Learning In and Through *Collaborative Literary Adaptation*

By

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Abstract

This dissertation demonstrates the need to centralize the concept of adaptation in text-based arts and humanities education. To support this effort, I introduce a learning construct called Collaborative Literary Adaptation (CLA). In a world of constantly changing information, structures, and meanings, CLA provides a powerful curricular and instructional tool for teachers and learners to experiment with alternative ways of thinking, doing, knowing, and being in the 21st century by collectively transforming literary texts “from page to stage” or screen. I address three explorations related to educational “making” and learning in and through the process of CLA in a series of articles, including: (1) how, when, and where people engage with multiliteracies and "learning by design;” (2) how people "learn to innovate;” and (3) the significance of creative constraints and "productive transgressions" in learning and art-making.

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No stories come from nowhere; new stories are born of old.

-Salman Rushdie (1990., p.86)

Haroun and the Sea of Stories

Introduction and Overview: Collaborative Literary Adaptation (CLA)

I began experimenting with integrating the concept of "adaptation" into my curriculum and instruction for promoting learning as a college-preparatory drama teacher about a decade ago. Essentially, I had students work together to transform various kinds of texts into creative productions, and at times for the purpose of addressing specific emergent needs within our school community. I possessed prior training and professional theater experience with this type of work, but I became intrigued by its complexity and seemingly vast potential for student learning as I started weaving it into my teaching.

In an era of increased accountability and decreased funding in arts and humanities education, I also felt pressure to demonstrate learning in theater-making. Students adapting texts collaboratively for creative production seemed like a promising method. The research literature in theater education on this topic was lacking in rigor, however, and short on evidence. To that end, I also struggled to find robust empirical studies supporting practical learning frameworks for educators engaging with this sort of work. *What* were my students learning, and more importantly: *how* were they learning it, and *where* and *when* was the learning occurring? I wondered, too, if this way of learning might have broader applications across other academic disciplines outside of theater? How might one transfer and tailor such a learning activity to reach wider audiences of educators and students?

Growing up in American public schooling I received a mostly passive, text-based arts and humanities education. My teachers taught us books, and we wrote essays about them, but I wanted to learn *to do* things with books (Cutchins, 2010): to create, to design, to engage, to *make*. Indeed, the latest research in education-related fields like learning sciences, literacy, and adaptation studies all point towards the need for new aims and approaches to teaching which emphasize *making* (Halverson & Sheridan, 2014; Kress, 2010; Gould, 2017). They also recommend a paradigm shift in *art-making* "away from the idea of authorial originality as a definer of value to a more collaborative and societal understanding of the production of art and meaning (Sanders, 2016, p. 192)" which aligns with the interconnected, participatory, and distributed nature of our rapidly changing world, and "new" literacies (Jenkins, 2009; Lankshear & Knobel, 2006). This calls for new learning theories, models, and frameworks which more adequately reflect these conditions and realities (Kress, 2009).

This dissertation defines, theorizes, and contributes three empirical studies related to learning in and through what I'm coining *collaborative literary adaptation* (CLA) in 21st century arts and humanities curriculum and instruction. This pursuit lies at the intersection of three disciplinary perspectives: learning sciences, multiliteracy studies (the "new" literacies"), and adaptation studies. Although CLA transfers easily across any teaching subject employing two of the "3R's" in education, namely *reading* and *writing* (the 3rd 'R' being *arithmetic*) (Partnership for 21st Century Skills [P21CS]), 2006), I will utilize my personal background in theater education as a professional practitioner and as a teacher at the high school and undergraduate levels to demonstrate its function in practice (see Figure 1).

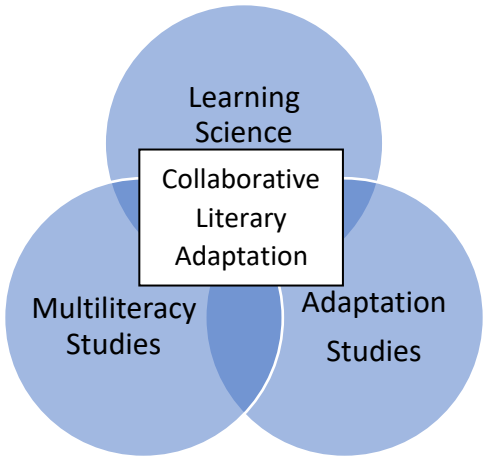

Figure 1. CLA at the intersections of learning science, multiliteracy, and adaptations studies.

Needs Assessment / Problem Statement

We are no longer in a period of stability; stable systems are difficult to find. We are in an era of radical instability, so that new aims are essential: the fostering of a disposition in which I feel capable of shaping my designs, in environments in which I understand, with resources whose potentials, limitations, and relations to my audience here, now, I fully understand. The new goal is to allow me to act meaningfully in an unstable environment [underline added for emphasis]. *This requires a disposition to the making of meaning which goes entirely beyond competence, and incorporates its aims and those of 'critique' in a constantly transformative response to the communicational demand of my environment.*

Such a conception places the maker of meaning at the center, aware of the cultural and social shape of the resources for representing, aware of the social shape of the environments of communication and of its constraints, and yet meaningfully agentive and always innovative. That

might serve as the basis of new theories of learning, as much as of representation and communication.

-Gunther Kress, 2013 (p.340)

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In the passage above, Kress (2013) portrays this moment in human history and the social systems supporting it as radically unstable. Competence and critique alone no longer suffice—teachers must prepare students *how to design, to communicate, and to act meaningfully* using appropriate resources in a diverse array of contexts (Kress, 2013). As a result, the field of education must *adapt* to meet the demands of a new world defined by constant change.

The New London Group (NLG, 1996) assert in *A Pedagogy of Multiliteracies: Designing Social Futures* that the mission of education is "to ensure that all students benefit from learning in ways that allow them to participate fully in public, community and economic life" (p. 60). Cope and Kalantzis (2009) elaborate on this assertion, advocating for: (1) the championing of *citizens* (public) as active agents capable of negotiating differences across contexts, (2) educating reflexive *persons* (community) as designers of meaning open to change, and (3) equipping *workers* (economic) with a critical understanding of the discourses surrounding power.

Tangentially, the Partnership for 21st Century Skills (P21CS, 2006) recommend students must learn what it means to learn, and they highlight the 4Cs as essential "innovation" skills in this pursuit: *Creativity, Collaboration, Critical Thinking, and Communication* (see Figure 2).

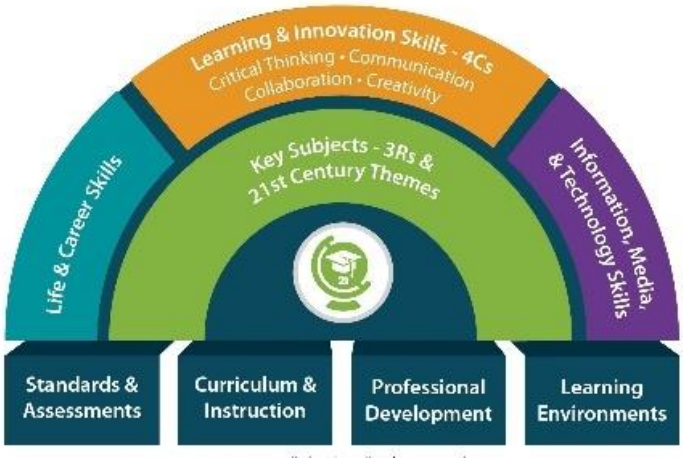


Figure 2. Partnership for 21st century skills learning & innovation 4Cs at the top in the middle.

Creativity scholar R.K. Sawyer (2006) emphasizes the need for training "knowledge workers" who are "symbolic analysts" that "create conceptual artifacts" (p.41) through relating, integrating, seeking patterns and principles, evaluating, dialoging, examining, and reflecting on their own learning (Sawyer, 2006, p.41). *Collaboration* thought leaders Scardamalia & Bereiter (2014) stress "developing coherent knowledge content out of fragmentary information coming from multiple sources" (p.413), like the social production of conceptual artifacts through sustained work with ideas in design mode, and fostering community knowledge (2019). Greeno & Engstrom (2014) propose learning activities which require expanding students fundamental understanding of social systems to develop *critical thinking* and a reflexive awareness of the implications of structure on organizing people. Indeed, Scardamalia & Bereiter (2019) accentuate the need to understand and work with complexity itself. As previously indicated, Kress (2009) encourages centralizing meaning-making and design with *communication* and representation to optimize 21st century learning. Furthermore, Van de Water, McAvoy & Hunt (2015) link 21st Century skills with theater-making, as compared with McCaslin's (1968) "goals of drama" (see Table 1).

21st Century Innovation Skills	Goals of Drama
Creativity	Creative and aesthetic development
Critical Thinking	Ability to think critically
Collaboration	Social growth and working cooperatively with others
Communication	Improved communication skills

Table 1. 21st century skills and the goals of drama.

The Common Core State Standards for English Language Arts (ELA)/Literacy (2010) recommend integrating complex tasks for learning involving reading, writing, listening and speaking between texts in grades 6-12. They ask students to, among many other things: compare and contrast texts; consider "an author's choices" and "aesthetic impact;" "analyze representations of two different artistic mediums, including what is emphasized or absent in each treatment;" "analyze how authors draw on and transform source material;" and to evaluate how an author "interprets a source texts" (2010; Gould, 2017, p. 727).

Navigating an unpredictable future will require more than just skills. Students will also need to exercise personal initiative and *flexibility* during collaborative, social learning activities. To this end, activities which also incorporate socio-emotional learning (SEL) advocates the cultivation of student self-awareness, self-management, social awareness, relationship skills, and responsible decision-making (Collaborative for Academic, Social, and Emotional Learning [CASEL], 2005).

These claims by leading minds in literacy, learning experts, and some of the most comprehensive educational initiatives in recent times have profound implications in terms of curriculum and instruction for teachers working in arts and humanities classrooms. In sum,

radically unstable social conditions call for a radical reimagining and response to how traditional text-based, "literary" disciplines approach teaching and learning for properly educating future citizens, persons, and workers (Cope & Kalantzis, 2009). I will now define CLA as a potential curricular and instructional intervention with a comprehensive definition sourced from the research literature, followed by an in-depth examination of its theoretical underpinnings.

Defining CLA for Teaching and Learning

Put simply, CLA for teaching and learning is all about groups of people "making texts together." It is rooted in the process and production of meaning-making through collective, multimodal design creation (Wheeler et al., 2020). In more complex terms:

> **Collaborative Literary Adaptation (CLA)** ***entails learners collectively engaging with the analysis, design, creation, and production of innovative texts from other texts using a range of meaning-making resources and materials which culminates in a public presentation of value for a community.***

In this sense, CLA balances both traditional "top-down" and progressive "bottom-up" approaches to curriculum and instruction in that it acknowledges the prevailing institutional importance of canonical literary texts in modern schooling, but also leaves room for more transgressive, collective group-making experiments like "using and abusing the classics" for creative production (McKinnon, 2011). CLA is task-oriented like project-based learning (Blumfield et al., 1991) and problem based-learning (Torp & Sage, 2002), emphasizing groups collectively working together to find innovative solutions. It optimizes the latest research and knowledge about how people learn through collaboration, literacy, and adaptation into a tangible formula for educators and students alike:

Collaboration + Making Text(s) + Adaptation (thinking, knowing, doing)

+ Public Sharing with Community Value → Engaging with Learning Processes

This formula establishes a simple structure, while leaving considerable room for flexibility and personalization depending on the parameters of the task. For example, even a traditional in-class, small group, multiple draft writing process of college-level research papers for an English composition course which concludes with a final presentation or sharing would qualify as CLA, albeit with ample possibilities for further variation of this more classical approach.

Structure of Dissertation

This dissertation examines the phenomenon of how people learn in and through CLA with a collective (Creswell & Poth, 2018) and comparative (Bartlett & Vavrus, 2016) case study approach. I undertook three case studies of two diverse sample populations at two separate sites. The first two case studies target separate and distinct age groups: novice adolescents versus expert adults. The final case study combines data from both. Each of these three case studies receives a dedicated chapter, and addresses a specific aspect related to CLA and learning which emerged as a significant finding from previous pilot studies. The research questions explore not only *how*, but also *what*, *when* and *where* people learn in and through CLA. Each study aims to substantiate and demonstrate learning, and ultimately to promote centralizing CLA in 21st century curriculum and instruction.

Theoretical Context

To do so, this research builds primarily on the learning theories of "making" and Constructionism. In addition, I also engage in the related learning theory of multiliteracies and multimodal texts, and interweave other foundational learning theories supporting the concepts of

collaboration and adaptation. I utilize my own background and the disciplinary making medium of theater in both live and digital forms to demonstrate CLA in practice, and provide contextual examples from inside a formal classroom environment and within professional settings.

Making and Constructionism

This dissertation frames CLA as a "maker" activity rooted in the educational theory of Constructionism. A relatively recent phenomenon called "the maker movement" has gained considerable traction in education-related communities of practice (Lave & Wenger, 1991) and the learning sciences, generally referring to "the growing number of people who are engaged in the creative production of artifacts in their daily lives, and who find physical and digital forums to share their processes and products with others" (Halverson & Sheridan, 2014). Firmly rooted in an educational theory known as *Constructionism*, the maker movement places *embodied, production-based experiences* at the core of how people learn (Harel & Papert, 1991; Halverson & Sheridan, 2014, p. 497). Despite its obvious ties to the arts, Constructionism has not heavily influenced domains beyond STEM in making (Peppler, 2010).

Constructionism aligns closely with the design concept of *iteration*, a key feature of making in STEM that supports the process of learning (Vossoughi et al., 2016). Iterative actions involve repetitions of operations which yield successively closer approximations to a desired result, like building an update of a robot or formulating better software through coding. Similarly, the related concept of *adaptation* in literature refers to the generation and production of new textual forms, or compositions based on existing texts, through a process of refinement which reflects learning through art-making. *Adaptation* also infers the importance of environmental conditions, or *socio-cultural context* in change-making with art. Artistic Director Moises Kaufman of the *Tectonic Theater Project* captures these sentiments when describing his

innovative approach to collaborative theater-making, clarifying that the word "tectonic" indicates "the company's interest in *construction*—how things are *made,* and how they might be *made differently*" (2010). Thus, in education *iterating* products is to STEM as *adapting* literature is to the arts and humanities.

Papert's *Constructionism* differs from Piaget's (1967) well-known educational theory of *Constructivism,* but they both share similarities and relevance to CLA. For example, as developmental theories each submits that "knowledge and the world are both *constructed and constantly reconstructed* through personal experience" (Ackermann, 2001, p.7). Dewey (1934) and Friere (1970) echo these thoughts, respectively, adding that experience needs "acts of reconstructive doing" (p.54) to facilitate new perceptions and to raise critical consciousness, or *conscientization* (p.109). Learning in and through adaptation teaches people new ways of noticing everyday activity (Voussoughi et al., 2014). Friere called this pedagogical notion *praxis,* or "reflection and action directed at the structures to be transformed" (p.13), a process which clearly likens Constructionist learning processes, but adds a humanistic touch, and emphasizes the greater social context surrounding the structures, too (Gee, 2015). Friere believed that people need *to learn to see,* and the process of reconstructing a text from an existing text accomplishes that very aim by "rendering… [that] with which we are familiar 'strange,' so that…we can see consciously (maybe for the first time) how much effort goes into making [the text] (Gee, 2005, p. 102).

Papert's Constructionism with a "C" favors a stronger social-cultural, contextual, and generative perspective on learning, whereas Piaget's constructivism with a "V" focuses more on the inner workings of the individual mind, like cognition. While ConstructiVism concerns itself with *building knowledge*, ConstruCtionism deals with *applying meanings* through trial-and-error

("tinkering"), such as with the concrete production and reception of a public entity (Papert & Harel, 1991; Ackermann, 2001). These complementary educational theories interweave during CLA, and highlight the cognitivist (Constructivism) and socio-cultural (Constructionism) dimensions of the learning sciences. CLA balances the structural elements of the literary text (cognitive) with the dynamics of social change (social-cultural). Learning becomes a question of *design*, requiring an ongoing commitment to "dwelling in" (action) and "stepping back" (reflection) from the work (Ackermann, 2001, p.8), a tenant of Constructionism, as well as *praxis* (Friere, 1970). Therein lies the intelligence of adaptation while working with texts, and CLA as a potentially powerful arts-based learning platform for making.

Collaboration

Roschelle (1992) defines collaboration as a process of building and sustaining mutual conceptions of a problem or task, distributing responsibility, sharing knowledge, and co-constructing cognitions. Jenkins (2009) defines collaboration in terms of participatory cultures representative of recent technological advances in digital media, and in relation to problem-solving as "working together in teams, formal and informal, to complete tasks and develop new knowledge" (p.3). Dillenbourg (1999) describes collaboration as simply "a situation in which two or more people learn or attempt to learn something together (p. 1). He adds that collaboration always consists of four components: a situation, interactions, processes, and effects (1999, p. 1). Why should literary adaptation be done collaboratively for learning?

Group interactions while designing during CLA, according to Michelene T.H. Chi's ACI (Active-Constructive-Interactive) conceptual framework (2009), typically yield more complex cognitive processing than individual approaches to learning, like students summarizing texts or writing essays by themselves (Spivey & King, 1994). Chi's model, sometimes also referred to as

the ICAP (Interactive-Constructive-Active-Passive) framework (2014), forwards the idea that learning activities from the student's perspective are either (1) active, (2) constructive, (3) or interactive. In contrast to similar learning models like Bloom's Taxonomy (1956), the ACI/ICAP frameworks focus on *processes*, not outcomes, a suitable fit for rehearsal-based learning activities grounded in design like CLA. Each type of overt learning activity involves progressively deeper levels of cognitive processing, as seen below (see Figure 3).

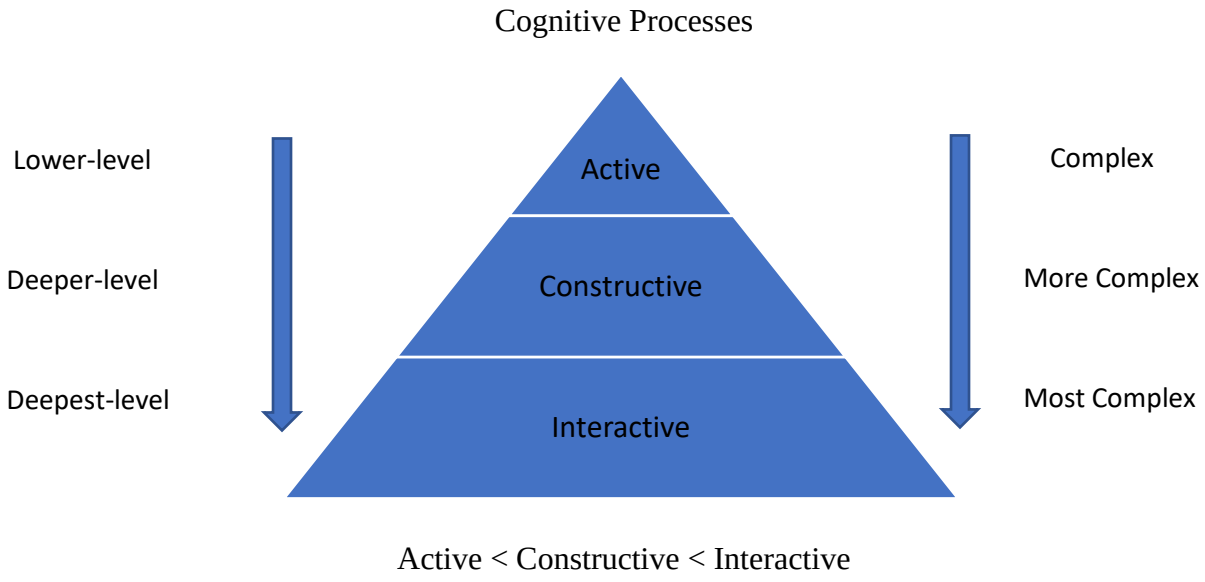


Figure 3. Progressively complex cognitive processing for differentiating learning activities.

This research implies that collaboratively adapting literary texts *interactively* would entail the most complex cognitive processing, more complex than simply adapting literary texts alone (constructive), or just the complex task of summarizing a text (active). This notion of deep learning through "interactivity" also underscores Vygotksy's (1978) claim of higher mental processes having social origins. Chi (2009) further outlines these three different levels of thinking, suggesting that the key component for engaging the deepest levels of cognitive processing during learning activities always involves "jointly creating processes," or creating processes that incorporate a partner's contributions (see Table 2).

Cognitive Processes from the Learner's Perspective *Active-Constructive-Interactive (ACI) Framework (Chi, 2009)*		
Original Text	Adapted Text	Creative Production of Text
ACTIVE TASK	**CONSTRUCTIVE TASK**	**INTERACTIVE TASK**
Attending (active) Processes	Attending (active) & Creating (constructive) Processes	Attending (active) & Creating (constructive) & Jointly Creating Processes
Activating existing knowledge	Activating existing knowledge	Activating existing knowledge
Assimilate, encode, or store new information	Assimilate, encode, or store new information	Assimilate, encode, or store new information
Search existing knowledge	Search existing knowledge	Search existing knowledge
	Infer new knowledge	Infer new knowledge
	Integrate new information with existing knowledge	Integrate new information with existing knowledge
	Organize own knowledge for coherence	Organize own knowledge for coherence
	Repair own faulty knowledge	Repair own faulty knowledge
	Restructure own knowledge	Restructure own knowledge
		Creating processes that incorporate a partner's contributions

Table 2. Chi distinguishes deepest-level cognitive learning activities with *joint* creating processes.

In other words, the most optimal learning tasks, like CLA, integrate high levels of creating, processing, and incorporating a partner's contributions, or *collaboration*.

Multiliteracies

Halverson (2013) connects art-making with the "new" literacies (NLG, 1996), *multiliteracies*, which acknowledge the importance of larger networks of socially shared meanings beyond language, and their communication potentials (Stam, 2017). She links multiliteracy learning with *the production of representations*, and argues that the *analytical* work and *creative* "making" processes associated with an activity like CLA mirror Constructivist and Constructionist educational theories (Halverson, 2013; Leitch, 2009). A distributed cognition model (Hutchins, 2000) for learning supports this claim, whereby "external representations function both as tools *to think with…* and *to express* complex concepts" (Halverson, 2013, p. 5).

A text in CLA refers to any configuration of signs or semiotic resources which provides the capacity for making meaning (Smargorinsky, 2001). Smargorinksy notes that the richest meanings, and therefore the deepest learning, "come through transactions that are most generative in the production of potent new texts," paving the way for a pedagogy centralizing the designing and redesigning of multimodal texts, or literary adaptation (2001, p.162). CLA produces two textual artifacts, or external representations of learning, based on source material (*available design*): an adapted text (*design*), and a culminating production (*redesign*), or multimodal *re*-presentation of the adapted text (NLG, 1996). These texts reflect *complex systems of representations,* whose meaning-making properties provide a rich canvas for *learning by design* (Wilensky & Jacobson, 2014; Cope & Kalantzis, 2015). Although learning scientists Kolodner et al. (2003) propose a conception of *learning by design* which shares some similar features with this research, this work decidedly builds upon the notion of *learning by design* forwarded by Cope & Kalantizis (2015) rooted in multiliteracy activities, while also borrowing heavily from the learning sciences.

For example, Cope & Kalantzis (2009) note that representational, social, structural, intertextual, and ideological design considerations underscore all multiliteracy learning. These same design considerations also form the basis of all decision-making during multimodal educational activities like CLA. Learning takes place in and through the multimodal transfer of the text "from page to stage" or screen, like the transformation of more discursively-oriented, "cognitive" elements such as narrative content and structure (cognitive), or the "socio-cultural" recontextualization of the story world to a different time and place, with all the accompanying changes in "social practice" and "ways of being," or Discourses (Gee, 2015).

Adaptation

Adapters function as both *analyzers* and *creators* of text(s)(Leitch, 2009), but a review of the literature falls short of illustrating a complete conceptual understanding of adaptation in terms of teaching and learning. What limited research does exist reveals that adaptation in education essentially takes three pedagogical forms: adaptation as *thinking*, adaptation as *doing*, and adaptation as *knowing* (see Figure 4).

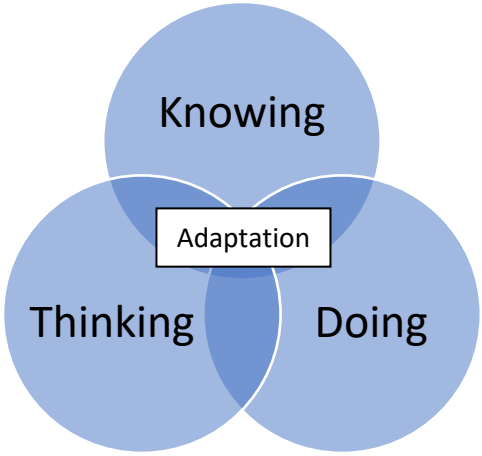


Figure 4. Adaptation as thinking, knowing, and doing.

Definitions, explanations, and examples of each of these three approaches to teaching and learning in and through adaptation follow:

1. **Adaptation as Thinking**

   Definition: Adaptation as an *analytical* and *evaluative* method for working with texts (Leitch, 2009).

Explanation: This is by far the most basic, commonly theorized, and practiced form of adaptation in learning, such as when comparing and contrasting texts, or exploring their "adaptive intertextuality" (Hutcheon, 2013).

CLA Example: Analyzing and evaluating Shakespeare's *Romeo and Juliet* with the musical film adaptation of *West Side Story* by Laurents (book), Bernstein (music), and Sondheim (lyrics), comparing the literary text in verse and the movie *synchronically* (as a particular moment in history), and contrasting them *diachronically* (across time) (Cutchins, Raw & Welsh, 2010).

2. Adaptation as Doing

Definition: Adaptation as an *active transformation, or creative interpretation and representation of a text* (Halverson, 2013) from another text.

Explanation: This form views adaptation as a creative process involving the transfer of texts across mediums and modes for communicating meaning.

CLA Example: "Bringing literature to life" by reading, writing, and staging a famous moment in time from a history textbook

3. Adaptation as Knowing

Definition: Adaptation as an *alternative epistemology* (Ackermann, 2001), or "*a way of knowing*."

Explanation: This is the most abstract, "big picture," and transferable form pertaining to learning which conceives of adaptation as a metaphor for acquiring knowledge. It regards adaptation as a powerful lens for students to view and perceive a world of constantly

changing information, structures, and meanings. Unlike the previous forms, it is not a physical or material text, but a "*a way of looking at texts"* (Cutchins, 2017, p. 97).

CLA Example: Learner's critique and provide feedback on multiple productions of the same source text. Students come to understand the implications of interpretation, representation, and the evolving, fluid nature of social meanings from a variety of perspectives.

Despite these obviously useful pedagogical applications for teaching and learning in and through adaptation in education, adapted texts (stage plays, movies, etc.) possess a status problem in literary and creative circles (Hutcheon, 2007). Hutcheon finds such hierarchical arguments about adapted texts, and "the politics of intertextuality" and engagement concurrently fascinating and futile (p. XIV). According to Hutcheon (2013), "multiple versions [of a text] exist *laterally*, not *vertically*," she challenges (p. XIV). Viewed from this non-hierarchical vantage point, then, intertexts exist on a continuum, not a ladder. Adaptations, regardless of their pedigree, don't lead teachers and learners away from texts, but to "the very heart of the textual condition, to an understanding of literary texts as points of intersection for multiple, evolving creative forces" (Gould, 2017, p. 725).

This model for conceptualizing teaching and learning in and through adaptation contributes to Leitch's (2016) disciplinary plea to "rescue" adaptation studies from English literature by bridging it with literacy studies. Instead of teaching books, he argues educators ought to instruct students in "how to do things with books" (2009), forwarding the idea of *textual studies* as disciplinary area and field of inquiry examining: "the production and reception of adaptations and the relations between adaptation and other intertextual modes;" investigating "the ways adaptations play with their source texts;" and contributing to "student's ability to read and write (and produce) across varied symbol systems," or multiliteracy learning (2016, p. 76).

Thinking, doing, and knowing in and through adaptation positions "semiotic transformation" at the center of learning (Cope and Kalantzis, 2009). By design, this approach to learning requires teachers and students venture beyond literary texts into the complexities of authorship, intentionality, context, and meaning-making, thereby raising the critical capacities of students to discern narrative in a post-truth era. Adapting texts scaffolds multiliteracy learning, giving educators a structure for students to analyze and creatively play *with* and *at* meanings, and *across,* and *between* texts. Finally, adaptation encourages an "openness" to understanding texts in the same way people ought not to essentialize others because identities, like meanings, shift depending on context. Students come to appreciate texts not as material objects comprised of absolute meanings, but as relational, "living" artifacts begging to be rewritten (Cutchins, 2013).

"Making" Medium: Theater

This research utilizes theater as its disciplinary medium for "making." Theater-making has a long history of collaboration, experimenting with text, adaptation, and public production, especially the work of the so-called "avant garde." Academics like Tomlin (2015) prefer the term "vanguard practice" as a signifier "to distinguish postmodern performance as a whole from the historical (avant-garde) traditions" like Expressionism, Surrealism, Dadaism, etc., and to also "cover all kinds of experimental and emerging new work" from the post-1970s onwards (p. 266). Despite disagreement about the definition and meaning of "avant-garde" in critics' circles, few scholars have investigated American theater education and teaching artist praxis as potential sites of theatrical vanguardism. In fact, Tomlin (2015) actually advises that "more effort should be devoted to seeking out and studying avant-garde practice occluded from the vanguard practice marketplace," such as "community and participatory innovations in very localized, and so generally less visible contexts," like schools (p. 280). In addition, Harding & Rouse (2006) argue for a more expansive, performance-based theory of the avant-garde, one which extends beyond

the narrow historical Eurocentrism of the late 19th and 20th centuries. Indeed, they "recognize (that) sites of artistic innovation associated with the avant-garde tend to be sites of unacknowledged cultural hybridity and negotiation" (p. 2). Although contemporary researchers like Savran (2005) lament the so-called *Death of the Avant-Garde*, the innovative vanguard practices, historical theories, and hallmarks so often associated with them in many ways continue to thrive in educational settings, often in alternative, "third space" theatrical learning environments (Etheridge, 2015). These informal learning contexts, often organized in opposition to formal spaces, foster ideal conditions for supporting democratic values, "socio-critical" literacy work (Gutiérrez, 2008), ensemble-building, and the development of innovative cultural capital.

In a critique on the current lack of avant-garde performance in the American theater, Schechner (2010) astutely observes that "when innovation is high, excellence is low" (p. 899). Conversely, the professional American regional theater system, bound by market constraints and economic imperatives, represents "high excellence, and low innovation" (Schechner, 2010, p. 899). Schechner laments this paradox, as seemingly few opportunities exist anymore for high innovation/low excellence theater-making, traits typically associated with more experimental vanguard practice.

Sell (2010) defines avant-garde theater-makers as those whom (1) challenge power, (2) are a minority formation, and (3) work "with" and "within" culture, all qualities which easily transfer and apply to the field of theater education (p. 769). Theater-making in K-12 schooling contexts falls underneath the disciplinary umbrella of theater education, which, according to Omasta & Chappell (2015), occupies a liminal space between theater practice/research and teaching/learning. Omasta's field-defining landscape survey of American theater education in

2012, although limited to high schools (grades 9-12), revealed that 80% of secondary institutions offer related coursework in these areas, but less than one-quarter of students have the opportunity to "make" theatrical work of their own (Ellis, 2012, p. 33). Moreover, only 1 in 10 high schools offers any formal instruction in directing (8%) or playwriting (6%), both "maker" skills (Ellis, 2012, p. 34). When administrators dedicate appropriate resources, and teachers carve out necessary time and space, students in turn embrace the opportunity to create, make and innovate in a myriad of ways, such as devising theatrical work.

Adaptation, a creative literary process closely associated with experimentation and the theatrical avant-garde, has experienced explosive growth in recent years. The proliferation of adaptations in theater-making at this moment in history is no accident, and indicates: (1) resistance to a pervasive, dominant, commercial theater production system and mono-culture both in and out of education, (2) a democratizing, participatory approach reflecting new levels of social connectedness in human relations, and (3) a need to strengthen and restore social bonds in local communities by personalizing storytelling. The field of education must also recognize the learning potential of these processes, as well as the multimodal nature of the theatrical medium and its endless capacity for social semiotic exploration.

Theater-making mirrors a complex, multiliteracy-based learning activity. Its meaning-making lies in the variable conditions of its creation, production, and reception (Knowles, 2004). Adapting in and through theater activates every aspect of language learning (reading, writing, listening, and speaking), and every "new" literacy mode for communicating meaning (Cope and Kalantzis, 2009, p. 178) which corresponds with numerous *theatrical elements* (Kaufman et al., 2018)(see Table 3).

Theatrical Elements	***Props***	***Sound***	***Acting***	***Lighting***	***Costumes***	***Scenic Design***	***Text/Story***
Literacy Modes	Tactile	Oral	Oral	Visual	Visual	Spatial	Oral
	Audio	Audio	Self	Spatial	Self	Visual	Written
	Spatial		Gestural		Tactile	Tactile	Self
	Visual		Spatial		Spatial	Self	Audio
	Self		Visual				

Table 3. Theatrical elements compared with new literacy modes.

In addition, theater-making also increases socio-emotional learning (SEL) in that it encourages the development of values, knowledge of self, and understanding and appreciation of others' perspectives (McCaslin, 1968). Finally, on a practical level theater-making lends itself well to formal learning educational contexts like school classrooms because it happens "face-to-face" and in "real time" just like teaching. It transfers environments easily, requires few resources because of its emphasis on imaginative storytelling, and costs comparatively little in comparison to other technology-driven mediums.

Examples of CLA Theater-making Outside the Classroom

The Pulitzer prize-winning American musical *Hamilton*, based on the best-selling biography of Alexander Hamilton by Ron Chernow, arguably represents the most successful commercial example of CLA told through a theatrical medium currently on stages across the country. This complex journey "from page to stage" took seven years in the making, and, according to *The Washington Post* (Marks, 2018), the efforts of an entire creative team of collaborators to realize, despite the crediting of its success to a single author, Lin-Manuel Miranda.

Two prominent, award-winning New York City-based vanguard theater companies that regularly implement CLA are *The Civilians* and the *Tectonic Theater Project*. These professional

producing organizations employ artists dedicated to the development of innovative new plays through adapting and devising theatrical work.

The Civilians regularly workshop and present material gathered through rigorous ethnographic research and personal interviews on topics as varied as death, hockey, the adult entertainment industry, and the American evangelical movement. The *Tectonic Theater Project*, on the other hand, uses a process for adapting and devising called "Moment Work" (Kaufman et al., 2018). This system involves creating and editing sequences of moments which maximize the various communication modes of the theater to optimize meaning-making for storytelling (see Table 3). Both companies work very deliberately to *balance* the elements and modes in their theater-making and storytelling, not just the spoken word.

The Civilians and *Tectonic Theatre Project* approach every theater-making project differently. Learning takes place during the research (*analytical*) and development (*creative*) phases of the process (Leitch, 2017). Regardless of their differences, they both emphasize collaboration, innovative ways of working with texts (in the broadest sense of the word), and constructing new and meaningful theatrical work resulting in public performances.

Examples of CLA Theater-making In the Classroom

What does the task of literary adaptation look like embedded in classroom curriculum and instruction, especially when done collaboratively? How does CLA function? I will now illustrate this through an example from my own past using the medium of theater. This learning activity took place in a high school English and Drama class composed entirely of 11th and 12th grade students.

The students wanted to examine and challenge the prevailing socio-cultural norms surrounding the male/female gender binary due to changing perspectives on campus. We chose Shakespeare's *The Taming of the Shrew* as an exploratory platform because it accents timeless identity and power conflicts between men and women through a single fraught relationship. Instead of producing the entire play, we took a "subtraction and contraction" approach (Hutcheon, 2013) to our adaptative text, focusing our attention on the famous confrontational scene between the chauvinistic Petruchio, the "tamer," and the cunning, sharp-tongued Kate, the "shrew." We transformed Shakespeare's infamous iambic verse into other textual formats to suit different adaptation conditions. Then, we mixed gender roles accordingly, and staged multiple versions of the same short scene for a school audience. Narration framed and explained the implications of each adaptation condition to the audience before the scene, highlighting differing degrees of situatedness (Gee, 2015)(see Table 4).

Act II, Scene I. *The Taming of the Shrew*			
Description: Petruchio and Kate Meet			
Topic: Exploring Prevailing Socio-Cultural Gender Binary			
Task: Adapt Scene in 6 Different Ways			
	Adaptation Condition	**Text format**	**Casting**
1	Traditional Scene	Classical Verse	Petruchio played by a Male, and Kate by a Female
2	Contemporary Scene	Contemporized Adaptation	Petruchio played by a Male, and Kate by a Female
3	Inverted Scene	Classical Verse Adapted	Petruchio played by a Female, and Kate by a Male
4	Same-sex Scene (2 Men)	Classical Verse Adapted	Petruchio played by a Male, and Kate by a Male
5	Same-sex Scene (2 Women)	Classical Verse Adapted	Petruchio played by a Female, and Kate by a Female
6	Musical	Song from "Kiss Me, Kate!"	Petruchio played by a Male, and Kate by a Female

Table 4. Outline of example CLA learning activity.

Depending on the CLA project, teachers must develop appropriate *scaffolding* with process steps to guide the learning activity. The instructional steps listed below approximate the CLA process of *The Taming of the Shrew* from the teacher/director's perspective, and could easily transfer and be applied in another CLA-related formal classroom situation (see Table 5).

1. Guide selection of a relevant topic of interest or theme
2. Guide selection of a suitable text(s) to explore the topic or theme
3. Establish an adaptive structure or scaffold based on chosen text(s)
4. Divide students into groups
5. Outline specific task/objective with each text(s) for every group
6. Generate new text(s) in separate working groups
7. Rehearse text(s) in groups
8. Share group performance in-class
9. Class discussion
10. Iterate (repeat steps 4-9 as needed)
11. Interweave text(s) together into a single production
12. Perform production publicly (optional: audience reflection afterwards)
13. Post-production reflection in-class
14. Assessment of process, product and performance: self and group evaluation methods

Table 5. CLA scaffolding for *The Taming of the Shrew* from the teacher/director's perspective.

A CLA adapted text, or product, then, may take the form of "a version, a variation, an interpretation, a continuation, a transformation, an imitation, a pastiche, a parody, a forgery, a travesty, a revaluation, a revision, (or) a rewriting" (Sanders, 2016, p. 18). A non-exhaustive list of possible sources of fictive and non-fictive texts for CLA include:

> Novels, novellas, newspapers, magazines, journal articles, essays, monologue books, plays, musicals, songs, screenplays, poetry, legends, sketches/pictures/visual art, advertisements, obituaries, menus, school textbooks, blogs, memes, interviews, letters, translations, or devising a text through improvisational means.

Overview of Chapters

The following three chapters (Chapters 2, 3 & 4) represent the beginning of a conversation about integrating CLA into text-based education, each with their own distinct research questions. This is by no means an exhaustive exploration of CLA as a learning construct, but merely a departure point. Although it is possible to conceive of each chapter as an individual article with a general disciplinary focus (either multiliteracy studies, learning sciences, or "making" and adaptation studies), these discrepancies often blur together to the point of meaninglessness because of the heavily interdisciplinary and intersectional nature of CLA. Every chapter serves a unique purpose, collectively contributing to a more comprehensive and holistic conception of CLA. I've also somewhat loosely organized the dissertation according to our newly branded research area at UW-Madison's School of Education in the Department of Curriculum and Instruction, now known as Design, Informal, and Creative Education (DICE). For example, chapter 2 covers learning by *design* and establishes CLA as a construct for exploring multiliteracies, chapter 3 addresses *creativity* and the novelty of learning to innovate with a decidedly mixed methods approach, and chapter 4 deals with critical perspectives on literary adaptation during the *informal* process of production-based art-making, specifically learning in and through creative constraints and productive transgressions (see Table 6).

OVERVIEW OF CHAPTERS			
DICE Research Category	**Chapter 2:** **DESIGN EDUCTION**	**Chapter 3:** **CREATIVE EDUCATION**	**Chapter 4:** **INFORMAL EDUCATION**
Title & Target Groups	*Learning by Design: Adolescent Drama Students Engaging with Knowledge Processes During CLA*	*Learning to Innovate: Expert Adult Teaching Artists Engaging with CLA*	*Learning in and through CLA: Creative Constraints and Productive Transgressions*
Disciplinary Focus	Multiliteracy Studies	Learning Sciences	Making and Adaptation Studies
Purpose	Establishing CLA as a Construct for Literacy Learning	Investigating a Novel Aspect of Learning In and Through CLA	Examining Critical Perspectives on CLA

Table 6. Overview of dissertation content by chapters.

As previously discussed, “making” and Constructionism, multiliteracies, and theories supporting collaboration and adaptation provide the theoretical context and foundations for the research questions in each chapter. Additionally, each research inquiry will utilize other related theories tailored to each topic (see Table 7).

<table>
<tr><th colspan="4">THEORETICAL FOUNDATIONS AND RESEARCH QUESTIONS FOR EACH CHAPTER</th></tr>
<tr><td></td><td>Chapter 2
Learning by Design: Adolescent Drama Students Engaging with Knowledge Processes During CLA</td><td>Chapter 3
Learning to Innovate: Expert Adult Teaching Artists Engaging with CLA</td><td>Chapter 4
Learning in and through CLA: Creative Constraints and Productive Transgressions</td></tr>
<tr><td rowspan="3">Theoretical Foundations</td><td>Multiliteracies
(New London Group)
&
Knowledge Processes
(Cope & Kalantzis)</td><td rowspan="2">Collaborative Knowledge Building
(Scardamalia & Bereiter)</td><td rowspan="2">Creative Constraints
(Elster)</td></tr>
<tr><td rowspan="2">Intertextuality
(Cutchins, Hutcheon, Barnette)</td><td rowspan="2">Creativity & Innovation
(Sawyer)</td></tr>
<tr><td>Dialogism
(Bakhtin)</td><td>Design Thinking
(Brown)</td><td>Making & Constructionism
(Halverson & Papert)</td></tr>
<tr><td rowspan="2">Research Questions</td><td rowspan="2">How do students engage with (multi-)literacy learning by design in and through CLA?</td><td rowspan="2">How do experts learn to innovate in and through CLA?</td><td>What categories of creative constraints specific to learning in and through CLA shape decision-making?</td></tr>
<tr><td>What is the relationship between learning, creative constraints, and “productive transgressions” during CLA?</td></tr>
</table>

Table 7. Theoretical foundations and research questions.

Although they function together, I will approach each research question as an individual case study, resulting in a series of inquiries, or multiple case studies all aimed at developing a deeper understanding of how people learn in and through CLA (Yin, 2014). Learning in and through CLA, then, will function as the *quintain*, or unifying principal under investigation with this multiple case study approach (Stake, 2006).

Methods of Data Collection and Analysis

The global COVID pandemic caused a major data collection debacle for many academic researchers, including myself. For example, I had lined up an opportunity to research *social design experiments* (Gutiérrez & Jurow, 2016) and CLA with a diverse group of high school theater students using Shakespearian scenes to address prescient EDI (Equity, Diversity, Inclusion)-related issues pertaining to gender, race, religion, etc. I was to guide and direct the entire process myself, culminating in a production, and had structured my dissertation proposal accordingly. Furthermore, I had planned on collecting data on children and CLA from public schools during multiple face-to-face teaching artist residencies. Once COVID struck, however, these data collections sources, their corresponding case studies, and my dissertation were put on hold for 14-16 months. As a result, I had to pivot in three major ways: (1) I located an entirely new data source, (2) I completely reconfigured my approach to an existing data source, and (3) by necessity shifted my focus away from live theater to digital theater, or the making of theatrical productions online for virtual broadcast by participants almost exclusively accustomed to creating for more traditional performance venues.

Overview of Sites

I observed two different groups of participants learning in and through CLA utilizing multiple site locations. Indeed, the changing of sites and redefining of physical space often exercised and exerted student knowledge transfer with CLA (Schank et al., 1999), contributing to its overall potential as a learning construct. Both groups of participants regularly engaged with theater-making: one group of novice adolescents, and another of adult experts.

Sites were chosen for practical reasons such as ease of access and scheduling, as well as more pragmatic reasons, like varying age range to examine CLA at different developmental levels, or diversifying organizations to investigate how certain social structures shape ways of collaboration and engaging with different types of literary adaptation (e.g. adapting a student-written text by a third grader versus adapting a canonical radio broadcast). Both sites maintained affiliations with formal public schools, yet crafted informal, alternative "third" spaces for creative exploration to flourish (Etheridge, 2015; Gutiérrez, 2008). Such arrangements make possible the type of organized, "beautiful chaos" so frequently attributed to art-making in theater (Perloff, 2015).

Site 1

Figure 5. Rehearsal of Orson Welles's *The War of The Worlds* radio broadcast from 1938.

The first site was a virtual, American high school theater classroom from a suburb of a small city in the Upper Midwest. Two adult teachers/directors led this elective, for-credit class revolving around the literary adaptation of Orson Wells' infamous radio broadcast about an alien invasion gone awry in 1938, *The War of the Worlds* (see Figure 5). None of the participants, including the adults, had ever participated in a CLA-related activity, nor were they experienced in digital theatrical production.

Site 2

Figure 6. Wisconsin-based professional educational theater company *Whoopensocker!*'s logo.

The second site belonged to *Whoopensocker!* (see Figure 6), an educational theater company affiliated with the University of Wisconsin-Madison's School of Education that works primarily with local third and fourth grade elementary school students on developing creativity, expression, writing, and collaboration (*Whoopensocker!*, 2020). The program operated as a six-week creative arts classroom residency culminating in a professional performance of student-written work adapted by adult teaching/performing artists for the entire school community. Although experts in literary adaptation for live theater, very few group members were knowledgeable about transforming text into digital theater prior to COVID.

These sites and their participants differed substantially from one another in four significant ways: age (adolescent students versus professional adults), expertise (novices versus experts), text (canonical versus mostly devised by a third-grade author/playwright), and production (live versus digital). However, all participants shared a similar creative process resulting in an adapted text and virtual performance. Interestingly, nearly all of them lacked familiarity with *digital theater* production. Indeed, the global COVID pandemic forced a steep learning curve upon these groups accustomed to working in a live theatrical medium to rely mostly on their knowledge of television and film to digitally produce theater. Whereas television and film operate primarily as archival mediums (Delikonstantinidou, 2021), digital theater typically involves (1) a co-present audience of some kind (even if just bystanders), (2) the use of digital technology as an essential component of the artistic event, (3) the shaping of content by the participating artists (not an editor), and (4) an emphasis on spoken language or text (Masura, 2020). The two groups, therefore, covered a range of experiences associated with CLA at varying sites, and complemented each other well for a multiple case study.

Data Collection Methods

I chose to collect data on learning during the making of six stories: (1) a high school digital theater adaptation of *The War of the Worlds*, two *Whoopensocker!* stories performed "live" called (2) *The Chocolate Bar Mess* and (3) *A Bird Adopts a Bird* (filmed pre-COVID), and one *Whoopenoscker!* digital theater adaptation of *Fox & Raccoon* presented in three different versions—with (4) just people, with (5) puppets, and as (6) a song.

Several data collection methods, informed by each research question, ensured depth and breadth of coverage for the inquiries. A large volume of audio-visual (A/V) recordings capturing rehearsal processes and productions formed the most sizeable contribution to the overall data for

all three research questions. Some informal, ethnographic field note jottings during and directly following these recordings transformed into more formal observations about the data. Interview data was collected collaboratively, and not one-on-one, due to the ensemble-based nature of CLA. I conducted these semi-structured, group interviews only with the high school students (Chapter 2 and 4) for two purposes: (1) to triangulate data by gathering "multiple perceptions to clarify meaning, verify observations, and validate interpretations" of the creative process (Stake, 2000, p. 443), and (2) to incite further discussion about learning and literary adaptation. I prepared specific questions based on transcriptions and observations before each group interview. I also issued informal surveys in online chat rooms during video conferencing with the high school students while using the application Zoom (e.g. "what are the first three words that come to mind when you think about today's rehearsal, and what did you learn?"), and formal surveys via Google Forms. Finally, every CLA learning activity results in text-based artifacts which assisted with the analysis. These documents allowed me to trace the evolution of each text, and its representational trajectory over time and space (Halverson, 2013). All digital participants across the data sets used GoogleDocs, and to a lesser degree GoogleSlides, which captured multiple drafts and versions of the adapted texts. I organized the data collection methods for each chapter as follows (see Table 8):

DATA COLLECTION METHODS			
	Chapter 2 *Learning by Design: Adolescent Drama Students Engaging with Knowledge Processes During CLA*	**Chapter 3** *Learning to Innovate: Expert Adult Teaching Artists Engaging with CLA*	**Chapter 4** *Learning in and through CLA: Creative Constraints and Productive Transgressions*
Sites	Virtual High School Classroom	Site 1: Rehearsal Studio and Elementary School Theater Site 2: Virtual Rehearsal Studio, Various Locations for Filming	Site 1: Virtual High School Classroom Site 2: Virtual Rehearsal Studio, Various Locations for Filming
Group Participants	Novice High School Theater Students (+2 Adult Directors/Teachers)	Expert Adult Educational Theater Company Members	Both
Medium	Digital Theater	Live and Digital Theater	Digital Theater
Digital Theater Productions	*The War of the Worlds*	*Fox & Raccoon* (x3 versions = Persons, Puppets, Song)	*The War of the Worlds* and *Fox & Raccoon* (x3 versions = Persons, Puppets, Song)
Live Theater Productions		*The Chocolate Bar Mess & A Bird Adopts a Bird*	
Task Time Frame	10 weeks	6 weeks for *Fox & Raccoon* 1 week for *The Chocolate Bar Mess & A Bird Adopts a Bird*	*Fox & Raccoon* (6 weeks) and *The War of the Worlds* (10 weeks)
Primary Data Collection (hours of footage)	12 hours of A/V Recordings	A/V Recordings 9 hours for *Fox & Raccoon* 3 hours for *The Chocolate Bar Mess & A Bird Adopts a Bird*	A/V Recordings (21 hours combined)
Secondary and Supporting Data Collection	Focus Group Interviews, Surveys, Text-based Artifacts		(only for *The War of the Worlds*:) Focus Group Interviews, Surveys, Text-based Artifacts

Table 8. Data collection methods for each chapter.

I received clearance in advance from the University of Wisconsin-Madison's IRB (Institutional Review Board) to collect this data. Please note that *all* participants voluntarily opted into the research studies, and their identities are anonymized to protect their personal interests. Any photos like screen shots which appear in the research are also *publicly available online* as posted videos on YouTube.

Data Analysis Methods

An essential feature of any case study entails defining the boundaries of the system(s) in question (Cresswell & Poth, 2018). The text-based narratives of every story bound each case. I traced the development and learning journeys of both groups as they evolved "from page to stage" or screen during CLA, from inception to production, whereby each process and performance "arc" served as the unit of analysis. I researched and traced the adaptation process and product generation forwards and backwards through time and space (Halverson, 2013b). Using these multiple types of analyses and coding methods at two different sites afforded me the opportunity to compare some of the results across studies, maximizing a unique feature of multiple case studies.

To better understand how people learn in and through the phenomena that is "CLA," I primarily employed Bidirectional Artifact Analysis (BAA)(Halverson & Magnifico, 2013), an umbrella methodology composed of Discourse (DA), Narrative (NA), and Artifact Analyses for examining a creative process and product "from [the] final product backwards and from initial idea forwards—to better understand participants' learning processes and the role of social, collaborative audiences in that learning" (p. 276). I also integrated Conversation Analysis (CA) as needed, a method akin to DA which became useful for interrogating collaborative turn-taking between conversation partners during rehearsals. Lastly, with its emphasis on semiosis, Critical

Discourse Analysis (CDA) offered me “a way of moving between close analysis of texts and [social] interactions” (Fairclough, 2003), a perfect lens for exploring productive transgressions and shifts in power during a CLA process, and their relation to learning.

First round coding took the form of mostly elemental methods (Saldana, 2016), like *structural* and *concept* coding, and second round coding included *pattern* and *axial* coding, all of which assisted with identifying and categorizing the data, as well as yielding both qualitative, and to a far lesser degree quantitative data representations (Miles et al., 2020, p. 65). To a much lesser extent, I also selectively used some affective methods (*emotion* and *values* coding) to understand motivations behind design choices, as well as literary and language methods (*dramaturgical* and *narrative* coding) for comparing intertextual relationships between source texts, adapted texts, and theatrical productions (Saldana, 2016)(See Table 9.)

<table>
<tr><th colspan="4">DATA ANALYSIS METHODS</th></tr>
<tr><td></td><td>Chapter 2
Learning by Design: Adolescent Drama Students Engaging with Knowledge Processes During CLA</td><td>Chapter 3
Learning to Innovate: Expert Adult Teaching Artists Engaging with CLA</td><td>Chapter 4
Learning in and through CLA: Creative Constraints and Productive Transgressions</td></tr>
<tr><td rowspan="3">Analysis Methods</td><td colspan="3">Bidirectional Artifact Analysis</td></tr>
<tr><td>Discourse/Conversation, Narrative & Artifact Analyses</td><td>Discourse/Conversation & Narrative Analyses</td><td>Discourse/Conversation, Narrative &
Critical Discourse Analysis</td></tr>
<tr><td>Structural, Concept, Pattern & Axial Coding</td><td>Concept & Pattern Coding</td><td>Structural, Concept, Pattern & Axial Coding</td></tr>
<tr><td rowspan="4">Main Findings</td><td>The most important design decisions in production-based art-making take place at the very beginning of the process, a ripe time for mining learning opportunities.</td><td rowspan="2">Learning to innovate occurs on multiple levels.</td><td rowspan="2">CLA participants transgress the definitional boundaries of different design categories while making, reconstructing them in meaningful new ways.</td></tr>
<tr><td>CLA scaffolds multiliteracy learning by design, differentiating itself as a construct by emphasizing the embodied experience of being the intertexts.</td></tr>
<tr><td>Learning by design in and through CLA primarily occurs along the intertextual and dialogical meaning-making dimensions of time (now/then), place (here/there), and representation (show/tell). Other decision-making factors include the author's intent ("fidelity") and the audience.</td><td rowspan="2">CLA promotes learning to innovate, an essential skill.</td><td>Creative constraints shape design choices on three distinct levels during CLA: individual, text, context. Every level consists of design categories specific to that level.</td></tr>
<tr><td>The general arc of learning by design during CLA begins with socio-cultural considerations, moves to cognitive decision-making, and ends with socio-emotional choices.</td><td>Transgressive decision-making by group participants during informal art-making like CLA may at times possess productive functions.</td></tr>
</table>

Table 9. Data analysis methods.

Contributions to the Field

To date, no one from the field of adaptation studies, an area of inquiry comprised mostly of philosophers from English literature and film departments, has linked the educational theories of "making" or Constructionism to the practice of literary adaptation. Despite considerable overlap in many areas such as the topic of design, remarkably very little empirical research exists at the intersections of adaptation studies and (multi-)literacy studies, not to mention theater education, especially studies substantiating learning. These investigations bridge that gap, attempting to exemplify how engagement with learning processes underscores the making of every literary adaptation, and utilizing the latest research to support centralizing CLA in 21st century curriculum and instruction. The results may have practical implications for teachers and curriculum designers, particularly in the arts and humanities where increased accountability measures and decreased funding have put pressure on academic departments to demonstrate their impact, value, and relevance in learning.

CHAPTER 2: DESIGN EDUCTION

Learning by Design:

Adolescent Drama Students Engaging with Knowledge Processes During CLA

The purpose of this investigation is to establish the legitimacy of Collaborative Literary Adaptation (CLA) as a learning construct for centralizing in 21st century curriculum and instruction. This case study examines novice, adolescent drama students engaging with CLA to demonstrate literacy learning in and through the transformation of a text "from page to stage," with a focus on design. It also examines other learning outcomes through a design lens, including *when* and *where* learning occurred during the CLA process.

To reiterate, CLA as a construct for teaching and learning in 21st education is all about groups of people "making texts together," a process rooted in meaning-making through collective, multimodal design creation (Wheeler et al., 2020). It entails *learners collectively engaging with the analysis, design, creation, and production of innovative texts from other texts using a range of meaning-making resources and materials which culminates in a public presentation of value for a community.* CLA is a text-based, task-oriented, project and problem-based activity which optimizes the latest research and knowledge about how people learn through collaboration, literacy, and adaptation. In a world of constantly changing information, structures, and meanings (Kress, 2013), the making of adaptations provides a powerful lens for teachers and learners to experiment with alternative ways of thinking, knowing, and doing. For example, among other things, the process of groups transforming a literary text from page to stage or screen "renders the familiar strange" (Gee, 2015) through the re-telling and re-showing

of recognizable stories. It revolves around a simple formula which leaves considerable flexibility for educators and students alike to exercise personalization:

Collaboration + Making Text(s) + Adaptation (thinking, knowing, doing)

+ Public Sharing with Community Value → Engaging with Learning Processes

Literature Review

CLA and Multiliteracies Theory: Learning by Design

The word "Literary" in CLA refers not only to *literature*, a staple in most arts and humanities classrooms, but also to older school-based notions of *literacy* as learning to read and write. However, "Literary" also alludes to newer conceptions of text, meaning-making, and literacy learning, or *multiliteracies*. This "transformative pedagogy" (NLG, 1996) has gross implications for defining and understanding learning in terms of CLA.

The NLG (1996) extended traditional, language-based notions of literacy pedagogy as simply learning to read and write with "signs" to also incorporate social-cultural context. These "new" literacies acknowledge the importance of larger networks of socially shared meanings beyond language, and their communication potentials (Stam, 2017; NLG, 1996). *Multiliteracies* integrate different modes used for making meaning through a variety of mediums. A *medium,* like theater or film, distributes communication through material and social channels, while a mode is a "socially and culturally shaped resource for making meaning" (Kress & Bezemer, 2008, p.171).

These meaning-making resources have roots in semiotics, or "the study of signs and symbols, and their use or interpretation" ("Semiotics," n.d., para. 1). When signs, or something that stands for something else, combine with tools, learners can actively mediate their

environment (Smagorinsky, 2001; Vygotsky, 1978). This links the individual to context, effectively "socializing semiotics," and forms the basis for what Kress (2010) calls *a social semiotic theory of multimodality* (p. 6). Sign-"making," then, entails people combining and shaping meaning utilizing *semiotic resources* to reflect their interests, and learning is the result of these processes, especially when done collaboratively (Kress, 2010).

A *text* in CLA refers to any configuration of signs or semiotic resources which provides the capacity for making meaning (Smargorinsky, 2001). Literary texts provide a ripe platform for learning via meaning-making and multiliteracy exploration. Smargorinksy notes that the richest meanings, and therefore the deepest learning, "come through transactions that are most generative in the production of potent new texts," paving the way for a pedagogy centralizing the designing and redesigning of texts, or literary adaptation (2001, p.162).

Just as the evolutionary idea of adaptation pivots around the concept of design in biology, learning in and through literary adaptation hinges around design in social semiotics. Accordingly, design is "a theory of communication and meaning… based on equitable participation in the shaping of the social and semiotic world" (Kress, 2010, p.6). This design-based, interventionist approach to learning encompasses all interpretive meaning-making decisions, as well as their effects (Gould, 2017).

Whether adapting literature or producing it, learners as designers in CLA begin the process with an original text (an Available Design), rewrite an adapted text (Design), and then stage or film a creative production (a Re-design). This transformative design framework for multiliteracy learning, formulated by the NLG (1996), maps seamlessly onto CLA. It demonstrates *how multiliteracy learning and literary adaptation grounded in design are fundamentally the same process* (see Figure 1).

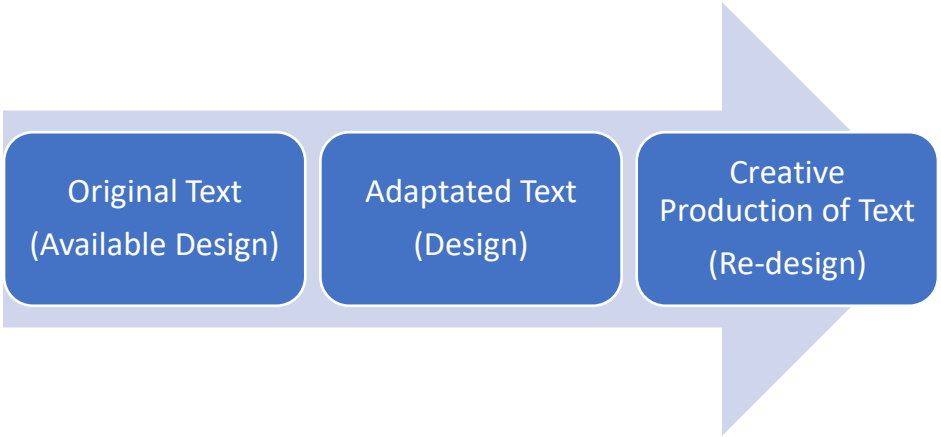


Figure 1: Literary adaptation grounded in a design process and multiliteracy learning.

Each step of this design process fosters the conditions for thinking, doing, and knowing *across* and *between* texts, underscoring the dynamic and relational aspects of meaning-making, and doing so *in practice* with the goal of learning (NLG, 1996). Practicing design empowers students with agency to become active producers as opposed to passive consumers of social and cultural capital (Bordieau, 1996 & 2007), while also honoring student subjectivities for motivating learning (NLG). The process of adapting literary texts, or learning by design, effectively "redesigns the designer" as they *transfer* meanings across and between texts (Kalantzis, 2006). Dewey notes:

> What is called the magic of the artist resides in his ability to *transfer*… values from one field of experience to another, to attach them to the objects of our common life and by imaginative insight make these objects poignant and momentous. (1934, p. 118)

As previously mentioned in Chapter 1, although learning scientists Kolodner et al. (2003) propose a conception of *learning by design* which shares some similar features with this research, this work decidedly builds upon the notion of *learning by design* forwarded by Cope &

Kalantizis (2015) rooted in multiliteracy activities, while also borrowing heavily from the learning sciences.

Knowledge Processes (KPs)

Updating previous work by the NLG (1996), Cope &Kalantzis (2015) make the case for shifting literacy learning from conversations about "multiliteracies" (available design, design, and redesign) to Knowledge Processes (KPs), or "the things you do in order to know" (p.17). KPs address *how* students actively learn and acquire knowledge in and through a reflexive design process. Cope and Kalantzis (2015) conceptualize KPs as circular map instead of a linear progression which recognizes "interweaving" across and between "pedagogical moves," and accommodates for the iterative, cyclical nature of learning during multiliteracy design work (see Figure 2).

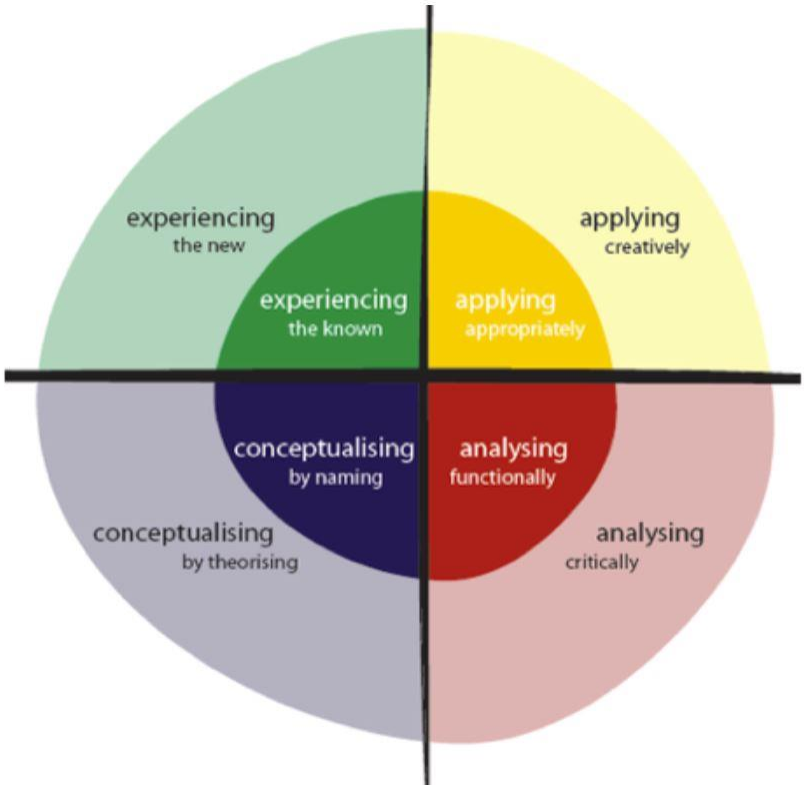


Figure 2. Knowledge processes.

Due to their emphasis on educational practice, KPs may also have theoretical implications for substantiating learning in and through CLA. For instance, students engaging with CLA may process knowledge in and through:

(1) ***conceptualizing*** by *theorizing* meaningful associations with other texts, and by *naming* shared categories across and between texts for comparing and contrasting;

(2) ***analyzing*** by *critiquing* their own work and that of others, and by determining the *functionality* of different mediums for their storytelling and story-"showing;"

(3) ***applying*** *creative* means like improvising for generating text, and *appropriately* rewriting a historical text to suit a new context; and

(4) ***experiencing*** *the known* (the original, historical source text) and *the new* (the adapted text and/or creative production) by redesigning the texts for performance.

This "learning by design" that occurs while working across and between texts with KPs during CLA theoretically takes place in and through the multilayered, interconnected process of literary adaptation.

CLA and Adaptation Theory: Dialogism and Intertextuality

Historically, the field of adaptation studies has revolved around three foundational debates: (1) what counts as an adaptation, (2) what responsibility does the adapted text have to evoke essential features of the original (the notion of "fidelity"), and (3) should adaptation study be analytical, or evaluative (Leitch, 2017)? Primary classical theorists of adaptation studies include Bakhtin (1981), Kristeva (1977) and Genette (1992), whose major contributions to the field include the notions of dialogism, intertextuality, and transtextuality, respectively.

Fascinated by literary language, translation and "the notion of *simultaneity*, or how something can be one thing and another thing at the same time," (Cutchins, 2017, p. 97) or this AND that, the Russian scholar Bakhtin (1981) theorized *dialogism*, or the ongoing, dynamic, and relational nature between all words, language and thought. For Kristeva (1980), who coined the term *intertextuality*, literature signifies "an intersection of textual surfaces rather than a point (a fixed meaning), as a dialogue among several writings" (p.65). Relatedly, Genette (1992) aims to transcend intertextuality with his more all-encompassing notion of *transtextuality* which problematizes cross-cultural meaning-making.

Although Bakhtin never addresses literary adaptations in his work per se, dialogism has obvious relevance for understanding how intertexts "dialogue" not only with each other through time and space, but also with readers, writers, and audiences. As Cutchin's notes:

> Dialogic thought would suggest that all meanings, including those generated by adaptations, are negotiated in complex webs of intended and unintended meanings and dialogues, and that when we label a text an adaptation we are simply acknowledging a particular relationship that we perceive between texts (2017, p. 101).

In this sense, the "logic" of dialogism and literary adaptation is pluralistic, following an *also/and* approach to examining texts, as opposed to an *either/or* mindset (Cutchins, 2017, p. 111). For Bakhtin, then, "all texts are intertexts," troubling the very idea of original or "new" work, and effectively rendering *every* text some form of adaptation (Leitch, 2017, p.26).

The diversity of definitions from leading scholars in adaptation studies like Cutchins, Sanders, and Hutcheon mirror its complexity as a construct. Indeed, Cutchins maintains that "any structural definition of adaptation is likely to be problematic" (2017, p. 107). Julie Sanders

(2016) heralds' adaptation as "the new critical idiom" in postmodern literary circles, but draws a distinction between it and the related concept of *appropriation*, which "frequently effects a more decisive journey away from the informing text" (p. 35). Otherwise stated, appropriations generally neglect to signal a source text, whereas adaptations always contain some form of reference to it (Sanders, 2016). Hutcheon offers two working definitions of adaptation: one short, and the other long. In modest terms she suggests that adaptation is "repetition with variation," but *without* replication (Hutcheon, 2013, p. 4). She describes adaptation as *telling, showing,* and *interacting,* resembling the practice-oriented dramaturgical process of *telling, adapting* and *performing* of personal stories (Wiley & Feiner, 2001; Halverson, 2007), but extrapolates further, defining adaptation as: "(1) an acknowledged transposition of a recognizable other work or works, (2) a creative and an interpretive act of appropriation/salvaging, and (3) an extended intertextual engagement with an adapted work" (Hutcheon, 2013, p. 8). Somewhat similarly, but painting in broader strokes, Corrigan (2017) simplifies Hutcheon's take on adaptation as a series of progressive steps: (1) a process, (2) a product, and (3) an act of reception "in which the reading or viewing of that work is actively adapted as a specific form of enjoyment and understanding" (p.44).

Intertextual and Dialogic "Making" Framework

Intertextual and dialogical considerations accompany and shape every interpretive "meaning-making decision" or design choice during CLA, especially along *temporal, spatial,* and *representational* dimensions. Theatre scholar Jane Barnette (2018) approaches adaptation studies from a decidedly *dramaturgical* perspective with her notion of "adapturgy." Unlike Wiley & Feiner (2001) and Halverson's (2007) *practice*-orientated dramaturgical lens, however, she offers a three-dimensional cubic model from the point-of-view of *reception* to assist

inquisitive audience members, or "spectators," with making sense and digesting the complex *relational* (intertextual) and *dual* (dialogical) nature of a literary adaptation in performance (See Figure 3).

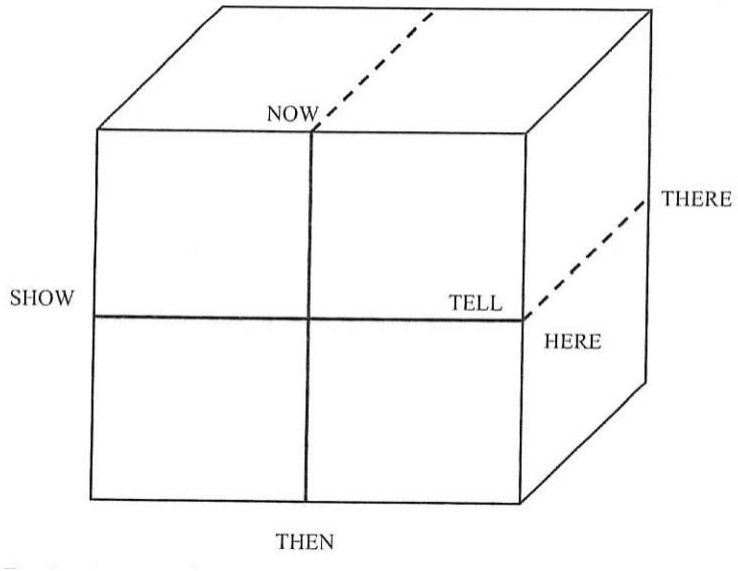


Figure 3. Barnette's (2018) cube of "spectator-based adapturgy" for assisting with processing relational and dual aspects of literary adaptation in performance.

Barnette's (2018) model not only illustrates from the "user" point-of-view (1) how a creative production relates back to its source text, but also (2) any other possibilities for how it might have been adapted and/or staged (p. 40, 2018). Despite its distinctly *observational* orientation to comprehending the interrelated aspects of literary adaptations, this diagram may also contain potentially powerful pedagogical implications as well for *educational making* and the *active practice* of learning by design during CLA.

For example, the lines of the cube essentially outline boundaries which contain the totality of meanings across and between the intertexts, or in the case of CLA, the original source material and an adapted text and/or adapted creative production. Every interpretive decision

about the literary adaptation occurs within these spatial (here/there), temporal (now/then), and representational (tell/show) boundaries, depicting a specific relationship across and between intertexts, and scaffolding a certain structure of meaning. The distances along the lines of one dimension to the next, such as spatially from "here" to "there," signify "mental leaps" in meaning *between* texts (intertextuality)(Kristeva, 1977), but also *across* multiple layers of meanings (dialogism)(Bakhtin & Holquist, 1981). *This effectively codifies a multi-dimensional way of learning "adaptationally"—of thinking, of doing, and of knowing intertextually and dialogically in and through the process of literary adaptation.*

This notion of "learning adaptationally" manifests during CLA as intertextual and dialogical *interpretive design decisions* occurring across and between three dimensions (*spatial:* here/there, *temporal*: now/then, and *representational*: tell/show) on both cognitive and socio-cultural levels. These interpretive design decisions inevitably revolve around both *analytical* and *creative* literary adaptation considerations (Leitch, 2009), scaffolded by fundamental questions pertinent to any text in transformation, like *who/what/where/when/how/why*? (Hutcheon, 2013). For example, on a *cognitive* level, participants making literary adaptations tinker with *discursive*, or "language-in-use" (Gee, 2005) aspects of the narrative text, like its content and structure. They might rewrite parts of the narrative by embellishing certain plot lines or alter the story's sequence of events to heighten dramatic tension or conflict.

However, every *discursive* interpretive design decision also carries significant *social-cultural* considerations linked to the *who/what/where/when/how/why* of a literary adaptation, too. Gee (2015) refers to these embedded, *situated* (Lave & Wenger, 1991) meanings as *Discourses*, or the socio-cultural-historical-political-economic practices which constitute different ways of being in the world and relating to it. These *Discourses* and their associated meanings, suspended

within a greater super-structure of meanings surrounding the text, in turn also shape every *discursive* interpretive design decision. Thus, any changes in the boundaries of meaning across and between the original source material and an adapted text and/or creative production reconfigures the positionality of the story and its meanings within the greater super-structure of *transtextual* meanings (Genette, 1992), and subsequently also alters its reception. Barnette's (2018) literary adaptation model reimagined (see Figure 4) depicts the intricacies of *text-based, interpretive design decisions informed by d/Discourses* during a making process like CLA.

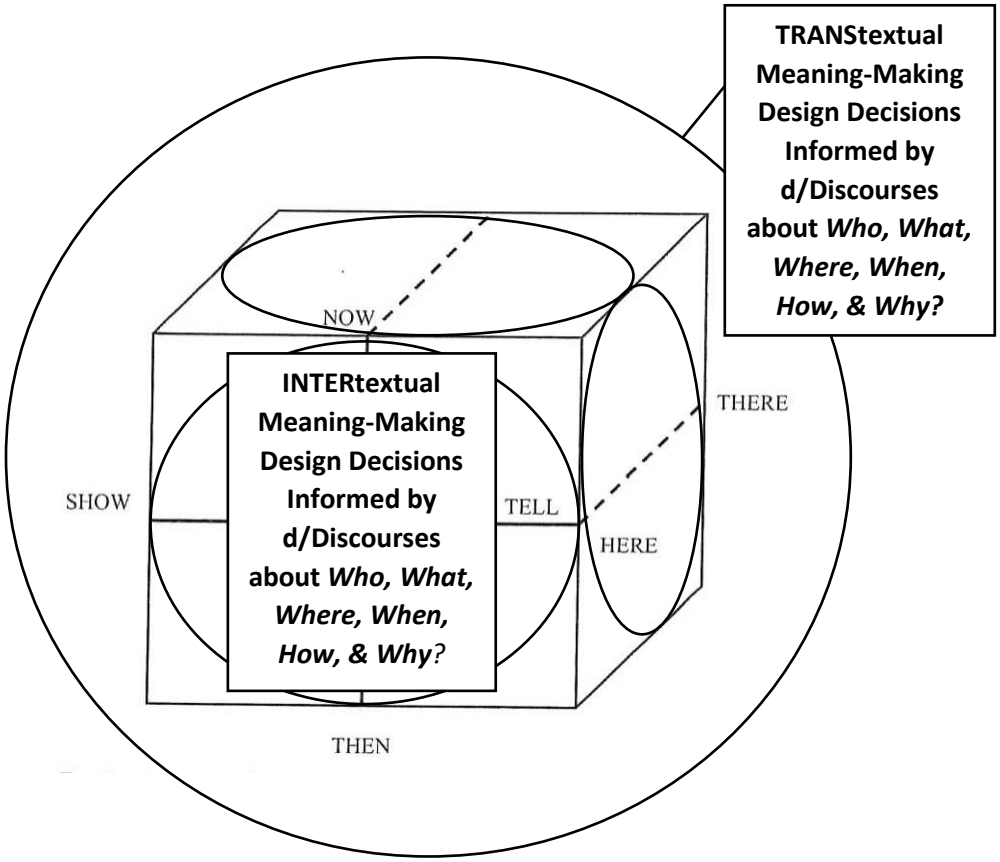


Figure 4. Barnette's (2018) literary adaptation model reimagined for "making:" intertextual/transtextual and dialogical framework for interpretive design decision-making informed by d/Discourses during CLA.

In terms of multimodal literacy learning, "makers" shape these social, cultural, economic, historical, and political meanings embedded in the text (Gee, 2015) by rendering *discursive* choices "from the inside-out" about the narrative content and structure. However, they also reshape them "from the outside-in" by drawing on familiar *Discourses* during literary adaptation. This relationship between d/Discourses essentially outlines a reflexive decision-making process akin to *learning by design* (Cope & Kalantzis, 2015). The theories of intertextuality (Kristeva, 1977) and dialogism (Bakhtin & Holquist, 1981) support this symbiotic process, whereby learners integrate and interweave their own knowledge with corresponding frames of meaning (Goffman, 2008) into the design and redesign of the adapted source material. This rich interplay and the reciprocal shaping/positioning functions (Willett & Wheeler, 2021) between d/Discourses, intertextualities/transtextualities, and the text/social context not only reveals the complexities of meaning-making decisions while "making" a literary adaptation, but also the multitude of possibilities and potential for engaging with design-based learning in and through a process like CLA.

Two examples of the relationship between "learning adaptationally"—of thinking, knowing, and doing across (dialogic) and between (intertextual) temporal, spatial, and representational dimensions—and the power of d/Discourses at work during CLA include the vitals roles of history and culture. Makers learning in and through CLA draw from a historical source text and its social world from the past in the present to transform the *social future* (NLG, 1996). They can shape and reshape historically significant social and cultural texts in meaningful new ways by *re*contextualizing these narratives from one time and place and situating them in another. The thinking, knowing, and doing of *redesigning* texts contains powerful cultural

implications for makers, especially those from historically marginalized groups seeking to reimagine and redefine their social identities the greater social environment.

CLA offers a platform for disrupting the historical and cultural flows of tradition in other ways, too, like representing older texts with more culturally relevant (Ladson-Billings, 2014**)**, powerful storytelling tools such as Zoom or iPhones suited for contemporary audiences, as in the case of digital theater-making**.** Adapting familiar narratives into a more historically and culturally accessible medium also supplies makers a ripe learning opportunity for acquiring practical digital storytelling tools like editing or cinematography (Halverson, 2013). Moreover, many of these digital skills can bring multimodal, representational awareness to otherwise less obvious social shifts in d/Discourses during text-based literary adaptation, as well as communicating some of their implications.

Lastly, as previously discussed in Chapter One, two other major intertextual and dialogical considerations factor into every interpretative design decision during CLA: the original author's intent (Cutchins, 2013), and the audience (Magnifico, 2010). On the one hand, learning while transforming texts into productions inherently provokes the question of the author's motivations, and the makers' "fidelity" to representing that source material. On the other hand, makers always create with their receiving audience in mind, and their perceived responses to certain meanings and effects of the story. For example, depending on the popularity of the text, receiving audiences may expect the presence of certain key narrative features scripted by the original author, like pivotal moments, whereas a more obscure text may permit more latitude in this regard. Either way, all decision-making during CLA always involves contemplating both (1) the historical notion of authorship "fidelity," and (2) the futuristic notion of anticipating a receiving audience's response to new work.

So, how do theoretical KPs and the intertextual/dialogical "making" framework for interpretive decision-making support learning by design during CLA? ***How do students engage with (multi-)literacy learning by design in and through CLA?*** And, as sub-questions, what types of design decisions supporting learning processes occur at the granular-level while meaning-making during CLA, and when do they take place?

Methods

This case study, one of three in a series of collective (Cresswell & Poth, 2018) or comparative (Bartlett & Vavrus, 2016) case studies, examines a group of novice adolescents collaboratively adapting and transforming a literary text into a creative production, and seeks evidence of literacy learning during the process. Due to my primary focus on learning in and through interpretive design decisions and processes, emphasis on collaboration, and featured prominence of socio-cultural theories and their shaping functions during the reproduction new texts (Gee, 2015), I utilize a constructivist-oriented conception of case studies "that consider how social actors, with diverse motives, intentions, and levels of influence, work in tandem with and/or in response to social forces to… produce… [a] social and cultural world" (Bartlett & Vavrus, 2016, p. 1). Furthermore, a case study of a collaboratively adapted literary text "occurs through a complex process of appropriation, during which social actors interpret and select [text], thereby adapting ideas and d/Discourses developed in a different place and potentially at a different historical moment and harnessing them for their own purposes" (Bartlett & Vavrus, 2016, p. 2; Gee, 2015). Bound by the constraints of the original text, or source material, the group and their design work in literary adaptation form the case study unit of analysis from start to finish.

Participants

The group consisted of 13 adolescent American high school students, presumably between the ages of 14 and 18, from a predominantly upper-middle class, highly educated suburb of a small city in the Upper Midwest. The leadership team consisted of one adult female teacher/director with an extensive background in theater, and one adult male teacher with an extensive background in technical theater, who also functioned as an assistant director. The student cast consisted of eight females and four males, primarily upperclassman (either high school Juniors or Seniors), supported by one adolescent female stage manager. Participating students auditioned or interviewed, and then elected to enroll in the creative production as a "for credit" high school class.

None of the participants, including the instructors, had ever participated in a CLA-related activity. Although intimately familiar with theatrical production, neither experienced teacher/director had ever made or edited anything online before. Therefore, all participants qualified as novices, including leadership. This made them ideally suited as a sample population for three reasons. First, unfamiliarity with the process would likely yield a steep learning curve and produce very "raw" data reflective of many groups approaching CLA for the first time. Next, unlike younger learners, adolescents possess the ability to meta-cognate, or to think about their own thinking (Schneider & Löffler, 2016). This developmentally reflexive capacity mirrored the reflexivity of the KP model, as well as other intertextual and dialogical considerations related to CLA. For instance, understanding the critical and comparative dimensions of time, place and representation, and the facility to empathize deeply with the authorship and receiving audience during the creative process, both key features of design-based decision-making during CLA

(Brown, 2009). Finally, this group operated within the context of an educational setting, and not a professional environment, positioning learning at the center of the activity.

Task

The team of 15 individuals worked collaboratively online via the digital platform Zoom, never once meeting face-to-face due to the global pandemic. The teachers/directors in advance chose to adapt and transform Orson Welles's famed radio broadcast play from 1938 *The War of the Worlds* (*WOTW*). The story, ironically an adaptation itself of British author's H. G. Wells's novel *The War of the Worlds* from 1898 concerning the fictive invasion of planet earth by aliens in spacecraft, takes place in the real-life small town of Grovers Mill in the State of New Jersey. The original airing of the source text on the radio incited panic from its "on air" listening audience in the tri-state area (NJ, NY, CT), and helped launch Orson Welles's distinguished entertainment career, which included numerous Academy Awards for writing, acting, and directing such noteworthy films as *Citizen Cane*. Many subsequent iterations of the *WOTW* exist, even parodies, supporting this selection of canonical dramatic material for high school students embarking on literary adaptation for the first time.

The students worked over 10 rehearsal periods during the height of the global COVID pandemic to adapt and transform *WOTW*, spanning mid-October, 2020 to early-December, 2020. As an official entry for the State High School Theatre Festival (SHSTF), they had two noteworthy deadlines, and therefore submitted two versions. The first submission, due early November, elicited feedback on improvements from three expert adjudicators, and solidified their spot as an official entry in the competition, with the final submission due in late November. SHSTF adjudicators only accepted extended single recordings of "one take" for all video entries, with little to no editing permitted. The *WOTW* cast and crew also produced a third, public-facing

YouTube version of their production for teachers, family, and friends in early-December, which this study utilized as the official final production.

Data Collection

I collected approximately 12 hours of audio and visual recordings from *WOTW* virtual rehearsals online over ten weeks. I used a combination of audio platforms and technologies like Otter.ai (audio only) and Zoom (mostly audio, minimal video) to capture data, and then transcribed these recordings using Rev.com. In addition to these rehearsal transcripts, I incorporated a wide variety of other supporting data. Contacted just two days before the project began, I lacked proper research questions before the start, so I developed and instituted a series of other data collection means apart from the rehearsal transcripts to capture learning in and through CLA such as formal and informal group interviews, surveys, and text-based artifacts. Incidentally, this supporting data became highly valuable for illuminating other findings and results. For example, I collected:

1. Three *focus group interviews* about learning and the CLA process with semi-structured questioning from the beginning, middle, and end of the project timeline.
2. Three *formal, individualized surveys* about learning and the CLA process using mixed methods via Google Forms from the beginning, middle, and end of the project timeline.
3. Three *informal, group surveys* about learning and the CLA process with students populating the chat field in Zoom with brief answers to questions from the beginning, middle, and end of the project timeline.
4. Three *student, text-based artifacts*:
    a. Student "*idea board*" slides from the first few rehearsals on Google Slides.
    b. Random *screen shots* from Zoom chats.

c. The finalized 2020 *WOTW scripted adaptation*.

I transferred all this data into the qualitative data analysis software tool MaxQDA to conduct the analysis. I also took advantage of the computer software extension tool Draftback for examining the final 2020 *WOTW* scripted adaptation, which displayed *every change* made to the original source text on Google Docs during the literary adaptation process, including who made changes, and when they occurred, providing an exceptionally powerful digital instrument for assessing and evaluating CLA.

Data Analysis

To analyze and interpret the data I chiefly employed Bidirectional Artifact Analysis (BAA)(Halverson & Magnifico, 2013), an umbrella methodology composed of Discourse (DA), Narrative (NA), and Artifact Analyses (AA) for examining a creative process and product "from [the] final product backwards and from initial idea forwards—to better understand participants' learning processes and the role of social, collaborative audiences in that learning" (p. 276). Specifically, I used Discourse/Conversation Analyses (DA/CA) (Gee, 2015) for deciphering the rehearsal transcripts and focus group interviews. DA, or "the close study of language in use" (Wetherell et al., 2014)," assisted in me understanding participant design decisions and meaning-making choices since multiple texts (the source material, the adapted scripts, and the final productions) operated as the main sites for examining creation/learning and change in and through CLA. CA, a methodology akin to DA, became valuable when participants took turns dialoging in-between rehearsing with the texts and while actively exchanging ideas about creative adaptative changes. I applied AA to text-based student artifacts like the conceptual "idea boards" in Google Slides and to the final performance recording on YouTube, and used NA (Connelly & Clandinin, 2006) in conjunction with Google Docs and the software Draftback for

understanding many of the changes to narrative content and structure with the texts, as well as for comprehending personal participant reflections on their learning.

Before beginning coding, I operationalized the term "learning," building primarily upon the educational theory of "making" (Halverson & Sheridan, 2014) as previously discussed in Chapter 1, as well as the notion that "learning and creating are fundamentally the same process" (Sawyer, 2003, p. 47). The learning sciences explicitly acknowledge both cognitivist, product-oriented approaches to learning, as well as socio-cultural, process-oriented approaches. Thus, I applied Scardamalia and Bereiter's cognitivist-oriented definition of learning as "a change in mental state" (2014, p. 397), but extended that to also include evidence of any external representations reflective of internal cognitive change, such as significant design changes in the transfer of meaningful narrative content and structure from text to the digital medium. Then, blending both cognitive and social-cultural dimensions, I coupled my reimagined theory of Barnette's literary adaptation model for "making" with Gee's (2015) socio-linguistic conception of d/Discourses to further define learning as any meaningful, interpretive design changes *across* and *between* texts relating to socio-cultural-historical-political-economic circumstances, like informed creation and insertion of modern music in the *WOTW* adaptation based on the old-fashioned music from the original work. Finally, I also utilized Lave and Wenger's (1991) conception of learning as a situated, co-constructed social process to recognize the vast amount of collaborative co-creation during the making of *WOTW*. Simply put, *I defined learning as creative change which contributed either directly or indirectly to the making of the final production*. To qualify as evidence of creative change either I had to observe the learning moment, or recognize it in my analysis as either an explicit articulation or implicit discursive statement or action by an individual or group participants.

For the first round of coding in MaxQDA I took a broad sweep of the rehearsal transcripts, interviews, surveys, and text-based artifacts by conducting a macro-level analysis with *structural coding* (Saldana, 2016) which "applies a content-based or conceptual phrase representing a topic of inquiry to a segment of data" (MacQueen et al., 2008, p.124). For example, I coded for the conceptual phrase "adaptation and learning," or any moments of creative change across and between texts.

For the second round of meso-level analysis, I applied *concept coding* (Miles et al., 2020), an approach focused on examining large swaths of data and abstracting participants' ideas as opposed to emphasizing particulars. For example, I scrutinized the segments coded "learning and adaptation" for prominent instances of each KP like *applying* or *conceptualizing* as evidence of multiliteracy learning during CLA, including their corresponding eight subcategories like *conceptualizing by theorizing* or *applying appropriately* based on definitions provided by the Knowledge Processes (KPs) framework (Cope & Kalantzis, 2015)(see Figure 2). I sought one primary example of each of the four KPs and its related subcategories for a total of eight instances. Naturally, each of these eight instances also demonstrated considerable intertextual and dialogical features related to literary adaptation sourced from my theoretical maker framework for literary adaptation, namely the dimensions of time (now/then), place (here, there), and representation (tell, show).

For the third and final round of micro-level coding, I utilized *pattern coding* (Miles et al., 2020) to examine particulars. I probed all the segments coded "adaptation and learning" across the entire data set one last time, but at the granular level and independent of the KP model to see what else might emerge during a CLA activity. I specifically labeled moments representative of repetitive, design-based decision-making supporting learning processes with action verbs as sub-

codes, and noted when they occurred. This generated more than 100 nuanced descriptive sub-codes such as negotiating, associating, evaluating, appropriating, meeting deadlines, etc., many of which overlapped neatly with certain KPs, although not all did so neatly. Then, using *axial coding* (Saldana, 2016), I formulated categories from these sub-codes. Based on group participant actions, explicit articulations, and implicit statements, these categories addressed *what* and *when other design-related learning* seemed to occur during the *WOTW* CLA process, further contributing to proof of learning during CLA.

Results

As expected, the CLA process of *WOTW* yielded ample evidence of learning at the intersections of multiliteracies and literary adaptation. Although conceptualized as a circular model for "interweaving" between four pillars, the KPs occurred in a somewhat linear progression during CLA in the following order: (1) conceptualizing, (2) analyzing, (3) applying and (4) experiencing. To highlight examples of each KP and their overlap with literary adaptation, I chose clear examples of each pillar *specific to CLA* for distinguishing this learning from a more traditional approach to a creative production in a high school setting.

In short, I discovered that students: (1) *conceptualized* using idea boards and making associations based on prior knowledge of similar story content and structure; they (2) *analyzed* the affordances and constraints of different mediums like an audio-only podcast format versus a Zoom recording presentation, and studied critique from sources both within and outside the project; they creatively and appropriately (3) *applied* rewriting edits and improvisations for generating new text; and repeatedly (4) *experienced WOTW* across multiple dimensions and levels while negotiating "live" intertextual switches across and between worlds in performance,

and struggling to adequately represent a mounting fear in their video production which pervades the source text (Cope & Kalantzis, 2015)(see Figure 5).

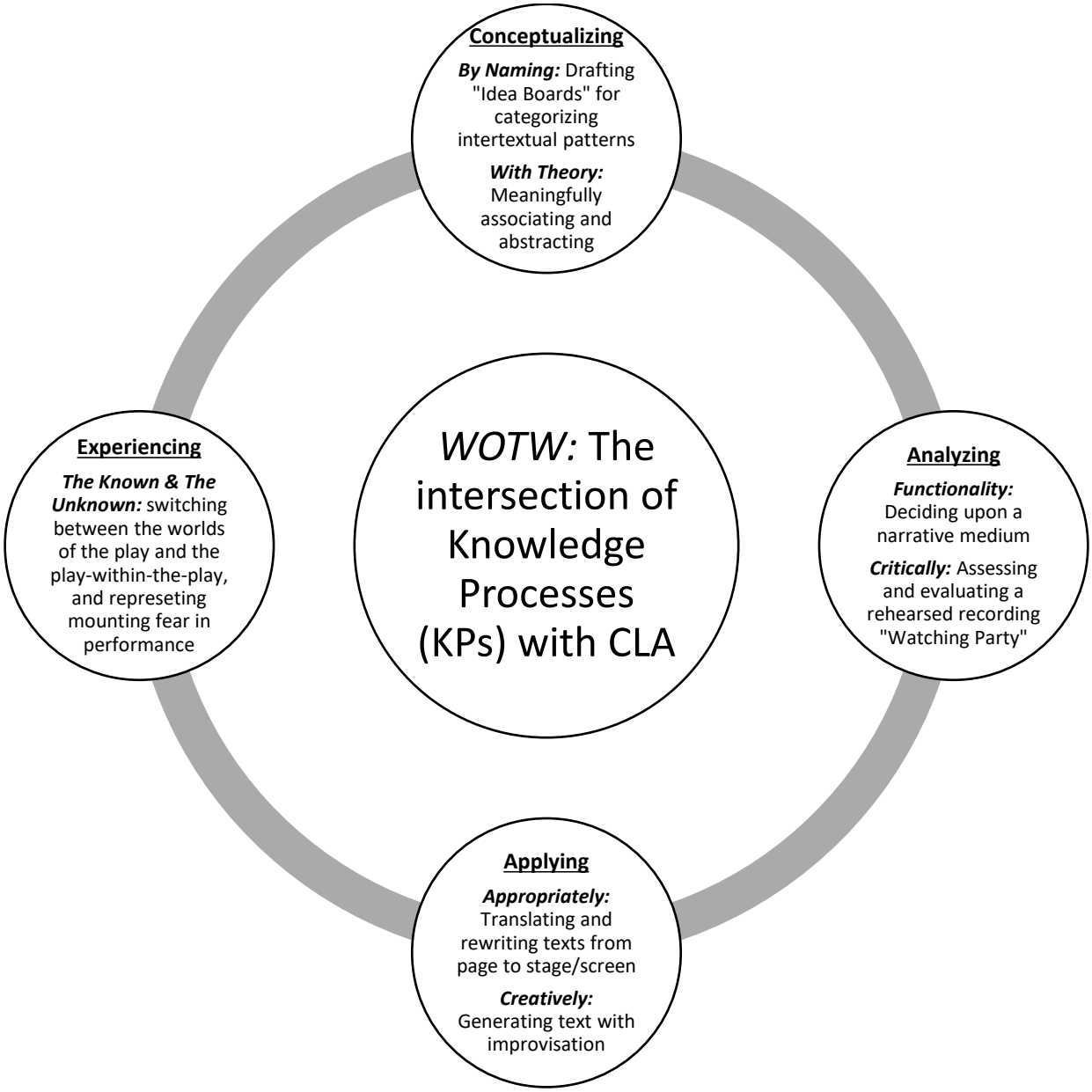


Figure 5. The intersection of KPs with CLA during *WOTW*.

The examples below from the data illustrate fitting instances of each KP, or multiliteracy pillar, and their intersection with "learning adaptatively." They confirm and validate learning in and through CLA. Despite the high frequency and considerable overlap between KPs during the

creative production process, these results address only one KP at a time for reasons of clarity. Furthermore, they also present the KPs in chronological order corresponding with the *WOTW* CLA process, although occurring throughout in a non-linear, cyclical fashion.

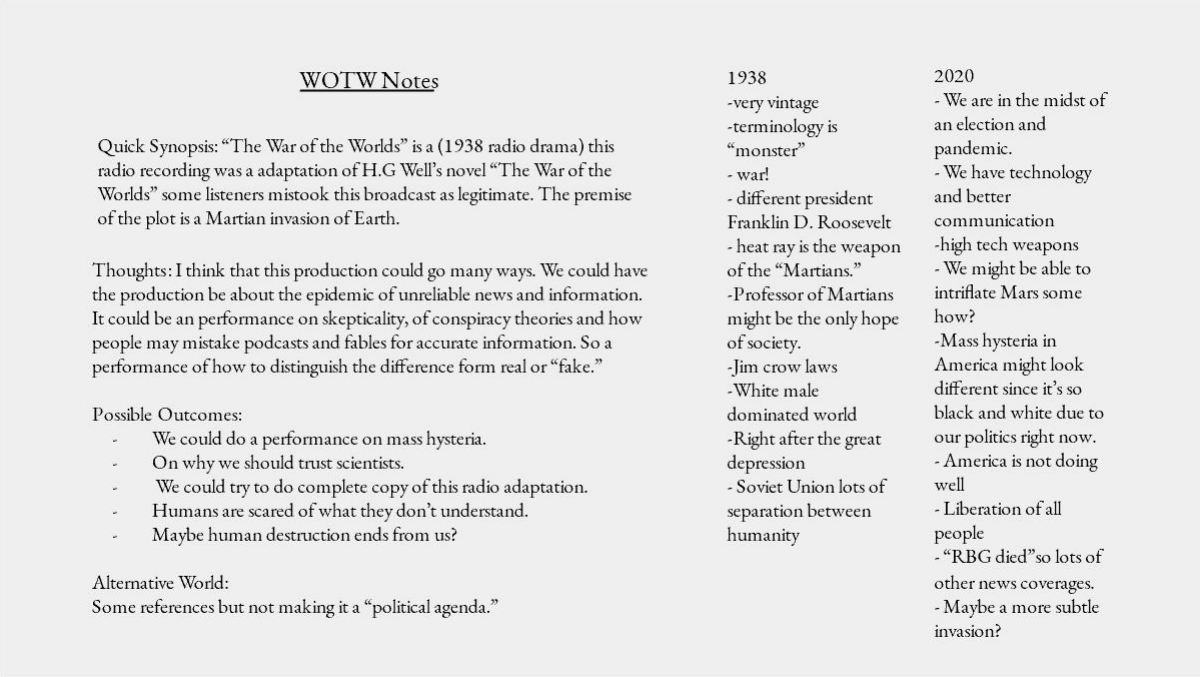
Conceptualizing

Under the leadership of Mrs. B., the primary teacher/director of the project, student participants started the CLA learning activity by drafting digital "Idea Boards" on Google Slides. During this literacy practice they named patterns and categorized across and between intertextual dimensions to make deeper sense of the source text, while dialogically hypothesizing a redesign. Then, students theorized potential content pathways and narrative structures for their new work by making associations and connections with existing knowledge of familiar schemas and mental models (Cope & Kalantzis, 2015, p.15). Imagining featured prominently during conceptualizing, as students invented a "metalanguage" to classify, define, and construct a design for collaboratively adapting *WOTW*.

By Naming: Idea Boards for Categorizing and Recontextualizing

Mrs. B. began the first online rehearsal with a conceptual design task, asking them to engage with fundamental questions pertaining to literary adaptation from the onset, like those concerning time, place, and representation, thereby positioning the students as interpretive designers straight away. She tasked them with actively listening to the original *WOTW* radio broadcast synchronously, while simultaneously reading along with the play script. Before commencing, however, she introduced the notion of an "idea board" to the group participants. "This is usually how I start thinking about (directing) a (theatrical) show," she explained, "by collecting images and maybe quotes and putting some notes down, things that I think about during rehearsal(s) or just random times…to then show… the designers later on." Thus, she

encouraged students to note comparisons and contrasts between 1938, the year of the original recording, and 2020, the present. Moreover, Mrs. B. leveled the power dynamic between teacher/director and students by urging the young learners to "draw parallels" and share "ideas, images and thoughts" online via a Google Slides template (of her own devising), effectively elevating them to co-creators, and therefore co-designers. In other words, students *conceptualized by naming* and sharing their abstracted conceptions, "drawing distinctions, identifying similarities and differences, and categorizing with labels" (Cope & Kalantizis, 2015, p.19)(see Figures 6 & 7).



WOTW Notes

Quick Synopsis: "The War of the Worlds" is a (1938 radio drama) this radio recording was a adaptation of H.G Well's novel "The War of the Worlds" some listeners mistook this broadcast as legitimate. The premise of the plot is a Martian invasion of Earth.

Thoughts: I think that this production could go many ways. We could have the production be about the epidemic of unreliable news and information. It could be an performance on skepticality, of conspiracy theories and how people may mistake podcasts and fables for accurate information. So a performance of how to distinguish the difference form real or "fake."

Possible Outcomes:
- We could do a performance on mass hysteria.
- On why we should trust scientists.
- We could try to do complete copy of this radio adaptation.
- Humans are scared of what they don't understand.
- Maybe human destruction ends from us?

Alternative World:
Some references but not making it a "political agenda."

1938
-very vintage
-terminology is "monster"
- war!
- different president Franklin D. Roosevelt
- heat ray is the weapon of the "Martians."
-Professor of Martians might be the only hope of society.
-Jim crow laws
-White male dominated world
-Right after the great depression
- Soviet Union lots of separation between humanity

2020
- We are in the midst of an election and pandemic.
- We have technology and better communication
-high tech weapons
- We might be able to intriflate Mars some how?
-Mass hysteria in America might look different since it's so black and white due to our politics right now.
- America is not doing well
- Liberation of all people
- "RBG died"so lots of other news coverages.
- Maybe a more subtle invasion?

Figure 6. Student idea board example #1.

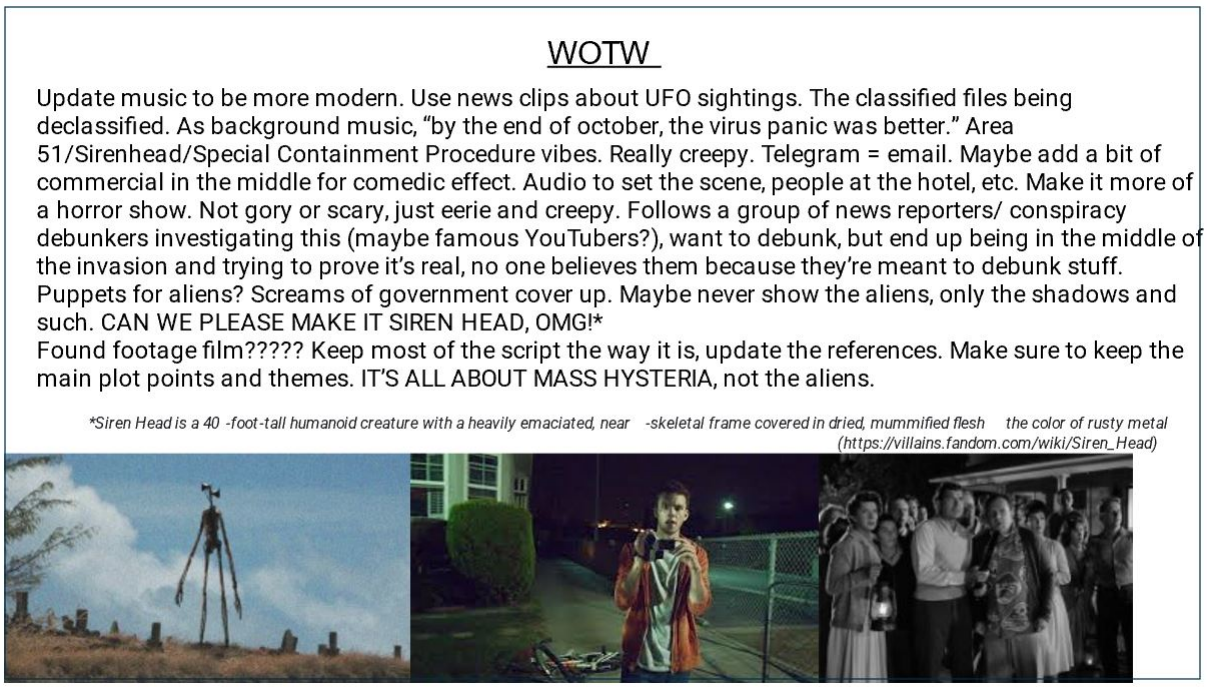


Figure 7. Student idea board example #2.

Despite their novice status, an analysis of all the student "idea boards" revealed a consistent pattern of conceptualizing the literary adaptation across and between intertextual and dialogic dimensions. This not only indicated learning in and through CLA, but also suggested the presence of a design "instinct" in beginners for structuring the initial phases of literary adaptation around three dimensions (see Figure 4). For instance, although only asked by Mrs. B. to compare and contrast temporally (the "then" time of 1938 versus the "now" time of 2020), student participants also inherently organized their thinking spatially (the "there" place of Grover's Mill, NJ, site of the fictive alien invasion versus the "here" place, a small city in the Upper Midwest), and combined the dimensions of time (*when?*) and place (*where?*) to formulate answers to other meaning-making questions (*who? what? how? why?*) related to the *WOTW* literary adaptation (Hutcheon, 2013), as well as the socio-cultural-political-economic-historical "situatedness" defining each text (Gee, 2015). Furthermore, student participants also started organizing there

thinking around representational dimensions concerning the narrative and story delivery, namely what narrative to "tell" versus how to "show" the story (see Table 1).

TIME	
THEN (1938)	***NOW (2020)***
Between WWI & WWII	COVID
PLACE	
THERE (New Jersey)	***HERE (Wisconsin)***
Sirens	Amber Alerts
TIME & PLACE	
THERE/THEN	***HERE/NOW***
FDR	Trump
Male Dominated Cast	More Females in Cast
Elevated American Standard Speech	Contemporary Speech
Old-fashioned Music	Modern Music
Telegrams	Emails
Trust in News/Government	Mistrust of Government/News as Authority
All White Cast	Racially More Diverse Cast
Telephones	Smartphones
REPRESENTATION	
TELLING	***SHOWING***
Audio Only	Audio/Visual via Zoom
Told the News via Newspaper/Radio	Shown the News via TV/Internet
Assumption of News as Truth (one-voice)	Misinformation/Conspiracy Theories/Skeptics (many voices)

Table 1. Instinctive designing around intertextual and dialogical dimensions of creating and learning in and through CLA.

After actively listening to the radio broadcast synchronously, they described the audio recording as "eerie and creepy," "apocalyptic," "alarming," "polarizing," and "hauntingly vintage," the latter phrase gaining wide appeal by the ensemble. These depictions then fueled a collective search for identifying and naming the overall "flavor" and narrative "vibe" of *WOTW*. In fact, more than half of the group participants in the first two rehearsals alone utilized the term "vibe," alluding to the importance of group agreement in CLA around properly classifying the essence of the original text before proceeding onto further conceptualizing. Interestingly, use of

the word “vibe” seemed primarily, although not exclusively, to reference story *content*, which subsequently lead them to consider meaningful *structural* associations and connections with other creative work. In other words, ascribing an *essence* to the source text content became a necessary condition and prefigured any organizational discussions.

By Theorizing: Meaningful Associations

Students also conceptualized *theoretically* during CLA by making over 15 different associations and connections (“this reminded me of that”) linking the original *WOTW* radio broadcast with their existing knowledge and experiences of personally meaningful textual resources and representational multimedia (see Figure 6.). They showed “how the text linked to other texts in the intertextual context, and how it might be similar in some respects to other texts used in comparable social contexts, and its connections with the text types in the order(s) d/Discourse” (NLG, 1996, p. 78). Students referenced either story content and/or structure, and cited a diverse array of titles from a wide variety of mediums which appeared with different frequencies throughout the transcripts, mostly during the first few rehearsals. Titles with a “higher level of significance“ during the *WOTW* literary adaptation measured below with a * which indicates number of mentions and estimated impact.

MEANINGFUL ASSOCIATIONS with WOTW CONTENT & STRUCTURE						
Title of Association	**Year**	**Type of Medium**	**Description**	**Relevant Meaning to WOTW CLA Process**	**Content or Structure Association**	**Significance to WOTW CLA**
Ender's Game	1985	book	military science fiction	humans die one-by-one and lose city to alien species	C	*
Speaker for the Dead	1986	book	science fiction sequel	sequel to *Ender's Game*	C	*
The Twilight Saga	2008-2012	film series	vampire-themed romance fantasy	certain effects meanings and reminiscent of the Cullen family	C	**
Titanic	1997	film	epic romance and disaster	calamatous "sinking ship" metaphor	C	*
Star Trek (the "older" series)	2018	television series	suspenseful space Western	similar "vibe"	C	*
Birdbox	2018	film	American post-apocalyptic thriller and horror	"The unknown (an unseen monster) is scarier than the fact."	C	**
The Purge	2013-Present	film series	dystopian action/horror anthology	all crimes illegal for 12 hours	C	**
Area 51	1955	location	highly classified US Air Force facility in Nevada	extraterrestial citings	C	**
Siren Head	2020	horror film	short YouTube film	supernatural, humanoid monster capitalizing on telephone pole-like appearance to hunt humans	C	**
Secure, Contain, Protect (SCP)	2008	website	"Creepy" fictional, crowd-sourced wiki-website	SCP urban fantasy website casts stories of mysterious phenomena as real horror and sci-fi	C	*
Unfriended	2014	film	computer screencast supernatural horror film	digital world conditions becoming "real"	C	**
The Twilight Zone	1959-1964	television	psychological thrillers commonly ending with surprise twist	Panic re: ET invasion, but ends w/ zooming out, and aliens have been watching people all along	S	***
Trap	2018	stage play	supernatural themed	Witness account of people killed in theater until audience realizes: they are the people being killed	S/C	***
September 11th	2001	event	coordinated terrorist attacks	conspiracy theories	C	*
Jumanji	1995	film	supernatural boardgame fantasy adventure	Fictional story being told begins to overtake the realistic narrative being shown ("lines to actions")	S	**
The Blair Witch Project	1999	film	horror	"found footage" structure, i.e. scene alone w/ flashlight "talking to myself"	S	***

Figure 6. Meaningful associations with *WOTW* content and structure.

For instance, book references surfaced like *Ender's Game* (1985), a military science fiction novel about an invasion where humans slowly die one-by-one and lose a city to an alien species. Older media franchises like *Star Trek* (1960's-1980's) received multiple mentions, as well as newer series like the dystopian action horror anthology *The Purge* (2013-2021). The ensemble even alluded to recent historical events and physical sites as meaningful associations, like the infamous, highly classified United States Air Force *Area 51,* a locale frequently connected to extraterrestrial sightings. Ironically, nearly all works cited as meaningful associations were also adaptations such as *Birdbox* (2018), an American post-apocalyptic horror thriller film adapted from a book, and *Jumanji* (1995), an American fantasy adventure film loosely based on a children's book.

In terms of content, they decided to closely follow a "found footage horror film" genre like *The Blair Witch Project* (1999), and to structurally pursue a concept like *The Twilight Zone* (1959-1964) which typically concluded each episode with a surprise "twist" at the end. The stage play *Trap*, by Stephen Gregg (2018), in which "incomprehensively… every person in the audience of a high school play falls unconscious… but one" also figured heavily into architectural design. The first few rehearsals of the *WOTW* contained an abundance of learning by the group participants rooted in conceptualizing their literary adaptation, and ultimately led to their fundamental premise: "what if it was our high school theatre group doing a production of *WOTW,* and throughout the show you find out that there's something [an alien invasion] happening in real time."

Analyzing

Analyzing, a term traditionally coupled with "cognitive" thinking, focused on the objective evaluation of *functionality* and the *critical* examination of texts, oftentimes with socio-cultural implications during CLA (Cope & Kalantzis, 2015). Two noteworthy examples of students analyzing during the *WOTW* literary adaptation, and therefore "processing knowledge," dealt with their search for and use of an appropriate production medium, as well as a critique of their own on-screen Zoom performance during a "watch party" just prior to the final filming.

Functionally: Deciding Upon a Medium

Students considered the *functionality* of a multitude of different mediums and technologies, weighing the constraints and affordances of each tool for shaping the presentation of their narrative and its delivery, or the story-"showing" dimensions of their story-"telling." They discussed "cutting between different forms of communication or technology to replace the old (radio broadcast)." For example, they considered using texting as a digital medium, not to mention other smartphone applications like Facebook, Instagram Live, TikTok and SnapChat. Apart from texting, they ultimately decided not to incorporate these other tools to avoid "dating the production," appearing "cringy," or even "trying too hard" to appeal to younger generations. In the end, they agreed that the most suitable (and convenient) medium for representing their *WOTW* literary adaptation also happened to double as their present means of communicating and collaboratively designing online, namely the video conference platform Zoom. Student participants also discussed integrating other mediums with Zoom, and how to optimize their special telling and showing functions to enhance the meaning-making and effects capabilities of representing a narrative "all about mass hysteria" over a video call. For example, a series of breaking news reports during the presentation might convey a sense of urgency and impending

doom surrounding the Martian takeover, as well as displaying conflicting accounts of what transpires when (time) and where (place), destabilizing the "truth" for the audience, and thereby amplifying fear and conspiracy theories.

> Student #1: I was thinking it could be a video call, and we're all reacting to it in different ways or something. And, we're all looking online for resources and stuff, and we're relaying the information back to each other…at different times.
>
> Student #2: Yeah, it was almost like a Zoom... well, it could be a Zoom video chat kind of thing, and everyone finds out. And then it's like somebody is giving this information or something. Somebody's camera cuts out.
>
> Student #3: Also too, if we decide to do the idea where we're all on Zoom together, and we're just kind of teenagers and we're giving each other information as we receive it to the news, we could have differing stories. So, you don't… know for sure what's happening because obviously news reports aren't always right, and they can report things differently.
>
> Student #2: Yeah, that's good, because that's very timely. Different news sources give completely different information.

In the end, student participants worked across modes to abstract the original source text from its linguistic and oral forms into correspondingly meaningful visual, spatial, and gestural representations, scripting a short "news flash" depicting a desperate high school principal whose interview becomes interrupted by the ensuing chaos (Kaufman, 2018). They also thoughtfully considered the storytelling implications of Zoom as a visual medium for portraying *WOTW*, like

recognizing the cinematographic power of not physically showing the aliens on the audience's imagination.

> If we do it *(WOTW)* on Zoom, and we do it with aliens, then it would be interesting if you never actually see the aliens, because it kind of lets the listener imagine what they look like. Because what are they actually afraid of? It would be really easy to show this very scary alien like, "oh, what does it look like?" But in Birdbox *(reference to sci-fi horror film from 2018)* you kind of sit there wondering what it looks like, and it's scarier. The unknown is scarier than the fact.

Accustomed to working almost exclusively on theatrical creative productions, student participants also admittedly acquired new technical skills throughout the project, like learning to "manipulate new (cinematic) mediums." The Zoom video call medium also posed unanticipated functional obstacles for learning, too, such as performers delaying line memorization because they could position scripts just off-camera, and distracted performers watching themselves acting during video recordings instead of engaging with each other.

Critically: The Watching Party

The students engaged critically with *WOTW* texts, "analyzing a multimodal knowledge representation" during a "watch party" organized by Mrs. B., while "examining the choices made by creators in the design of their texts, and the effects of these choices in the representation of meanings" (Cope & Kalantzis, p 20). Prior to recording a final version of their *WOTW* Zoom video production for public distribution, Mrs. B. set aside time in the second-to-last online rehearsal for the cast to collectively view and critique their most recent 30-minute video recording in three separate chunks of 10-mintues each, playfully referring to this exercise as a "watch party." She even described this exercise in terms of literacy learning, asking students to

consider “what do you like (when you watch), and what do you ***read*** from the performance?” This critical viewing of previous work provided group participants the rare opportunity to collectively reflect and process their “interpretive intervention” in its entirety during rehearsal. Mrs. B. elaborated, urging them to also note “what you are doing, and how what you are doing projects (to an audience).” In other words, students deepened their literacy knowledge through a critical analysis of the effects and meanings produced by their literary adaptation while answering questions like “what does it do, (and) how does it do it?”(Cope & Kalantizis, 2015, p 20).

Following the screening, student participants uniformly agreed upon a primary critique: the performance neglected subtle and nuanced ways the original radio broadcast worked to slowly build fear over time. Or, as one student summarized, “the gradual transition of fear throughout the entire thing.” An analysis of the data tied the root cause of this phenomena with deleting large portions of the carefully crafted source material written by Orson Welles, and failing to fully comprehend the *experiential* implications of these “adaptive” edits on their *WOTW* adapted texts, such as representational consequences in performance. One student participant critiqued this discord, citing a problem targeting all three dimensions of literary adaptation: the timing and placement of a large technical effect, and the telling/showing of their fearful reactions to it.

> As much as I hate to say it, maybe having someone react to a huge flash in the sky is a little too big right at the beginning. That pushes us forward too much. Either we have to start having reactions that are smaller and get bigger a lot before that big flash, or maybe we just tweak the script and move the big flash back a little bit, because I feel like that would help us with our growth (of fear over time).

Fortunately, they ended up successfully matching the emotional build of fear (place) with the plot development (time), mostly by rewrites and "scoring" the psychological rise in terror during improvised scenes from beginning to end. The creative team and cast members alike also indicated a desire to repeat video critiquing in future theatrical rehearsals for learning purposes.

Applying

According to Cope and Kalantzis, *applying* in multiliteracy learning refers to "making texts and putting them to use in communicative action" in two distinct ways, *appropriately* and *creatively* (2015, p. 4). For instance, the *WOTW* participants applied knowledge *appropriately* during textual rewrites. They properly transferred existing knowledge of the original script, including its structure and content, to a suitably reimagined transformative redesign reflecting an alternative version of that same world. Similarly, they applied knowledge *creatively* when generating text through improvisations. Participants utilized the available structure and content from the 1938 script to inform creative improvisations, which eventually became the basis for numerous scenes set in 2020 depicting high school students under attack by aliens while attempting to rehearse a contemporary version of *WOTW*.

Appropriately: Rewriting the Text

The original *WOTW* radio broadcast script contained 8,360 words, whereas the adapted script consisted of only 4,157 words. This difference in word count indicates that more than 50% of the source text changed during the CLA process. Many of these changes entailed major deletions and edits of existing text, mostly due to previously mentioned time constraints. Despite these significant structural changes, content changes accounted for the remaining differences, revealing considerable variation between the two documents.

According to the software analysis tool Draftback, the group participated in over 200 distinct rewrites of the text, defined as periods of applied writing time with less than a 10-minute gap between revisions. Firstly, a "Timeline of activity" below (see Figure 7.) displays weekly frequency of rewriting along an X-axis from late October to early December, as well as how the adapted script length expanded over time (the blue/gray shading along the top). Secondly, "Where in the document were the changes?" displays vertically where the changes took place in the manuscript (highest grey dots along the Y-axis are the beginning, lowest grey dots along the Y-axis are the end), and horizontally displays when they occurred along the X-axis, with each vertically clustered line of grey dots representing one of the 10 rehearsals.

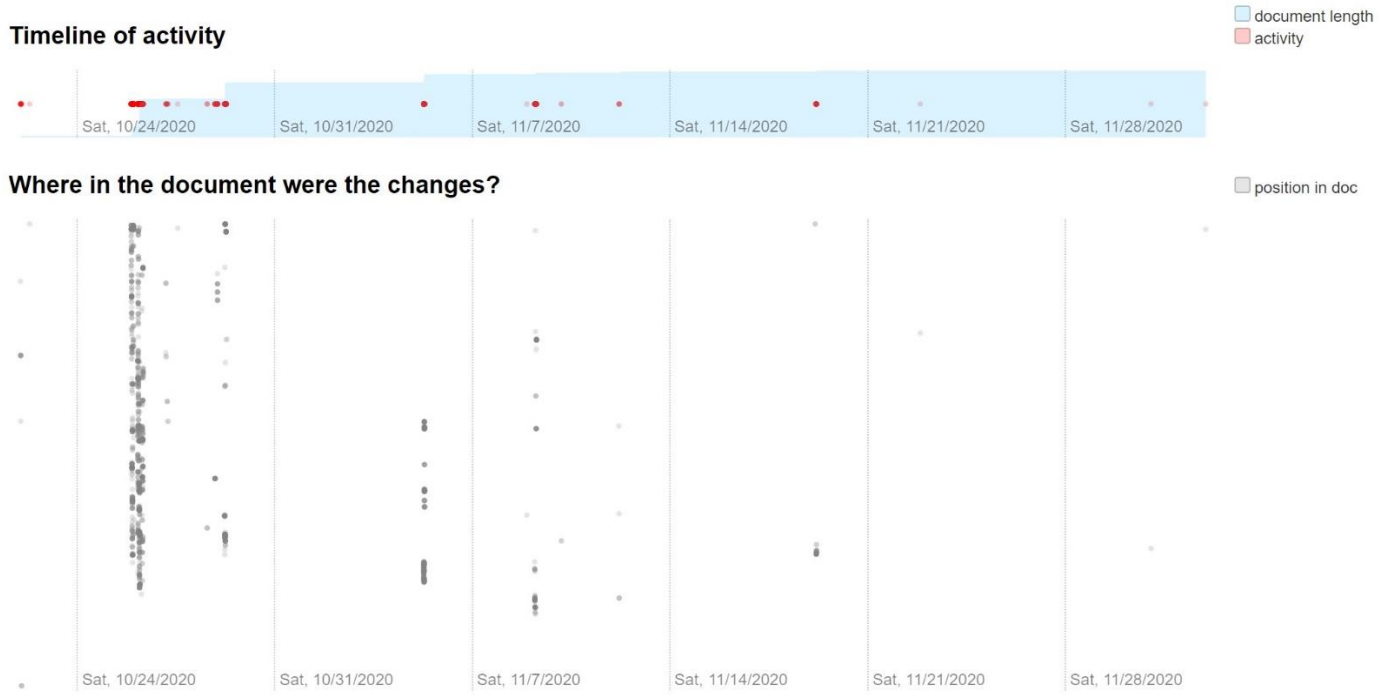


Figure 7. Frequency of rewrites, their position in the document, and when they transpired.

Most of the rewrites came about shortly before, during, and after the first and second rehearsals (out of 10). This finding underscores the importance of rewriting early on in CLA, when the

focus remains primarily on reworking the available design (original source material) to create a new design (an adapted text) for redesigning (the production)(NLG, 1996). It also emphasizes the value of "incubation" time periods in making during an iterative creative process (Sawyer, 2013). Draftback also specified that the two adult teachers and directors modified about 66% of the text, mostly during the first two rehearsals. Students accounted for the other 33% of rewrites, becoming increasingly more comfortable with appropriately applying rewrites and edits by the fifth rehearsal. Rewrites then mostly ceased following the seventh rehearsal.

The texts below, displayed side-by-side for ease of comparison, illustrate a few examples of how students appropriately rewrote sections of the original *WOTW* script to suit their own production. In addition, they also offer clear examples of intertextual and dialogical thinking. For instance, in the following text students:

1. Divided up lines and roles (tell/show) for purposes of equity across the ensemble
2. Conducted changes and major edits (tell/show) of the original text
3. Added text (tell/show)
4. Alluded to relevant time (there/here) differences, like when receiving a text versus being handed a message
5. Referred fittingly to place (then/now) differences, like substituting New Jersey locales for their own county, city, and state names
6. Incorporated technical directions specific to the production medium (tell/show), like Zoom gallery views for cinematography
7. Integrated meaningful effects specific to the production medium (tell/show), like sound effects, or the camera going blank at the end of the scene to convey the death of a character

***ORIGINAL SCRIPT* (1938)**	***ADAPTED SCRIPT* (2020)**
	Gallery View (*camera angle*)
PHILLIPS: A humped shape is rising out of the pit. I can make out a small beam of light against a mirror. What's that? There's a jet of flame springing from the mirror, and it leaps right at the advancing men. It strikes them head on! Good Lord, they're turning into flame!	Reporter 2: A humped shape is rising out of the pit. What's that? Reporter 3: There's a jet of flame springing from the mirror, and it leaps right at the advancing men. It strikes them head on! Reporter 2: Good Lord, they're turning into flame!
(SCREAMS AND UNEARTHLY SHRIEKS)	(SCREAMS AND UNEARTHLY SHRIEKS, *ad lib*)
PHILLIPS: Now the whole field's caught fire. (EXPLOSION) The woods . . . the barns . . . the gas tanks of automobiles . . . it's spreading everywhere. It's coming this way. About twenty yards to my right . . .	Reporter 4: Now the whole street's caught fire. (*EXPLOSION, sound effect*). The cars . . . the buildings . . . everything . . . it's spreading everywhere. It's coming right at me! . . .
(CRASH OF MICROPHONE … THEN DEAD SILENCE)	(CRASH OF MICROPHONE … THEN DEAD SILENCE, *sound effect*)
ANNOUNCER: Ladies and gentlemen, due to circumstances beyond our control, we are unable to continue the broadcast from Grovers Mill. Evidently there's some difficulty with our field transmission. However, we will return to that point at the earliest opportunity. In the meantime, we have a late bulletin from San Diego, California. Professor Indellkoffer, speaking at a dinner of the California Astronomical Society, expressed the opinion that the explosions on Mars are undoubtedly nothing more than severe volcanic disturbances on the surface of the planet. We now continue with our piano interlude.	Ned (*offscreen*): Tom, are you ok?
	Speaker View (*camera angle*)
ANNOUNCER TWO: Ladies and gentlemen, I have just been handed a message that came in from Grovers Mill by telephone. Just a moment. At least forty people, including six	Tom: (*having a panic attack)* NO, I AM NOT OK! PEOPLE ARE DYING!!! Raina: I just got a text! (*reading*) At least forty people, including six state troopers lie

state troopers lie dead in a field east of the village of Grovers Mill, their bodies burned and distorted beyond all possible recognition. The next voice you hear will be that of Brigadier General Montgomery Smith, commander of the state militia at Trenton, New Jersey.	dead in a field east of the village of XX, their bodies burned and distorted beyond all possible recognition.
SMITH: I have been requested by the governor of New Jersey to place the counties of Mercer and Middlesex as far west as Princeton, and east to Jamesburg, under martial law. No one will be permitted to enter this area except by special pass issued by state or military authorities. Four companies of state militia are proceeding from Trenton to Grovers Mill, and will aid in the evacuation of homes within the range of military operations. Thank you.	Tom: (*Continues reading*) The governor of XX to place the city and town of XX under martial law. No one will be permitted to enter the area except by special pass issued by state or military authorities. Thank goodness the military are on it!
ANNOUNCER TWO: You have just been listening to General Montgomery Smith commanding the state militia at Trenton. In the meantime, further details of the catastrophe at Grovers Mill are coming in. The strange creatures after unleashing their deadly assault, crawled back into their pit and made no attempt to prevent the efforts of the firemen to recover the bodies and extinguish the fire. Combined fire departments of Mercer County are fighting the flames which menace the entire countryside. We have been unable to establish any contact with our mobile unit at Grovers Mill, but we hope to be able to return you there at the earliest possible moment. In the meantime we take you — just one moment please.	Alana: I'm just reading the details of this report. It says "strange creatures after unleashing their deadly assault, crawled back into their pit and made no attempt to prevent the efforts of the firemen to recover the bodies and extinguish the fire. Combined fire departments of XX County are fighting the flames which menace the entire countryside." (*Alana's screen goes blank*) *Gallery View (camera angle)* Tom: What just happened- can anyone get ahold of Alana? I know she lives out by XX….

In general, as far as overall time spent on CLA tasks and KPs, students conceptualized (ideating and theorizing) and analyzed (remediating and critiquing) the adapted text and production more than applying rewrites. The exception: employing creative improvisations for text generation.

Creatively: Improvisations

Creative *improvising* became a crucial means of generating text during this CLA project. Instead of rewriting the original text before working on performative elements such as acting, the reverse occurred: students applied performance-based creative improvisational practices to make text, and then continued to iterate in this manner until the group arrived upon a mutually agreeable narrative to officially "set" the scene as text. This unexpected development became highly useful at critical storytelling junctures, such as during strategically positioned group scenes showcasing progressively intense disturbances caused by the aliens, or the introduction and conclusion of the production.

As an example, students Ramona (playing the student director) and Lily (playing the student stage manager) creatively improvised the introduction to the *WOTW* adaptation many times before arriving upon the scripted text below. They creatively improvised and appropriately played within the constraints of their social roles (student leaders of a high school production), their medium (a theatrical Zoom presentation) as well as their concept (a group of contemporary high school students interrupted by an alien invasion while rehearsing a production of *WOTW*) to develop the following opening scene:

(*Ramona is alone on screen*)
Ramona: Helloooo? Is anyone there?
(*Lily comes into the room*)
Lily: Hey! How's it going? Anyone else here yet?

Ramona: It's going good! I believe people should be coming in shortly… (*checking the computer*)

(*Students start turning on their cameras, saying "hello," etc. Ad Lib*.)

Ramona: Okay, I think we have everyone here. Hello, everyone! Welcome to the first taping of War of the Worlds (Woo hoo!). Today is going to be like our dress rehearsals, except we'll be filming and hopefully turn in submission by today. We're gonna try and do it all in one take, so if something goes wrong, just keep going like it's an in-person performance. Other things: remember to keep your expressions big during lines, make sure you have any props, and this is gonna be off book completely, so if you forget a line, just improvise. Lily, anything else?

Lily: Remember, phones off. As Ramona said, no stopping unless you absolutely need to. Sound is here today, thank you sound, but I won't be calling any cues today since all cues are lines, so make sure to read your lines exactly as printed. Remember we have a time limit, so keep things running smoothly with minimal distractions. I think that's it for me. Ramona?

Ramona: Have fun! We're always able to re-film so if something does go wrong it's all chill. I think we're ready to start, is everyone ready?

(*Students nod their heads*)

Ramona: Sick, let's start. Max, you ready?

Max: Yup!

Ramona: Okay, start whenever…

Max: The Columbia Broadcasting System and its affiliated stations present Orson Welles and the Mercury Theatre on the Air in The War of the Worlds by H. G. Wells.

Experiencing

One *experiences* multiliteracy learning via KPs by actively participating in both *known* and *unknown* situated contexts (Cope & Kalantzis, 2015; Lave & Wenger, 1991; Gee, 2015). In CLA the *known* refers to the original text, any newly acquired knowledge and experiences from digesting this text, in addition to whatever other prior knowledge and experiences group participants bring to the task. The *unknown* refers to the creative products, or the yet-to-be-

adapted text, as well as the immersive design process of the text experienced in and through a different medium.

WOTW participants simultaneously *experienced* three levels of intertextuality in performance, including the original text (the "known"), the adapted text, and creative production (the "unknowns") along three dialogical dimensions (here/there, now/then, tell/show), thereby deepening their learning during CLA. They faced two persistent experiential challenges stemming from text-based and representational design choices. First, based on the design decision to frame *WOTW* as a play-within-a-play, performers frequently had to switch characters rapidly on-screen across and between place and time, or the "here/now" present-day world of themselves playing actual high school theater students under alien attack during a virtual Zoom rehearsal, and their historically fictive "there/then" roles. Their second experiential challenge revolved around problems with representing a slow and gradual building of fear, an oversight of the carefully crafted original text.

The Known and The Unknown: Being Intertextuality (Switching Between Worlds)

The *WOTW* ensemble ultimately decided to frame their literary adaptation as "a play-within-a-play," a deceivingly complicated storytelling device with a long history in the theater that poses many critical issues with representation. This highly intricate dramatic convention, popularized by Shakespeare, invariably requires scripting and portraying two clearly delineated, parallel worlds in the same narrative: the world of the play itself, and the world of another play-within-the-play. Mrs. B. readily admitted that "the concept is hard. What they came up with is hard and confusing. It's inherently confusing because we're back and forth in the same story." In other words, students already working with the complexities of intertextuality and dialogism in literary adaptation ironically settled upon a design fraught with dualities and multiple world-

making challenges. Up until the final production student performers struggled experientially to maintain these distinctions. An exasperated Mrs. B. interrupted the final recording to draw attention to this very point:

> Alright, we're gonna go back and… start over. So here's the thing, you all set this (literary adaptation) up. After all of this process… you've got to show me the difference between being in the *WOTW* story, and being a teenager that is doing a read-through (of the play)!

Although participants struggled at-length with adequately performing this confusing dichotomy, in many ways these *experiences* reflected the pinnacle of their learning in and through adaptation during *WOTW*. In learning to negotiate these switches during performance students inhabited two separate worlds: they literally and figuratively *became* the intertexts, embodying both the *known* (the subjective experience of playing themselves) and the *unknown* (the objective experience of playing fictional historical characters) at the same time.

To complicate things even further, the looming alien invasion perpetuated a mounting fear amongst characters as the narrative developed, blurring the boundaries between the worlds of the play (the real-time high school students rehearsing on Zoom) and the play-within-the-play (the performance of the fictive *WOTW*). After viewing an A/V recording of their latest full run-through at the "watch party," one of the students pleaded for the other ensemble members to "carry over [the effects of] this (escalating) fear" in performance, while another relatedly emphasized the importance of situating the context of each world after every "switch" to representationally clarify the storytelling:

> Roxanne: The issue we're having is that the effects of what's happening isn't resonating with us. Something bad will happen, and then we'll be completely fine. Then something

> bad will happen again, and we'll be completely fine. Like, I feel like we're not carrying… we need to carry what happened to us previously into the next action.
>
> Nick: I agree with Roxanne.
>
> Christine: Yeah, we had like an ON and OFF switch. When we go into character again, it's almost like we're too into character that we… it's almost like our surroundings just don't even exist at that point. And I think we still need to carry our fear over slightly into the characters.
>
> Caleb: Yeah, that made it a little confusing at times. Yeah.
>
> Zack: And figuring out how to do that subtly… like, we are still performing, but we're scared as the performer doing the thing we're supposed to be doing.

The student performers wrestled continually with emotional considerations like communicating a growing sense of fear while embodying intertextuality and "switching between worlds." Accustomed to working from previously published materials, *WOTW* participants liberally edited Orson Wells' source material early in the process by cutting its length in half, and neglecting to match the primary conflict with the emotional arc of many characters and their development.

All in all, examples of KPs abounded during CLA, an optimal activity for maximizing learning by design, as well as "learning adaptationally" by thinking, doing, and knowing intertextually and dialogically on multiple dimensions. Through a learning science lens, participants engaged *cognitively* with adapting discursive aspects of the text, like its narrative content and structure. They also engaged *socio-culturally* while recontextualizing the text, and incorporating surrounding Discourses. However, CLA also touched on *emotional* considerations, not only in and through embodied performance, but also as the group collectively learned to

successfully work together towards the completion of a creative task of value for a targeted community.

Additional Findings: Design/Meaning-Making Decisions and Associated Learning Processes, and When They Occurred

Although the *WOTW* data provided ample evidence of KPs supporting multiliteracy learning during CLA, different types of micro-level design/meaning-making decisions and associated learning processes seeded these outcomes. This decision-making and learning occurred throughout the CLA rehearsal process and productions, and it revolved around eleven different design/meaning-making categories. Aspects of these design/meaning-making and associated learning categories clearly overlapped with certain KPs, although not all did so neatly, lending further support and merit to an independent investigation of design and learning from the KP framework, specifically how they related to CLA. Furthermore, this micro-level examination also aided in identifying *when* exactly these design/meaning-making decisions and associated learning processes occurred, in addition to with what frequency (see Table 2)

DESIGN/MEANING-MAKING DECISIONS AND ASSOCIATED LEARNING PROCESSES CATEGORIES, INCLUDING WHEN THEY OCCURRED DURING *WOTW* REHEARALS #1-#9	***Rehearsals***								
	1 & 2 *	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**TOTAL**
1. **Redesigning/Workshopping** (*critically evaluating meanings/effects, editing for representational production, iterating)*	70	14	10	13	4	5	5	3	**121**
2. **Designing / Socio-Cultural Considerations (Historical, Economic, Political)** *+ their associated meanings/effects on appropriating context, character development, etc.*	58	5	6	5	3	3	3	0	**83**
3. **Connecting** *(associating, comparing/contrasting)*	50	4	7	2	3	1	2	2	**69**
4. **Designing / Emotional Considerations** *+ their associated meanings/effects on acting, motivations, etc.*	16	2	7	9	10	8	5	5	**57**
5. **Designing / Cognitive Considerations** *+ their associated meanings/effects on structuring, sequencing, writing*	36	11	8	0	0	0	2	0	**57**
6. **Collaborating** *(creative input, negotiation, confidence)*	18	5	5	5	0	3	10	9	**46**
7. **Imagining** *(envision, conceptualize, interpret)*	34	1	2	2	2	0	1	1	**42**
8. **Working with a New Medium** *+ associated technologies*	18	3	1	1	0	3	2	2	**28**
9. **Creative Production Process** (*steps, patience, fun, trust)*	4	6	5	2	1	1	5	1	**24**
10. **Timing/Scheduling** *(meeting deadlines/managing workload)*	2	3	5	6	0	0	4	1	**20**
11. **Improvising**	0	7	2	4	1	1	0	1	**15**

Table 2. Design/meaning-making decisions and associated learning processes categories, including when they occurred during the *WOTW* CLA activity.

**I combined the data for the first two rehearsals to draw attention to the immense amount of learning by design which occurred at the beginning of the process, and to emphasize the curricular and instructional opportunities this time creates for teachers/director's during CLA.*

A flurry of learning activity around the concept of design took place during the first two brainstorming rehearsals.* The results from these early rehearsals heavily impacted learning outcomes related to design as indicated in Table 2, but then gradually equalized with the other categories midway through the rehearsal process.

In contrast to the start of a more traditional rehearsal process, learning in and through CLA at the onset seemed to distinguish itself with remarkably high levels of (1) "redesigning and workshopping" the text and production. This made sense given the iterative nature of rehearsals for creative production in general, but especially for theater-making with a multi-step design process like literary adaptation which situates repeated reworkings, or the "dwelling in" and then "stepping back" from the text and production, at the center of the rehearsals (Ackermann, 2001, p.10). Frequent stopping and starting defined these deeply Constructionist, "workshopping" moments of learning in the rehearsal data transcripts, during which time collaborators paused to explain adaptative changes, matched understandings to confirm their course, or simply suggested a different approach altogether before agreeing to advance on to the next design problem. In other words, *a continual need existed during CLA to regularly stop and start the flow of rehearsals amongst group members to confirm and summarize the shape and direction of the text and production designs*. For example, at a critical juncture early in the *WOTW* rehearsal process the two teachers/directors interrupted proceedings to confer with the student ensemble about their complex "play-within-a-play" design choice:

> Teacher/Director #1: What I understand at this point is that we are in a read-through of a drama production at a high school, led by a drama director of the play *The War of The Worlds* (*WOTW*) from 1938. So, we are not updating the 1938 stuff. Instead, we are inserting and peppering little moments and scenes throughout from outside that world. These moments and scenes in our play are going to exist around the *WOTW*. Is that what I'm understanding it to be?
>
> Teacher/Director #2: So, like, the run-through of *WOTW* is the thing that gets interrupted by our story, right? So, somebody misses a line because they're getting a news alert about the aliens coming to [suburb of small, Upper Midwestern city]? It's very meta. Is that where we're going? Or, do we derail and have it turn into something more modern?

In addition, (2) "socio-cultural design considerations" became especially relevant in the beginning when determining an appropriate context (time/place) for the adaptation, and when making (3) "connections," drawing associations, and comparing/contrasting *WOTW* with other multimodal resources. Furthermore, (5) "cognitive design considerations" like the structuring and sequencing of text and the implications of these changes on the production figured heavily into the initial rehearsals, whereas (4) "emotional design considerations" remained constant throughout, as performers wrestled with acting challenges such as properly representing the evolution of fear in *WOTW*. Regardless, the two design categories inspired by learning science research (*socio-cultural design* and *cognitive design*), as well as *emotional design* considerations ALL centralized the three intertextual dimensions of adaptation (here/there, now/then, tell/show) in learning. These design categories for describing different styles of learning, though

continually interweaving, *generally* transpired during CLA in the following order, from start to finish (see Figure 8).

Figure 8. Chronological arc of design categories for learning during CLA from context to text, to individual.

Interestingly, this pattern also revealed a shift in concentration and priorities over time by the group from more contextual considerations (socio-cultural design) in the beginning, to a greater preoccupation with textual content and structure (cognitive design), to individual contemplations in the end (emotional design) like acting in performance.

All in all, these results prove that *design accounted for the greatest share of learning* during *WOTW*. Intertextual and dialogical considerations featured prominently in nearly every meaning-making decision during the process, tethering CLA with the concept of design, and distinguishing it as educational construct for advancing 21st century multiliteracy curriculum and instruction. As one student indirectly stated about CLA:

> I think my biggest learning moment was in the very beginning of the adaptation, when we were trying to figure out what our show was going to be about. It sounded like people were leaning towards something like an alien invasion horror movie, except with respect to the original source material. With this experience, I learned that while adaptations can be as loosely related, or as strictly related to the script as possible, but there must still be a relation, something calling back to the source material. Otherwise, it's just your own creation.

Beyond design, I also noted other learning which emerged in the data. For example, students overwhelmingly cited (6) "collaborating" as the most enduring learning outcome once the project ended, despite not explicitly mentioning it during focus group interviews. They regularly exercised (7) "imagining" throughout, but especially early in the process while processing their knowledge conceptually, as the ensemble envisioned and different pathways for the project. (8) "Working with a new medium" seemed to require more effort initially with developing familiarity around new technology, but learning extended the length of rehearsals as they discovered different storytelling and story-showing strategies via Zoom. The cast appeared to learn about the (9) "creative production process" steadily as the *WOTW* process unfolded. I observed that in many ways each rehearsal functioned as an exercise in adaptation and iteration itself, a ritualistic time and place for participants to improve knowledge with slight variations in thinking, doing, and knowing. The impact of (10) "timing and scheduling" did not become apparent until the middle of the process, when a majority of respondents expressed that they "wished they had more time" to dedicate towards *WOTW*. Finally, (11) "improvising" served as an integral means for learning, mainly for generating new text.

The data also exposed findings not captured by Table 2 above. For example, students struggled to articulate their learning in complex, specific terms in distinct categories like design, except for *emotional design* considerations, or acting. A wide gap existed between the number of explicit learning statements versus noted instances of implicit learning. This may point towards a need for educating pre-service teachers in English, Drama, and other literacy-related subjects about design-based, multimodal meaning-making, or how people learn via creative production. Similarly, a large gap existed between explicit statements and implicit instances pertaining to learning within the category "creative production process." This may hint at a need for learners

in creative production to better understand what they are doing and why they are doing it while they are doing it. Underscoring the need to inform educators, even the adult teachers/directors seemed surprised to discover that students learned during *WOTW* ("I hope they are learning something?"), and regularly confided in me their own doubts and abilities about expressing in detail what the ensemble learned during the process ("so, they are learning?") which aligns with my own experience as a teacher/director in secondary English and Drama, as well as at the undergraduate levels. In the case of CLA, design (KPs) and the "learning adaptively" model (here/there, now/then, tell/show) provide suitable frameworks for teachers and learners to address students about how, when and what people learn in and through CLA.

In the end, all parties also repeatedly mentioned and appreciated the "customizability" and ability to collectively personalize and "own" the literary adaptation from the start, as opposed to beginning with a published script, which directly contributed to the learning outcomes. According to Mrs. B., "I think they (the students) have definitely had more voice in it (the project), and (that) they brought more of themselves to it versus trying to emulate a time period or a style." John admitted that "the editing aspect of the script, and like making it like your own production is kind of the joy of taking something and making it your own. I find I find that exciting and enjoyable." These comments underscore constructionist learning in that they highlight not only personalization, but also iterative actions towards perfecting a product.

Discussion

These results and additional findings have clear implications for teaching and learning in and through CLA, and the design of CLA-based learning environments. To begin with, CLA differentiates itself from other constructs by emphasizing an *embodied, multimodal experience* of the intertexts. As one of the leading figures in adaptation studies scholarship, Cutchins notes that

adaptation supports “a way of looking at texts” (Cutchins, 2017, p. 97), but this data also suggests that learning activities centralizing adaptation like CLA support *a way of being intertexts*. In a world of constantly changing information, structures, and meanings, adaptation in text-based education not only provides a powerful platform rooted in design for exploring alternative ways of thinking, ways of doing, and ways of knowing, *but also the ontological experience of BEING the intertexts* (see Figure 9). And, in the case of CLA, *being collectively*.

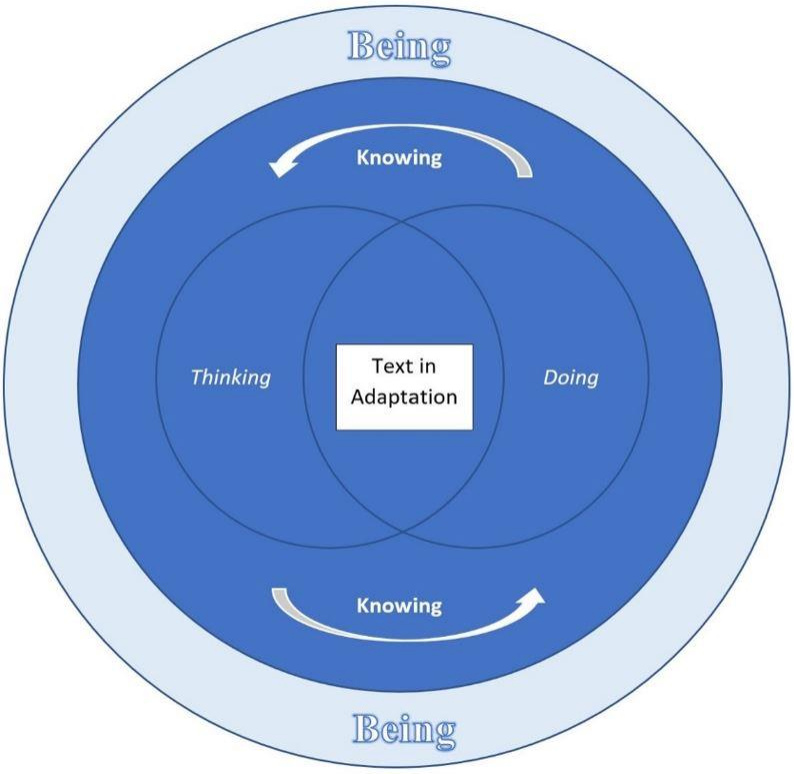


Figure 9. Adaptation as thinking, doing, knowing, and *being* the intertexts in education.

Thus, future text-based educators working with literary adaptation ought to design for 21st century curriculum and instruction around cognitive and socio-cultural approaches to learning, including emotional considerations which support the experience of *being*. These outcomes suggest a need to update the original formula for CLA for educators and students, which

optimizes the latest research and knowledge about how people learn through collaboration, literacy, and adaptation:

Collaboration + Text(s) + Adaptation (thinking, knowing, doing, BEING)

+ Public Sharing with Community Value → Engaging with Learning Processes

In hindsight, one student reflected on the value of experiential learning, of *being* the intertexts during *WOTW*, summarizing the voices of many other ensemble members:

> Female Student: I think it's doing it hands on. I think that is what's really… what am I trying to say? I think doing it as a show is more beneficial, and more fulfilling because you get to step inside this world as opposed to like [writing] an essay. You can do all the research in the world on a topic, but unless you are stepping into it, and experience being it, it is completely different.

Next, the most important design decisions in production-based art-making seem to take place at the very beginning of the process. Although this type of decision-making occurs regularly throughout a creative production process, the first few rehearsals seem to contain more promise for mining opportunities for learning. For instance, teachers and directors could spend ample time with a cast or creative ensemble weighing the affordances and constraints of selecting different storytelling or representational frameworks, or even applying certain genres to a text with if/then scenarios as opposed to rushing into acting and performance.

Finally, learning by design in and through CLA primarily occurs along the intertextual and dialogical dimensions of time (now/then), space (here/there), and representation (tell/show), a highly useful and transferable maker framework for literary adaptation. However, creators must also factor the author's intent ("fidelity to the original") and their intended audiences into their

design decisions. These main design considerations during CLA essentially function as a heuristic for all creative participants, whereby "designing redesigns the designer" (Cope & Kalantzis, 2015), and apply broadly to other production-based art-making.

Conclusion

Adaption and multiliteracy learning by design undeniably support CLA as a learning construct in many ways, and on numerous dimensions. In addition, learning in and through CLA operates on three levels: pedagogically, epistemologically, and ontologically.

Teachers and students can still work from existing or already published material, but with an adaptation mindset. For instance, educators need only adopt a broader understanding of literary adaptation as creative production itself, and not simply re-production of material in a different medium, with the aim of redesigning available meanings to shape existing knowledge and render it anew. How far can the teacher/director and students extend the meanings from the original source text or production while still maintaining its identity as a variation, and not an appropriation (Sanders, 2016)? Such exercises in "distancing" between here/there, now/then, and showing/telling seem to contribute significantly to learning, and to personalizing the experience for all parties.

By no means is this an exhaustive study of everything learned during a CLA experience. It does, however, serve as a departure point for future studies. Furthermore, these results provide the foundation for deeper explorations into more novel learning occurring via CLA, such as learning to innovate (Chapter 3), and critical perspectives (Chapter 4) unique to the construct. Next, the discussion turns to "learning to innovate," and focuses on collaboration, a key component of CLA not addressed by design (KPs) or adaptive intertextuality.

Appendix

At the time of publishing, publicly available YouTube video for *The War of the Worlds* (30 mins.):

https://www.youtube.com/watch?v=B3oaMIwRyLs&t=1336s&ab_channel=MiddletonTheatre

CHAPTER 3: CREATIVE EDUCATION

Learning to Innovate:

Expert Adult Teaching Artists Engaging with CLA

Adapted numerous times throughout history, the famous story of *Sleeping Beauty* originally began as an oral tale called *The History of Troilus and Zellandine* in early 16th century France. Nearly a century later Charles Perrault published a variation entitled *The Beauty in the Sleeping Wood* as part of his world-renowned *Mother Goose* collection. Eventually the Brothers Grimm in Germany heard a rendition in 1812, and subsequently penned the fairy tale *Little Briar Rose*. Finally, the American Disney corporation animated a film in 1959, and then appropriated the narrative into a Hollywood blockbuster starring Angelina Jolie called *Maleficent* in 2011.

Literature Review

Human beings retell and reshow familiar stories over time and space using different representational mediums. They reinterpret and restructure content, and in doing so remake meanings and represent experiences in and through story, effectively reframing narrative (Goffman, 1974). According to Bruner, "narrative organizes the structure of human experience" (1986, p.21). Bestselling author and historian Harari (2015) notes in *Sapiens* that the success and power of our species rests on its unique ability to collect and organize around belief in shared fictions, and cites religion, nationhood, and money as examples. Hutcheon (2013) mentions our yearning for congregating around imaginative storytelling as an adaptive mechanism contributing to social cohesion in uncertain conditions. Thus, centralizing students collaboratively adapting and making stories together in education during an era of constantly

changing information, structures, and meanings (Kress, 2013) seemingly fulfills both evolutionary and societal imperatives.

The learning sciences, a rapidly evolving scholarly sub-field of education, offers useful definitions and methods for understanding and engaging collaboration in relation to learning, conceived here in very basic terms as "a change in mental state" (Scardamlia & Bereiter, 2014, p. 397), or a group process involving conceptual change (Lave & Wenger, 1991). The field embraces multiple perspectives on learning, recognizing the importance of both the individual and group, but also extending to include broader social context (Vygotsky, 1978; Hoadley and Haneghan, 2011). This dual emphasis on the *cognitive* and *socio-cultural* realms of learning, as well as on *design*, provides an ideal integrated approach for defining collaboration as an essential component for bolstering learning via literary adaptation.

CLA as a construct for teaching and learning in education is all about groups of people "making texts together," a process rooted in meaning-making through collective, multimodal design creation (Wheeler et al., 2020). It entails *learners collectively analyzing, designing, creating, and producing innovative texts from other texts using a range of meaning-making resources and materials, which culminates in a public presentation of value for a community.* CLA is a task-oriented, project and problem-based activity which optimizes the latest research and knowledge about how people learn through collaboration, literacy, and adaptation. For example, among other things, the re-telling and re-showing of recognizable stories in an altogether different medium positions makers and audiences at a critical distance (Sanders, 2016) which can render familiar aspects of the social world strange (Gee, 2015). During a time of radical social instability (Kress, 2013), the making of adaptations provides a powerful lens for teachers and learners to experiment with alternative ways of thinking, knowing, doing, and

being. It revolves around a simple formula which leaves considerable flexibility for educators and students alike to exercise personalization:

Collaboration + Making Text(s) + Adaptation (thinking, knowing, doing, being)

+ Public Sharing with Community Value → Engaging in Learning Processes

Research literature for the emerging transdisciplinary field of adaptation studies has expanded over the past decade to include some *philosophical* works related to learning by scholars from predominantly English and Film departments, such as in the recently published and compelling *Oxford Handbook of Adaptation Studies* (Leitch, 2017), but scant *scientific* evidence grounded in learning theory supporting these claims. Thus, a clear need exists for further empirical studies grounded in solid educational theory and rigorous research which closely examine novel aspects of learning in and through CLA, like "learning to innovate," to begin methodically substantiating it as a vital construct for 21st century curriculum and instruction.

Creativity versus Innovation

Cultivating creativity and innovation skills remain top priorities for most educational institutions in the 21st century (*Partnership,* 2006; Sawyer, 2006; Schwarz, 2015). Groups of students engaging together with making activities, like literary adaptation, furthers the development of these essential "innovation skills" by cultivating the "4Cs" of 21st century learning: Creativity, Critical thinking, Communication and Collaboration (*Partnership*, 2006). With proper instructional scaffolding, the process of adapting literature collaboratively affords student "knowledge workers" the ability to function as "symbolic analysists" who manipulate narrative for creating conceptual artifacts (e.g. a script or screenplay) and physical objects (e.g. a stage

production or digital film) representative of their understanding (Sawyer, 2006). In theater-making the progression of text "from page to stage" engages all 4Cs, and this makes sense because "learning and creating are fundamentally the same process," (Sawyer, 2003, p.47) strengthening the case for centralizing a creative learning construct like CLA in 21st century curriculum and instruction.

Although people frequently use the terms *creativity* and *innovation* interchangeably, finite differences exist with significant implications for learning. In general, higher education tends to associate creativity with the arts and humanities, and innovation with technology and business. A broader conception of education, however, allows for the inverse as well, such as learning to innovate while working in the arts and humanities, or learning to create while working in technology and business. Unfortunately, many scholars in the arts and humanities regard innovation as a "dirty" word closely associated with neo-liberal market forces. They may even consider research in this area as inherently "dangerous" because it signals the encroachment and outsized influence of business on academic fields like education. This mentality seems at least in part to spring from innovation's emphasis on production, a notion heavily tied to market-based processes. The notion of production, however, also figures heavily into learning by making (Halverson & Sheridan, 2014). For example, making in and through artistic production scaffolds a heuristic for creativity and innovation, wherein learners frequently combine unique ideas to generate novel concepts (Sawyer, 2013a; *Partnership*, 2006). Whereas creativity may never extend beyond the realm of mere ideas, however, innovation always results in *a deliverable product of value for a receiving user or community,* firmly cementing its relationship with design-based learning activities steeped in making like CLA. Furthermore, Sawyer & Bunderson (2013) differentiate creativity and innovation skills from one another by suggesting that

individuals generally practice creativity, whereas *groups* exercise innovation. In other words, cultivating innovation as a 21st century skill seemingly *requires collaboration*. For this reason, Sawyer (2006) argues for more research on situated, interactive learning activities in education like CLA which align with the social nature of innovation in today's economy.

Some scholars may disagree with these distinctions, referring to innovation simply as "group creativity" (Sawyer, 2014). However, a broad sweep of the research literature across domains indicates otherwise. These fundamental differences between *creativity*, or the generation of novel and useful ideas in any domain (Amabile, 1996), and *innovation*, or *the successful implementation of novel idea combinations by a group in the form of a deliverable product of value for a targeted community* (Amabile, 1996; Sawyer, 2013, 2017; Sawyer & Bunderson, 2013; Govindarajan, 2010) suggest a possible pathway for "learning to innovate" might entail jointly creative, process-oriented, *production-based* art-making activities grounded in design (Chi, 2009; Halverson & Sheridan, 2014; Harel & Papert, 1991; Lave & Wenger, 1991).

Learning to Innovate on Three-Levels

Art-making during CLA works in two chronological phases: a rehearsal process, and a production. Opportunities for learning to innovate and engage with different learning processes arise during both phases, and likely on multiple levels. For instance, during the CLA *rehearsal process* collaborators plant the seeds of innovation, rendering individual and group decisions about the source material in the form of text-based creative interpretations and improvements at the *micro-level*. As part of the literary adaptation process in rehearsals, groups negotiate potential designs and test these creative interpretations at the *meso-level* as series of iterative steps, some of which yield *process innovations*. In the end, some of these process innovations become

adopted and appear during the final performance deliverable as *product innovations* at the *macro-level*. Thus, learning to innovate and engage with different learning processes probably take place on a variety of levels during both the rehearsal process and the final production (see Figure 1).

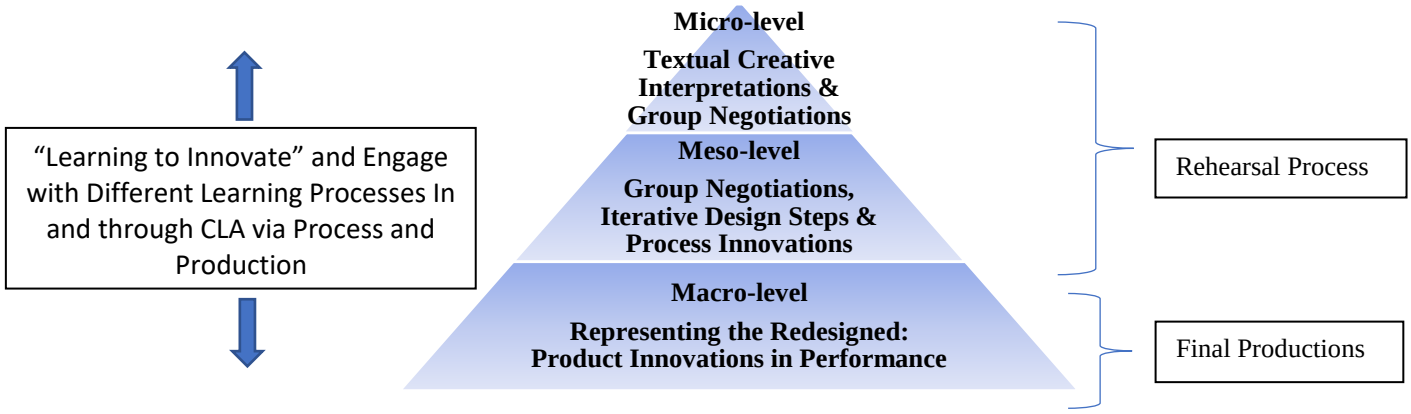


Figure 1: Learning to innovate on multiple levels via process and production in and through CLA.

The discussion will now turn to two theories which may support learning to innovate on these distinct levels, beginning with developing a meso-level understanding of Brown's (2009) Design Thinking process, and Scardamalia & Bereiter's (2006) Collaborative Knowledge Building (CKB) at all three levels of process and production.

Meso-level Process Innovations (Design Thinking)

Creative production in art-making always entails a *process* consisting of a series of steps. R.K. Sawyer, a highly regarded creativity scholar in the learning sciences, conducted a meta-analysis of nearly a dozen other theoretical models of the creative process (p.89, 2013). His meticulous investigation suggests that the creative process typically involves eight steps:

1. Find the problem (in CLA, the "text" to be adapted)
2. Acquire the knowledge
3. Gather related information

4. Incubation
5. Generate ideas
6. Combine ideas
7. Select the best ideas
8. Externalize ideas

Design thinking, another creative process model closely aligned with innovative product development, may also extend to interactive learning activities in education rooted in art-making like CLA (see Figure 2).

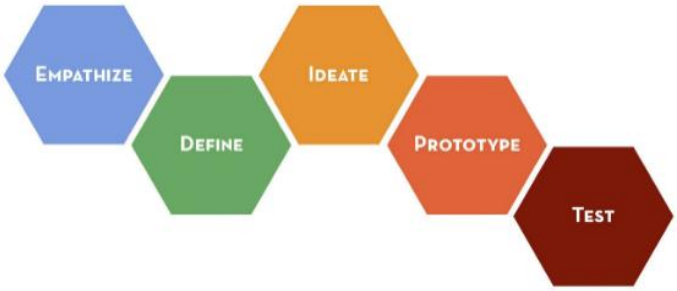


Figure 2: Design thinking creative process model for learning to innovate.

With its origins in engineering, Design Thinking blends cognitive, socio-cultural, and socio-emotional learning and problem-solving approaches (Scardamalia & Bereiter, 2006; Martin, 2009). It outlines a pathway to innovation in five-steps: (1) empathize, (2) define, (3) ideate, (4) prototype and (5) test. This process of Design Thinking (to which I also add "Design Doing" in recognition of the active, educational, production-making process component of CLA) emphasizes both the analytic and intuitive, but truly distinguishes itself as a model by stressing *empathy* as a first step in the creative process. In other words, the needs of the "user, or audience in the case of CLA, underscore every decision made during the design process from the very beginning to product deliverable. Collaborative, interactive teams immersed in Design Thinking

learn to innovate collectively during such creative design processes which provide a theoretical foundation for activities like CLA.

Micro -level Process Innovations (CKB)

The highly complex process of adapting literature into multiple modalities lends itself well to supporting teams of people working together in process on creative productions. Fortunately, Sawyer (2006) notes that "creativity is deeply social; the most important creative insights typically emerge from collaborative teams and creative circles" (p.42). To that end, Scardamalia & Bereiter's (2006) theoretical notion of "Collaborative Knowledge Building" (CKB), although frequently paired with technology, may also suit groups socially engaging in the creation and making of literary adaptations rooted in a design process. During CLA, students create and jointly process, interacting and dialoguing with one another to "build on a partner's contribution, argue, defend, and/or confront or challenge" certain choices while refining texts (Chi, 2009). They figuratively iterate language and tools to create an adapted version of a story.

A key feature of learning through collaboration, groups of participants must learn to *negotiate* situations through interactive processes and reach agreement (Miyake & Kirschner, 2014; Chi, 2009). These interactive negotiations frequently consist of axiological considerations such as differing values between group members and contested priorities. In CLA, such collaborative decisions might involve choosing a text, determining what text to adapt from a given text (Kress & Bezemer, 2008), selecting a new context like a genre change and its social implications (Gee, 2015), or allocating project roles and responsibilities for production.

Unfortunately, usually individual, and not collaborative literary and creative efforts tend to receive cultural recognition. Schooling, too, traditionally valorizes the autonomous student, perpetuating the idea of a singular creative, literary genius. Adaptation studies scholar Sanders

encourages a paradigm shift "away from the idea of authorial originality as a definer of value to a more collaborative and societal understanding of the production of art and meaning" which also aligns with the interconnected, participatory, and distributed nature of our rapidly changing world, and "new" literacies (2016, p. 192; Jenkins, 2009; Lankshear & Knobel, 2006).

CKB emphasizes the creation and improvement of knowledge "conceived of as the out-in-the-world production of designs, theories, problem solutions, etc." (Scardamalia & Bereiter. 2003, p. 13; 2014, p.397). With clear ties to the educational theories of Constructivism and Constructionism, CLA in many ways epitomizes the theory of CKB *in practice*. CKB supports socially engaged *analysis* and *creation* through discursive idea improvements (Scardamalia & Bereiter, 2006; Leitch, 2009). These knowledge enhancements emerge during shared turn-taking and iterative cycles of creative, distributed decision-making across groups (Sawyer, 2009; Scardamalia & Bereiter, 2014; Hutchins, 1995).

Iterative Cycles of Design Decision-Making

CLA's creative production process consists of *three iterative cycles of design decision-making*, all supported in different ways by CKB, and substantiating learning by design (Scardamalia & Beriter, 2006; Cope and Kalantzis, 2015). The design decision-making process begins with individuals, and then evolves into collaborative group work during rehearsals. *These iterative cycles of design decision-making appear on all three-levels of making during CLA (micro-, meso-, and macro-), but always originate with individuals at the micro-level.*

First, learners (1) individually interpret a text creatively. Then, during the process of adapting the text as a group, they (2) jointly negotiate these creative interpretations in terms of narrative content and structure (the *who? what? where? when? how?* and *why?* [Hutcheon, 2013]), as well as their social implications (Gee, 2015), which may yield *process innovations* during rehearsals. Finally, they must (3) reach group consensus on all representational design

decision-making for the text as a creative production, which may yield *product innovations* in performance (see Figure 3).

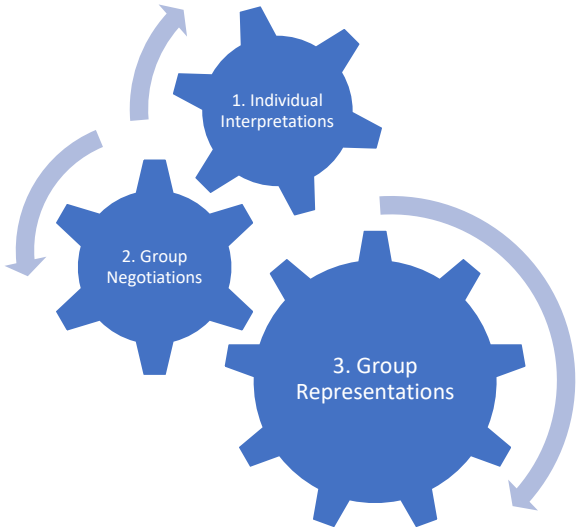


Figure 3. Iterative cycles of creative decision-making in CLA: Individual Interpretations → (2) Group Negotiations (*process innovations*) → (3) Group Representations (*product innovations*)

Two other important considerations accompany every iterative cycle of creative decision-making during CLA: (1) authorship "fidelity" (Cutchins, 2013), and (2) audience reception (Magnifico, 2010). Authorship "fidelity" refers to the extent to which an adapted text captures critical aspects of the source text. While adapting, makers *empathize backwards* with the author and their historical text to try and understand its effects and meanings (Gould, 2017) before determining how "close" or "far" from the source material to render their design and redesign. While adapting, makers also *empathize forwards* with an imagined audience, like a reader or viewing public, to try and anticipate their reactions to the new effects and meanings (Gould, 2017) transmitted by the redesign. Like bookends signifying the very beginning (authorship intent) and end (receiving audience) of a CLA journey, makers filter all iterative creative decisions through them at every step of the way.

Individual Interpretations

As individuals read texts, "meaning comes through (the) reader's generation of a next text in response to the text being read" (Smargorinksy, p.133). Learners begin rewriting the narrative content and structure and reimagining the social world during their initial readthroughs of the source material. In a sense they "collaborate with the original text" to construct new knowledge and expanded versions of it, such as an adapted script or adapted creative production. Personal histories, experiences, and primary Discourses (Gee, 2015) based on familiar ways of being in the world color every individual creative interpretation. This process of generating individual creative interpretations inevitably results in multiple understandings from varying participants of the same text (Cutchins, 2017).

Group Negotiations

When the time comes, groups must *learn to share* [creative] *interpretive power over decision-making* (Taylor, 2003, p.xii) by collaboratively negotiating, collectively shaping a text by either *contesting* or *agreeing* over choices pertaining to its adaptation, like certain situated meanings supporting a new social world, or secondary Discourse (Gee, 2015). Negotiating the social becomes political as learners contest how to design "ways of talking, listening, writing, and reading" into meaningful situations where characters are "acting, interacting, believing, valuing, and feeling" in recognizable patterns (Gee, 2015, p.166). Makers negotiate socio-cultural *meanings*, but also personal *significance* (Leitch, 2009). Groups must determine how to "distribute social goods" throughout the adaption, balancing their own axiological priorities with those of the group and the text (Gee, 2005, p. 100). These decisions ultimately characterize the group's identity, formed by arriving at a shared vision of the social through negotiating differences (NLG, 1996; Cope and Kalantsiz, 2009). This has profound implications for storytelling, which ought to result in a higher quality, innovative product because of these

numerous instances of CKB (Scardamalia & Bereiter, 2014), or cooperative learning between peers. Students become knowledge creators by jointly processing and combining ideas together: reading, building on, and improving each other's contributions to the collaborative knowledge building effort (Chi, 2009; Scardamalia & Bereiter, 2019).

Group Representations

Once groups determine what to *tell* in CLA they then need to decide how to *show*, or represent their narratives in creative production (Hutcheon, 2013). These show-and-tell conversations also turn political as groups confront challenging questions regarding *representational authority*, or who can represent whom, how, and why (Wiley & Feiner, 2001). The answers to these problems have potentially powerful implications for underrepresented, marginalized, and oppressed identities engaging with CLA, like the choice to represent a historically "white" narrative such as the hit Broadway musical *Hamilton* with a cast comprised entirely by people of color. Such a historical intervention affords groups the opportunity to reimagine the social, to transcend "what is" based on "what was," and instead explore "what if" (Dolan, 21). In other words, as students "negotiate their playmaking" in and through CLA, they are also "renegotiating community identity and culture" (Wiley & Feiner, p.125). These group representations ultimately become a new product, or knowledge structure depicting deep sense-making of a literary text.

Macro-level Product Innovations (CKB & Design Thinking)

Opportunities to observe innovations during CLA most obviously occur during the production phase, or Design Thinking "Test" step. Depending on the medium, innovative decision-making can even happen in real-time while presenting in front of a live audience, as in the case of theater. However, product innovations that surface during a final show in the form of group representations usually evolve out of the granular, micro-level negotiations during iterative

design-making rehearsal processes at the meso-levels. Product innovations, traced backwards and forwards over time and space on all three-levels, depict a deeply Constructivist *representational trajectory* of learning (Halverson, 2013) founded on questioning, dialoguing, and iterative idea improvements (Scardamalia, 2002), or CKB efforts.

Thus, Design Thinking and CKB theoretically support CLA and learning to innovate and engage different learning processes (see Figure 4).

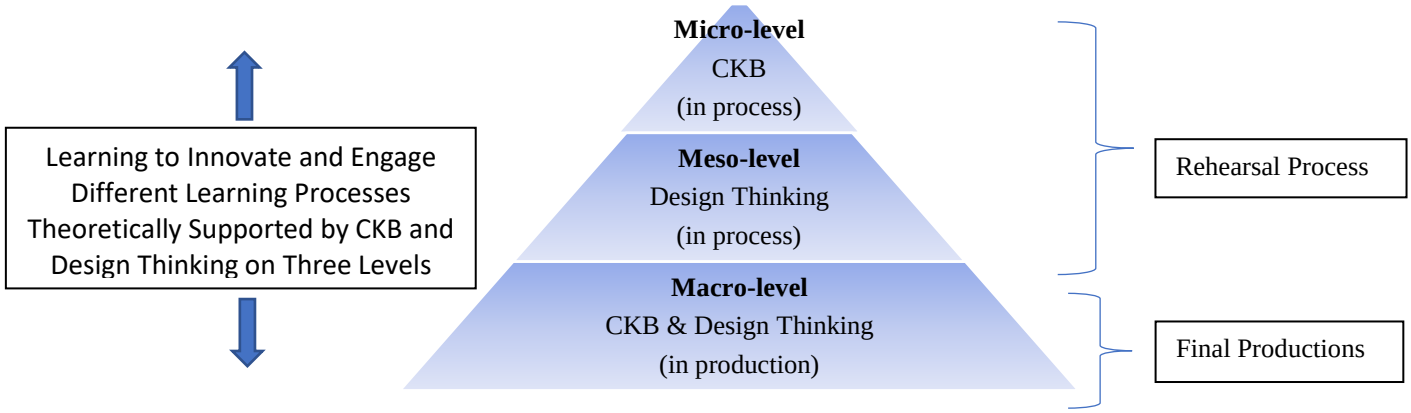


Figure 4: Learning to innovation supported by CKB and Design Thinking on multiple levels.

During CLA text-based individual and group decision-making design processes abound. Some even yield innovating results, or "innovation in and through adaptation." ***How do people "learn to innovate" in and through CLA?***

Methods

This case study, the second of three in a series of collective (Cresswell & Poth, 2018) or comparative (Bartlett & Vavrus, 2016) case studies, targeted a group of adult professional experts adapting and transforming literary texts into creative productions and sought evidence of them learning to innovate and engaging with different learning processes during the process (Creswell et al. 2018). The analysis focused on five stories adapted using two different mediums, namely

live theater production and digital theater production. I traced the stages of creative development and the learning trajectories of participating members from "page to stage" or screen for each story, effectively binding the system under investigation (Bartlett et al., 2017; Stake, 2000), and scoured the data for patterns reflective of learning to innovate and engagement with different learning processes.

Participants

The group under investigation consisted of a wide range of members. They all belonged to a professional educational theater company called *Whoopensocker!* affiliated with the University of Wisconsin-Madison's School of Education. According to their website:

> *Whoopensocker!* is a six-week creative arts residency program where 3rd grade elementary school students in (small city in Upper Midwest) work with adult teaching artists to express themselves through writing, improvisation, and performance. The program culminates in a professional performance by the teaching artists of select student-written work, where the entire school community celebrates the power of student imagination and adult creativity (*Whoopensocker!*, 2020).

One team from *Whoopensocker!* adapted stories for a live production, and the other team adapted stories for a digital production. The live production group participants included 12 adults (one off-stage director, one musician and 10 adaptors/performers) spanning in age from 18-50, and were a mix of theater and education professionals. The digital production group participants included eight adults (one off-screen director/editor, and six adaptors/performers) spanning in age from 18-40, and were similarly a mix of theater and education professionals. All group member participants from both teams except for one person were veteran experts of *Whoopensocker!*, and

therefore highly familiar with existing program protocols and procedures in creative production. The non-veteran, however, possessed a significant professional background in theater-making.

Third-grade public school student "playwrights" provided stories for the team members to adapt. These young playwrights and their peers represented a diverse population. For example, approximately 43% of the students in the Upper Midwestern school district were White, with the next largest demographics composed of Latinx (21%), and then African-American (18%) students. Nearly half of all students (48%) in the district qualified for free and reduced lunches. These students and their families also functioned as the intended target audiences for both the live and digital productions. *Whoopensocker!* strives to work at underserved public schools in the district with fewer resources and higher needs in terms of arts programming as part of its mission.

Task

The live production team of 12 members reconvened for a weeklong, intensive rehearsal schedule off-site in a studio space following an on-site, six-week teaching residency in a local elementary school. They collectively chose 20-25 stories written by the students during the teaching residency to adapt for the stage, and then threaded them together to form a cohesive show. Rehearsals transferred from the studio space to a school auditorium in preparation for the final show during the latter half of the production week. The performance took place in the school auditorium in front of a live audience consisting of the third-grade students, their parents, schoolteachers, and administrators.

The digital production team of eight members worked entirely online over the course of six weeks at the height of the global COVID pandemic. Tasked with adapting the same story written by a single third-grade student in three different ways, they divided into three small groups of two artists each (plus the director/editor, and the later addition of one other artist). Each of the

three small groups adapted a version of the same story utilizing a different storytelling and representational (story "showing") mode: the first version adapted the story using just people (Persons), the second version adapted the story using puppets (Puppets), and the third version adapted the story into a song (Song). During the pandemic *Whoopensocker!* planned to assemble an instructional "how to adapt a story" video demonstrating the literary adaptation process as part of an online curriculum to distribute publicly for students at home. Multiple versions of the same story allowed students to view a range of opportunities available to them for adapting their own stories while schooling remained almost entirely online, guiding them towards utilizing at-home resources for telling and showing stories digitally. Different sites such as personal homes and outdoor parks served as settings for the digital recordings. After substantial edits the director/editor released the story adapted in three different ways online via YouTube as part of an instructional video for teachers and students in the district.

These live and digital teams from *Whoopensocker!* and their respective tasks offered ideal conditions for a study investigating CLA, and how this complex process exercises learning how to innovate and engage with different learning processes. First, the third-grade students generated simple narrative stories which lent themselves easily to artistic interpretation. Second, although they used two distinct mediums for literary adaptation, namely producing for the stage (live) versus screen (digital), they shared the same creative process, which simplified and diversified the comparative analysis. Finally, in contrast to novice learners in formal settings like a high school classroom or college, these adult experts were intrinsically motivated to work diligently and efficiently to complete the tasks.

Data Collection & Analysis

Data collection for the live production took place over the course of a single week. The research focused on two stories chosen at random. An iPhone video camera captured audio and visual recordings with verbal and non-verbal interactions between group participants as they worked together during rehearsals, including the final performance (Cresswell, 2018). I fully participated in the creative process for the live production as a creative team member and researcher, interacting as needed, and then removing myself occasionally for data collection, "code-switching" when appropriate from participant to observer and back again to minimize distraction (Cresswell, 2018). I was not an adapter or cast member for either selected story.

Data collection for the digital production took place over the span of six weeks. The research focused on three different rehearsal processes (Persons, Puppets, Song) of the same story. Pre-recorded Zoom calls captured A/V recordings of the teams of group participants collaborating and adapting the text virtually in rehearsal.

The study employed multiple methods, and targeted different units of analysis for examining cognitive and socio-cultural dimensions of learning. For example, the investigation considered individual contributions, as well as group interactions aiding in the development of each production. Combining these two perspectives acknowledges the significance of their interdependence during the creative process, and thus provides a more holistic picture of learning outcomes. I primarily employed Bidirectional Artifact Analysis (BAA)(Halverson & Magnifico, 2013), an umbrella methodology composed of Discourse (DA), Narrative (NA), and Artifact Analyses (AA) for examining a creative process and product "from [the] final product backwards and from initial idea forwards—to better understand participants' learning processes and the role of social, collaborative audiences in that learning" (p. 276). I used DA, or "the close study of

language in use" (Wetherell et al., 2003), especially for interpreting the A/V transcripts, and Conversation Analyses (CA)(Gee, 2015) for in-between rehearsal dialoguing and turn-taking. In addition, I applied Artifact Analysis to the A/V recordings of the final performances, especially for seeking product innovations. I also engaged NA(Connelly & Clandinin, 2006) for understanding some of the changes in story content and structure to the texts during the literary adaptation process. I utilized *concept* coding (Miles et al., 2020) to identify moments of CKB, as well as Design Thinking, followed by *pattern coding* (Saldana, 2016) "to condense large amounts of data/codes into a smaller number of analytical units" like moments of just collaboration, or just knowledge building, or specific Design Thinking steps (Miles et al., 2020, p. 79). Finally, I operationalized the term "learning," building primarily upon the educational theory of "making" (Halverson & Sheridan, 2014) as previously discussed in Chapter 1, as well as the notion that "learning and creating are fundamentally the same process" (Sawyer, 2003, p. 47). Simply put, *I defined learning as creative change which contributed either directly or indirectly to the making of the final production*. To qualify as evidence of creative change either I had to observe the learning moment, or recognize it in my analysis as either an explicit articulation or implicit discursive statement or action by an individual or group participants.

Measures

I measured evidence of learning to innovate and engagement with different learning processes on micro-, meso-, and macro-levels for breadth and depth (Saldana, 2016) to strengthen findings and results, and used external assessment to ensure vertical alignment and bolster validity (see Figure 5.).

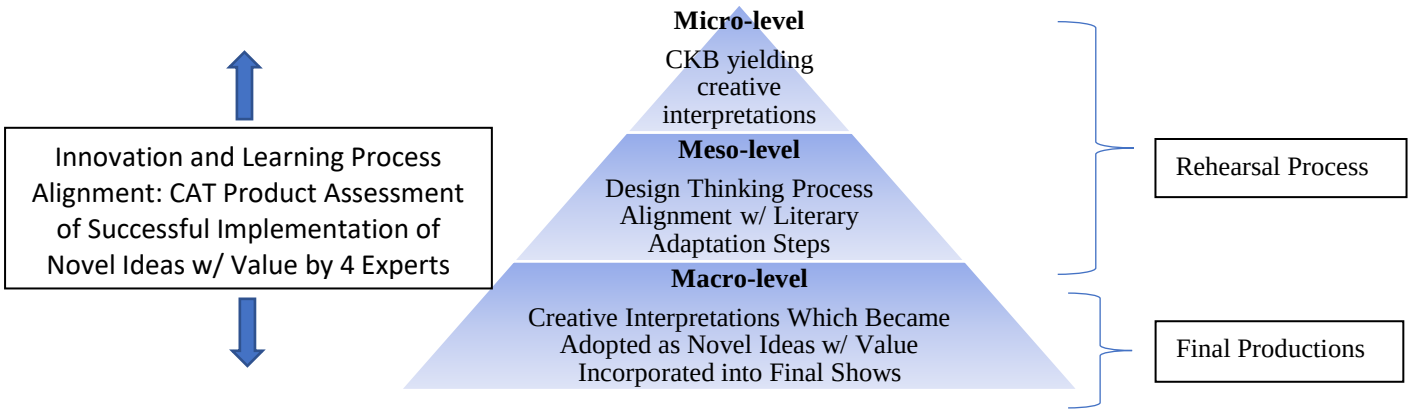


Figure 5: Innovation measures/assessments and alignment on 3-levels.

In terms of theory, evidence of micro-level CKB during the literary adaptation rehearsal process would indicate engagement with learning processes. Moreover, similarities between Design Thinking theory and literary adaptation steps would reveal proof of learning to innovate and engagement with learning processes on a meso-level. Finally, alignment of innovation levels vertically between the inward-facing rehearsal processes (CKB at the micro-level, and Design Thinking at the meso-level) and the external-facing final productions (innovation assessments of the final performances at the macro-level) would validate consistency of innovation across multiple theoretical dimensions.

At the micro-level I assumed the discourse and conversations from the data collection and transcriptions would contain granular evidence of learning through literary adaptation in the forms of collaborations and knowledge building (Scardamalia & Bereiter, 2014). CKB would generate many *creative interpretations* of the story between adapters, some of which would ultimately result in *process innovations*, which may or may not yield *product innovations* in performance. Shared agreements between individual ensemble members would signify moments of collaboration, and code *as any interaction involving mutual understanding which directly related to the creative process*. Idea improvements would indicate knowledge building, and code as *any instance of one*

group member enhancing or building upon previous ideas introduced by another directly related to the creative process.

I scrutinized the meso-level data for indications of the Design Thinking learning model during each literary adaptation process. Moreover, I searched for the emergence of meso-level process innovations during rehearsals while ensemble members continually worked together in rehearsal to refine creative interpretations and eventually adopt and implement them, or not. Finally, I looked for the successful execution of macro-level product innovations in the final performances which had evolved from micro- and meso-level process innovations. For the purposes of this study, I defined innovation as *the successful implementation of novel idea combinations by a group in the form of a deliverable product of value for a targeted community*. In CLA, this refers to any unique creative interpretations made by the adapters in translating the source material into a representational medium, including any subsequent adoptions and integrations of these creative interpretations in rehearsals (process innovations) or the final productions (product innovations). These novel translations, or new and unusual combinatory ideas which appear original or striking in conception or style (Sawyer, 2013; *Cambridge.com*, 2022), presumably emerged from inspired, collaborative discourse and conversation between the adapters about the text. The study assumed that experts innovating in and through literary adaptation nearly always honored a high degree of fidelity towards the third-grade authors/playwrights, as well as the receiving audience into every representational decision-making step.

Value, a challenging term to operationalize, had to meet two criteria. First, the analysis would work *backwards* by identifying innovative, embodied performance acts from videos of the final shows (product innovations), tracing the evolution of these acts during the collaborative

making process (process innovations) from novel ideations, and finally locate their roots in the original literary text. Next, the analysis would work *forwards* by tracking and ranking the number of times a novel idea was adopted for use in a meaningful way by others (process innovations), and then integrated into the final performances (product innovations). Both criteria had to be met to qualify as value. The number of instances of micro- and macro-level CKB process innovations from rehearsals should then directly correlate with the amount of macro-level product innovations from the final performances. This would underscore the theoretical importance of CKB in contributing to innovation levels achieved during the literary adaptation process. Working backwards and forwards, or "bi-directionally," in this manner while analyzing these artifacts reduced interpretative errors (Halverson & Magnifico, 2013).

To assess production innovation of the live and digital shows, four experts in theater education would attend the same final live performance or watch the culminating digital videos to determine successful execution of the individual stories. They would evaluate overall innovation on two dimensions: (1) artistry, and (2) community impact/relevance. Prior to viewing the production, the experts would be given instructions to read photocopies of the original literary texts written by the third-grade students. Then, working independently and employing the Consensual Assessment Technique (CAT)(Amabile, 1982), they would be asked to judge the stories according to the following criteria: (1) artistic innovation, i.e. the quality of the original source material transformed into representative performative acts, and (2) innovation impact/relevance for the community, i.e. gaging live audience reception for the live shows, and estimating the audience reception for the digital presentations.

The CAT, originally developed by Amabile (1982), is a widely used method in creativity research which posits a high correlation between multiple domain experts rating products and their

overall creativity, and easily transfers to innovation research, as well. The experts would rate these two criteria on a scale from 1 (low) – 5 (high) with fractions (.5) permitted. No external standard would be used for comparison, nor would any judge be asked to explain or defend their ratings. They simply would rate each story according to their own expert sense. The judges scores should fall within one point of each other to ensure validity, and would then be compared to determine the amount of innovation present in each story. If the scores do not line up, then the judges would re-score until they reach consensus. *The number of macro-level product innovations for each story should correspond to the judges' overall innovation scores.* In other words, the more innovative the final performance of the story, the greater the artistry and impact/relevance on the audience.

Results and Discussion

For the live production, group members divided into pairs of two or three based on a shared desire to work on specific stories in the early stages of rehearsal. Each pair then assumed primary responsibility for adapting that literary text. It was inferred that they would not only function as the de facto experts of that specific literary adaptation, but also play leading characters in the story for the final performance. The two stories selected at random for analyzing the live production, *The Chocolate Bar Mess* and *A Bird Adopts a Bird*, involved only one man and one woman.

For the digital production, the director/editor and another teaching artist specialist with a background in curriculum and instruction chose a story called *Fox & Raccoon* to showcase in their "how to adapt a story" instructional video. In addition to the story being "linear and concise," they based their selection decision of *Fox & Raccoon* on it also being "the most likely to inspire many different (types of) adaptations because of the action and language." Then, they chose three relatable and accessible modes (Persons, Puppets, or Song) for third-grade audiences, and divided

the responsibilities for digitally adapting *Fox & Raccoon* among three groups of professional participants composed of two adults each.

I transcribed and loaded rehearsal and production data into the qualitative data analysis software MaxQDA, approximately three hours of footage for the live process (*The Chocolate Bar Mess*, and *A Bird Adopts A Bird*), and 9 hours for the digital process (*Fox & Raccoon-Persons*, *Puppets*, and *Song*). First, I used MaxQDA to identify meso-level evidence of Design Thinking as an indicator of an innovative process at work during the making of the five stories. I assigned each successive "pass" at adapting a given story with a corresponding Design Thinking creative process step (see Tables 1 & 2). Next, I coded for micro-level instances of collaboration and knowledge building which yielded creative interpretations, some of which evolved considerably over time and became process innovations. Finally, a comparative and evaluative analysis between the original literary texts and the final live and digital "product" performances bore macro-level product innovations.

LIVE PRODUCTIONS					
Story Title **& # of Passes at Adaptation**	**Literary Adaptation Steps**	**Meso-level Process Innovation**	**Micro-level Creative Interpretations & Process Innovation**		**Macro-level Product Innovation**
		Design Thinking *Creative Process Steps*	**Collaborations** *shared agreements*	**Knowledge Building** *Idea improvements*	**Product Innovations** *novel translations & # of times ideas adopted*
The Chocolate Bar Mess					
Pass 1	Read	Empathize	1	0	0
Pass 2	Create	Define/Ideate	14	8	5
Pass 3	Review	Prototype	8	6	0
Pass 4	Show Group	Test	9	14	1
Pass 5	Add Others	Test	6	5	1
Pass 6	Polish	Test	1	6	0
Performance	Live Show	Innovate	0	3	0
TOTALS	→	→	**39**	**42**	**7**
A Bird Adopts a Bird					
Pass 1	Read	Empathize	1	0	0
Pass 2	Create	Define/Ideate	20	6	4
Pass 2.5	Create/Review	Define/Ideate	9	3	0
Pass 3	Review	Prototype	13	4	1
Pass 4	Show Group	Test	7	6	1
Pass 5	Add Others	Test	5	2	1
Pass 6	Polish	Test	5	5	1
Performance	Live Show	Innovate	0	4	0
TOTALS	→	→	**60**	**30**	**8**

Table 1: Live performance rehearsal and production data from adapting two stories.

DIGITAL PRODUCTIONS					
Story Title **& # of Passes at Adaptation**	**Literary Adaptation Steps**	**Meso-level Process Innovation**	**Micro-level Creative Interpretations & Process Innovation**		**Macro-level Innovation**
		Design Thinking *Creative Process Steps*	**Collaborations** *shared agreements*	**Knowledge Building** *idea improvements*	**Product Innovations** *novel translations & # of times ideas adopted*
PERSONS-Fox & Raccoon #1					
Pass 1	Read	Empathize	0	0	0
Pass 2	Create	Define/Ideate	67	61	6
Pass 3	Create/Review	Ideate/Review	23	23	5
Pass 4	Review/Show	Prototype/Test	31	20	3
Pass 5	Edit/Polish	Test	3	2	0
Performance	Digital Show	Innovate	0	0	0
TOTALS	→	→	**124**	**106**	**14**
PUPPETS-Fox & Raccoon #2					
Pass 1	Read	Empathize	0	0	0
Pass 2	Create	Define/Ideate	57	49	7
Pass 3	Create/Review	Ideate/Review	53	31	2
Pass 4	Review/Show	Prototype/Test	31	22	1
Pass 5	Edit/Polish	Test	8	2	0
Performance	Digital Show	Innovate	0	0	0
TOTALS	→	→	**149**	**104**	**10**
SONG-Fox & Raccoon #3					
Pass 1	Read	Empathize	2	1	0
Pass 2	Create	Define/Ideate	94	46	7
Pass 3	Create/Review	Ideate/Review	40	24	2
Pass 4	Review/Show	Prototype/Test	35	19	2
Pass 5	Edit/Polish	Test	15	4	1
Performance	Digital Show	Innovate	0	0	0
TOTALS	→	→	**186**	**94**	**12**

Table 2: Digital performance rehearsal and production data from adapting three versions of the same story.

Meso-level Process Innovation Results

An inductive assessment and comparison of the five creative processes for each story uncovered "passes" each pair took towards adapting their respective texts. The live productions took six "passes" (Table 1) at adapting their stories, while the digital productions took five "passes" (Table 2).

Each “pass” corresponded to a clear step in the literary adaptation process. For instance, all pairs began by reading the story together out loud to each other (1. Read). Next, they created the adaptation, alternating between structure and content (2. Create). Then, they reviewed their work (3. Review) before presenting it to one another or the group (4. Show Group). After that, the live productions added ensemble members and a musician to the story as needed (5. Add Others), whereas the digital productions edited (5. Edit) their work. Finally, both groups “cleaned up” (6. Polish) their productions with one last run-through or major edit to solidify their work across the group. Past that point, subsequent live run-throughs and digital edits of each story took place, but the focus shifted from creating and developing to problem-solving technical elements such as lighting, costuming, and props for the live productions, and editing clips, sound effects, and sequencing for the digital productions.

These meso-level “passes” and steps in literary adaptation also aligned very closely with the popularized notion of Design Thinking (see Figure 2)(Brown, 2009). For instance, all the pairs first read the original literary texts presumably to understand the author’s intent and relate it to their future audience (1. Empathize). Next, they shared ideas and made critical interpretive decisions about the story (2. Define, and 3. Ideate). Then, through performance they demonstrated their embodied representations of the adapted texts to one another as a product, effectively “trying it out” (4. Prototype). Lastly, they continued to iterate their product (5. Test) multiple times over until the final performances (6. Innovate).

Meso-Level Process Innovation Discussion

Many “passes” at adapting each text combined multiple literary adaptation and Design Thinking steps, denoted with a “/” in Tables 1 and 2. This makes sense given the frequent blurring of definitional boundaries and overlap between steps during the creative process.

The discrepancy between the number of "passes" at adapting each story between the live production (six passes) versus the digital (five passes) production reflects varying influences. To begin with, rehearsal time constraints differed considerably between the groups: the live team worked one week, the digital team worked over six weeks. Next, the digital teams also lacked familiarity with working virtually and benefitted from the expanded time frame because they worked far less efficiently. Of note, they conducted nearly all their work independently in contrast to the live rehearsal processes, therefore requiring seemingly fewer "passes" at adapting each story. They spent the bulk of their time online distributing tasks (Hutchins, 2000) to complete offline ("you do this, and I'll do that, instead of us doing it together because we are apart"), and evaluating previous video work by "verbally iterating," or deciding what they should keep and change.

The meso-level data clearly indicated alignment between literary adaptation steps and the Design Thinking process. Consequently, CLA supported an innovative learning process composed of many steps, firmly rooted in the theory of Design Thinking (see Figure 2).

Micro-level Creative Interpretations Results

Generally, the micro-level analysis revealed far more collaborations than knowledge building across all five stories, nearly double in certain instances, and markedly fewer instances of product innovations in comparison (see Tables 1 & 2). Put together, the number of instances of collaboration (C = shared agreements) plus knowledge building (KB = idea improvements) in each story directly correlated with the number of product innovations (PI). The combined live production team totals averaged an 85% return rate of micro-level CKB to macro-level production innovations, and the combined digital productions averaged only a 48% return rate of micro-level CKB to macro-level production innovations.

$$C + KB = CKB \; ; \; PI / CKB = \text{rate of return}$$

Not accounting for differences between the live versus digital team rehearsals such as amount of time or lack of technical knowledge, this discrepancy indicated that *the live production teams creating face-to-face operated far more efficiently than the digital production teams creating virtually*. Of note, the least efficient digital production two-member team (*Fox & Raccoon-Puppets*) with the widest margin between CKB and product innovations also consisted of the most inexperienced expert, a professional puppeteer with little knowledge of the *Whoopensocker!* approach and format for adapting literary texts.

The nearly consistent ratios between collaboration, knowledge building, and production innovations across all five stories revealed far more creative activity occurring during the initial "passes" at adapting literary texts, and then exponentially diminishing over time. Across all groups the need for explicit shared agreements lessened, and knowledge building became more implicit, almost intuitive, emphasizing "learned collaboration," or the ability to begin to collaborate "through the air" (Kafai & Harel, 1991) as an additional outcome of CLA . This gradual shift over the trajectory of the creative process also manifested in the video recordings as less verbal and more physical interactions, not to mention a greater emphasis on tools as opposed to narrative (Halverson, 2013).

Not all collaboration (shared agreements) lead to knowledge building (idea improvements), and vice versa. For instance, individuals sometimes built upon previous knowledge that they had introduced themselves from a prior pass at adapting. Or, occasionally, individuals developed script enhancements themselves. This accounts for some of the discrepancy in numbers between collaboration and knowledge building. These moments of individual learning, however, often contributed to even further CKB later in the creative process.

Micro-level Creative Interpretations Discussion

Diminishing rates of return between CKB and product innovations as the rehearsal processes progressed suggested that group contributions to the creative process, like shared agreements and idea improvements, likely increased innovation across all five groups at the micro-level. However, collaborative pairs also made many creative interpretations of each text independently of one another, especially the digital production teams, which mostly took place during "incubation" periods between rehearsals (Sawyer, 2013). Only a handful of these independent creative interpretations graduated into process innovations during rehearsals or product innovations in performance, though.

The presence of CKB heavily increased the likelihood of creative interpretations becoming process innovations during rehearsals, or novel ideas with added value. Moreover, CKB also improved the chances of these process innovations during rehearsals becoming implemented as product innovations in performance. In many ways, CKB operated as the "glue" in between steps of the innovation process which made each successive creative design "leap" forward possible:

Creative Interpretations » (CKB) » Process Innovations » (CKB) » Product Innovations

An example of this formula at play from the *Fox & Raccoon-Persons* data transcripts illustrated the power of collaboration and knowledge building during CLA in making innovative, meaningful decisions about how to represent a text in a digital production. In the following passage the pair of digital team members alternated frequently between collaboration and knowledge building, ultimately arriving upon the novel idea during rehearsal of depicting Fox and Raccoon's friendship for the audience of third graders by throwing a tennis ball to each other

between frames. This novel idea with value (or process innovation) appeared innovative in production because the two actors communicated a meaningful friendship humorously by filming this scene in two similar, but obviously very separate locations due to the COVID pandemic, and tied them literally and figuratively together with an on-screen to off-screen game of toss-and-catch using a ball to represent their special bond (see Table 3).

COLLABORATIONS (shared agreements, micro-level)	84	Male: So, we can show Fox and Raccoon playing in the forest.
	85	Female: That shows friendship to me because friends play.
KNOWLEDGE BUILDING (idea improvements, micro-level) COLLABORATIONS (shared agreements, micro-level)	86	Male: Maybe we could shoot one of us... do you have a tennis ball?
	87	Female: Yeah, I do have a tennis ball.
KNOWLEDGE BUILDING (idea improvements, micro-level)	88	Male: We could pretend we're playing, I could film myself throwing a tennis ball and you could catch a tennis ball, and we could be playing, throwing a tennis ball.
KNOWLEDGE BUILDING (idea improvements, micro-level) COLLABORATIONS (shared agreements, micro-level)	89	Female: I love that. That is a great idea. That is a great idea and a good way to make it seem like we're together.
KNOWLEDGE BUILDING (idea improvements, micro-level)	90	Male: Right. So that would be something that we could incorporate into the beginning of the story, showing that they're friends and they like to play.

Table 3. Excerpt of CKB leading to innovative decision-making about digital representation.

In sum, the number of instances of micro-level CKB during each rehearsal process directly correlated with the amount of macro-level product innovations. This underscored the theoretical importance of CKB in contributing to innovation levels achieved during the literary adaptation process.

Macro-level Product Innovations Results

The macro-level analysis concentrated mostly on data from final productions of the live and digital performances, including some rehearsal transcript data. For purposes of diversifying research findings and results, the live and digital performance analyses addressed different special

properties related to identifiable production innovations with origins in CKB and Design Thinking. For example, on the one hand, the analysis of the live performances data targeted *when* and *where* production innovations surfaced, not to mention ranking *how often* the teams adopted certain process innovations which became production innovation. On the other hand, the analysis of the digital performances data focused on classifying emergent categories of various types of product innovations.

The live performances generated seven product innovations for the story *The Chocolate Bar Mess,* and eight for the story *A Bird Adopts a Bird*. After each team introduced a product innovation during a pass at adapting the literary text, they then adopted and integrated it into the story a certain number of times. The total number of production innovations for each story is displayed below (see Table 4).

The Chocolate Bar Mess		
7 Product Innovations	**# of Times Adopted in Process**	**Pass When Introduced**
Public broadcasting / news anchor in field/breaking story	12	1
Throwing-up using a brown sheet/backpack	7	1
Multiple names for newscaster joke	7	4
Jim, the imaginary cameraman, getting footage	5	1
Rising chocolate pudding using brown sheet & "survivors"	4	1
Billy, the protagonist, not appearing until middle of story	3	2
Final punchline about chocolate tasking good second time	2	2
Audience involvement change ("Billy, Billy, etc.:)	2	5
TOTAL	**42**	
A Bird Adopts a Bird		
8 Product Innovations	**# of Times Adopted in Process**	**Pass When Introduced**
No words, only musical underscoring	15	1
Chariots of Fire theme music for the bird races	12	6
Flying montage	6	1
Bird race montage	6	1
Circular movement to denote passage of time	4	1
Baby bird sprouting adult wings through movement	3	1
Real estate agent to convey building a house w/ race money	2	2
Using chests as props onstage as bird nests	2	4
TOTAL	**50**	

Table 4. Ranking of macro-level product innovations from the live performances.

A comparative analysis of the three digital versions of *Fox & Raccoon* uncovered six distinct categories of product innovations (see Table 5).

Product Innovation Categories
Content Creation (text, dialogue, and character development innovations)
Place/Location (environmental, contextual innovations)
Music/Sound Effects (songs, background music innovations)
Plot (unexpected scenes and prop innovations)
Costuming (puppets, etc.)
Narrative (point-of-view, sequencing decisions, editing innovations)

Table 5. Product innovation categories from the digital performances.

These categories of product innovations displayed clear priorities for each version of *Fox & Raccoon*, especially related to their respective modes (*Persons, Puppets*, or *Song*) in the digital medium. Each mode, as well as the medium, afforded and constrained their story "showing" in different ways. For instance, the *Persons* team maximized the innovation potential and affordances of a text-based "frame" with word play (rhyming, alliteration, etc.) in performance, the *Puppets* team capitalized on innovations in costuming related to hand puppetry, and the *Song* team displayed the most innovations in Music/Sound Effects (see Table X). After each team introduced a process innovation during rehearsals, they adopted it a certain number of times. The total number (#) of specific product innovations in performance for each story is displayed in (parentheses) below (see Table 6).

PERSONS-Fox & Raccoon		
14 Product Innovations Across All Categories	**# of Times Adopted in Process**	**Pass When Introduced**
Content Creation (including word play: rhyming, alliteration)	46	2
Plot	10	2
Place/Location	8	2
Music/Sound Effects	4	4
Costuming	2	2
Narrative	0	0
TOTAL	**70**	
PUPPETS-Fox & Raccoon		
10 Product Innovations Across All Categories	**# of Times Adopted in Process**	**Pass When Introduced**
Costuming	13	1
Content Creation	12	2
Place/Location	10	6
Plot	9	6
Music/Sound Effects	4	2
Narrative	1	2
TOTAL	**48**	
SONG-Fox & Raccoon		
12 Product Innovations Across All Categories	**# of Times Adopted in Process**	**Pass When Introduced**
Music/Sound Effects	23	1
Content Creation	16	2
Place/Location	7	3
Plot	7	4
Narrative	6	2
Costuming	3	6
TOTAL	**62**	

Table 6. Ranking of product innovation categories from the digital performances.

Macro-level Product Innovations Discussion

In general, both the live and digital performance rankings of macro-level product innovations, whether detailed as specific instances or chunked into broader categories, highlighted the importance of representation and “showing” storytelling while “learning to

innovate" and engaging with learning processes during theater-making. Remarkably, nearly ALL the emergent product innovation categories from the CLA making process data (music/sound effects, content creation, place/location, plot, narrative, costuming) essentially aligned with every *theatrical element* (props, sound, acting, lighting, costumes, scene design, text/story) as defined by Kaufman (2018), and their corresponding "new" literacy modes for communicating meaning (audio, visual, spatial, oral, self, gestural, written)(Cope and Kalantzis, 2009, p. 178)(see Table 7)(see Chapters 1 & 2).

Theatrical Elements	***Props***	***Sound***	***Acting***	***Lighting***	***Costumes***	***Scenic Design***	***Text/Story***
Literacy Modes	Tactile	Oral	Oral	Visual	Visual	Spatial	Oral
	Audio	Audio	Self	Spatial	Self	Visual	Written
	Spatial		Gestural		Tactile	Tactile	Self
	Visual		Spatial		Spatial	Self	Audio
	Self		Visual				

Table 7. Theatrical elements compared with new literacy modes.

In the live performances, the concept of a public broadcasting network framed (Goffman, 1974) *The Chocolate Bar Mess*, whereas the pair creating *A Bird Adopts a Bird* boldly chose not to use any words at all in their performance, just musical underscoring. These findings underscore the practical importance of the first few decisions made during the creative process, and how these key choices literally and figurately set the tone for the rest of the adaptation (see Chapter Two, Discussion). Much like a lesson plan scaffolds instruction, the frame creates the architecture for the narrative to develop, an important consideration for teachers and instructors implementing CLA, or those working in creative production and "making" in general.

Across both live and digital production processes, the earliest passes at adapting each text in rehearsal ultimately produced the most process innovations which yielded product innovations. For the live productions, the first verbal exchanges between each pair of live collaborators

following the initial read-through contained the critically important "framing device" to scaffold the narrative (Goffman, 1974). Similarly, the major product innovations for all three pairs of digital collaborators working on *Fox & Raccoon* mostly surfaced during the second pass at adapting the text, despite having received their storytelling modes (*persons*, *puppets*, and *song*) in advance. Every process innovation transformed exponentially over time with each Design Thinking step, or iteration, prior to the final performances. For example, in the lead up to the final shows the teams adapting *Fox & Raccoon* continually altered alliterative dialogue and rhyming for the *Persons* version, the conclusion for the *Puppets* team eventually evolved into a surprise ending with a reveal of the puppeteer, and the *Song* team eventually decided just to add the reggae band bass player as a third character to play the leading role of Fox. These innovative decisions to add cast members, or apply tools (sets, props, costuming, etc.) in novel ways distributed cognition across the group, and explained among other reasons ongoing instances of process innovations well into the later stages of the rehearsal process (see Tables 4 & 6). For instance, this clarified the one instance of innovation which happened in the final pass at adapting *A Bird Adopts a Bird* (see Table 4). In a supreme moment exemplifying CKB the male actor and musician substituted generic musical underscoring in the "bird race montage" with the theme song from *Chariots of Fire*, a film commonly associated with running competitions, and a fitting parody for a flying bird race.

Interestingly, nearly all the production innovations resulted from the team members *extrapolating and abstracting* meanings from the original literary source, either individually, in pairs, or collectively (see Tables 4 & 6). First, they identified meaning in the text. Then, the problem became how to translate the meaning "from page to stage" or screen. Next, instead of a literal interpretation, the innovations typically involved disrupting the obvious pattern with a creative solution like a metaphor or alternative representation. Most of the time these innovations

borrowed and re-appropriated meanings from popular culture in the dramatic tradition of parody. These extensions and expansions of the source material generally maintained fidelity of meaning to the original story, but frequently transgressed the textual boundaries by adding content to enhance overall meaning of the production.

Overall Innovation Results & Discussion

At the final live and digital performances, a group of four independent theater education experts participated in the CAT and scored all the stories for artistic innovation and impact/relevance of innovation on community. In sum, all five stories scored for overall innovation at 88% or greater (see Table 8), an unsurprising finding considering the high level of expertise amongst participants. Interestingly, the *Whoopensocker!* company member with the least amount of expertise at the time helped adapt *Fox & Raccoon-Puppets*, the same team which also received the lowest score.

Overall Innovation Assessment Scores			
Story	Artistic Innovation	Impact/Relevance of Innovation on Community	**TOTAL** (out of 40)
The Chocolate Bar Mess	17	19	**36**
A Bird Adopts a Bird	20	20	**40**
Fox & Raccoon-Persons	18.5	19.5	**38**
Fox & Raccoon-Puppets	16	19.5	**35.5**
Fox & Raccoon-Song	19.5	18.5	**38**

Table 8: Overall innovation assessment scores by expert theater educators.

As expected, all the theater education expert judges delivered scores within a 1-point range of each other, thereby strengthening the validity of the results according to the CAT protocol. *A Bird Adopts a Bird* received the maximum possible score of 40/40, possibly for disrupting the expected

story pattern with a highly figurative, less literal interpretation of a performance set only to music and without words.

These externally adjudicated, overall innovation scores (36/40, 40/40, 38/40, 35.5/40, and 38/40, respectively)(see Table 8) aligned with my personal analysis of macro-level product innovation outcomes (42, 50, 70, 48, and 62, respectively)(see Tables 4 & 6). This alignment between macro-level product innovations and overall innovation scores supports the analysis methodology, thereby building a compelling case for centralizing CLA in making as a means of educating for innovation in 21st century learning (Sawyer, 2006). Practically speaking, instructional designers in the arts and humanities can integrate this work easily into their curricula by incorporating production-oriented art-making projects to teach group creativity and innovation skill-building (Sawyer, 2006; *Partnership*, 2006; Halverson, 2013).

Limitations

Two major contributing factors specific to this case study limited the results and findings. Firstly, I captured the data of every critical "pass" at collaboratively adapting each story during the rehearsal process and product development phases. Naturally, however, creative interpretations and decision-making occurred off-screen, outside the purview of my A/V recordings, and beyond the time and space set aside for live and virtual rehearsals. Secondly, key differences existed between the scaffolding for the live versus digital adaptation tasks. For instance, the director/editor and curriculum specialist for the digital productions prompted the three virtual creative teams in advance to address certain topics during their Zoom rehearsals for their "how to adapt a story" instructional video, such as: (1) talk about the story, (2) identify important parts of the story, (3) discuss what resonated, and (4) explain your choice of adaptation medium. Although the pairs of adapters likely would have addressed these issues anyways, the additional direction for this task

obviously influenced their creative interpretations and decision-making, lending a somewhat "performative" and explanatory element to selective parts of their rehearsal data.

Conclusion

This comparative analysis reveals clear alignment across the data measures, linking the *process* with the *product*, as well as verifying the degree of innovation present in the work on multiple levels. These findings substantiate a definitive connection between two processes, CLA and learning to innovate by engaging with different learning processes, woven together during art-making via two representational mediums, namely live and digital theatrical production.

This study demonstrated how the production-oriented process of adapting literature collaboratively reflected learning how to innovate by engaging different learning processes. The reworking of these simple literary adaptions, written by 3rd graders and reconceived for stage and virtual performance by adult theater education professionals supported Design Thinking, a learning process model which resulted in innovative productions. During the development process group collaborations bore many micro-level creative interpretations which generated fewer, but highly significant macro-level production innovations. According to professional theater education adjudicators, the live and digital performances resulted in high levels of overall innovation in terms of artistry, but also added community value for their receiving audiences. Unlike the solitary formal task of students writing essays for an in-class book assignment, working together collaboratively to build knowledge informally was a central feature of this process. Previous research has established a strong link between CKB and creativity. However, this study connects the pedagogical and design affordances of adapting literary texts with learning how to innovate. Collaborative literary adaptation (CLA) proves an effective method in curriculum and instruction

for advancing student understanding of the innovation development process in 21st century learning.

Appendix

Text for *The Chocolate Bar Mess*

Once upon a time Billy woke up in his barn. He went to open the door, but he saw there were too many chocolate bars. They were on the road too. People were trying to drive but they didn't realize there was pudding outside the door, so they ran into the pudding! Then Billy said, "Oh, ha! This is super bad! I have to do something." He tried to eat his way to the car. He made a little road so he could drive out of his garage and drive to the store. He got too full so he couldn't eat anymore. He said, "I can't eat anymore!" You'll have to eat the rest of the way through, it's just a little bit—just 20 or 10 bites." So he ate his way through but he threw it all up. So the city was saved because he ate all the chocolate bars!

Text for *A Bird Adopts a Bird*

Once upon a time there was a bird. He was all alone. He wanted company. One day he saw a baby bird. He thought "Some company! I can care for it!" So, he went down to it. The baby bird was very welcoming. So, he brought it up to his nest. The baby bird grew up to be a very good flyer. He even entered more then 15 flying contests a month! Both of them loved each other a lot. When they got old they enjoyed each other's company in a big house they got with the prize money. The End.

Text for *Fox & Raccoon*

Once upon a time there was a fox, and a racoon, they were best friends! They both lived in the friendly forest. One day fox was busy walking and raccoon was just playing, when a storm hit. Fox was at songbird stream. Raccoon was in treacherous tree. fox made it to her house but raccoon could not get out, and got endlessly tangled. Fox sensed something was wrong and went to the treacherous tree before it was so treacherous. So fox knew how to navigate her way through and didn't get tangled! She found raccoon and took out the knots and took raccoon to her house. Raccoon was so thankful and the Besties became closer than ever!!! The End

At the time of publishing, publicly available YouTube video for all three versions of *Fox & Raccoon* (fast forward ahead to view between minutes 15:00-25:00):

https://www.youtube.com/watch?v=OjhWnPA1XbI&list=PL2cx8tteUCRicBtHJxWKvOTMJWXrbOSqC&index=22

CHAPTER 4: INFORMAL EDUCATION

Learning in and through CLA:

Creative Constraints and Productive Transgressions

Introduction

Competitive television programs like *The Great British Bakeoff* (baking), *The Great Pottery Throwdown* (pottery), *Blown Away* (glass blowing), or *Making the Cut* (fashion) reached millions during the global COVID pandemic, and continue to captivate viewers world-wide, dominating many industry station ratings in multiple languages and countries. Despite their popularity and obvious entertainment value, nearly all contestants in these shows, regardless of their personal outcome in the competition, universally speak in hindsight about how much they learned during the process, often exclaiming that they grew more in these environments than they ever had before. Two examples of this learning phenomena from competitive television programming follow. The first, taken from in an interview with the *LA Times* following her glass-blowing victory on *Blown Away*, in which professional glass blower Deborah Czeresko reflects on learning, admitting that:

> My artistic voice grew throughout the process. I spent a lot of time trying to do that in the six weeks I was there — grow artistically and conceptually, and to resonate with the issues [during the various competitive tasks]. Then I realized that one of the things I was connecting with was the material itself. I decided it was the perfect material to express what I wanted to express because it was… so transformative. I grew a lot doing it [the show], because I focused every single day on the art (Brennan, 2019).

Even from the judge's perspective, potter Keith Brymer Jones from the show *The Great Pottery Throwdown* conceded recently in *The New York Times* about learning in this second example that:

> These potters go on a journey of self-discovery, and they learn new techniques. As judges, it's just so fascinating to see. They surprise themselves — they don't know they have it in them. And just a little bit of pressure, a little bit of imagination, and they come up trumps [British expression: one does something successfully, even when they aren't expected to]. It's brilliant. (Stanford, 2022)

Each of these productions shares common elements in relation to engaging with learning processes. For instance, as viewed through a learning sciences lens, they all: foster group competition and skill development supporting Vygotsky's (1978) renown *zone of proximal development* educational theory; revolve around meaning-making in and through distinctive art forms (Halverson, 2021); encourage creativity and innovation (Sawyer, 2013); promote collaborative thinking (Scardamalia & Bereiter, 2006) and social ties despite honoring individual successes; transpire in playful environments (Kangas, 2010) and informal learning contexts (Rogoff et al., 2016), and centralize participant "tinkering" (Vossoughi & Bevan, 2014) using domain-specific materials and tools in the design of new products (Gee, 2005). Above all, however, they shape contestant learning whilst employing various (1) creative constraints during challenges which successful rivals often (2) design around in uniquely meaningful and productive ways.

Literature Review

Collaborative Literary Adaptation (CLA) as a construct for teaching and learning in 21st education is all about groups of people "making texts together," a process rooted in meaning-making through collective, multimodal design creation (Wheeler et al., 2020). It entails *learners collectively analyzing, designing, creating, and producing innovative texts from other texts using a range of meaning-making resources and materials, which culminates in a public presentation of value for a community.* CLA is a text-based, task-oriented, project and problem-based activity which optimizes the latest research and knowledge about how people learn through collaboration, literacy, and adaptation. In a world of constantly changing information, structures, and meanings (Kress, 2013), the making of adaptations provides a powerful lens for teachers and learners to experiment with alternative ways of thinking, knowing, and doing. For example, among other things, the process of groups transforming a literary text from page to stage or screen "renders the familiar strange" (Gee, 2015) through the re-telling and re-showing of recognizable stories. It revolves around a simple formula which leaves considerable flexibility for educators and students alike to exercise personalization:

Collaboration + Making Text(s) + Adaptation (thinking, knowing, doing, being)

+ Public Sharing with Community Value → Engagement with Learning Processes

As a field of scholarly inquiry, the learning sciences acknowledges both cognitive and socio-cultural types of learning, and often engages the language of "affordances and constraints" in terms of designing learning environments. Cognitive scientist and technologist Norman (1999) lists three kinds of behavioral constraints: (1) *physical*, (2) *logical*, and (3) *cultural*. Firstly, during a learning activity like CLA physical constraints might include limitations of the production medium, such as digital film. Secondly, logical constraints "use [cognitive] reasoning

to determine the alternatives," and closely follow a *conceptual model*, possibly like the narrative content and structure of a CLA source text primed for adaptation (Norman, 1999, p.40). Thirdly, cultural constraints "are [social] conventions shared by a cultural group," and fundamentally concern what people believe and do (Norman, 1999, p.41), and therefore likely figure heavily into socio-cultural design considerations and decision-making during a CLA process. Norman adds that "logical [cognitive] and [socio-]cultural constraints… can be *violated* or *ignored*, and [they] are [therefore especially] powerful tools for the designer" (p. 41). In doing so, he links the concept of constraints to cognitive and socio-cultural learning, while also making a theoretical case for developing a deeper understanding of creative constraints and the role of transgressions during a text-based design activity like CLA.

However, very little, if any research exists specific to the function of constraints and learning in and through creative production. An exception is Peppler & Solomou's (2011) acknowledgement in *Building Creativity* which "emphasizes the importance of… (and) an appreciation of the constraints that one works within while producing a creative contribution" (p. 2). This study attempts to begin filling that gap by starting a much-needed discussion on the role of creative constraints in production-based meaning-making activities like CLA, and their relationship to learning. For instance, ***what categories of creative constraints specific to learning in and through CLA shape decision-making?*** Additionally, previous pilot studies I conducted about learning in and through CLA suggested a link between creative constraints and transgressions serving *productive* functions. ***What is the relationship during CLA between learning, creative constraints, and "productive transgressions?"***

Creative Constraints

On the one hand, competition television programs typically list and share *explicit* rules and regulations, or creative constraints, for carefully crafted challenges with contestants and viewing audiences. These creative constraints considerably shape the learning experiences and results of the contestants, not to mention the overall arc of the program. On the other hand, teachers and directors in educational environments designing for production-based tasks like CLA often fail to understand the profound significance of seemingly mundane constraints on learning, and therefore often only *implicitly* contemplate their consequences. This may stem from a variety of reasons, for instance an overfocus on the final production and its delivery as opposed to realizing the rich opportunities available for learning during a rehearsal process. Due to such imbalances, among other factors, developing a basic understanding of creative constraints and their potential educational implications during arts-related tasks may not only result in a better production, but also deeper learning.

Norwegian social scientist and philosopher Elster (2000) proposed a field of study called "constraint theory" in his oft-cited *Ulysses Unbound*. In his chapter *Less is More* he recognized the paradoxical nature of constraints, like time and cost, on creative outcomes in art-making. For example, constraints like time and cost can either *enable* or *inhibit* a creative process and product (Rosso, 2014). In competitive television programming, not enough time for a task might inhibit a participant by causing them to rush and end up with a poor product result, or conversely it might enable them to hyperfocus and create a masterpiece. Much like a teacher or instructor designing an effective curriculum, adjusting these limits and restrictions in productive ways during a creative process could yield highly beneficial results, like innovations (Elster, 2000). To try and unify cross-disciplinary research on this topic, Danish scholars of applied digital design work

and engineering Onarheim & Biskjaer (2013) distilled Elster's (2000) work on creative constraints into three **types**: (1) *self-imposed*, or individually chosen constraints; (2) *intrinsic*, or constraints inherent to the materials; and (3) *imposed*, or constraints by external forces.

All these unique features of creative constraints also deserve consideration when designing educational activities like CLA which centralize learning in and through making texts (Halverson & Sheridan et al., 2014). Much like a competitive television program or a game, a text functions as "a distinctive semiotic system affording and discouraging certain sorts of actions and interactions (Gee, 2005, p. 14)," and in this sense operates as the ultimate creative constrain in CLA. Other creative constraints likely apply and contribute to the shaping of design decisions and meaning-making for text-based creative production processes in education, too, which carries implications for learning. After all, as Sawyer (2003) notes, "learning and creating are fundamentally the same process" (p. 47). For example, while transforming a text into a digital production one might need to consider the *imposed* creative constraints of time (how short, or how long to rehearse?) or a set budget of money (how much, or how little?), cast a prescribed number of participants *intrinsic* to the text, or *self-impose* a recontextualization of the story. All the above options have the capacity to either *enable* or *inhibit* a CLA making process and/or final product. To that point, creative constraints clearly align with current conceptions of learning in and through design in that they shape both the *process* (Lave & Wenger, 1991) and the *product*. In other words, *creative constraints are learning constraints*, and vice versa. Thus, knowledge of these different constraints and their features may assist curricular and instructional designers working at the intersections of learning, creative production, and art-making.

Transgressing Meanings During Art-Making

Learn the rules like a pro, so you can break them like an artist.

-Pablo Picasso, 1881-1973

Constructionist learning theory (Papert, 1991) underlies the educational "making" that occurs during these competitive televised programs. Constructionism supports the process of "taking apart," or deconstructing and reconstructing knowledge in and through the applied process of building a meaningful product, like when learning in and through CLA (Ackermann, 2001). While remaking a text into a production, participants playfully learn by "disordering the orderly" (Sutton-Smith, 1972) narrative by *transgressing* its meaningful content and structures on both physical and social levels. For instance, they tangibly (1) *select* and rewrite an entire text for a different modality, (2) re*arrange* the story sequentially, but also temporally and spatially, (3) *foreground* or background certain choices, and (4) in doing so reconfigure its *social relations* (Kress & Bezemer, 2008). Similarly, contestants who "rise to the top" in competitive television programs frequently learn to *transgress* various creative constraints by designing in uniquely productive ways.

The idea of *transgressing* texts while making during CLA, instead of merely "changing" them, pairs well with literary adaptation and constructionist learning theory for several reasons. For example, transgressions by definition: require thought and *action* (Dictionary.com, 2022); are *socially constructed* (Burr, 2015); imply "*overstepping some limit*" (Dictionary.com, 2022), such as the crossing of a meaningful textual boundary; and (4) infer change ("trans") by means of "transfer," or learning in and through the "moving of meaning materials" (Kress, 2009). Also, transgressions are uniquely *human*, and therefore highly appropriate for text-based work in the arts and humanities. Unlike computers, humans are fallible, and excel at breaking or violating social laws and codes (Dictionary.com. 2022), which often yield learning as a result. This belief

reflects the oft-cited adage attributed to Pablo Picasso, which essentially advises creators to “first learn the rules, and then break them.” This echoes the concept of “transgressive learning,” an expression already circulating within academic circles, but strictly in regards to “transformative learning in times of climate change” (T-learning, 2022) and ecological sustainability, and not in relation to learning in and through arts-based creative production processes.

Transgressing boundaries, as opposed to just “changing” a story, provides an apt descriptor for the considerable learning process of coming to deeply know and understand all the meanings and effects (Gould, 2017) of a text during CLA prior to recontextualizing it. Relatedly, Genette’s (1992) all-inclusive semiotic notion of *transtextuality* encompasses "all that sets the text in relationship, whether obvious or concealed, with other texts" (p. 83-84). In other words, transgressions of meanings and effects likely do not just occur at the discursive level of the text (available design) and intertexts (design and redesign) during CLA (NLG, 1996), but also include other contextual factors. Framed in this manner, transgressive decision-making almost certainly serves *productive* functions in the formation of new texts, and signals learning. Moreover, these *productive transgressions* also likely intersect somehow with creative constraints and learning.

Methods

Participants

This study utilized data from two contrasting groups of participants engaging with CLA: (1) novice high school theater students, and (2) expert adult teaching artists of theater. Although they shared CLA in common, as well as the challenging aim of “digitalizing theater” as a representational medium during the global COVID pandemic (Halverson, Farrar, Sliter, & Wheeler, 2020), they approached the creative production process in very different ways because

of obvious differences in age, life experience, familiarity with literary adaptation, and task. This diversity amongst group participants constituted an ideal match for examining learning, creative constraints, and productive transgressions, contributing to both depth and breadth of findings.

The first group of participants consisted of 13 adolescent American high school students, presumably between the ages of 14 and 18, from a predominantly upper-middle class, highly educated, and mostly white suburb of a small city in the Upper Midwest. The off-screen leadership team was comprised of one adult white female teacher/director with an extensive background in theater, and one adult white male teacher with an extensive background in technical theater, who also functioned as an assistant director. The on-screen student cast had eight females and four males, primarily upperclassman (either Juniors or Seniors), supported by one off-screen adolescent female stage manager. Participating students auditioned or interviewed, and then elected to enroll in the creative production as a "for credit" high school class. None of the participants, including the adult instructors, had ever participated in a CLA-related activity. Although intimately familiar with theatrical production, neither experienced teacher/director had ever made or edited anything online before. Therefore, all participants qualified as novices, including leadership.

The second group of participants belonged to a professional educational theater company called *Whoopensocker!* affiliated with the University of Wisconsin-Madison's School of Education. According to their website,

> *Whoopensocker! is a six-week creative arts residency program where 3rd grade elementary school students in (small city in Upper Midwest) work with adult teaching artists to express themselves through writing, improvisation, and performance. The program culminates in a professional performance by the teaching artists of select*

> *student-written work, where the entire school community celebrates the power of student imagination and adult creativity* (*Whoopensocker!*, 2020).

This group of participants included seven adults (one off-screen director/editor, and six on-screen adaptors/performers) spanning in age from 18-40. They subdivided into three smaller creative teams of two persons each composed of one male and one female. They were a mix of working and middle-class theater and education professionals. Nearly all group member participants were veteran experts of *Whoopensocker!*, or at least had one experienced person on each team, and therefore were highly familiar with existing program protocols and procedures for creating live production, but not particularly knowledgeable about how to transfer CLA to a digital medium for virtual performance.

One third-grade public school student author provided a single story for the three teams of professionals to adapt. The young author/playwright and their peers come from a diverse school district in a mid-sized city in the Upper Midwest where approximately 43% of the student population were White, with the next largest demographics composed of Latinx (21%), and then African-American (18%) students. Nearly half of all students (48%) in the district qualified for free and reduced lunches. *Whoopensocker!* strives to work at underserved public schools in the district with fewer resources and higher needs in terms of arts programming as part of its mission.

This collective, or multiple case study (Creswell & Poth, 2018) examined the rehearsal adaptation processes and digital "making" of two stories (*WOTW* and *F&R*) into creative productions, which bound the investigation. Although their tasks and motivations for creating the stories varied slightly, they all shared CLA as their quintain, or "object or phenomenon to be studied" (Stake, 2006).

Task: Group 1

The first group of 15 participants worked collaboratively online via the digital platform Zoom, never once meeting face-to-face due to the global pandemic. The teachers/directors chose in advance to adapt and transform Orson Welles's famed radio broadcast play from 1938 *The War of the Worlds* (*WOTW*). The story revolves around the fictive invasion of planet earth by aliens in spacecraft, and takes place in the real-life small town of Grovers Mill in the State of New Jersey. The original airing of the source text on the air incited panic from its "on air" listening audience in the tri-state area (NJ, NY, CT), and helped launch Orson Welles's distinguished entertainment career, which included numerous Academy Awards for writing, acting, and directing such noteworthy films as *Citizen Cane*.

Their educational "making" task, a production recording, was framed as an official submission for consideration in a state-wide, one-act theater festival. Therefore, their primary target audience were festival adjudicators, although they also anticipated other audience members like teachers from their high school, family members, friends, and the general online viewing public. The students worked over 10 rehearsal periods on *WOTW* during the height of the global COVID pandemic, spanning mid-October, 2020 to early December, 2020. The *WOTW* cast and crew produced and posted a final public-facing YouTube version in early December, which this study utilized as the official final product (see Figure 1).

Figure 1. *WOTW* high school theater students in digital performance on YouTube.

Task: Group 2

The six members of the three digital production teams formed group two, and they worked entirely online over the course of six weeks at the height of the global COVID pandemic. The three teams adapted the same story called *Fox & Raccoon* (*F&R*) in three different ways, with each team assigned a unique representational mode for showing the story by an off-screen production director/editor from *Whoopensocker!*, who also possessed a significant background in curriculum design: the first version adapted *F&R* using just people (*F&R-Persons*), the second version adapted *F&R* using puppets (*F&R-Puppets*), and the third version adapted *F&R* into a song (*F&R-Song*). Written by a third-grade student, the short story details a fox saving a raccoon during a storm in the woods, resulting in an even closer friendship between the two animals (see Appendix).

Their educational "making" task was framed as part of an online collection of curricular and instructional videos which *Whoopensocker!* produced during the global pandemic. This series of videos, available in both English and Spanish, was geared towards at-home third-grade students and their teachers during the pandemic. It outlined and demonstrated key aspects of the literary adaptation process, with the additional aim of empowering youth while stuck at home as digital

creators and learners. Multiple versions of the same story presented in different mediums allowed students to view a range of opportunities available to them for adapting their own written work while schooling remained almost entirely online, guiding them towards utilizing familiar environments and at-home resources for telling and showing their stories digitally using a video tool which integrated text called Flipgrid. Relatedly, the *Whoopensocker!* teams modeled how students could maximize different locations such as rooms at home and the outdoors to serve as settings for these virtual presentations. Their target audience for "making" were students and their classroom teachers in the district at-large, as well as their families, and other potential future online clients. After substantial edits the director/editor released *F&R* adapted in three different ways online via YouTube for participating schools in the district to view (see Figure 2).

Figure 2. *F&R-Puppets* team members rehearsing for digital production.

Data Collection

For the first story, *The War of the Worlds* (*WOTW*), I collected approximately 12 hours of A/V recordings over the span of 10 weeks capturing novice adolescents engaging with CLA. These recordings included virtual rehearsals and a final, edited online presentation. I used a combination of technological platforms like Otter.ai (audio only) and Zoom (mostly audio, minimal video) to record the data, and then utilized the online transcription service Rev.com accompanied by my own hand-written efforts to generate the transcript data for this first group. I

also supplemented this primary data with secondary data such as brief focus group interviews, surveys, and text-based artifacts to support the analysis.

For the second story, *Fox & Raccoon* (*F&R*), I collected approximately five hours of A/V recordings and tapings over the span of six weeks via Zoom, capturing three small teams (*F&R-Persons, F&R-Puppets, F&R-Song*) of expert adult professionals from the educational theater company *Whoopensocker!* while engaging with CLA. These recordings included virtual rehearsals online and a final, edited online production. I likewise utilized the same online transcription service (Rev.com) accompanied by my own hand-written efforts to generate the transcript data for this second group.

Of note, unlike the previous case study from Chapter 3, I intentionally opted *not* to incorporate other A/V footage of two other stories made by *Whoopensocker!* team members for this study because they occurred pre-pandemic under "live" conditions. This decision to not include the "live" theater data kept the digital creative processes and virtual representational conditions in this study similar between the first *WOTW* and second *F&R* groups.

Before conducting the analysis, I transferred all the transcript data into the qualitative data analysis software tool MaxQDA. I also took advantage of the computer software extension tool Draftback for scrutinizing the final scripted adaptations, which displayed every change made to the original source texts on GoogleDocs during the literary adaptation processes, including who made the changes, and when they occurred, providing an exceptionally powerful digital instrument for assessing and evaluating CLA.

Data Analysis

I employed a combination of different types of methodologies and codes for exploring ***what categories of creative constraints specific to learning in and through CLA shaped decision-making,*** and for delving into ***what the relationship was during CLA between learning, creative constraints, and "productive transgressions."*** For the first question I developed an analytic framework based on the work of Onarheim & Biskjaer (2013) and Elster's (2000) three types of creative constraints to help guide the analysis: (1) *self-imposed*, or individually chosen constraints; (2) *intrinsic*, or constraints inherent to the materials; and (3) *imposed*, or constraints by external forces. For the second question I established a few meaningful definitions of key terms to guide the analysis, such as *transgressive decision-making* and *productive transgressions*.

In each case I operationalized the term "learning," building primarily upon the educational theory of "making" (Halverson & Sheridan, 2014) as previously discussed in Chapter 1, as well as the notion that "learning and creating are fundamentally the same process" (Sawyer, 2003, p. 47). The field of learning sciences explicitly acknowledges both cognitivist, product-oriented approaches to learning, as well as socio-cultural, process-oriented approaches. Thus, I applied Scardamalia and Bereiter's cognitivist-oriented definition of learning as "a change in mental state" (2014, p. 397), but extended that to also include evidence of any external representations reflective of internal cognitive change, such as significant design changes in the transfer of meaningful narrative content and structure from a text to the digital medium. Then, blending both cognitive and social-cultural dimensions, I drew upon Gee's (2015) socio-linguistic conception of d/Discourses to further define learning as any meaningful, interpretive design changes *across* and *between* texts relating to socio-cultural-historical-political-economic contextual circumstances. Finally, I also utilized Lave and Wenger's (1991) conception of

learning as a situated, co-constructed social process to recognize the vast amount of collaborative co-creation during the making of *WOTW* and the three versions of *F&R*. Simply put, *I defined learning as creative change which contributed either directly or indirectly to the making of the final production*. To qualify as evidence of creative change I had to observe the learning moment in situ, or recognize it as an explicit or implicit discursive statement or action by an individual or group participants.

For each case study I primarily used Bidirectional Artifact Analysis (BAA)(Halverson & Magnifico, 2013), an umbrella methodology composed of Discourse (DA), Narrative (NA), and Artifact Analyses as a lens for examining the creative process and product "from [the] final product backwards and from initial idea forwards—to better understand participants' learning processes and the role of social, collaborative audiences in that learning" (p. 276). Thus, as part of BAA I chiefly employed Discourse/Conversation Analysis (DA/CA) (Gee, 2015) to interpret the transcript data. DA, or "the close study of language in use (Wetherell et al., 2014)," assisted me in identifying participant design decisions and labeling creative constraints across and between the source material, adapted scripts, and final productions for each case study. Indeed, they functioned as the main data sources for examining creation/learning processes and change in and through CLA. CA, a close cousin to DA, became valuable when participants took turns dialoging in-between rehearsing with the texts and while actively exchanging ideas about creative adaptative changes. Finally, I also applied NA(Connelly & Clandinin, 2006), at times in combination with the software tool Draftback, for understanding some of the individual and group meaning-making changes in content and structure to the texts during the literary adaptation process, as well as personal participant reflections on their learning.

For the second research question I also occasionally utilized Critical Discourse Analysis (CDA) when searching for and identifying transgressions, as this method of analysis uncovered "nonobvious ways in which language was involved in social relations (Fairclough. 2003)" and helped with "making connections between social and cultural structures and (active learning) processes (like CLA) on the one hand, and properties of [the] text on the other" (Fairclough & Wodak, 1997, p. 277). These aspects of CDA, coupled with its emphasis on semiosis, provided a perfect lens for analyzing moments of productive transgressions during the CLA process, and their relation to learning.

In terms of coding, for the first research question I developed a scheme for identifying categories of creative/learning constraints. I used *concept coding* (Saldana, 2016) for the first round of analysis, an approach focused on examining large swaths of data and abstracting participants ideas as opposed to emphasizing particulars. For the first pass I highlighted all individual and group decision-making, both explicit and implicit, related to the creative/learning process and making of each production. Then, I also noted *the presence of any constraints, limitations, or restrictions on the decision-making*, and assigned them a general label like Spanish (a constraint on language), gender (a constraint on casting roles in some of the productions), or scheduling (a constraint on time). Finally, I applied *axial coding* (Charmaz, 2014) to begin drawing connections and grouping these labels according to similar types of creative/learning constraints to see what commonalities emerged, and whether or not they related to Onarheim & Biskjaer (2013) and Elster's (2000) three types of creative constraints. Finally, I condensed and "sharpened" these labels into finite categories with "specific properties and dimensions" for arranging them in a distinctive order (Saldana, 2016, p. 244).

For the second question I wanted to understand the relationship between these creative/learning constraints specific to CLA and transgressions in art-making. I devised another coding scheme for not only identifying "productive transgressions," but also to assess any potential linkages with creative/learning constraints. For the first round of coding I utilized *structural coding* (Saldana, 2016) which "applies a content-based or conceptual phrase representing a topic of inquiry to a segment of data," like *transgressive decision-making* (MacQueen et al., 2008, p.124). I defined transgressive decision-making as *any explicit or implicit action resulting in a further action involving change by an individual or group member which entailed the reshaping or crossing of a meaningful social or physical (textual) boundary during making*. Then, for the second round of coding I applied *pattern coding* (Saldana, 2016) to parse this large amount of data which I had assembled with a "meta code" (Miles et al., 2014, p.86) by operationalizing *productive transgressions*. I defined productive transgressions as *any significant change in narrative (content or structure) construction with social implications based on an informed reinterpretation and redesign of meanings from the source material which became adopted, repeated, and elaborated or added upon during the creative production process*. In other words, to qualify as *productive*, the transgressive decision-making needed to also *reoccur, exceed, and extend* boundaries of meaning with origins in the source material.

Results

Creativity/Learning Constraints & Productive Transgressions during CLA

The data analysis revealed three major findings. Firstly, although previous research highlights different **types** of creative constraints, *three distinct **levels** with implications for learning emerged which also shaped individual and group decision-making.* Secondly, *each level of creative constraints consisted of different **categories** specific to that level*. Thirdly, *the*

definitional boundaries of these different categories were what learners transgressed while reshaping the narrative*, productively reconstructing them in meaningful new ways*. Thus, a clearer picture emerged of the relationship between creative/learning constraints and productive transgressions during CLA: different categories of creative constraints shaped decision-making on multiple levels while also supplying the necessary definitional boundaries for transgressing meanings.

Creative constraints operated on three distinct levels: (1) individual, (2) textual, and (3) contextual. These different levels of creative constraints generally, although not exclusively, also paralleled conceptions of learning from cognitivist and socio-cultural perspectives. For instance, individual creative constraints on participants yielded examples of mostly cognitivist learning stemming from independent decision-making which shaped the texts from the "inside-out." Textual creative constraints on "the story" tended to blend cognitivist and socio-cultural perspectives on learning with groups weighing both types of considerations during design choices. Contextual creative constraints on everything else surrounding "the story" unsurprisingly highlighted mostly socio-cultural learning given all the situational and environmental factors woven into decisions which shaped the texts from the "outside-in" (See Figure 3).

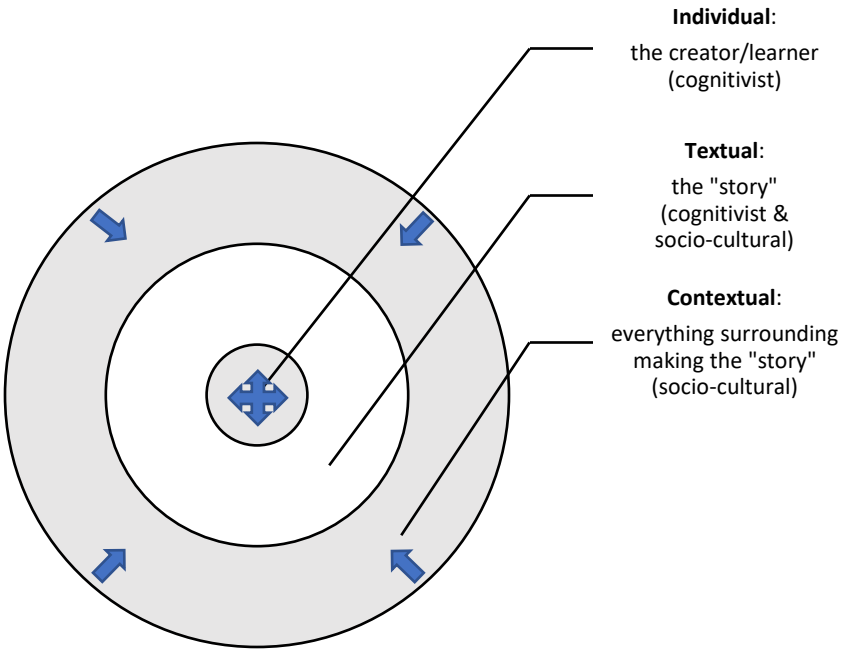


Figure 3. Three concentric levels of creative/learning constraints during CLA. Arrows indicate the "meaning shaping functions" of the individual and contextual levels on the textual level.

Individual Level

The individual constraints on meaning-making present in the data primarily concerned limits of the self, or the *subjectivities* (NLG, 1996) one brought to the group as a creator/learner. Due to the sensitive nature of personal identity, some of the different identity categories of individual creative constraints remained elusive and indiscernible to me unless clearly observable, or if participants voluntarily disclosed a personal identity characteristic in some relevant way. In other words, I never specifically asked participants about their gender, race, ethnicity, etc. With that caveat, I provide a list of these individual creative constraints below with examples from the data (see Table 1).

INDIVIDUAL CREATIVE CONSTRAINTS	
Time	*Personal availability for rehearsals*
Place	*Personal physical proximity, or online access to rehearsals*
Ability - Mental and/or physical	*Vocal ranges for singing*
Age	*Adolescents versus adults*
Ethnicity	*Hispanic cast member*
Sex	*Assigning majority of male and female roles accordingly*
Gender	*Gender-bending by casting a few traditionally male roles as female*
Race	*Multiple persons of color in casts*
Religion, Beliefs, Ideology	*Political concerns about incorporating current events because assumption of similar beliefs in cast*
Sexual Orientation	*Gender-neutral pronouns "they" used in rehearsals*
Socio-Economic Status, Class	*Majority middle-class participants*
Education	*Varying levels of knowledge re: Zoom; novices versus experts*
Language	*English, Patois, and Spanish; accents and dialects*
Geography, Regional Background	*Team member from Spain*
Profession	*Participants working as teachers, social workers, non-profit administrators, etc. outside of rehearsals*
Collective Life Experience	*Leisure activities (sports, reading, shows, etc.); domestic and global travel*

Table 1. Individual creative constraints on creators/learners during CLA with examples from the data.

Although less pronounced on the individual level, participants productively transgressed their own personal identities and subjectivities during the CLA processes and productions. They worked "across and beyond" existing boundaries of meaning and categories customarily associated with notions of the self, enabling opportunities for learning as a result. For example, the professional team from *F&R-Song* scripted and played characters of the opposite sex [Gender](*specific categories of creative constraints from each level hereafter referenced in brackets*), and the *WOTW* students performed an elevated form of classical speech characteristic of old Hollywood films called "American Theater Standard" in contrast to their contemporary dialects, and rewrote lines reflective of that language change [Language]. In each of these instances and more, participants reshaped the texts on an individual level, learning in and through CLA by productively transgressing meaningful boundaries commonly linked with selfhood.

In the following extended passage, two female student playwrights from *WOTW* devised and scripted an opening scene to frame and establish the literary adaptation as a "play-within-a-play," a dramatic convention whereby scenes shift with varying degrees of frequency back-and-forth between one contextual world and another, often transgressing time and space. This dialogue between a theater *director* and *stage manager* featured two *professional* roles from the entertainment industry that neither had ever directly experienced themselves [Profession]. Building upon prior knowledge of these professional roles from previous productions they had participated in, and in many ways parroting their own teachers/directors from *WOTW*, this example highlights student learning in and through CLA by means of productively transgressing the individual creative constraint of *professionalism*. Both in writing and on-screen, they transgressed their identities as novice students, and crafted imaginary identities as theatrical

experts (D = Director; SM = Stage Manager), embodying their authority, language, and affect in performance:

(*RAMONA is alone on screen*)

Ramona (D): Hellooo? Is anyone there?

(*VERA comes into the room*)

Vera (SM): Hey! How's it going? Anyone else here yet?

Ramona (D): It's going good. I believe people should be coming in shortly… (checking the Zoom room)

(*STUDENT cast members start turning on their cameras, saying "hello" and ad-libbing*)

Ramona (D): Okay, I think we have everyone here. Hello, everyone! Welcome to the first taping of *The War of the Worlds* (woohoo!)! Today is going to be like our dress rehearsals, except we'll be filming and hopefully turn in a submission by today. We're gonna try and do it all in one take, so if something goes wrong, just keep going like it's an in-person performance. Other things: remember to keep your expressions big during lines, make sure you have any props, and this is gonna be completely off-book, so if you forget a line, just improvise. Vera, anything else?

Vera (SM): Remember, phones off! As Ramona said, no stopping unless you absolutely need to. Sound is here today, thank you sound, but I won't be calling any cues today, since all the cues are called on specific lines, so make sure to read your lines exactly as printed. Remember, we have a time limit, so keep things running smoothly with minimal distractions! I think that's it for me. Ramona?

Ramona (D): Have fun! We're always able to re-film, so if something does go wrong, it's all chill. I think we're ready to start. Is everyone ready?

(*STUDENTS nodding their heads*)

Ramona (D): Sick, let's start.

Textual Level

The source texts from each group acted as "bounded scaffolds of meanings and effects" during CLA. They supplied an architecture which creatively constrained all collaborative decision-making and shaped every subsequent interpretation. Creative constraints at the textual level consisted of two major categories with many sub-categories, namely the category of *telling*, or scripting of the adapted texts, and the category of *showing*, or the representing of the adapted texts in performance. Although the textual level creative constraints of the source material *intrinsically* (Elster, 2000) restricted the meaning-making of each group's storytelling and representational choices, many clearly defined sub-categories also *enabled* (Rosso, 2014) ample opportunities for learning when participants productively transgressed narrative content and structure.

While collating these textual level creative constraints another design pattern emerged significant to learning in and through CLA. Across the *telling* and *showing* decision-making categories, participants either (1) *elaborated,* (2) *added,* (3) *continued,* or (4) *deleted* meanings along the lines of various sub-categories. Although decisions to either "elaborate" or "add" text both drew inspiration from source material, and paralleled constructivist learning (Piaget, 1967), they differed from one another by degrees of *fidelity* (Cutchins, 2013) to the original story, a popular topic of interest for scholars of adaptation studies. For instance, choices which

"elaborated" upon text largely *extended* embedded meanings and effects by building upon the source material. Specific observations from the source material by the groups tended to inform more general conclusions, in many ways exemplifying Hutcheon's (2013) classic definition of literary adaptation as "repetition, but with variation" (p.4). This decidedly *inductive* approach to decision-making contributed to a higher frequency of productive transgressions. "Adding" text, on the other hand, mostly supported an *abductive* approach to literary adaptation, whereby learners much more freely departed from the meanings and effects of the source material, only loosely basing their decision-making on the source material for developing alternative directions to tell and show their stories. These more pronounced departures from the original text resulted in fewer productive transgressions, and approximated Sander's (2016) notion of *appropriation*, a type of literary adaptation, which "frequently effects a more decisive journey away from the informing text" (p.35). Of course, many design decisions also remained steadfastly within the traditional bounds of the source material, displaying primarily *deductive* reasoning when groups chose to either "continue" or "delete" certain text, and therefore its accompanying meanings and effects.

The first list below from the *WOTW* and *F&R* data sets catalogs sub-categories of creative constraints related to the *storytelling*, or narrative (content and structure) "scripting" of each adapted text (see Table 2). Although I further divided these sub-categories into their emphasis on either narrative content or structure, much overlap exists between these fine delineations. In addition, I supply specific examples of each sub-category of creative constraint, including their data sources, many of which also illustrate instances of productive transgressions:

TEXTUAL CREATIVE CONSTRAINTS		
TELLING of the Story (the "scripting" of the adapted text)		
Content		
Setting (time & place)	*Transferring action to present-day Wisconsin*	*WOTW*
Text (generate & delete)	*Improvising a scene to produce text; deleting words and passages; translating, or paraphrasing a scene*	Both
Characters	*Elaborating, adding, or deleting characters by deviating from source text expectations*	Both
Props	*Playing of instruments; adding ball toss between frames to signify friendship*	*F&R*
Language	*Adding, deleting, or changing dialogue; incorporating Spanish and Patois*	Both
Dramatic Conflict & Plot	*Adding dramatic tension not in the source material; removing entire plot lines*	*F&R*
Dramatic Conventions	*Metaphor; rhyming; repetition (alliteration); melodious key changes to heighten mood*	Both
Structure		
Setting (time & place)	*Resequencing plot progression to alter dramatic pacing; rearranging a song chronologically instead of out-of-sequence*	Both
Point-of-View, Narration	*Substituting descriptive moments in source text with elaborate character dialogue*	Both
Length	*Brevity to accommodate for state-wide drama competition submission guidelines*	*WOTW*
Framing Devices	*WOTW "play-within-a-play" schema; F&R versions told using puppets and as a song*	Both

Table 2. Textual level creative constraints for *storytelling* during CLA with examples from the data.

Incidentally, *every* group of CLA participants transformed mere descriptive text from the source material into dialogue [Language; Point-of-View, Narration], considerably altering the narrative *content* and *structure*. They *significantly reconstructed the storytelling based on an informed reinterpretation and redesign of meanings with social implications, which then became adopted, repeated, and elaborated upon existing boundaries of meaning*.

The following passages from *F&R-Persons* detail the evolution of a textual level productive transgression over the course of a few rehearsals. They illustrate how different sub-categories of creative constraints shaped storytelling decision-making and learning, enabling and inhibiting design choices which led to considerable elaborations of the narrative. To begin with, the team of two seasoned *Whoopensocker!* story adapters casually read through and noted literary alliteration as central to the meanings and effects produced by the original text of *F&R*:

> Male: There's some cool locations (*in the story*).
>
> Female: Yes.
>
> Male: "Songbird Stream" and "Treacherous Tree."
>
> Female: "Treacherous Tree," I like the alliteration.
>
> Male: Yeah, there's some alliteration in both.
>
> Female: Yes. It's nice.

Second, they located all the moments of alliteration [Dramatic Convention] in the complete text (CAPITALIZED and **emboldened** below):

> *Once upon a time there was a fox, and a racoon. They were best friends! They both lived in the **F**riendly **F**orest. One day fox was busy walking and raccoon was just playing when a storm hit. Fox was at **S**ongbird **S**tream. Raccoon was in **T**reacherous **T**ree. Fox made it to her house, but raccoon could not get out, and got endlessly tangled. Fox sensed something was wrong, and went to the **T**reacherous **T**ree before it was so **T**reacherous. So fox knew how to navigate her way through and didn't get **T**angled! She found raccoon*

> *and took out the knots and took raccoon to her house. Raccoon was so thankful and the Besties became closer than ever!!! The End*

Third, they recognized the potential for generating dialogue [Text] using the available text to enhance the storytelling:

> Male: This particular story doesn't have any dialogue, specifically. So that would be something that we would have to make up.
>
> Female: Yeah, we would. The action is there, we just need to make up what is talked about.

Fourth, they later decided to adopt alliteration as a structural feature of the narrative [Point-of-View, Narration], a *self-imposed* (Elster, 2000) creative constraint sourced from the original text:

> Male: So, like we were talking about alliteration with "Songbird Stream" and "Treacherous Tree." I think if we can find ways to incorporate alliteration into our characters dialogue…
>
> Female: Yes, that would be a great idea!
>
> Male: We don't even need to have that much dialogue because we're going to be showing a lot of the story.

Then, they productively transgressed the descriptive text, "tinkering" with different versions while scripting additional content [Language] based on the three major instances of alliteration from the source material emphasizing the letters "f," "t," and "s." In the examples below, the team *elaborated* and arguably *added* further meanings and effects by appropriating text inspired by the alliteration from the source material. They still maintained degrees of fidelity to the

storytelling, however, such as working with the same letters (“f,” “t,” and “s”) from the original text:

“F” as in Friendly Forest

Female: I'm toying with some sort of alliteration and catchphrase of sensing like, "I'm feeling fear. Raccoon's feeling fear, I got to go!" Something like that.

Male: Your friend fear.

Female: My friend fear is activated. Cool, I like that!

“T” as in Treacherous Tree

Male: Don't get tangled in the torturously twisted tree.

(then, somewhat later in the same rehearsal…)

Female: This tea is tea-rrific, but that tree was terribly treacherous!

The final video production from the *F&R-Persons* team shows that they ultimately decided to frame [Framing Device] nearly every scripted interaction between the characters of Fox and Raccoon with alliterative dialogue. This last textual level “leap” in storytelling completed the evolution of this productive transgression:

“F” as in Friendly Forest

Female: What a fun-filled frolicky day in the friendly forest!

Male: You’re my favorite four-footed friend, Fox.

Female: You're my favorite fluffy forever friend, too! Friends, furr-ever?

"T" as in Treacherous Tree

Male: I'm tangled up in the twisty torturous treacherous tree!

"S" as in *Songbird Stream*

Female: The sweet songs of Soundbird Stream are so serene! A storm is stirring in the skies. We must hastily head home!

The team from *F&R-Persons* looked to the source material for *intrinsic* (Elster, 2000) clues about how to proceed with their literary adaption, and then *self-imposed* (Elster, 2000) the dramatic convention of alliteration as a creative constraint to further appropriate the text. This decision ultimately shaped all subsequent design choices related to the generation of dialogue in the story, as they continued to construct and integrate other textual level creative constraints. For the most part, *these sub-categories of textual level creative constraints around meaning-making in CLA enabled productive transgressions by providing boundaries to cross during the construction of new intertexts.*

A second list below from the *WOTW* and *F&R* data sets catalogs sub-categories of creative constraints related to *representing* the stories, or the narrative (content and structure) "performance" of each adapted text (see Table 3). As before, I supply specific examples of each sub-category of creative constraint, including their data sources, many of which also depict productive transgressions:

TEXTUAL CREATIVE CONSTRAINTS		
SHOWING of the Story (the "performing" of the adapted text)		
Content		
Setting (time & place)	*Adapting to natural disruptions during performances, like bystanders, weather, airplane noise, traffic, etc.*	*F&R*
Acting, Performance	*Moment-to-moment representational choices within the world of the play; pacing*	Both
Speech	*Performing certain known accents and dialects*	Both
Costuming	*Representing characters as puppets*	*F&R*
Lighting	*Filming at certain times of day to create mood effects*	Both
Sound	*Adding recorded or instrumental music and other audio effects (e.g. thunder) to enhance meanings*	Both
Dramatic conventions	*Surprising effect of "breaking the 4th wall," i.e. directly addressing the camera to stun audiences*	Both
Genre	*Found footage horror film for WOTW; a breaking news report; extending and holding chords in reggae (which is not typically done)*	Both
Animations	*Electric flashing bolts signifying lightening to enhance visual meanings and effects*	*F&R*
Structure		
Setting (time & place)	*Limited access to filming locations due to COVID: bedrooms, yards, homes, parks*	*F&R*
Medium	*Designing communication and representations appropriate for Zoom*	Both
Cinematography	*Playing with filming via Zoom like with dimensions and perspectives, or toggling between a gallery view versus presentational mode*	Both
Technology, tools	*Recording equipment; music software (e.g. GarageBand, Ableton)*	Both
Editing	*Adding or deleting segments of film post-performance*	Both

Table 3. Textual level creative constraints for *showing* stories during CLA with examples from the data.

These examples of *intrinsic*, textual level creative constraints during CLA shaped group decision-making regarding the adaption of representational *content*. Two examples of educational making choices along the lines of the sub-category [Genre] from *WOTW* included when students (1) adopted a "found video footage horror film" approach to their literary adaptation based on movies like *The Blair Witch Project*, and (2) portrayed a short scene utilizing the visual trope of a contemporary "Breaking News Flash" from a local television news station (see Figure 4).

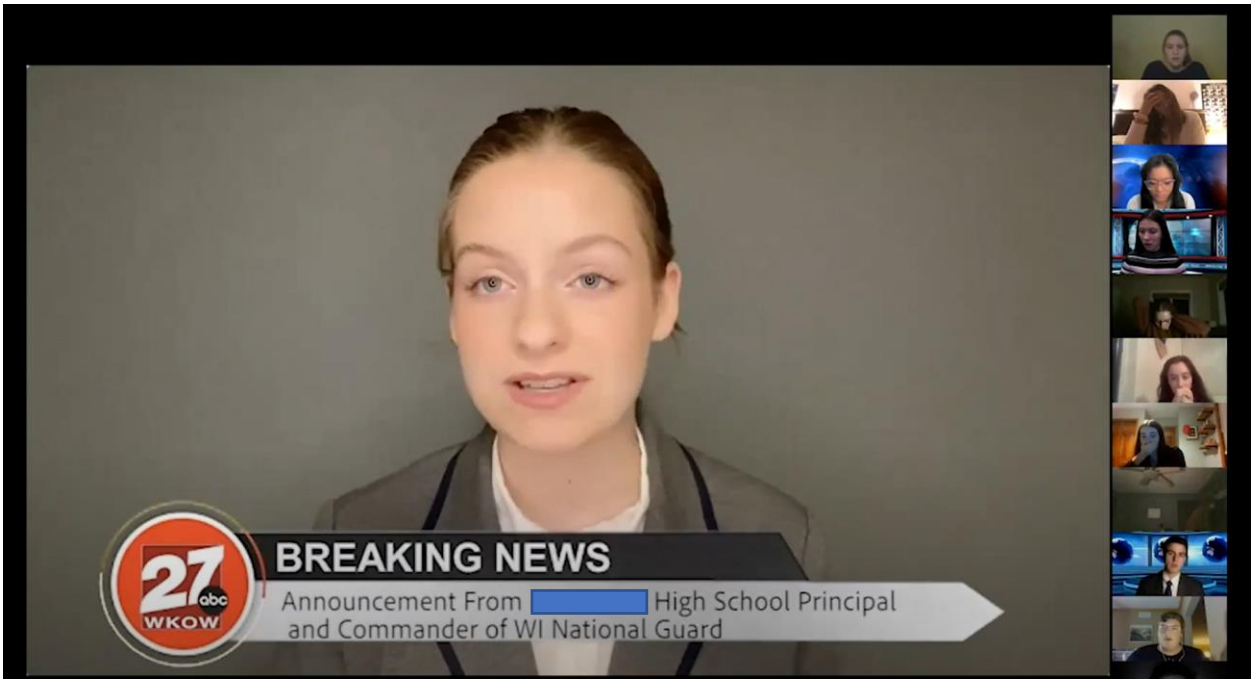


Figure 4. Visual example of "showing" decision-making along the lines of the sub-category [Genre] for representing *WOTW*.

Textual creative constraints also contributed to the formation of strictly *structural* sub-categories related to representing their story. For instance, to visually portray the final alien invasion scene in *WOTW* which concluded with an abrupt ending to the original radio broadcast, participants

chose to communicate these meanings and effects via Zoom [Medium] with editing [Editing] and cinematography [Cinematography] depicting a series of consecutive, dramatic deaths.

> Female Student: I feel like a lot of characters we could see [Medium] die, or maybe they just cut out [Editing] and don't come back? What we could do is have someone in an area where there's a little bit of scenery behind them, and they could be looking behind them and stuff. And in the script when they die their camera could cut off [Editing] and they just don't come on for the rest of the time. Because it ends with what, two people's cameras. You can see it decrease every single time [Cinematography]. Or we could leave the Zoom meeting [Cinematography]-
>
> Other Male Student: One person dies at a time (crosstalk)… Oh my gosh, that would be so (crosstalk)…
>
> Other Female Student: And you just see [Medium] their background, and it's empty, but they're gone.
>
> Male Student: "I'm going to go outside. I'm going to check it out." Then, he leaves and doesn't come back!

All in all, textual creative constraints prevail as the most obvious level of creative constraints in terms of narrative content and structure during CLA, unlike those operating at the more obscure contextual level.

Contextual Level

Contextual creative constraints encompassed all decision-making surrounding the making of the story, or those limits on making meaning "imposed by external agents" (Elster, 2000). For example, the most frequently cited or indirectly impactful contextual creative constraint, *time*

[Time], manifested in the data sets as scheduling rehearsals, organizing, meeting deadlines, etc. Interestingly, beyond time and place, the other categories of constraints on this level generally aligned with Gee's (2015) notion of big "D" Discourses, or the various social, cultural, economic, historical, and political forces responsible for shaping *social context*. Thus, I applied these Discourses derived from social context to the data analysis and developed categories with sub-categories for organizational purposes. The table below lists these Discourse categories and sub-categories of less obvious, "hidden" creative constraints rooted in social context at work during CLA (see Table 4).

CONTEXTUAL CREATIVE CONTRAINTS		
Time		
Scheduling, Organizing	*Rehearsal calendar, deadlines*	Both
Place		
Rehearsal Environment, Location	*Zoom & GoogleDocs for organizing & creating "apart together"*	Both
Social-People		
Group, Collaborators	*Differences in size of creative teams*	Both
Organization of Leadership & Power	*Teachers versus student power differential and small teams of two professionals*	Both
Limits of Group's Collective Experience, Knowledge	*Familiarity with literary adaptation (experts) versus none (novice)*	Both
Effectiveness, Productivity	*Certain creative teams more collaborative & innovative than others*	Both
Social-Cultural		
Prevailing Mores, Social Norms	*No swearing, distributing # of spoken lines across actors due to purposes of equity*	*WOTW*
Access, Privilege	*Elective high school course for Upperclassman (Seniors & Juniors) only*	*WOTW*
Social-Economic		
Audience or Consumer Product Tastes	*Choosing which texts to adapt*	*WOTW*
Money	*Budget, payroll*	Both
Legal	*Copyright laws re: intellectual property & literary adaptation*	*WOTW*
Social-Historical		
Global Considerations	*COVID pandemic shift to digital production*	Both
Social-Political		
Institutional, Governmental	*Needing curriculum to be educationally attainable for at-home third-grade "makers"*	*F&R*
Task Expectations	*Goals set by either show or education director*	Both
Division of Labor	*Team of just 2 people, with 1 "owning" more creative responsibility*	*F&R*

Table 4. Contextual level creative constraints during CLA with examples from the data.

Without question, a socio-historical event like the worldwide COVID pandemic [Global Considerations] represented the most obvious example of a contextual creative constraint across both cases which significantly shaped decision-making and learning during CLA. For instance, group participants accustomed to working with a "live" theatrical medium suddenly found themselves having to transgress traditional meaning-making boundaries governing dramatic process and production. Confronted with an unknown "virtual" environment [Limits of Group's Collective Experience, Knowledge], they transferred a mostly limited knowledge of digital media, and learned by tinkering with the tools of this new medium. Although the passage below illustrates a *textual* level "showing" constraint [Cinematography] in which one of the two *WOTW* teachers working alongside students learned how to toggle between speaker and grid views while recording in Zoom, it also depicts how a broader, *contextual* level constraint like the occurrence of COVID [Global Considerations] indirectly fostered the conditions to make this moment and acquisition of new knowledge possible:

> Male *WOTW* Teacher/Director: I was thinking maybe we should record a little section, because I've only actually recorded in speaker mode. I haven't recorded where it's back and forth. Maybe we should try bouncing back and forth between the grid view and speaker view, and see how it records so we know what we're working with here? So, if we want to maybe just do that again, and record that little chunk and see what happens?

An unprecedented disruption like COVID, although painstakingly difficult to navigate due to constantly evolving conditions and ever-changing circumstances, also forged other unexpected learning and impressive innovations in creative production at the contextual level. In hindsight, one *WOTW* theater student reflected on the affordances of the new digital environment [Place], exclaiming that "unlike (*performing*) the normal one-act (*plays on stage*), we can make mistakes

(*virtually, and in recording*). We can do things over!" In fact, not long after the final *WOTW* production release on YouTube both teachers/directors reflected on the value of recording and collaboratively evaluating performances with casts prior to an audience "showing," and vowed to integrate this digital practice into future learning, whether making for virtual or live audiences.

Contextual constraints also exerted creative limitations at times on behalf of participants. For instance, the following comments from a *F&R-Persons* team participant describe how contextual creative constraints like curricular goals [Task Expectations] set by the off-screen *Whoopensocker!* [Institutional, Governmental] director/editor before the project started, as well as the target age group of third graders [Limits of Group's Collective Experience, Knowledge] *inhibited* their representational choices:

> Adult Male Professional: I mean, I think that's one of the big balancing acts for this work—you want to create a fun and polished piece, but then you also want to make it attainable. You want to make it in such a way that inspires young folks (*third graders*) to make their own thing, so they see it, and they're like, "oh yeah, I can do that."

Given the paradoxical nature of constraints, however, one could also argue that these contextual restrictions caused participants to pivot in creative ways that enhanced the overall process and product outcomes.

Discussion

Two of the three levels of creative constraints aligned seamlessly with Elster's (2000) three overarching **types**, namely the *textual* (intrinsic, or inherent to the text) and *contextual* (imposed by external forces). However, Onarheim & Biskjaer (2013) interpreted Elster's (2000) third type of creative constraint, *self-imposed*, as "freely initiated by the creative agent himself in

expectance of a higher creative payoff" (p. 5). This type of creative constraint implied the possibility of another **level** focused on the self. Sure enough, in my analysis I discovered creative constraints operating at the level of the *individual*, but which featured categories of less obvious personal traits and aspects of participant identity that mostly shaped design decisions and meaning-making choices indirectly. Meanwhile, *self-imposed* creative constraints that individual participants willingly initiated directly on themselves and/or others transpired *on all three levels*.

Productive transgressions of creative constraint categories by group participants which reshaped narrative content and structure appeared most *overtly* and *directly* at the textual level. This made sense given the centrality of texts to decision-making during CLA as a site for both producing and receiving various meanings and effects, but also because the texts provided a *physical record* and *representational trajectory* (Halverson, 2013) in both written and visual mediums for tracing productive transgressions in both social thought AND action. Productive transgressions also took place at the individual and contextual levels along different definitional categories, albeit much more *covertly* and *indirectly*. Notably, every level shared the constraints of time and space, but otherwise consisted of separate categories specific to each respective level.

Makers learn in and through CLA by design. Designing during CLA always involves the creative (re-)construction and (re-)configuration of a meaningful structure or conceptual model, like a text, into another text and/or creative production. All creative production processes are different, in no small part due to the presence of various types of different constraints. Constraints govern nearly every aspect of a creative production process "from page to stage" or screen, such as the personal abilities of group participants, the locations of scene settings, and task expectations or the project aims. Artists' use these constraints creatively, both directly

(consciously) and indirectly (unconsciously), during literary adaptation to transgress the original text and its meanings *on multiple levels*, and often in productive ways. When adapted productively, these transgressions signify the crossing of meaningful physical and social boundaries, mostly defined along the lines of *design categories* and sub-categories at the level of the *individual*, *text*, and *context*. On all three levels *these productive transgressions, or constraint violations, represented conceptual change and therefore learning in and through the group process of CLA* (Norman, 1999; Lave & Wenger, 1991). In other words, "constraints are [not only] powerful tools for the designer" as Norman (1999, p. 41) states, but also *powerful learning mechanisms during production-based art-making*. Furthermore, teachers and directors often view transgressions of any kind while learning unfavorably, especially in formal educational environments. However, as the data indicates, *constraints and transgressions happen together*. Thus, *the presence of transgressive decision-making* (and associated social behaviors) *during informal art-making like CLA may at times possess productive functions*.

In sum, knowledge of these creative constraints operating on multiple levels, their corresponding design categories, and an understanding that productive transgressions occur along the lines of these design categories deserve closer attention by researchers and practitioners working at the intersections of learning and art-making.

Limitations & Future Considerations

Analyzing learning in and through CLA with a focus on creative constraints and productive transgressions is admittedly "slippery" work. For this reason, future studies at the intersections of adaptation, learning, and art-making ought to incorporate others in the collaborative analysis of data to strengthen findings, not to mention triangulating data with participants to verify meaning-making decisions. For example, readers should consider the lists

of creative constraints at the individual, textual, and contextual levels as non-exhaustive, as more than a few other categories likely exist which may have been overlooked or organized differently by a different researcher. Moreover, further work in this area should incorporate other artistic forms beyond digital media and theater-making like dance, visual arts, and music, and consider other learning contexts like an undergraduate history classroom tasking students with a CLA exercise for learning. This way educational researchers could establish firmer patterns of creative constraint categories, or "learning levers," which readily transfer across production-based art forms, and even track alignment of productive transgressions. In addition, they could also begin conducting meta-analyses with larger swaths of data to draw stronger inferences. Finally, future researchers also ought to evaluate and assign *value* to the different meaning-making categories (like time) across artistic forms to try and determine the importance and magnitude of their impact and relevance on creating, and their implications on learning when adjusted in different ways.

Conclusion

In conclusion, different categories and sub-categories of creative constraints with defined boundaries of meaning provided opportunities for productive transgressions during CLA, and organized and shaped interpretive design decisions by participants on three distinct levels: individual, text, and context. On all three levels these productive transgressions, or constraint violations, represented conceptual change and therefore learning in and through the group process of CLA (Norman, 1999; Lave & Wenger, 1991). In a sense, creative constraints during CLA operated as curricular and instructional "design levers," or learning mechanisms. Adjusting or "pulling" any of these levers to varying degrees changed the learning and meaning-making process and product. This paves the way for further future design-based research on the learning

functions and capabilities of creative constraints in production-based art-making. Indeed, some of these identifiable categories and sub-categories likely possess broader applications for similar learning tasks in education. Similarly, learning in and through transgressive decision-making along finite categories of meaning while reconstructing a product also probably extends to other art-making tasks. In the meantime, those currently working in education with creative production and pre-service teachers ought to develop a greater awareness of such "design levers" and their implications for learning, especially the less obvious individual and contextual constraints. In addition, these same constituencies also may want to cultivate the presence of transgressive decision-making during informal art-making like CLA as a positive sign of learning which may also yield productive outcomes.

Competitive television shows on internet channels like Netflix and Amazon continually alter and devise new formulas to creatively constrain contestants who learn while adapting to different process challenges, often transgressing meaningful design categories linked to the task in productive ways. Similarly, educational theorists and practioners of production-based art-making in curriculum and instruction ought to deeply consider the implications of these "design levers," or categories of creative constraints, and the function of productive transgressions when engaging with future scholarly work or planning learning activities like CLA.

Appendix

Text for *Fox & Raccoon*

Once upon a time there was a fox, and a racoon, they were best friends! They both lived in the friendly forest. One day fox was busy walking and raccoon was just playing, when a storm hit. Fox was at songbird stream. Raccoon was in treacherous tree. fox made it to her house but raccoon could not get out, and got endlessly tangled. Fox sensed something was wrong and went to the treacherous tree before it was so treacherous. So fox knew how to navigate her way through and didn't get tangled! She found raccoon and took out the knots and took raccoon to her house. Raccoon was so thankful and the Besties became closer than ever!!! The End

At the time of publishing, publicly available YouTube video for all three versions of *Fox & Raccoon* (fast forward ahead to view between minutes 15:00-25:00):

https://www.youtube.com/watch?v=OjhWnPA1XbI&list=PL2cx8tteUCRicBtHJxWKvOTMJWXrbOSqC&index=22

CHAPTER 5: CONCLUSION

Further Limitations

My positionality factored into these proposed case studies. For example, I have a personal background as a company member of *Whoopensocker!* which may have influenced some interpretations. I also possess a decade of experience working with adolescents in drama, especially with CLA. This prior knowledge and expertise afforded me access to each research site, but also likely exposed me to bias.

I've attempted to reduce this bias and balance my positionality as much as possible to avoid issues commonly associated with case study research, such as the tendency to overfocus, an abundance of subjectivity tied to complexity, and lesser generalizability (Cresswell & Poth, 2018). For example, to counter overfocusing I selected two different sites, and addressed multiple topics related to learning at a single site. Next, to minimize subjectivity I collected multiple data sources from participants to triangulate and verify my interpretations. Finally, I attempted to improve generalizability by working with a diverse age range of learners in different contexts. To strengthen the integrity and overall effectiveness of the case studies I focused on a single "making" discipline in relation to CLA, namely theater.

Despite these efforts, all A/V recordings require a degree of subjective interpretation. Therefore, future research may want to triangulate data interpretation to increase objectivity by corroborating with the creative team participants on analyses after CLA, such as confirming personal interpretations of multimodal performance making, or verifying the assignment of codes to sections of data considered collaborations, knowledge building, productive transgressions, etc. Moreover, an even larger sample of stories collected across different communities of learning

like schools, after-school programs, other professional venues, etc. would also bolster findings. Learners need access to a broad range of social and cultural capital to effectively engage with representational meaning-making processes in creative production, so future research also ought to analyze the effectiveness of CLA with younger age ranges.

Another limitation is that all study participants from both sites self-selected to work on the respective tasks. This ensured a successful data collection effort, but failed to account for motivation, a prominent variable in many formal schooling environments where students stand to benefit from learning in and through CLA. Fortunately, enough flexibility exists within the CLA framework (see Chapter 1, Defining CLA for Teaching and Learning) for personalization and developing significance for even the most difficult of traditional classroom students.

The process of adapting literature can also lead to reinforcing misconceptions. It is imperative that learners thoroughly understand the meanings and effects of the source content before beginning the adaptation process.

Technical difficulties contributed to the loss of the better half of one of the 10 rehearsal recordings of *WOTW* halfway through the process. Nearly all the high school students participated in the focus groups interviews, but other data collection means like the learning surveys had a mixed return rate of between 50-70% participation.

My hope, despite some of the vulnerabilities associated with this research design, is that by combining these three case studies which examined the phenomena of learning in and through CLA that an overall pattern emerged of the construct, including its potential for creating impact, value, and relevance in 21st century curriculum and instruction. Once we better understand *how*, *what*, *when* and *where* learning takes place in and through CLA, we can *adapt* our own practices

as educators in the arts and humanities to include more activities which resemble its overall structure.

A Final Word on CLA: "Putting It Together," Again, and Again, and Again…

Undoubtedly, the most common theme across these multiple case studies in terms of learning in and through CLA revolved around a near constant tension between *structure* and *anti-structure* (Turner, 1969), two foundational concepts related to design, creativity, and informal education, but also to curriculum and instruction. CLA embodies the playful, experiential process itself of disordering (anti-structure) the orderly (structure, or the text), and then reconstructing and remaking it anew (Sutton-Smith, 1972). Despite considerable setbacks, in many ways the global COVID pandemic also operated as a threshold experience for these two groups of participants, carving out a liminal time and a third space (Gutiérrez, 2008) for design, creativity, and informal learning to "digitally" flourish.

Hutcheon recommends conceptualizing literary adaptations on a vertical and horizontal axis, not in terms of a hierarchical ladder. In my research I've come to visualize literary adaptation and the remaking of texts as a 3-dimensionional, rhizomatic phenomenon: an infinite number of interconnected spheres representing texts (different configurations of meaning) suspended in a vast, web-like network of shared, interrelated meanings.

CLA as a learning activity is complicated, and so is learning in and through it. This work represents the beginning of a conversation about integrating adaptation into text-based education. Multiple frameworks and concepts support its application in 21st century curriculum and instruction. Although this definitional and theoretical research presents some compelling arguments for specifically centralizing CLA in arts and humanities coursework, scant scientific

evidence grounded in learning theory supports these claims. Thus, a clear need exists for further *empirical studies* examining the learning processes underpinning CLA to substantiate its efficacy as an innovation for educating students to meet the challenges of an ever-changing future. This research provides a scientific departure point for continuing related investigations.

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