, multi-faceted situations (Marzano, Pickering, & McTighe, 2002). Wiggins (2011) argued the importance of intentionally teaching all three levels at any given time in order to maximize student learning; however, the flow of learning and structure of tasks should not necessarily follow the same order as they progress in their complexity. Essentially, learning should not begin with acquisition even though it is not as cognitively demanding. In general, all four learning frameworks similarly support educators to understand the progression from basic to more complex learning, and thus may significantly impact the structure and process with which teachers design student tasks.

Krathwohl (1992) and Webb (1997) differ from Wiggins (2008) and Marzano, Pickering, & McTighe (2002) in several significant ways that influence task design. First, they assign hierarchical value to individual cognitive processes. The original and revised Bloom's Taxonomy (Krathwohl, 2002) offers six levels of cognitive complexity such that a student cannot engage in a higher level until she successfully masters the one(s) below it. This may negatively impact the breadth of teacher task design by requiring students to remain in the fact-based, de-contextualized levels without ever being exposed to the higher cognitive levels (Wiggins, 2008).

Second, Bloom and Webb assign each level with one or more verbs to guide teachers in articulating the types of task appropriate for each level (Webb, 1997; Krathwohl, 2002). Unfortunately, teachers may select verbs and

ultimately design tasks randomly rather than purposefully, without proper articulation and teaching support for each nuanced skill (Yamanaka & Wu, 2014). Third, Bloom's and Webb's taxonomies place significant effort on the cognitive level of the final product, but not the context within which that product is created. Their highest cognitive levels emphasize specific thought processes, but do not emphasize authentic, performance-based, engaging, authentic situations in which those thought processes should occur (Krathwohl, 2002). Students may make connections between various skills and content, but they may not yet transfer that knowledge within an authentic, performance-based, engaging situation. Therefore, while Bloom's and Webb's focus on cognitive complexity, the study focuses on Wiggins' Acquisition/Meaning Making/Transfer framework; the latter describes a progression of cognitive complexity while maintaining the importance of authentic, engaging contexts, which the research above has shown critical to increasing student engagement and academic performance.

Just as various learning models directly inform and influence the design of student tasks, technological models influence the incorporation of 21st century technology resources. Several learning frameworks identify essential conditions for effective technology implementation (Mishra & Koehler, 2006; Shulman, 1986). Mishra & Koehler (2006) designed The Technological Pedagogical Content Knowledge (TPACK) model to emphasize technology's place in support of content and pedagogical knowledge. Few teachers possess the requisite knowledge or experience to effectively incorporate technology into their classrooms, even though schools have continued to increase the amount, quality and connectedness of the technology (Sahin, 2011). Teachers often see pedagogy, technology and content as discretely separate (Niess, 2005) so TPACK's unified approach is crucial. TPACK is a foundational component for teachers' pedagogical development (Angeli and Valanides, 2005; Koehler et al., 2007); without a framework that considers the interplay between the domains, teachers may consider technology an insignificant addition to teaching and learning (Pierson, 2001), instead of designing high-level learning tasks utilizing appropriate and effective technology (Koehler et al., 2007). TPACK

recognizes the unique and interactive roles that content, technology, and pedagogy play in authentic teaching and learning environments and suggests the consideration of a new form of knowledge extending beyond content, technology and pedagogy alone (Mishra & Koehler, 2006).

Ruben Puentedura (2009) provides qualitative depth to TPACK's synthesized approach with his Substitution, Augmentation, Modification, Redefinition (SAMR) model. The SAMR model depicts a vertically aligned four-layer model of technology use, moving from substitution to redefinition, the highest level where technology allows for the creation of new tasks that were previously inconceivable (Puentadura, 2006). SAMR provides unique depth to the technology component of the TPACK framework, but remains disconnected from cognitive complexity and pedagogy, which may cause further difficulty in implementing technology effectively (Niess, 2005).

Several models attempt to align learning with technology while also showing depths within each category. Puentadura (n.d.), the International Center for Leadership in Education (2016), and the Levels of Teaching Innovation (LoTi) Framework all align SAMR with Bloom's Taxonomy; unfortunately, in each instance SAMR is aligned with Bloom's Taxonomy, and is done so in a direct, one-to-one approach indicating that lower levels of technology are always paired with lower levels of learning, and higher levels of technology are always paired with higher levels of learning. This correlation may mislead educators to incorrectly assume learning and technology are always explicitly linked when in reality, one may reasonably find examples of high levels of learning with no technology, or low levels of learning with transformative technology.

CHAPTER 3

In order to shift student engagement and academic performance it is imperative to drastically shift the types of learning tasks students experience. Schools must transform their current model of rote content acquisition to one of transfer within complex situations that incorporate technology in meaningful and intentional ways. This Dissertation in Practice focuses solely on task design, specifically, the quality of teacher-designed types students engage with on a daily basis. The proposed framework called the Authentic Learning with Technology Model (ALTmodel) provides a lens on how educators should design and structure tasks so students are more rigorously prepared academically for the complex challenges they will encounter after their K-12 experience *(Appendix A)*. This framework intersects Wiggins' AMT learning framework with Puentadura's SAMR framework, thus asserting that technology must act not as an independent goal, but a tool to drive higher cognitive complexity.

The framework is accompanied by six professional development modules which support teachers and principals to reflect upon their current task design, shift their thinking using the ALTmodel framework, and support them to design new tasks with higher cognitive complexity and more sophisticated uses of technology.

The proposed professional development modules were crafted around the design considerations outlined in Chapter 2: forming collaborative groups, identifying a collective problem to solve, and providing structured time to monitor implementation and measure impact. The professional development modules took place over a series of collaborative, experiential, and process driven in person sessions supported by interactive online resources collated in an iTunes U course. This format provided both synchronous, challenge-based conversations as well as consistent access to asynchronous models and resources. Teachers and principals did not engage in singular exposure to best practices; rather, participants worked with colleagues to develop a collaborative community of practice by asking probing questions and challenging each other to improve. Participants dove deeply into a singular question around task design over a series of several sessions, with time

to experience and learn the concept in the context of a professional learning community. Participants also had opportunities to transfer their learning to their own situation within the context of the larger group, thus increasing the likelihood of permanent change.

The product consists of an asynchronous, online iTunes U course supplementing six in-person professional development sessions during which participants learned how to design authentic tasks by effectively integrating technology with deeper learning (*Appendix B*). Participants designed their tasks using the Authentic Learning with Technology model framework (ALTmodel) which intersects Grant Wiggins' Acquisition/Meaning Making/ Transfer (AMT) framework (Wiggins, 1998) with Ruben Puentedura's SAMR technology framework (Puentadura, 2006). AMT demonstrates a progression of increased cognitive complexity situated in authentic, meaningful performances (Wiggins, 1998), whereas other frameworks define cognitive complexity as discrete verbs/processes absent of larger context (Webb 1997, Krathwohl 2002). SAMR is a widely-used technology framework that describes not just the presence of technology, but the depths of technology (Puentadura, 2006). This model relates back to the question "Can teacher task design be improved through the ALTmodel framework and professional development?" because it demonstrates engagement, authenticity, and cognitive complexity are crucial components of teacher-designed tasks that along with effective technology implementation, can be used to increase student engagement and academic performance (Jonassen 1998, Bebell & O'Dwyer 2010, Larson 2014, Newman et al., 2009, Finkelstein et al., 2010, Lynn & Baker 1996).

Principals and teachers were trained during six 5-hour, in-person professional development modules, offered once per month for six months, on the concept of the ALTmodel and how to design student-learning tasks with deeper learning and more sophisticated technology. In-person modules were offered once a month for six months to provide a regular cadence of conversation, reflection, and learning throughout the majority of the school year, avoiding all testing and holiday vacations. In-person modules were supported with online resources

compiled in an iTunes U course which were accessed at any time. Participants attended the in-person professional development modules in order to have access to the online resources. Overall, the in-person sessions provided teachers with an overview of the ALTmodel framework as well as hands-on, personalized training on how to design tasks in their respective grade levels and subject areas. Each category of learning (acquisition, meaning making, and transfer) and technology (substitution, augmentation, modification, and redefinition) were analyzed so participants were comfortable with the concept and vocabulary of the framework. Participants were supported in understanding the process of designing tasks for each of these levels, largely based on Grant Wiggins' Understanding by Design approach (Wiggins, 2011). This approach delineates the various levels of learning and stresses the idea of designing backwards from the deepest level of learning - transfer - instead of focusing solely on basic acquisition. Participants also received basic training on the functionality and use of the device so they were comfortable navigating the tools and designing tasks that incorporate technology. The technology introduced not only replicated students' typical tasks such as taking notes and reading textbooks, but supported teachers' understanding of how the device can be used to deepen cognitive complexity and transform learning in their own classrooms. This ties back to research which demonstrates technology is most effective when used to deepen learning instead of simply to replace pen and paper (Herrington, 2007; Barber, 2015).

In preparation for the modules, the principal created a compelling understanding for the need to change. The principal articulated a clear motivation for teachers to improve learning opportunities for all students. The principal also collected artifacts to share with his/her staff so the staff can create their own sense of urgency and agency. The principal identified trends by looking at data such as student and teacher attendance, student and teacher perceptions of school, academic performance, teacher evaluations, and sample tasks. The principal created a school goal around how task redesign through the ALTmodel can align with current initiatives and

goals within the school. During this preparation time, the principal identified whether or not the entire staff or a small subset of teachers will participate in the professional development.

The goals of the first module, *Inspire*, are to 1) develop empathy for students around their current experience and 2) articulate the desired school experience for all students. Teachers and principals asked the questions: What does it mean to be a student in our school? What do educators want students to experience? How do educators want students to feel? During the session, teachers/principals empathized with students to better understand individual needs, strengths, and motivations, and identified the characteristics of ideal school environment based on needs of identified students. By the end of the session teachers/principals had a common articulation of what they feel classrooms should look like based on the mission/vision of their school, including the type of work students should be engaged in.

The goal of the second module, *Rethink*, is to shift conceptual understanding of task development with respect to authenticity and technology. Participants asked the question: How can educators build common conversations around task design with authentic learning and technology? During the session, participants analyzed sample school tasks to determine characteristics of innovative and traditional tasks, evaluated where individual tasks fall on the ALTmodel with respect to learning and technology, and identified school-wide, grade-level, and content-area trends regarding task design characteristics. By the end of the session participants had a common understanding and conversation regarding depths of authentic learning and technology, as well as an ability to effectively interpret tasks and discern between high/low levels of authentic learning and technology.

The goal of the third module, *Reflect*, is to enable participants to evaluate current depths of authenticity and technology within classroom tasks using a common framework. Participants asked the question: Where are our own tasks on the ALTmodel learning/technology framework? During the session, participants applied the

ALTmodel to their own task design and conduct norming activities to create common agreement regarding ALTmodel concept and language. By the end of the session teachers reflected upon and interpreted *their own tasks,* discerning between high/low levels of authentic learning and technology, and created a school-wide distribution of selected tasks on authenticity/technology scale.

The goal of the fourth module, *Model*, is to infuse practices from other schools to help inspire and guide task development. Participants asked the question: What practices can educators learn from other schools? During the session participants reviewed and evaluated other schools' sample tasks and learning models, discerned which practices are most applicable to achieving their vision, and determined which practices they may adopt and how. By the end of the session participants understood how the current state of their tasks differs from their ideal vision of what their classroom tasks can and should look like with respect to authenticity and technology.

The goal of the fifth module, *Design*, is to increase the authenticity of student learning tasks through the use of effective technology. Participants asked the question: How can I apply the framework and models to redesign my students' learning tasks? During the session participants learned an approach for authentic task design, then applied that approach to their own tasks. By the end of the session participants had detailed before and after depictions of their task redesign.

The goals of the sixth module, *Implement & Refine*, are to develop confidence in participants' implementation in their own learning environment, and improve practice based upon learnings from previously implemented tasks. During this school-based PD session participants asked the questions: What practices have educators systematically implemented in our classrooms? What ongoing support do educators need? During the personalized, site-specific session, the authors visited teachers and principals in their school environment, and supported them in implementing and evaluating their next steps. This included additional modeling, leading

walkthrough, task analysis, or planning. Details for all modules including agendas, keynote presentations, and materials can be found in the iTunes U course entitled "Authentic Learning with Technology."

Participant Feedback

In order to test the potential efficacy of this professional development series, a group of principals, academic coaches, and teachers from nine New York City public schools provided qualitative feedback on each of the sessions. Principals, academic coaches, and teachers were identified as the expert group because they are the intended audience for whom the professional development was designed. All teachers represented either traditional content areas (math, English, social studies, science) from grades 9-12, irrespective of alignment with a New York State Regents Exam, or any K-6 teacher with a focus on any content area. All teachers were selected by the school principal to participate in this professional development. All teachers had a minimum of three years teaching experience with no extra curricular activities such as department chair or athletic coach. All principals and academic coaches had a minimum of three years in their current New York City school.

The participants experience each of the first five modules and provided qualitative feedback by answering the following four questions after each module (*Appendix C*):

1. Did the session help transform your thinking? If so, how?
2. What part of the session could have been improved to help you transform your thinking?
3. What kind of follow-up would you like to see as a result of today's session?
4. How might your practice change as a result of today's conversation?

Many participants found the ALTmodel effective in helping them rethink the extent to which their tasks engaged students in deeper cognition and effective technology use. One participant wrote *"I found [the] idea of SAMR and UBD clarified and put in a more simple form to help us analyze whether or not we are meeting "rigorous" standards."* Another wrote *"Vetting our tasks and forming an approach to let students get a chance to do their*

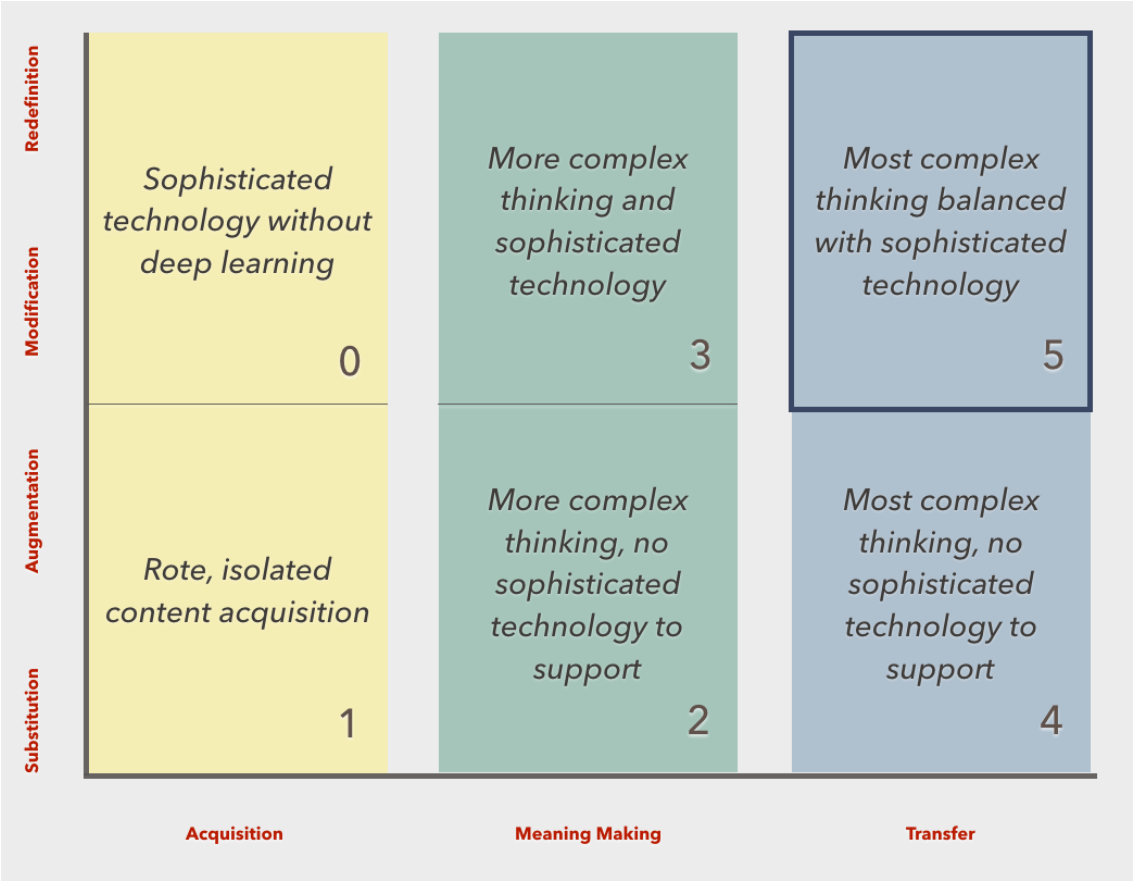
own inquiry rather ing than tell or showing them what it do. Also, examining how to make learning transformative to apply to the real world." A third wrote *"The way to think about how to structure tasks and assignments was especially useful."*

In addition, many participants felt the modules inspired them to change their short-term and long-term practice with respect to designing more authentic student learning experiences that effectively incorporate technology. One participant wrote *"I want to get back to helping people evolve their use of technology to help them move their students up the learning scale."* Another wrote *"[I will] design purposeful assignments based in acquisition, meaning making and transfer model."* A third wrote *"I am inspired to get back to the classroom and continue to think of ways to take my lessons to the transfer level."* A fourth wrote *"[I will change] how I plan lessons in respect to SAMR and authentic audiences."*

Participants felt the modules could have been improved by providing more time, a wider array of examples from other schools, and additional technology apps and functions. One participant wrote *"[I wanted] more time for onion peeling activity to thoroughly give and receive feedback on the CBL Challenge."* Another wrote *"Perhaps another example or two of how other schools are using it who have gone through this process."* A third wrote *"What other apps can be used to integrate and enhance technology for curriculum purposes - it would have been helpful to have more time to practice using new technology."* A fourth wrote *"It would be great to find a structured way to capture some of the work we do during the session using the tools available on the iPad so that by the end of the sessions we have digital artifacts from all of the days."* The authors will incorporate the feedback into our revisions to provide participants with more time, models from other schools, and experience with the devices.

Analysis of Student Learning Tasks

In addition to qualitative feedback, during Module 5 learning tasks were collected and rated on the ALTmodel to determine if there is an increase in the authenticity of learning and/or the depth of technology use. The ALTmodel was divided into six sections, each with a corresponding rating of 0-5, based on its level of authenticity and technology (*Appendix D*). The first column (Acquisition) is less authentic because it includes basic facts and skills isolated from authentic applications and transfer of skills. The top level receives a score of 0 because it represents sophisticated technology without deep learning; in other words, the depth of technology is not aligned with the depth of authenticity. The bottom level receives a score of 1 because there are low levels of authenticity and low levels of technology; the depths of authenticity and technology are aligned, but they are low.



The second column (Meaning Making) is slightly more authentic because students make connections between what they are learning and the outside world, but there is no transfer of skills to a larger, authentic challenge or problem. The bottom level receives a score of two because there is more complex thinking and authenticity, but no sophisticated technology aligned to that thinking. The top level receives a score of three because there is more complex thinking and levels of authenticity aligned with more sophisticated technology.

The third column (Transfer) is most authentic because it requires application of content and skills to solve legitimate problems identified by students. The bottom level receives a score of four because there is the most complex thinking and levels of authenticity, but no sophisticated technology to support it. The top level receives a score of five because it shows the most complex thinking balanced with sophisticated technology.

Participants brought original student learning tasks to the session, then redesigned the tasks to increase authenticity by increasing depths of learning and technology. By the end of the session, participants had detailed depictions of their initial and redesigned tasks. 15 redesigned tasks were anonymously collected and rated by the authors using the ALTmodel (*Appendix E*). Ratings were compiled in a table to determine if there was a change in the level of authenticity and/or learning (*Appendix F*). Responses were compiled and reported anonymously so as not to identify individual participants or schools. Participants' answers are confidential and the records of this qualitative data will be kept private. In any sort of public report, the authors will not include any information that will make it possible to identify participants. Data records will be kept in encrypted files and only the researchers will have access to the records. There are no benefits to participants other than the professional development and associated support in developing learning tasks.

12 out of 15 tasks (80%) increased authenticity from learning and technology perspectives, 2 out of 15 tasks (13%) stayed at the same level of authenticity, and 1 task (7%) decreased in authenticity. For task 13, which

decreased in authenticity, the designers started with a task that was low level in both learning and technology. Students were given paper nametags introducing them to the other students. They present information about themselves such as background information, family, and interests to the other students in the class. Based on the ALTmodel this was given a score 1 because it was low levels of learning with no technology. The teachers redesigned the task such that students create QR codes, a website, or a wiki page to house this information. The task decreased in designation from a 1 to a 0 because the designers modified the level of technology but did not increase the level of authentic learning.

For task 12, which stayed at the same level of authenticity, the designers changed specific elements of the task and added technology, but the level of learning stayed the same and the technology served to enhance, not transform, the task. In the initial task students were asked to read Mary Shelley's Frankenstein, complete a chapter review packet and then write an essay. Based on the ALTmodel this was designated a 2 because it was at a meaning making level of learning and had no technology. In the revised task the designers added technology such as a video conference and a blog, but the technology did not significantly modify the task. The level of learning did not change, so the designation remained a level 2 on the ALTmodel.

For task 9, which increased in authenticity, the task increased in its level of learning as well as sophistication of technology. In the initial task students were asked to summarize a book and write five paragraphs, which was given the designation of a level 2 on the ALT model because it is at the meaning making level of learning but with no technology. In the revised task the designers increased the level of student choice, authentic audience, and cognitive complexity of the task by asking students to not only read the book, but convince others to read it based on a student-designed pitch. Based on the ALTmodel this was designated as a 5 because the task increased from a meaning making level to a transfer level, and more sophisticated technology was included to significantly modify the task.

Summary

The initial results of the study suggest the ALTmodel and professional development supports teachers, coaches, and principals to redesign student learning tasks which increase authenticity and the effectiveness of technology. The majority of participant-identified tasks transformed from lower to higher levels of learning, engagement, and authenticity, as well as lower to higher levels of technology sophistication. This is significant because the ALTmodel and professional development provided teachers with a unified, concrete approaching for designing and evaluating authentic student learning tasks.

The professional development supported participants to change their mindset and design deeper learning tasks incorporating technology. The majority of participants felt the modules changed their understanding of how to evaluate and design a student learning task with higher levels of cognitive complexity and more sophisticated technology. Almost all constructive feedback centered around needing more time and examples from other schools to gain a better understanding of how to apply this work. Approximately one-quarter of participants provided specific, logistical suggestions such as group management and app requests that will be incorporated into future iterations of the professional development modules. Overall, the modules provided a solid professional foundation for task redesign based on the positive feedback they received.

In this study we demonstrated this model and professional development supported changes in educators' understanding, mindset, and ability to design authentic tasks. The sample size of participants as well as redesigned tasks was small but significant due to the quantity of positive results received. Further qualitative and quantitative research could be designed in order to conduct a deeper analysis of the impact of the ALTmodel and accompanying professional development on the design of authentic student learning tasks. Further studies should continue to focus on core content areas such as math, English, social studies, and science,

and include teams of teachers, coaches, and administrators to provide balanced conversation between various stakeholders. They may also compare the intended curriculum, as planned in these professional development modules, with the enacted curriculum that is actually implemented in classrooms. Finally, further studies could examine samples of student work and compare the levels of authenticity, cognitive complexity, and technology use in the original and redesigned tasks.

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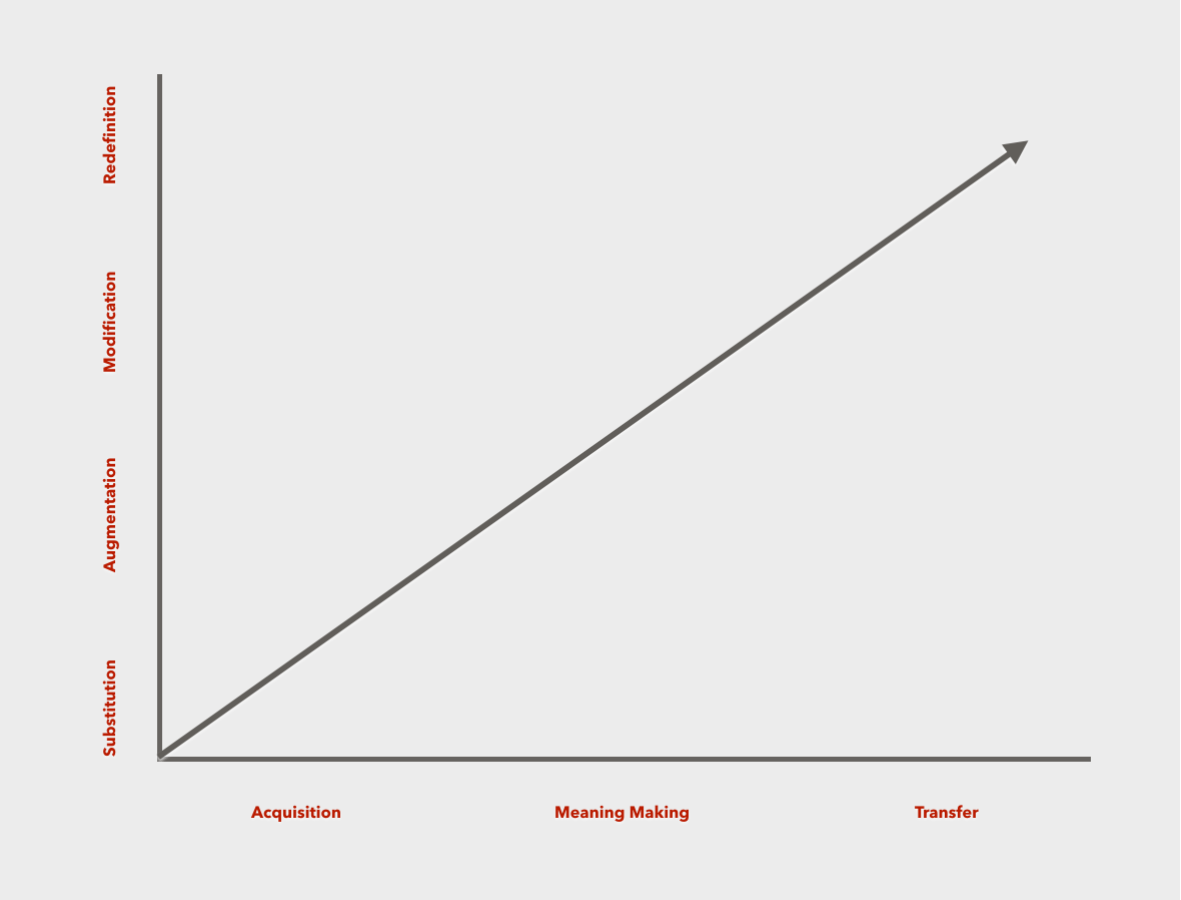
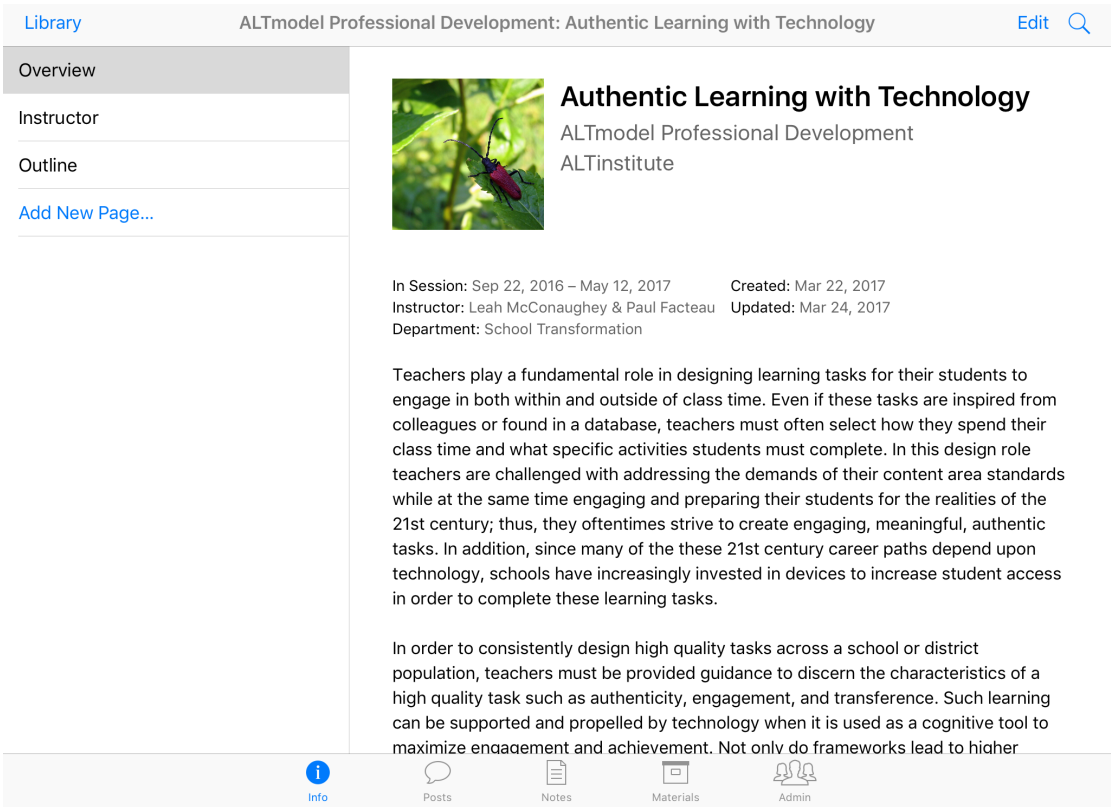
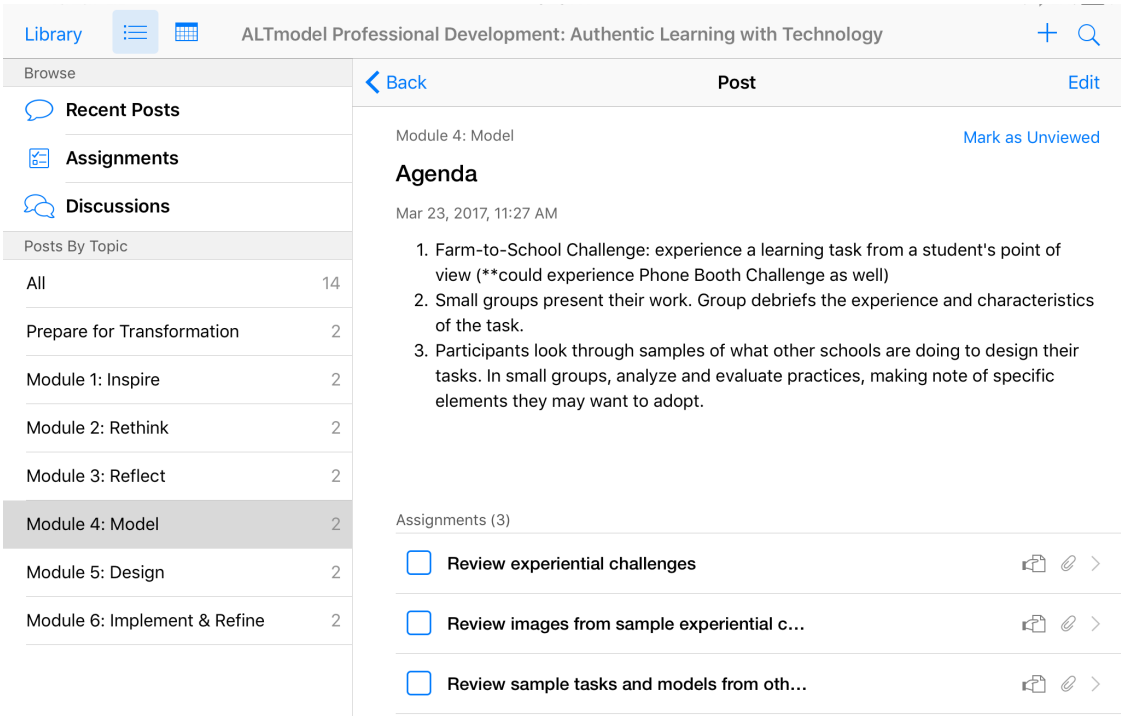
APPENDIX A: Authentic Learning with Technology Model (ALTmodel)



APPENDIX B iTunes U Course Sample Images





Appendix C: Qualitative Feedback

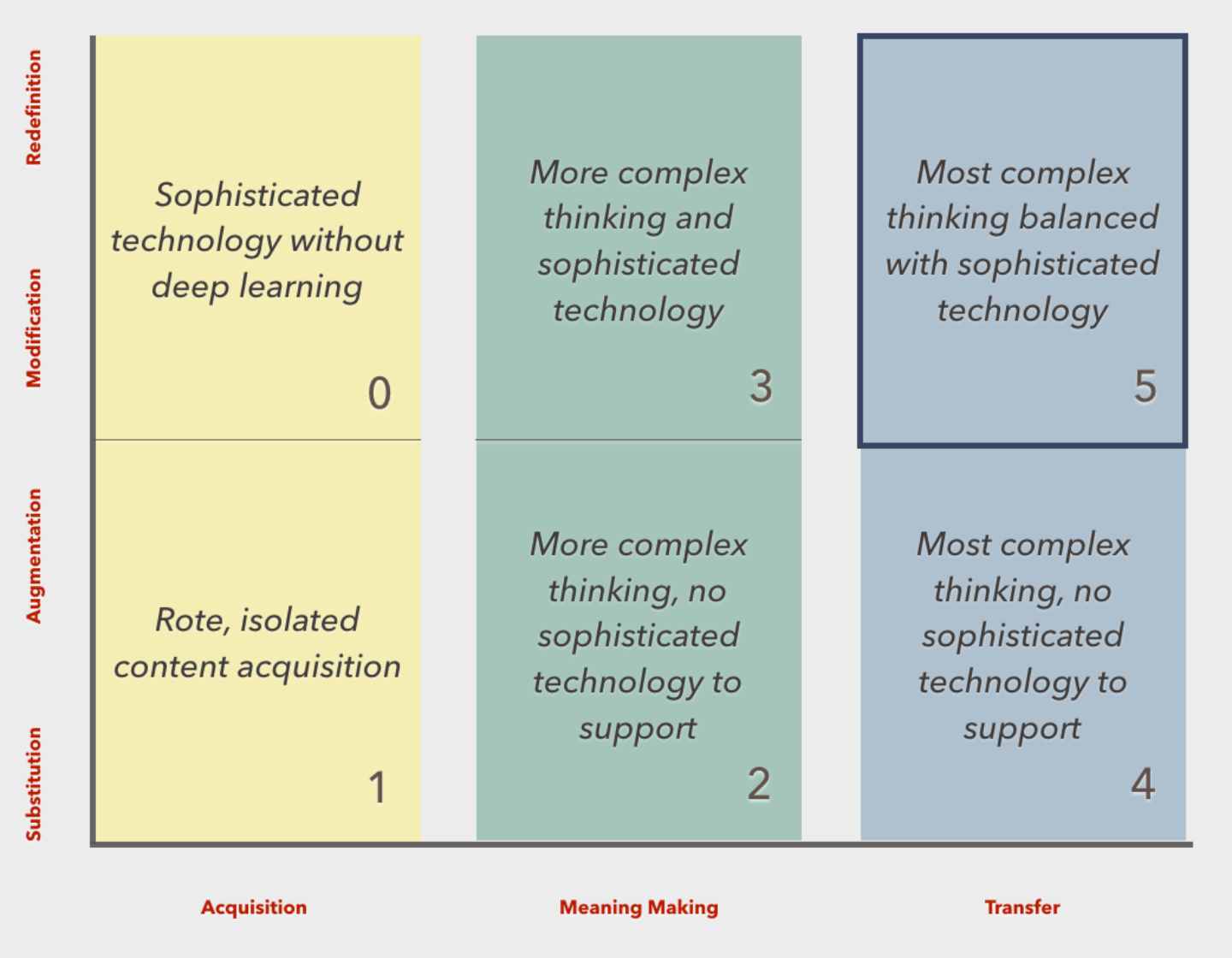
	Module 1	Module 1-2	Module 2	Module 2	Module 2-3	Module 3	Module 4	Module 4	Module 6
What part of the session helped you most transform your thinking?	The opportunities to discuss our work with another school and gaining feedback that made us realize how to break down our goals and objectives.	I liked the approach of addressing the integration of technology from the perspective of transforming learning and thinking about the "why" first.	Thinking about how to establish a clear vision and plan to use technology effectively as an instructional tool.	The entire concept of technology enhancing/ augmenting the learning process, and taking learning to the next level.	The idea of using SAMR/ AMT to assess levels of learning and technology use when creating learning activities and experiences for students ----and also using this acronym to assess the teacher's use of technology	Before and After activity iTunes U Course One Best Thing	hands on phone booth activity, video interview/ presentation with principal	It was useful to actively work on a project	Planning time with school team
	Time to collaborate and brainstorm about our goals and objectives.	I liked how the information focused on technology that transforms learning.	Description of SAMR model	It was especially useful to be reminded that learning should drive technology and not vice-versa. I thought the SAMR discussion was a great way to evaluate our use of technology in the classroom	I feel that as a newer teacher, I found that reminding us that teachers should be facilitators and allow students to do the exploring is very important. I enjoyed learning about innovated apps and tools that can be utilized. I also loved the analogy of why kids love video games so much.	SAMR model is definitely a goal for me to incorporate more of the transfers.	Today helped us create a plan of what tools we can use and where to start in our school. Also, The photobooth challenge was a great way to give us an idea of what our students will feel like.	All of it...particularly having the opportunity to work on the Challege Based Learning project	team building and creating a purpose for the use of the I-pads and laptops
	Goal creating and making a time line	I loved the analysis of how to transfer and use technology to pass into the transform level.	I am now able to think about technology in education in a different light.	Seeing how easy it is to navigate instructional items.	I found Dr. William Ruben's idea of SAMR and UBD clarified and put in a more simple form to help us analyze whether or not we are meeting "rigorous" standards as per making a classroom student centered vs. Teacher centered	I will be using One Best Thing as a resource. I enjoyed seeing the technology my peers are using in the classroom.	Delving into the tools and being guided to use them through a challenge- Collaborating	What I found useful was the fact that we were able to use everything we were learning all throughout the sessions, in this last session. We were able to use the technology and create a mini project which put us in the students position to try and problem solve and organize in order to present information...	The amazing collaboration between colleagues was inspirational and powerful for us as a school.
	Identifying an action plan to implement the big idea through goal setting and anticipating the challenges that lie ahead. Also, to address those challenges- coming up with a problem-based approach that will deliver - technology driven Literacy school-wide initiative.	Every single minutes was useful. Thinking about planning using golden circle and SAMR-I'm on it!!	Firstly, the vision of how technology should be used as a tool to push for a rigorous tool, and not as an end in itself. Secondly, using the workshop to attract and move the practice of all of my stakeholders, be they swimmers, shark watchers or flag-holders. Thank you, I believe the work that we do will help push my ELL's toward reaching the literacy CCLS	The fact that a simple video could bring such a great task for he students.	I learned the differences between the traditional teaching to innovative teaching. It is not just acquisition but transfer learning using technology and taking it to the next level, and outside the classroom.	i think it's great to hear real examples of what is happening in each classroom. I also think it's great to know that the expectation is not to make it Disneyland everyday, just work toward that next step.	The team leaders taught me about all the different kinds of apps that can be used by my students. They gave me ideas that I can improve in my classroom. Plus, looking at a school as a whole and thinking what can help our student's become ready for today's world.	Learning how to use the Apps in a real scenario was very helpful. Now I know how it might look in the classroom and some of the techniques that actually require time and a lot of planning.	Lots of team building planning time
	empathy training	Felt the exposure to SAMR was the most useful part of the day.	Ideas presented about iBooks Author and utilizing iPads and computers in new ways. The 2 girls who designed the water filter made an impression	The hands-on approach to learning. The time we had to "play" with the tools. The focus on teaching and learning as opposed to "technology".	How to use technology effectively into the classroom. The fact that we need to make sure our activities are student centered and not teacher centered.	Love the examples.	Learning about the different apps and books available in iBooks and in the App Store	Thinking about WHY when making decisions that we are looking to impact others. - iBooks Author -Air Dropping	Setting goals and objectives.The One Best Thing Collection on iBooks. I think setting one to two goals was more realistic.
	Thinking about how to implement a schedule into the school year to try to accomplish and reach our top priority goal.	Everything	I liked the philosophy of the student-based/project-based approach. I felt this workshop was about education, instead of selling Apple products. We just purchased two class sets of iPads. We already know about the products and the software. We need exactly what Paul and Leah were talking about: ways to improve education using these devices. Having Apple help us with this is the best reason to continue buying these products. Our plan I s to buy a huge number of iPads, one per student for grades 3-5 (and we have five to six classes per grade) and then begin with grades K-2.	The information was useful. Introduction to iTunes U and post it was helpful.	I loved learning about iBooks Author and analyzing the different levels of tasks (acquisition, meaning and transfer along with SAMR	I loved collaborating with other districts and discussing how to take my lessons to the transfer level.	Modeling the technology via a project based lesson. The FaceTime chat with a principal who is 3-years into this framework.	I found the organization of ideas to convince the pole holders to get on board. Also the different stations for learning how to use certain tools.	collaboration, got teachers engaged, got teachers excited about the new tools,
	I felt that exploring how our "Merrian" would react to the new school technology mission and replies to their concerns was most useful.	examples from other schools	It was helpful to see the use of different apps, iTunes U and post it plus.	Arranging the tasks on a continuum and using the SAM-R framework for thinking about where a task falls and the intersection between technology and learning.	Great information and discussion. Presenter is very knowledgeable and practical .	How to use various apps in the classroom and for project based learning.	Very helpful	It was very participant focused- I think it really helped the school teams focus their planning around their goals and mission.	
	Very useful was the pair-up discussion with another group...brainstorming was great	The SAMR model was very useful	Loved the samr explanation	i loved the different apps we we used. I didn't know how to use them in the classroom. Now I have an idea of what I want to do in my lessons	the exposure to apps the videos the time to plan	The books for educators in iTunes U was awesome!	the ability to think big and experiment while also using the tools that we hope to use more with our students.	The hands-on activity about the telephone booth.	the pedagogy discussions were helpful for us as ITC's because it supported what we are trying to do in schools with staff re:instructional technology
	I found the visualization component of today's lesson helpful.	I found the examples of student work on excel useful	Purposeful and engaged learning through technology.	I found the presentation of new tech tools that can be used in the classroom.	Moving from Aquisition to meaning making to transfer.	I loved seeing and hearing about the lessons shared. I also benefitted from the various models used to visualize how to "update" a lesson..	I really appreciated the exposure to:Pages and Numbers. It was also insightful to hear from Diana.	We had time to think about the process and point of view allowing staff it see the vision for the future island.	The information provided was VERY helpful! I left reflecting on what ways I personally need to make changes in my instructional practices in a way that allows my students to become more active in their learning process.
	It helped us to organize our thoughts and prioritize our goals.	I found the SAMR model to be a great model to plan and evaluate projects.	the design arc	Using Pages and numbers. I also enjoyed using Postits.	Learning about the different levels of using technology and the different levels of learning (acquisition,meaning making, transfer).	The idea that in order to have a "transfer" lesson there are many skills to reach first. Transfer isn't a daily goal, but more like Disney World. It's a place you want to go to, but can't go daily.	Speaking with people from other schools Speaking with David and other reps The Phone Booth Challenge (seeing other people's projects)	I enjoyed learning to use iBook author	The time we were given to work with our teams and talk about the issues that mattered to us. Then create a focus and goal. This will help our school, even if we weren't getting ipads. I also appreciate the view that the ipads are just a tool to help us work towards these goals. The presentation used many metaphors, which I personally find very helpful.
		The discussion on the why		It is the first time I used an IPad, so everything I learned is amazing.	SAMR- my thinking has been transferred onto a different rail. How can student work be advanced to a transfer level?	Inclusion of teacher's actual class projects/ activities	Talking to other schools, Learning about the tools and they support instruction	I loved being able to experiment with iMovie, keynote etc It was helpful to experience andsee how, with very little direction, a group cloud create such varied responses to the problem. I liked that we were given options of what resources to use.	I found it very useful to narrow down our objectives and then the timeline that we created. Also, really getting to take with people from our building and sharing ideas.
		new ideas		Everything! Particularly using iTunesU, Pages,Post-it Plus, APP, and creating a clearer picture of what our future island is beginning to look like.	SAMR really helped me think about how I can push the learning and use of technology for our students.	There were several helpful examples and leads in good directions. It was interesting reflecting on how I am using the SAMR model in my classroom, and using some of the group time to enhance my original tasks.	Rethinking our school's culture	I found everything useful with this PD. Through the conversation that were brought up my school was able to think about what is needed to make the changes we want to make.	Cooperative work
				it gave me useful ideas on how to slowly introduce new technology to teachers	Thinking about the learning and technology components of our tasks.	The One Best Thing collection and the AMT axis of the graph indo	Being able to experience the apps and apple iWork products. Participating in the phonebooth challenge was especially helpful and we would like to replicate that with our staff.	I really enjoyed working on the phone booth challenge. It gave me the opportunity to not only work with the different apple apps but it was a great example of how to create real world problems for students to work on.	Working together as a team to come up with a plan for my building
				Starting the process of envisioning where we want to be and telling our story.	Vetting our tasks and forming an approach to let students get a chance to do their own inquiry rather ing than tell or showing them what it do. Also, examining how to make learning transformative to apply to the real world.	The gaming model. Thank you for keeping it "real." I don't feel overwhelmed, not every lesson has to be transferred. I'm leaving with a different mindset.	Modeling what can be done w kids	I was really impressed with the way our teachers came together to create our presentation this morning. We all shot out ideas and worked collaboritvely to create a presentation we were proud of.	Discussing our essential question and what we plan to do about it
				Being exposed to the endless possibilities of using Apple products in the classroom.	I liked learning more about iTunes U. As well as the iBooks in order to make our our book. I look forward to working with my colleagues in using this further.	Hands on engagement with the material.	learning how to incorporate tools such as iTunes U, keynote, and numbers.	I loved the phone booth problem for providing us with the experience of this version of learning I also found valuable to the debate between my teachers surrounding the "what to bring back to the teachers."	It was a good opportunity to set a vision and action plan with other faculty members. It was also inspiring.
				The different apps that were introduced. Being able to talk with colleagues about our "new island".	Turning traditional tasks into more innovative and engaging activities, iTunes U library, SAMR	SAMR and Acquisition, Meaning Making and Transfer	Introduction to useful apps that can be used in the classroom to further engage students in their learning.	Thinking about engaging teachers in the work	Having the opportunity sharing ideas and concerns with colleagues.
				I love how there was opportunities for me to collaborate with my colleagues. We really had the opportunity to discuss what our vision is for our school.	Being able to see the different learning levels and samr technological levels of tasks was helpful in discussing our next units/tasks and making last minute changes as we prepare to begin our firsts cbl units.	Finding your assignments on the samr / amt scale and converting it into more	The q&a with 442, the modeling of specific applications of tech	The Phone Booth Challenge	Relation to our educational goals and assistance with creating those goals.
				The information found in iTunesU. Crafting my vision for what technology will look like in my building.	Taking current lessons, evaluating them and figuring out how to make them more of a transfer lesson	seeing the SAMR model and acquisition, meaning making, and transfer go hand in hand	The Phone Booth Challenge!	How to use Ipad as a education tool.	Post it timeline
				Post it plus and pages	How to incorporate technology in my lessons. How to use iTunes u as a tool.	SAMR	discussing goals and having the time to think and practice	completing the project	Collaborating as a team on how to move forward
				The information that was provided was very useful. The discussions allowed for everyone in the team to share their thoughts.	The SAMR model is very useful.	iTunes U info		It was very useful to be engaged in the challenge based learning activity. It provided us a lot of time to work on I Earning the apps and formulate ideas for implementation at our school.	The visuals, the personal stories and situations
				The different kinds of apps that I can use to help me make life easier.	SAMR, Creating an iTunes U class overview	I found that having the visual of the SAMR model was beneficial in helping me plan ideas for future lessons.		Looking at different types of technology to present information. Being presented with an engaging activity to challenge my group with.	
				Actually getting to use an iPad. Collaborating with team members also was beneficial.	I really liked working to make a task more meaningful for my students in my class by using the "chart" you provided for us.	Collaborating with others; gaining ideas to bring back to the classroom.		The great phone booth task	
				The post it app and the various courses that I can begin to go through to create a curriculum.	The way to think about how to structure tasks and assignments was especially useful.	Lots of great ideas		The hands on training	
				so many things but I really found the post it app useful. For example, I can see how to use the numbers app in engaging student learners by the comment side after items have been sorted. Teacher always ask me best ways to get student reflective on the types of questions they ask or compose. I always advocate a post it sort after students have composed the questions. The post it ap would be an amazing tool to deepen the thinking and discussion around that.	New apps and features that were displayed and introduced.	One best thing and general collaboration			
				The use of the Post-It app and iTunes U useful.	Showing the use of the different technology. Having time to think about the task and the changes that can be made.	Explanation of SAMR, and One Best Thing books			
				how to apply Ipads to my lesson.	I enjoyed looking at examples of how we can take a lesson from acquisition to transferring. The Kobe Bryant task was amazing!!!!	The small group discussion on how to move a lesson to the next level and how to incorporated technology into these lessons.			
				Discussing how to to forward to creating a better environment for you and your school.	Learning ways to flip learning and teaching children how to transfer what they have learned.	The definition of SAMR and ways to implement.			
				I love that we worked on our vision for our school. I think that it is really important there is a clear vision for any project implemented in any school. I am looking forward to seeing how we are going to create and faciltate our own visions.		educators sharing successes in the classroom.			
				Collaboration		Learning how to use the SAMR scale properly			
				I loved learning about the different apps like I-tunes u or post-it plus available and how to incorporate them into the classroom.		itunes U			
				The step by step process that we were taken through to learn all that iTunes U has to offer. How all the things can be implemented in our classroom.		The apple resources			
						The presentation by Leah and Paul was very useful			

	Module 1	Module 1-2	Module 2	Module 2	Module 2-3	Module 3	Module 4	Module 4	Module 6
What part of the session could have been improved to help you transform your thinking?	Thee didn't really feel like thee was enough time to thoroughly analyze the work with outside observers. More time for the "onion" protocol.	I thought it was thorough and very informative for an overview. In future sessions, I would like to learn more about how to use technology in the classroom.	Perhaps another example or two of how other schools are using it who have gone through this process	N/A	I really liked the "storytelling"/ documentation aspect that was a part of the structure of session 1. It would be great to find a structured way to capture some of the work we do during the session using the tools available on the iPad so that by the end of the sessions we have digital artifacts from all of the days	more time to work one on one with experts in iBooks, course creation	nada. one recommendation for the series for your future sessions, start with that interview/presentation with the principal, then break off into the school vision white board activity. then in future sessions, play that video again so folks to check in with her challenges and reflect on how theirs are similar and different. it's very powerful to see the example of a school who has already implemented and dealt with many of the challenges but powered through	I would have liked for the instructors to through the varios programs. At times I relied too much on help from my colleagues	N/a
	More time for onion peeling activity to thoroughly give and receive feedback on the CBL Challenge.	Maybe more time to cover other examples of useful apps.	Many of us are already working with Bloom's taxonomy and Webb's Depth of Knowledge. It would be helpful if you tied the projects and potential you describe to them and help us see the connections.	More Apple!!!!!	N/A	The weather...too much rain...lol	Loved the talk with the principal. Would love to have talked more with her or her teachers. Looking forward the the January meeting!	More time :-)	More technology instruction and implementation
	IDK	more time to explore options for my school.	I would have liked some more examples of how technology has been used in some of the apple educators classrooms.	More time!!	I feel everything went smoothly.	It would have been helpful to have more time to practice using new technology.	I had no expectations- I was ready for anything- thus, I thought it went well.	There seemed to have been a very full itinerary of activities which we were not able to get to. Everything seemed important and fun to do I just wish there was more time to do it all.	Always a bit more time!
	What other apps can be used to integrate and enhance technology for curriculum purposes.	More time!!	Looking at some of the App's, perhaps, if we had technology available	Need more time to dig into this further. I know that was not your doing since we sort of limited the time.	I think what could have improved in today's session is to have us do some of the activities using the apps.	I think it was greats,	It's a little overwhelming, the quick way of showing how apps can be used.	The activity was excellent but very time consuming. Maybe we could have designed something shorter using a specific app. Maybe we could have been divided into groups , one group using keynote , one group using iMovie etc. do like a zigzag activity where we share how to use the different apps	More time!!!!
	More specific strategies similar to empathy training to facilitate developing objectives	Not much of anything.	Perhaps. ... A little shorter	A more detailed walk through the different programs used to create the end product. I.e. Solver. Coaches eye	Everything was wonderful	More time to explore the information given. Time is hard! It is always a challenge.	The NYC Phone Book project was fun, but I wish here had been more time as we were playing with iMovie and other features I for the first time anymore time to learn about them - or some tutorial on them with hands on practice would have enabled me to feel more comfortable with them.	Nothing	Technology provides numerous tools that teachers can use in and out of the classroom to enhance student learning. Teachers are excited to learn about these tools and have expressed this as a need.
	Giving us ideas on how to incorporate technology into the school or suggest a starting point.	N/A	We are very interested in working with Apple this year, so we can make good use of our iPad investment. As I mentioned above, we have two class sets. Our data specialist (me) had an iPad club with a fourth grade ESL class last year. This year, there will are third and fifth grade ESL iPad clubs. Also, every teacher has an iPad that they use to update their teacher website, track student data in Numbers and in other apps, and create class materials and homework sheets in Pages. They have had these iPads since November 2011 and are well-trained and comfortable using them. We would absolutely love to meet with Apple, in our school, so we can build this capacity with a strong foundation.	In your e-mail invite be sure to recommend bringing iPad	A little more hands on.	More time!!	More time with Paul and Leah and to collaborate (This whole experience has been incredibly powerful and meaningful) more often - Mega Bravo to you both!!!	N/a	?
	I'm curious, what apps could be used to improve and implement our mission?	make interactive	Getting closer to what it might look like on an ipad -- actual use	It would be helpful to spend some time with creating classes on ITunes U as this will be helpful with assistance.	Another hands on task, perhaps.	Smaller groups	Nothing	Time to explore all products	The room acoustics... sorry!
	More practical classroom applications and examples of technology use in classrooms	More examples of how a lesson would look.	More examples would be great as well as a the presentation sent ahead of time	We would like to see more apps and brainstorm ideas to implement them in our school.	add a place in the course description for participants to log thoughts in at various intervals related to their thinking about their tasks	I thought everything was very well done.	You did a great job	Maybe a small homework assignment using one of the medias.	only the presentation room
	I feel as though the "Onion Peeling" activity could have run for longer. There were so many questions that I had for our partner school.	a more interactive session	Some conversation among principals and how they use technology perhaps.	It was great	I would have liked to have been more hands on and also to have received more resources	I would have liked to see the iTunes Best of Everything books more organized.	I thought it was great. Of course, more time to process and debrief is always favorable.	Some time to explore ITunesU and get some guidance as to which resources are useful for classroom content.	Overall I enjoyed the session!
	Nothing at all.	I thought it was very well done for such a shot amount of time.	more hands on minds on UBD from school leadership perspective - we are onboard with the why	I thought it was a well designed course that maximized our use of time.	Showing us how can we do this at our schools?	Using the time at the end more. Giving more practical ways to implement using the iPads in the classroom.	We would benefit by having to complete projects using basic programs, such as Keynote, Pages, Numbers	More time to work hands on	It would have been nice to know what the final outcome of our work was before we started (creating a timeline for our school to work towards a goal). There needs to be a little more clarification in regards to what constitutes as a challenge, and the difference between a goal and an objective. We eventually understood, but it could have been made more clear through explanation.
		More apps		Apps downloaded ahead of time. Individual iPads.	Nothing	No suggestions. Felt the pace and content was great	More time to use the tools - we needed more time for the phone booth challenge	As always, More time.	I wish we would have had more time.
		na		Everything was great!	More reference to elementary schools.	Nothing.	More time to apply our activities	Nothing.	Knowing that some groups already did some of the planning. Those groups were anxious to move on.
				Nothing.	I would have liked to see some of the work created from the sample tasks that we looked at. What was the process teachers used to develop the tasks?	The afternoon session felt rushed.	Maybe more time to share resources with other schools maybe- having time to talk and find out what other schools are using and having success with.	Nothing it was a great pd.	The training was very good but the room that it was taught it was not the most conducive. When we worked in groups, it was very loud and hard to hear at times. It is of no reflection on the trainers. They were wonderful.
				it would've been great to know to bring my own ipad	Technology is being discussed which is great spans we get to see what's out there. I feel like I need practice actually walking throuh the use of the recommended apps. I need more practice navigating I TunesU.	Nothing- thank you	Timing. But that's always an issue	More time on our presentations, as well as more time to work out a plan to get our staff back in our school on board.	Not sure
				I should have brought my own iPad.	More time to use these and be able to ask questions while we were in them. I know that there will be problems that arise and you will not be with us in our building.	Streamline of other presenters.	Needed more time to complete phone booth challenge.	lol longer day to do more	I think it could have been accomplished in one day.
				Everything was great.	A list of apps to use in elementary schools.	More time to look at books on iBooks.	More time to use the apps	It was very meaningful! Nothing to change.	I know the this is not all about the iPads, but having addressed many of these concerns before, it would be helpful to have training on the tools available to us to relay back to the teachers.
				Nothing!	Lunch later... We all think better before we eat.	Better wifi	More modeling of resources, a more in-depth q&a with other leaders in the field	The session was great	more walk through of apple products/apps to assist in teaching
				I think the session was great. Leah and Paul were so knowledgeable and the team that walked around for support were super helpful!	All good	I think more teachers need to be included in these workshops.	More time to play with different tools.	Introduce more apps that we can use such as editing pictures.	Nothing
				I would have lived to see more examples of where this work can be headed.	Nothing	Having more teachers attend who are not already comfortable with this, who aren't our already 1:1 classrooms.	more time?	timing	Not sure
				More hands on work	More hands on training	I thought the flow was great and topics not overwhelming for the attendees. So, nothing.		Time flew. But times flies when your having fun.	If we had technology to view things us to help us learn a bit
				Everything was great.	Nothing. I learned a great deal.	I think that everything was great--I enjoyed having time to collaborate with a group to revamp a lesson using the SAMR model.		More time!	
				Nothing	I would have like some groups to share their tasks and how they changed theirs as well.	Nothing.		More time to learn the apps...iBook author... Keynote etc	
				I didn't need to see the endless parade of introductions. Creating one and seeing a couple was enough for me.	More hands on time with some of the apps	Nothing, I feel the information was presented clearly and paced well.		More than one activity for hands on training	
				Getting into the actual course material or being given time to explore it	More hands on work.	Lunch??			
				I cant think of anything.	Some more hands on activities that will allow use to think more about the school.	More examples of SAMR lessons			
				I thought everything was great.	I would have like to see more apps that we can use when completing specific tasks	We were asked to follow a student and take snap shots. I think had we shared them in small groups that might have led to some interesting discussions.			
				it was great!	Show examples of problems from a wider range of grades. It's hard to visualize how something would work in lower grades.	The distinction between Meaning Making and Transfer.			
				It was great		more time. There's never enough time to go over all of the innovative and exciting resources.			
				I wish i was informed to bring my school ipad so i would have the resources in front of us to bring back with us to our school.		More time to discuss topics with other teachers in similar grade levels			
				Slow down and give more process time		I would have liked to talk to more math teachers.			
				I would have liked to learn how to set up an I-tunes u classroom.		More time to apply what was learned			
				An email explaining all materials we should bring.		Make it playful through a game to open us up some more, at least a short one in the beginning maybe			

	Module 1	Module 2	Module 2-3	Module 4	Module 4	Module 6
What kind of follow-up would you like to see as a result of today's session?	Viewing the videos and other documentation from the other schools.	More programs and apps that we could utilize. Last time we download really useful apps. I.e. Post its. 3m	Creating iTunes U units	I would love to have additional instruction time on the various apps that are available with the iPads and Mac s	feedback for CFN 201 schools' implementation- a rep at some site visits	Rollout of use and maintenance with students -App suggestions
	To see how how other schools implement their GLCs.	Just an opportunity to continue adding to the stories we began telling today---using the tools we were introduced to today as well as tools you will introduce us to next session.	I would like to see more practical, hands-on activities. Basically, how does using all of this technology and tools actually looks like in the classroom?	Meetings with the principals or magnet team in the summer or early fall to plan follow-up pd, if necessary.	First, with help organizing the technology that we have. Next, to come and see what we are doing well and what we can do better.	more training for teachers that are not used to implementing technology
	More work with my team.	iTunes U classes	Doing research for using technology in the classroom for specific subjects like history can be challenging. I want to try to get my students to be on a Transfer Redefinition level, but feel I need an extensive list of resources to have students create things such as Paul's math presentation on Kobe's 21ft dunk.	Given our program will roll out this dual language program I would like for there to be one or two point people to meet with us next school year and throughout the summer if possible. This will make sure to keep everything we learned fresh in our minds because just like students, without reiteration and practice, things can easily be forgotten.	If it is possible, help us to find grants or learn ways in which we can acquire iPads for our students. We are hoping what we learned here from your support will be transferred through our excitement for doing the project	Peer observations? Maybe more examples of what mirrored struggling schools, with a similar population in an urban, high poverty district, have strategically done to teach their kiddos and see success!
	See some samples of educators who ave addressed their technology goal initiative.	More Apps! And some examples of how schools are implementing common core instructions using cbl	How to create iBooks, or creat a puppet made with pals, etc	I would like to receive more info on apps and tools that can be used , specifically on bilingual classes.	We need to know fundings to help my school to get tablets for my students.	Any that you can provide
	Not sure what I am supposed to be checking. There are no options.	How does it look like in the classroom.?	How can we create different resources for our bilingual students? There are not many resourses for us because not a lot of schools have a bilingual program	The team or members of Cohort Trainers to visit our school to build ideas.	Please put me in touch with any connections in Apple about grants or funding to bring more Apple technology into my school. Notify me of any free sessions on how to use my Apple products. I've been a PC person for so long that I feel that I have an iPad that I barely know how to use.	PD
	Giving us ideas on how to incorporate technology into the school or suggest a starting point.	More practical, classroom instructional practices while using different technological tools.	I would love to learn more about how I can incorporate iBooks Author in my class.	Please add my name to the NYC group on iTunes U. Thank you very much for your time.	We want to see what Standards/Mastery based learning looks like. Very intrigued!!! Thank you, x's Avogadro's Number!!!!	I believe that all teachers in 1:1 environments would benefit from these sessions. I hope that Buffalo is able to bring back this team to do future in-services.
	Exploring teaching methods to best support our children with this new technology.	Ensuring that all members understand what is being taught by having each person create after each session.	How to create an iTunes u course.	Handbook on ibooks	Visitations to our school to see how we incorporate technology into the classroom and how we can move to the next level.	more, more, more...
	Use of meaningful apps to use to enliven literacy instruction	Student centered lessons.	As my teachers plan their units to lend support to resources on itunes u and other apps	How to create a iTunesu course.	there needs to be a more streamlined Netflix like approach to purchasing books for students that are owned by the institution rather than the user. We could use some more help implementing project based and mastery based rubrics.	i need a mentor/guru that I can communicate with that has done what i am about to do
	I would like to see the videos that other groups make and have them accessible for reflection.	Using other APPLICATIONS and APPs available to NYCDOE schools.	Hands on activities using the apps presented	I would like some leads of resources a Literacy teacher can use on ITunes to engage struggling reader push on level students.	Coordinate or match us up with model schools.	The basic set up and "know how" in order to begin using some of the basic concepts we were taught.
	Identify strategies that we can use to enhance learning and improve instruction.	Can't think of anything off the top of my head	How can we do this with our teachers?	Hope to have follow up over the summer.	school visits to provide PD	Most of the teachers at my school have been teaching for 10/15 or more years. Technology isn't as intuitive for them. I know they are going to want basic training about how to use the technology that we are receiving. We did not finish our timeline at the training. A few of us are going to meet before school and try to finish it. After we finish it, I think we will have a better idea as to what support we need.
		A brief review of what we accomplished in today's session.	Links or Lists to suggested APPs that have been used and are connected to the 3 levels of schools; K-12 listed by genre or disciplines.	Pd for the staff at my school	Configure iPads Inventory our use of technology through a walkthrough and support our future purchases	Me personally - modeling and support in the classroom with the students
		iBooks and other educational apps	I would like a continuation of the content we were exposed to today. Also, some examples of what that looks like in an elementary school.	In my school, we need assistance with many technical issues such as the VPP program, the Apple ID and other things of that nature. It would be greatly appreciated if we could have someone assist us one on one with these issues.	Further development of standards based learning	Classroom support
		I would like more practice with I tunes u.	Practice using tools to create courses on iTunes -	I would love for the apple team to give us feedback after we have implemented this in our school. For example, we could video tape ourselves and bring it in to show the team.	Help with deployment and PD for staff members to help us work towards getting to our new island!	support from administration and the district
		I am excited to learn new ways to use iPads in the classroom. I learned so many new things today and I look forward to learning more.	More time for application in the classroom.	I would love to set up a time for Apple to come into our building to show our vision together. When the message is doing from inside and outside sources people are more open to hearing the ideas!	Continue this work w us.	Not sure...
		Actually creating a course in iTunesU	Im am extremely interested in the PD we will have to provide an what Apple will be able to offer to get our flag pole holders on board ??	meeting with the team who visited and the principal to further clarify the vision etc.	Having support staff come into the school to further help train teachers. Also, to do inventory on technology in the building and to offer advice on what to purchase next in regard to technology.	iPad use
		Creating a course on I tunes u	More apps for the elementary level to promote deeper thinking.	Support in partnering schools, setting up visits, sharing best practices, and obtaining resources.	More work on how to implement the apps with our curriculum	Training on effective use of integrating technology.
		It would be great to start with something technological issues that schools are facing in order to incorporate the teachnology in the school.	More on how we build consistency and buy in from all or most of the staff. I am afraid that if teachers don't buy in, that our school will be stuck on our island. Lol...	More sessions showing us how to turn key the info to staff members	A gateway for select teachers to be engaged in more personalized pd programs and certificates; I.e., how can I interact with or investigate becoming an apple educator?	teacher training
		Team time to get concrete planning done in light of what is being presented.	I'd like to see schools take a lesson they presented that was and acquisition lesson and how they turned in into a transfer lesson and discuss why they feel it is a better developed lesson now	PD opportunities.	On site support.	Need writing with technology research and strategies
		How to develop a curriculum across ela, science, math and social studies	More examples	developing more project based learning activities	consolidate best practices and timelines based on data and evidence from similar schools	Not sure
		As my team processes the information to check in and keep us on an "out of the box" type of trajectory.	Ways to share what we've learned with teachers in my school	Continued communication. maybe a visit next year to see what was implemented and what we can do to improve.		Equipment, pd
		A deeper look into how technology can enhance student engagement.	Devote time to really get into creating an ITunes U class.	More learning opportunities. Visits set up to witness technology and challenge based learning in other schools continued.		
		Deatailed use of apple products.	ideas from other school, more apps that people find useful	How to create an iTunes U course		
		More interaction with technology	An idea of kinds of educational apps to use and how to find them.	See this in a school setting with using ARD		
		Seeing how schools are doing it now with all different types of technology. What are the perks of ipads over pcs? or visa versa	More apps and features with more hands on training.			
		More work on newsletter	Being able to create a plan and brain storm ideas that can be used to get to the overall plan (island).			
		I would love to learn how to work on iMovie.	More apps or website that can be used during instruction or when completing tasks.			
		How to create a course. Step by step process	Teaching us how to create and use what we are learning so we can bring it back to our classroom and feel confident when using it. I'd like to learn how to create an I Book or make a course on I tunes. I'd like to become more familiar with apps I can use in my class.			

	Module 3
How might your practice change as a result of today's conversation?	we are updating our district challenge bowl activities to make them more in line with 21st century goals for our students
	I need to be more of a facilitator.
	I will definitely collaborate with other teachers that are using technology.
	as an administrator, I'd love to encourage teachers to try these things in thei classrooms.
	I am making it a goal to take at least one lesson a marking period to the transfer level.
	I am inspired to get back to the classroom and continue to think of ways to take my lessons to the transfer level.
	Design purposeful assignments based in acquisition, meaning making and transfer model.
	Honestly, I'm not quite sure.
	I want to move more of my lessons to the "transfer" stage.
	I will am to transfer, but remember that it's not a daily event.
	Not a classroom teacher, but I am taking away ideas for my colleagues
	Although the information was overwhelming, I will try to implement a few of the strategies throughout the rest of this year and continue to build on them over time.
	Revise teacher education presentations to include ideas presented today
	I will try to visit "Disney" more often.
	Include more technology!
	Trying to get my lessons to "M" and "R" (Modification and Redefinition) on the SAMR model
	More tech components and transfering
	I think more teachers might be willing to try the activities when they see the SAMR and AMT framework.
	Model more SAMR
	I will certainly incorporate more iTunes U into our district.
	This forces me to relax a little in a sense that everything I do in my classroom does not necessarily need to be in the transfer phase. But, at the same time, allows me to visually assess where my lesson is currently.
	I want to get back to helping people evolve their use of technology to help them move their students up the learning scale.
	I will be thinking more about acquisition, meaning making and transfer.
	Integration of iPad in one to one district
	I will begin by perusing a few of the One Best Thing books as well as changing some of my upper grade lessons, when possible.
	This was an affirmation of the direction our school and district are moving. I am encourage about where we are!
	How I plan lessons in respect to SAMR and authentic audiences.
	at the middle school, our teachers are going to explore iTunes you and adding math and science curriculum to their iTunes courses.thank you for such an amazing day and a great workshop!
	I will be more inclined to create an iTunes U course for my students to follow.
	Maybe use iTunes U to flip the classroom.
	Enormously.
	implementing some of the new software I learned and also trying to be mindful of the SAMR model graph that was displayed throughout the day

APPENDIX D: ALTmodel with Ratings



Theme: Ancient Architecture

Initial Task

Make posters depicting the architecture of ancient Egypt.

Theme: Ancient Architecture

Final Task

Complete a case study on the pyramids using the question "How were the pyramids built?" to address five controversial issues: source of the design, source of the materials, time to completion, method of transportation of materials, and contents of the chambers.

Theme: Geometry

Initial Task

Observe and measure various school buildings and record data.

Theme: Geometry

Final Task

Design a "School of the Future" with scale drawings and models, taking into account the site and anticipated needs. Present plan to an audience of school officials or community experts.

Theme: Presidential Policies

Initial Task

Research three US Presidents from the 1700s, 1800s, and 1900s. Create a table and identify the major policies of their administrations.

Theme: Presidential Policies

Final Task

Research a US President from the 1700s, 1800s, and 1900s to investigate the question "How has Presidential policy changed to meet the needs of today's world?" Create a podcast for each President, their key policies, and how their policies align to the current administration, and how they would fare in the current world in which we live. Stream the podcast out via iTunes U

Theme: Nutrition

Initial Task

Locate and read articles about nutrition. Select a diet that would contribute to a healthy lifestyle.

Theme: Nutrition

Final Task

Research the basic food groups to understand basic dietary needs. Visit a nutritionist either face-to-face or via Skype at the Food Network to identify balanced meals that could be turned into a publication for developing a more healthy lifestyle. Create an ePub cookbook that includes recipes, and health tips for distribution to the school community.

Theme: Water Conservation

Initial Task

Create posters around ways to save water in the home and school.

Theme: Water Conservation

Final Task

Visit the local public water utility to learn where our water comes from and where it goes. Identify water waste issues in the community and working with the water service find ways to help conserve water. Create a video for local cable access and pamphlet PSA campaign to raise awareness.

Theme: Voting

Initial Task

Create a mock election of the candidates involved in the current primary process. Have students vote, tally the votes, and report the results.

Theme: Voting

Final Task

Identify the candidates involved in the current primary elections. Students should select a candidate, research their platforms, and represent the candidate in a series of debates. Students should also create a commercial for their candidate for the school website, then hold a mock election.

Theme: Climate Change

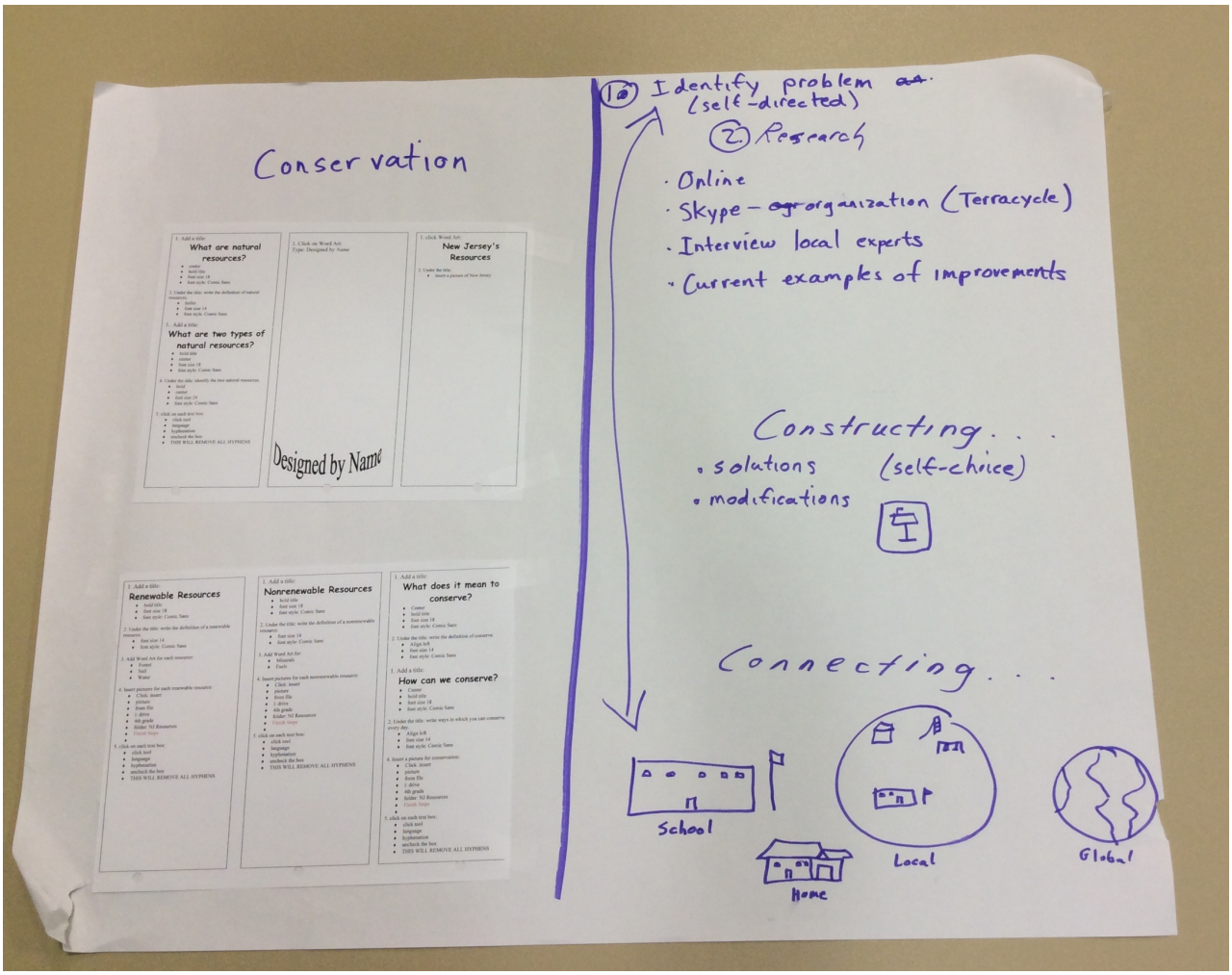
Initial Task

Watch the movie, "An Inconvenient Truth" and write a report about climate change.

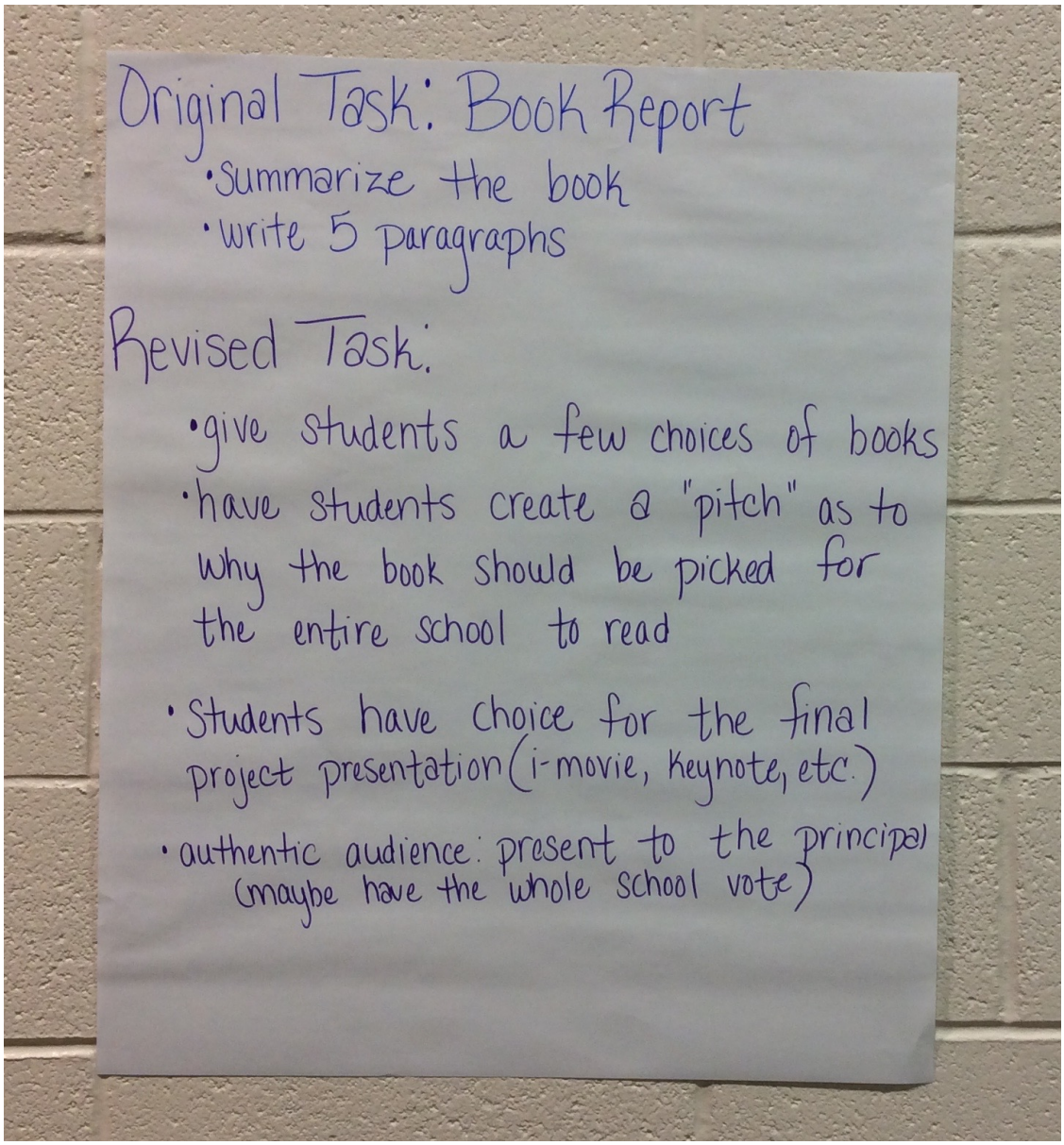
Theme: Climate Change

Final Task

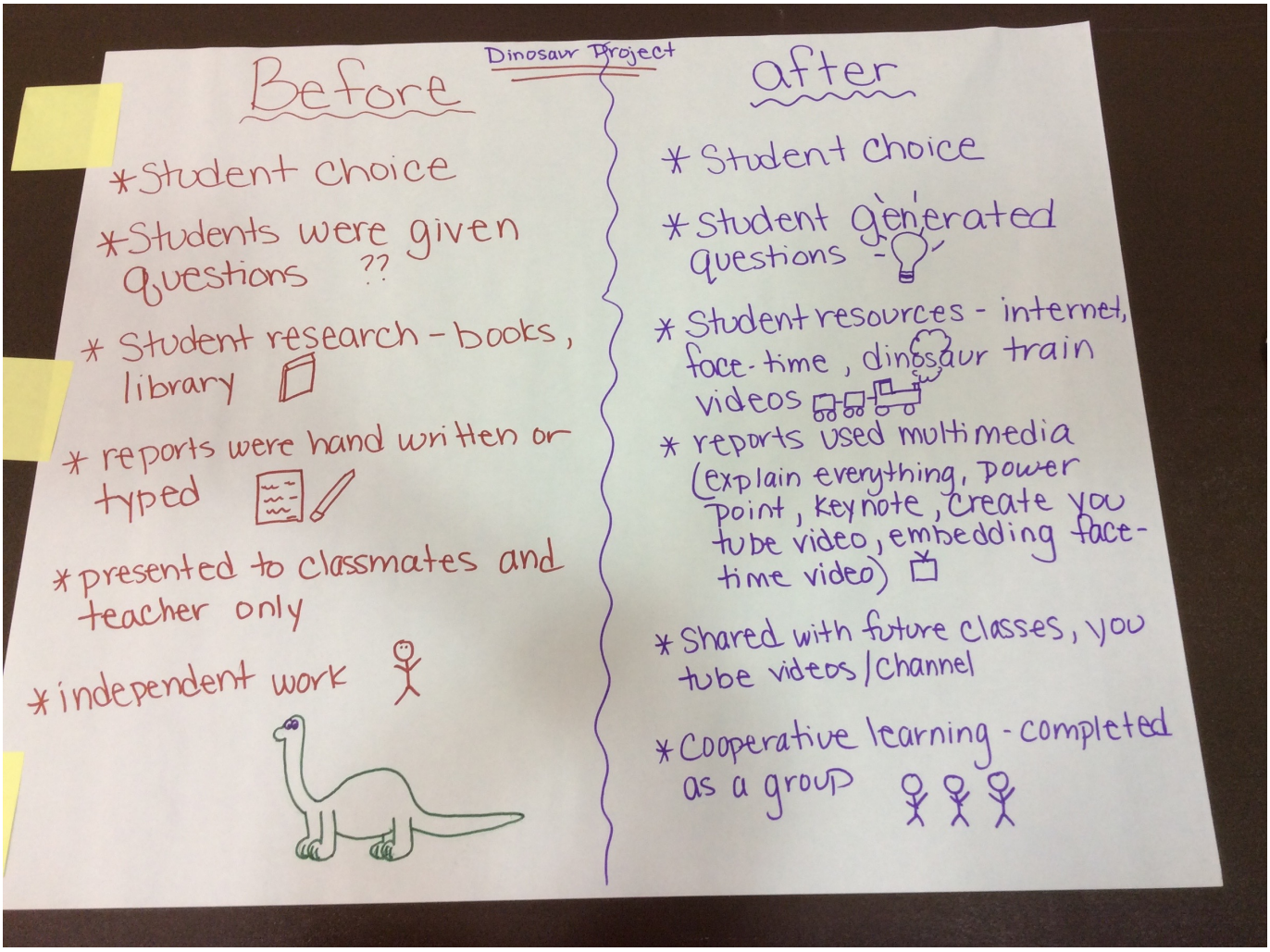
Document the effects of climate change in your community via interviews. Use local, regional, and national climate data from NOAA and other sources to reconcile your findings and report the results to a wider audience. Create a children's book on climate change that can be used with elementary students.

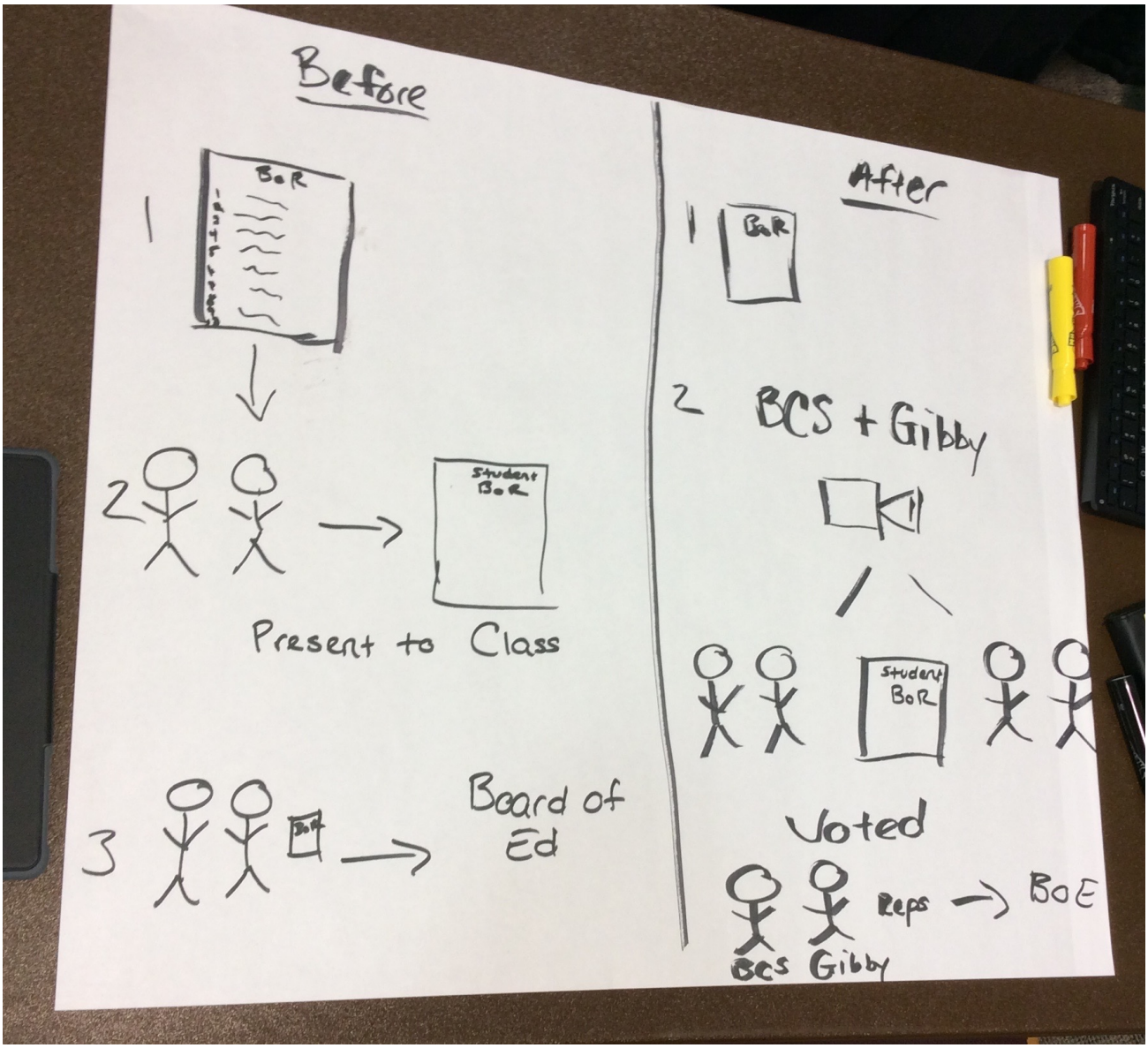

Conservation
What are natural resources?
What are two types of natural resources?
Designed by Name
New Jersey's Resources
Renewable Resources
Nonrenewable Resources
What does it mean to conserve?
How can we conserve?
1. Identify problem (self-directed)
2. Research
· Online
· Skype – organization (Terracycle)
· Interview local experts
· Current examples of improvements
Constructing . . .
· solutions (self-choice)
· modifications
Connecting . . .
School
Home
Local
Global

SAMPLE 8

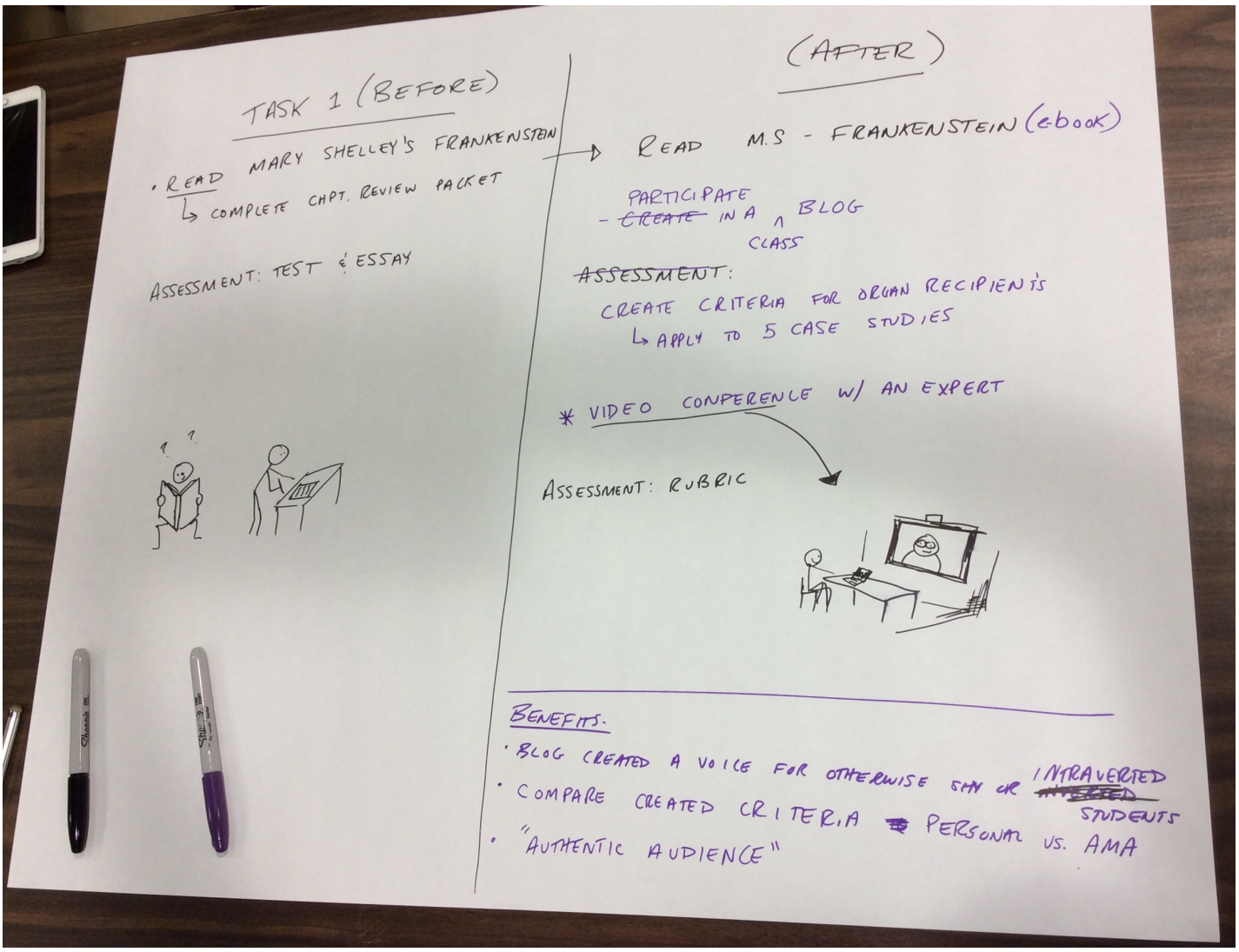

Original Task: Book Report
•Summarize the book
•write 5 paragraphs
Revised Task:
•give students a few choices of books
•have students create a "pitch" as to why the book should be picked for the entire school to read
•Students have choice for the final project presentation (i-movie, Keynote, etc.)
•authentic audience: present to the principal (maybe have the whole school vote)

SAMPLE 9

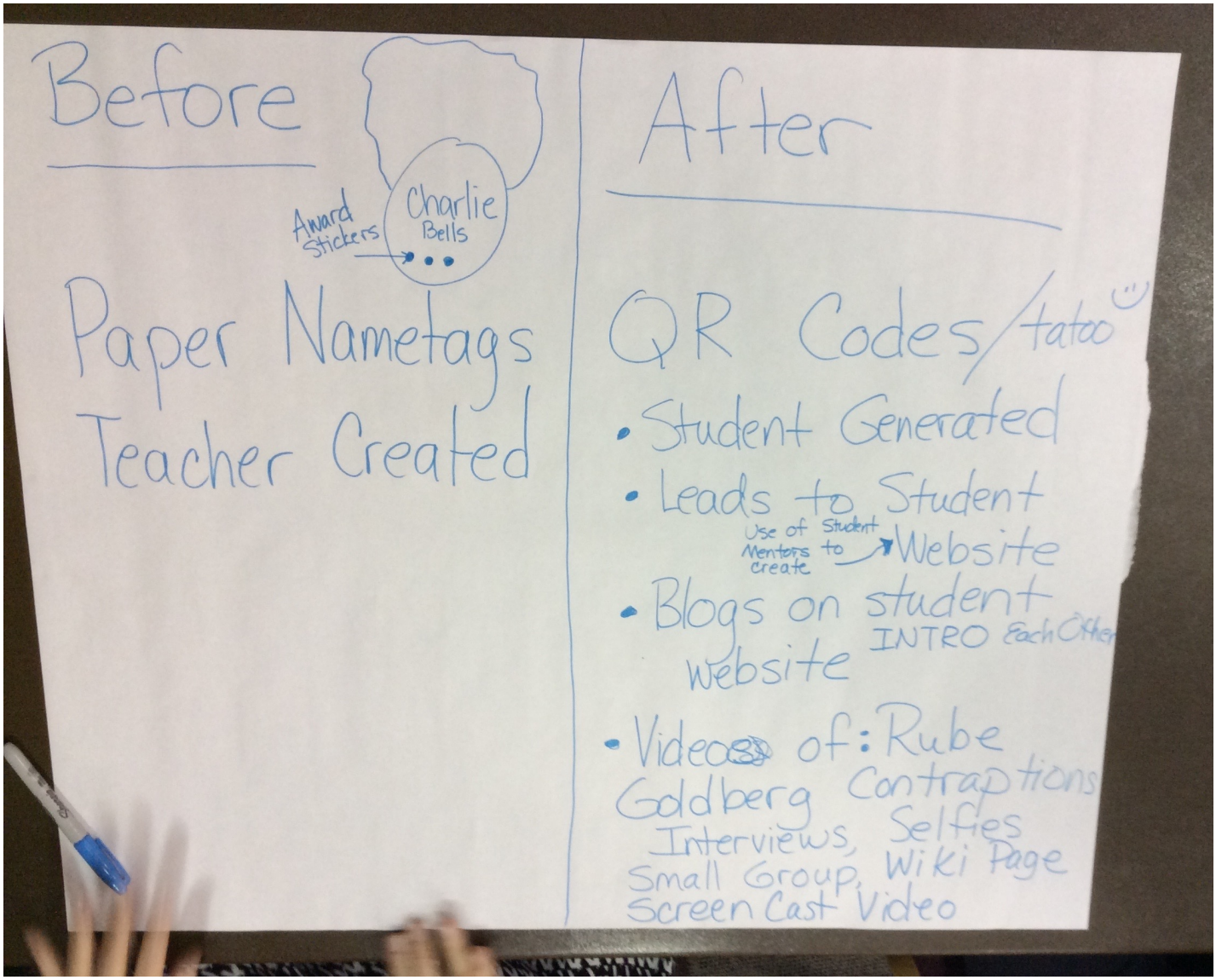

Dinosaur Project
Before
*Student choice
*Students were given questions ??
* Student research - books, library
* reports were hand written or typed
*presented to classmates and teacher only
*independent work
after
* Student choice
* Student generated questions
* Student resources - internet, face-time, dinosaur train videos
* reports used multimedia (explain everything, power point, keynote, create you tube video, embedding face-time video)
* Shared with future classes, you tube videos/channel
* Cooperative learning - completed as a group


Before
BoR
1
2
Student BoR
Present to Class
3
BoR
Board of Ed
After
1
BoR
2
BCS + Gibby
Student BoR
Voted
Reps
BoE
BCS
Gibby

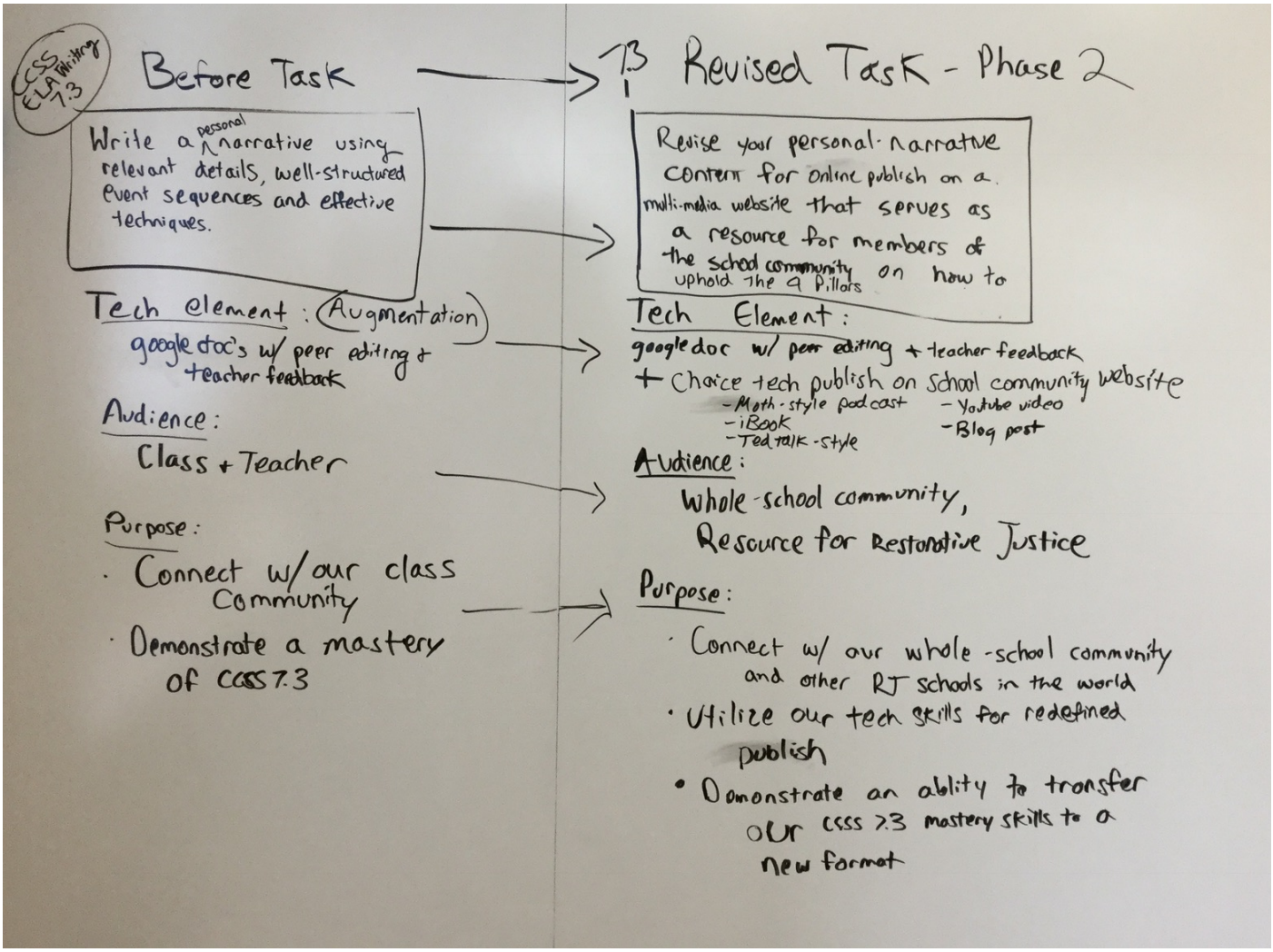
SAMPLE 11


TASK 1 (BEFORE)
• READ MARY SHELLEY'S FRANKENSTEIN
↳ COMPLETE CHPT. REVIEW PACKET
ASSESSMENT: TEST & ESSAY
(AFTER)
READ M.S - FRANKENSTEIN (ebook)
- ~~CREATE~~ PARTICIPATE IN A CLASS BLOG
~~ASSESSMENT~~:
CREATE CRITERIA FOR ORGAN RECIPIENTS
↳ APPLY TO 5 CASE STUDIES
* VIDEO CONFERENCE W/ AN EXPERT
ASSESSMENT: RUBRIC
BENEFITS.
• BLOG CREATED A VOICE FOR OTHERWISE SHY OR INTRAVERTED STUDENTS
• COMPARE CREATED CRITERIA ⇆ PERSONAL VS. AMA
• "AUTHENTIC AUDIENCE"

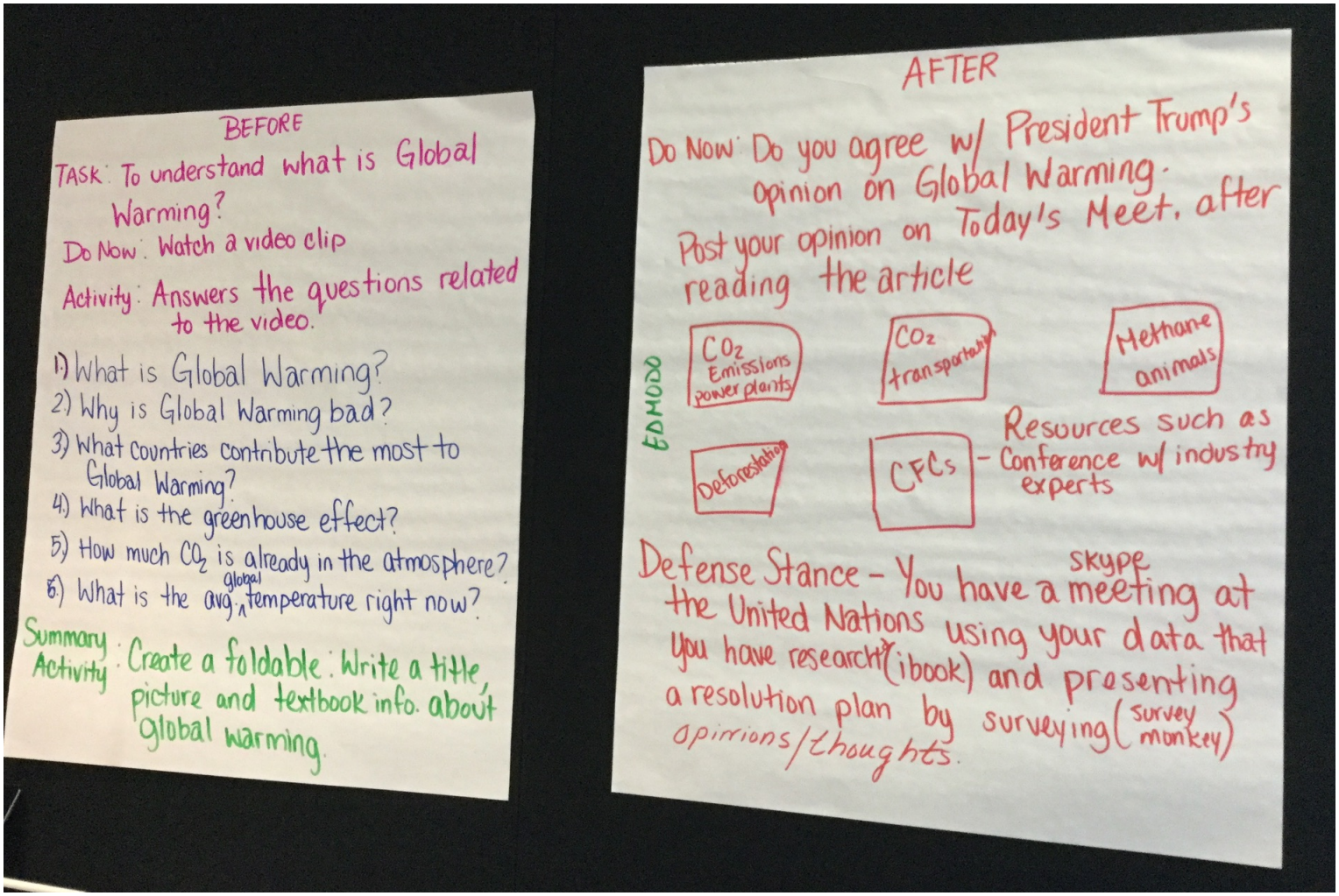
SAMPLE 12


Before
Award Stickers
Charlie Bells
Paper Nametags
Teacher Created
After
QR Codes/tatoo
Student Generated
Leads to Student Website
Use of Student Mentors to create
Blogs on student website
INTRO Each Other
Videos of: Rube Goldberg Contraptions
Interviews, Selfies
Small Group, Wiki Page
Screen Cast Video

SAMPLE 13


CCSS ELA Writing 7.3
Before Task
Write a personal narrative using relevant details, well-structured event sequences and effective techniques.
Tech element: Augmentation
google doc's w/ peer editing + teacher feedback
Audience:
Class + Teacher
Purpose:
· Connect w/ our class Community
· Demonstrate a mastery of CCSS 7.3
7.3 Revised Task - Phase 2
Revise your personal narrative content for online publish on a multi-media website that serves as a resource for members of the school community on how to uphold the 4 Pillars
Tech Element:
google doc w/ peer editing + teacher feedback
+ Choice tech publish on school community website
- Moth-style podcast
- iBook
- Ted talk-style
- Youtube video
- Blog post
Audience:
Whole-school community,
Resource for Restorative Justice
Purpose:
· Connect w/ our whole-school community and other RJ schools in the world
· Utilize our tech skills for redefined publish
· Demonstrate an ablity to transfer our CCSS 7.3 mastery skills to a new format

SAMPLE 14


BEFORE
TASK: To understand what is Global Warming?
Do Now: Watch a video clip
Activity: Answers the questions related to the video.
1) What is Global Warming?
2) Why is Global Warming bad?
3) What countries contribute the most to Global Warming?
4) What is the greenhouse effect?
5) How much CO_2 is already in the atmosphere?
6) What is the avg. global temperature right now?
Summary Activity: Create a foldable: Write a title, picture and textbook info. about global warming.
AFTER
Do Now: Do you agree w/ President Trump's opinion on Global Warming.
Post your opinion on Today's Meet, after reading the article
EDMODO
CO_2 Emissions power plants
CO_2 transportation
Methane animals
Deforestation
CFCs
Resources such as
- Conference w/ industry experts
Defense Stance - You have a skype meeting at the United Nations using your data that you have research (ibook) and presenting a resolution plan by surveying (survey monkey) opinions/thoughts.

SAMPLE 15

APPENDIX F. Ratings Table

Task #	Pre-treatment score	Post-treatment score	Delta
1	1	2	Increase
2	1	5	Increase
3	1	3	Increase
4	1	3	Increase
5	1	5	Increase
6	2	3	Increase
7	1	5	Increase
8	1	3	Increase
9	2	5	Increase
10	1	2	Increase
11	1	1	Same
12	2	2	Same
13	1	0	Decrease
14	2	5	Increase
15	1	3	Increase