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Addressing Issues of Equity Using the Cross-Pollination of Universal Design for Learning and Culturally Responsive Teaching

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Context

Our institution is a regional, comprehensive public university dedicated to learning in the liberal arts and sciences, and to education for the professions including early childhood, elementary, secondary, and PK-12 education with our program preparing special educators at the graduate level. Central Teacher Education Network (CTEN), our university's shared teacher preparation governance council, facilitates a tripartite collaboration between disciplinary and education faculty, and our PK-12 school partners. As an outcome of our shared commitment to creating *a context for continuous professional learning and leading for all participants* (Essential 3: Professional Learning and Leading) to address equity issues in PK-12 schools, CTEN has implemented trainings and professional learning communities focused on Universal Design for Learning (UDL) for our faculty and PK-12 partners. Outcomes of this shared commitment to equity in education include a co-constructed UDL lesson plan template and the development of 23 high-leverage practices (CTEN, 2018) focused on preparing our teacher candidates to use UDL to plan and implement instruction for diverse PK-12 learners. CTEN *embraces the preparation of educators through clinical practice* (Essential 2: Clinical Preparation), so that our teacher candidates are "learner-ready, day one teachers" (Connecticut Educator Preparation Advisory Council, 2016).

As a result of this partnership work, we have come to recognize the significance of operationalizing a cross-pollination of UDL and culturally responsive teaching (CRT) (Thorius and Waitoller, 2017). We believe that this model can strengthen the systematic, proactive, and intentional implementation of both UDL and CRT in PK-12 classrooms. We also recognize that strong university and school partnerships are essential to bringing the cross-pollination of UDL and CRT to PK-12 classrooms to advance Essential 1 of the Second Edition of the NAPDS Nine Essentials by promoting *equity…among schools, colleges/universities, and their respective community and professional partners* (NAPDS, 2021, p. 4). UDL and CRT applications are not cookie-cutter practices, since learner variability exists in every classroom (CAST, 2018). By cross-pollinating UDL and CRT universities and their school partners can work together to create intentional and reflective UDL and CRT implementation in PK-12 settings to meet the needs of diverse learners. This article articulates our vision and journey towards operationalizing this cross-pollination of UDL and CRT (Thorius and Waitoller, 2017).

Literature Review

Teaching has grown exponentially more challenging over the past few years. Our collective response as educators to the COVID-19 pandemic has created a heightened sense of urgency to address perennial issues of equity for our nation's PK-12 learners. In the words of Angela Watson (2020), we must "step forward boldly into the uncertain, and co-create something better." Educators are often asked to make changes in their teaching practices without starting with the changes we need to make within ourselves. To boldly co-create something better, we must begin by doing the required "inside-out" work called for by Hammond (2015) to address, through self-reflection and cognitive training, the engrained beliefs and implicit biases that unconsciously impact our teaching and the decisions and interactions teachers encounter every day (Myers, 2021; Posey & Novak, 2020).

Professional Development Schools (PDS) and school-university partnerships are uniquely situated to engage in this collective unlearning process to ensure that all students have access to high-quality education (Myers & Jenkins, 2020; National Association of Professional Development Schools, 2021; Polly & Martin, 2020; Posey & Novak, 2020). This work requires established and trusting relationships as well as an ongoing commitment to collaboration – foundational components of effective PDSs and school-university partnerships (Tseng, et al., 2017). This shared sense of efficacy can sustain PDSs and school-university partnerships toward better educational outcomes for all students (Donohoo et al., 2018; Myers & Jenkins, 2020; Novak, 2016). The collective efficacy that fosters a growth mindset in teachers (Novak, 2016) can be as small as two teachers working towards a shared goal (Friend & Cook, 2017), and can be significantly magnified within PDSs and school-university partnerships that are guided by the comprehensive mission boldly articulated in the revised National Association for Professional Development School's (NAPS) Nine Essentials *to advance equity, antiracism, and social justice* (Essential 1: A Comprehensive Mission).

Why is the Cross Pollination of UDL and CRT important for Pre- and In-service Teachers?

We seek to contribute to this collective efficacy by extending and operationalizing the proposed cross-pollination of two asset-based pedagogies, UDL (Meyer & Rose, 2000) and CRT (Gay, 2010). In doing so, we seek to illustrate the potential that comes from the alignment of these two asset-based pedagogies. We want to avoid the education innovation fatigue that comes from the oversimplification of initiatives that result in superficial and ineffective "add ons" to teaching. Instead, our intention here is to support teachers to weave CRT into the fabric of their teaching for all students as recommended by Kieran and Anderson (2019) and others (Chita-Tegmark et al 2012; Chardin & Novak, 2021; Myers, 2021). This paper responds to Thorius and Waitoller's call (2017) to develop pedagogies that seek to bring this cross-pollination of UDL and CRT into teacher preparation programs and teaching practices and builds upon and further operationalizes previous related work (Kieran & Anderson, 2019; Chardin & Novak, 2021).

What is Culturally Responsive Teaching?

The CRT literature base is deep and wide, admittedly we cannot do it justice in this brief article. Instead, we wish to call attention to the key scholars and teacher educators foundational to the evolution of the principles surrounding CRT. Ladson-Billings (1995) originally introduced culturally relevant pedagogy as a means of engaging students whose experiences and cultures were not reflected in their curriculum. Gay (2010) later introduced a framework called culturally responsive teaching to extend these principles beyond teaching materials to include teaching practices and the importance of asset-based pedagogy. Paris and Alim (2017) further extended these principles by introducing the term *culturally sustaining pedagogy*, moving beyond the notion of curriculum that is relevant to students towards curriculum that serves to sustain students' cultural identities throughout the learning process.

This deliberate evolution from curriculum as a mirror or window towards pedagogy that sustains and deepens student learning is foundational to this paper. However, despite the rich body of literature surrounding CRT there are few articles that support pre-and in-service teachers to systematically integrate CRT into their planning and teaching, thus limiting educators' abilities to choose effective instructional practices to support the diverse learning needs of their students while maintaining their cultural and linguistic identities.

What is Universal Design for Learning?

UDL is an asset-based and scientifically valid educational framework (CAST, 2018a) that is grounded in the science of learner variability (Ok et al., 2017). Teachers can use the UDL framework to proactively address learner variability in how students actively engage in and are motivated

to learn, how students process information, and how students demonstrate their learning (Rao & Meo, 2016). The goal of UDL is to develop expert learners that are purposeful and motivated, resourceful and knowledgeable, and strategic and goal-oriented (CAST, 2018b).

The foundation of UDL was established by the Center for Applied Special Technology (CAST) more than three decades ago (CAST, 2021). The UDL Guidelines serve as a guiding tool for teachers, specifying evidence-based teaching practices organized around the three principles of universal design that are aligned with the brain's major networks associated with learning. CAST's website houses an interactive format of the UDL Guidelines that provides descriptions, examples, and supporting research (CAST, 2018b).

At the national level, UDL is cited as how *all* students will successfully access academic standards (Common Core State Standards Initiative, n.d.; ESSA, 2015; Rao & Meo, 2016) and meet other learning outcomes in the general education curriculum (Owiny et al, 2019). The Every Student Succeeds Act (ESSA, 2015) specifically defines and endorses UDL for addressing assessment, literacy instruction, and technology for supporting the learning of all students. Furthermore, the National Education Technology Plan (Office of Educational Technology, U.S. ED, 2017) endorses UDL Principles in the development of digital learning environments that are accessible to all potential users.

How Can University-School Partners Work Together to Implement a Cross-Pollination of UDL and CRT?

The concept of cross-pollination extends well beyond applying pollen from one flower to another, as exemplified by Thorius and Waitoller's (2017) proposed cross-pollination of UDL and CRT. UDL's intersection with CRT is intentional. For instance, there are UDL Checkpoints (CAST, 2018b) that explicitly address varying activities and sources of information so that they can be culturally relevant (UDL Checkpoint 7.2: Optimize relevance, value, and authenticity). Aceves and Orosco (2014) identified four emerging evidence-based culturally responsive teaching practices: collaborative teaching, responsive feedback, modeling, and instructional scaffolding as well as four recommended culturally responsive teaching practices: problem-solving approach, child-centered instruction, assessment, and materials. Each of these practices is embedded within the UDL framework.

Since teaching and learning are culturally situated and vary across and within cultural and linguistic groups (Gay, 2010), seeing this explicit connection between UDL and CRT is essential for teachers to address issues of equity and inclusion systematically and proactively in their classrooms (Waitoller & Thorius, 2016). This complex and situational nature of teaching and learning underscores the key role that PDSs and school-university partnerships can play in addressing issues of equity and inclusion in university settings and PK-12 schools.

More than 30 years ago, Style (1988) notably posited the need for curriculum to function in multiple ways, as mirrors that reflect students' lives and as windows for students to learn about others. When teachers deeply understand this cross-pollination of UDL and CRT, they can use the UDL Guidelines (CAST, 2018b) as a prism to identify and proactively address learner variability in their classrooms. In doing so, teachers can move beyond seeing the curriculum as a mirror or window towards culturally sustaining teaching that seamlessly integrates evidence-based strategies informed by neuroscience and cognitive psychology to effectively meet the needs of all learners, as originally conceptualized by Hammond (2015).

One of the biggest challenges teachers face is how to operationalize culturally responsive pedagogical principles into their teaching (Hammond, 2015). The cross-pollination of UDL and CRT extends and builds upon Hammond's proposed Ready for Rigor Framework that delineates four core areas of culturally responsive teaching: awareness, learning partnerships, information processing, and community of learners and learning environment. Physical, cognitive, and linguistic aspects of teaching are tangible because we can observe their outcomes. Through cross-pollination, explicit and intentional UDL implementations clarify ways CRT are operationalized. Thus, CRT can become observable.

However, pre-and in-services teachers can easily be overwhelmed by the breadth of instructional choices embedded within the UDL framework. The ongoing training and support required for successful implementation of UDL is well matched to the work of PDSs and school-university partnerships. Effective implementation of UDL in PK-12 classrooms requires training at the pre-service level (Basham et al., 2010; McGuire-Schwartz & Arndt, 2007; Strobel, et al., 2007; Takemae et al., 2018), with continuous, ongoing professional development at the in-service level (Spooner et al., 2007). Teacher candidates prepared within strong PDSs and school-university partnerships benefit from faculty modeling UDL implementation at the pre-service level with systematic and intentional practice-based opportunities to apply UDL in PK-12 settings. This is a time and cost-effective approach that reduces the need for in-service teachers' professional development and ensures continued and authentic application of UDL in PK-12 settings. An implementation tool for this work, the UDL Progression Rubric (Novak & Rodriquez, 2018) containing rich descriptive criteria for each UDL Checkpoint along a continuum from emerging, proficient, and expert practice which serves as a useful tool to guide self and peer evaluation and reflection at the pre-and in-service level. We embed the UDL Progression Rubric in reflective assignments at the beginning, middle, and end of our program so that our teacher candidates can self-assess and reflect on their evolving understanding and implementation of UDL.

What follows is a brief overview of each of the three broad Principles of UDL (engagement, representation, and action and expression) accompanied by specific teacher actions to further illustrate classroom applications of the cross-pollination of UDL and CRT (Center for Reaching & Teaching the Whole Child, 2018). The following sections provide pre- and in-service teachers with concrete examples that illustrate the alignment between UDL Principles and CRT discussed by Kieran and Anderson (2019, pp. 1210 - 1213). By intentionally expanding on this previous work to include teacher and student actions, teaching and learning can be purposefully linked to students' own cultural connections as recommended by Gay (2010).

Providing Multiple Means of Engagement

The lack of student engagement is a considerable barrier to learning for students who do not see themselves represented within the curriculum or understand the relevance of what they are learning. Hammond (2015) coined the term dependent learners to describe the impact of educational inequalities often experienced by culturally and linguistically diverse students. For example, a dependent learner will sit passively and wait if stuck until their teacher intervenes, while an independent learner activates cognitive strategies for getting unstuck (Hammond, 2015, p. 14). The UDL Guidelines provide teachers with a systematic means of identifying and addressing these and other barriers to student engagement with evidence-based practices associated with the affective network of the brain (CAST, 2018b).

A key question for teachers to ask regarding student engagement is does my teaching provide options that can help all learners (a) regulate their own learning, (b) sustain effort and motivation, and (c) engage and interest all learners (CAST, 2020). For example, teachers can use UDL Checkpoint 8.1 *Heighten salience of goals and objectives* to engage learners in assessment discussions of what constitutes excellence and generate relevant examples that connect to their cultural background and interests. The power of the UDL Guidelines is its cohesive approach to assist teachers in systematically addressing and remediating such barriers to student engagement.

Understanding the importance of student engagement is an entry point to UDL and how we introduce the UDL framework to students in our program. Based on this understanding, students practice to apply the UDL framework to teaching and learning. Early in the program, course assignment examples include structured classroom observations and microteaching with an explicit focus on student engagement. Providing students with access to PK-12 classrooms that exemplify sound UDL implementation is essential in this early stage of teacher preparation.

Figure 1 illustrates the alignment between Hammond's CRT Themes and UDL Checkpoints pertaining to student engagement. Some UDL Checkpoints are applicable across Hammond's CRT Themes. For instance, UDL Checkpoints 7.3, 8.3, 8.4, 9.1, 9.2, and 9.3 can be applied to address Awareness as well as Community of Learners and Learning Environment. UDL Checkpoints 7.1 and 7.2 can be applied to address Learning Partnerships. This alignment can be used as a guide to intentionally design ways to motivate and engage students in culturally relevant ways. By taking these teacher actions, pre- and in-service teachers can intentionally use pedagogies that value and celebrate diverse ethnic, racial, and linguistic connections (Waitoller & Thorius, 2016). Thus, PK-12 students can take actions to engage in culturally meaningful learning opportunities.

For example, UDL Checkpoint 8.3 *Foster collaboration and community* is aligned with Hammond's CRT Theme of *Community of learners and learning environment*. To implement this UDL and CRT alignment, the teacher can promote students' uses of oral language, fluency, and comprehension through collaborative learning and reciprocal teaching activities (Doran, 2015; Piazza et al., 2015). These teacher actions result in students actively using oral language, fluency, and comprehension while engaging in collaborative learning and reciprocal teaching activities (Doran, 2015; Piazza et al., 2015). Another example to illustrate this alignment is UDL Checkpoint 8.2 *Vary demands & responses to optimize challenge* and Hammond's CRT Theme of *Information Processing.* To implement this alignment, teachers can use digital and visual literacy supports to optimize student motivation (Richardson et al., 2012). Yet another way to enhance student engagement is by using UDL Checkpoint 9.2 *Facilitate personal coping skills and strategies, which is* aligned with Hammond's CRT Theme of *Awareness and Community of Learners and Learning Environment.* This Checkpoint prompts teachers to leverage instructional approaches that convey intelligence is flexible instead of fixed (Hammond, 2015; Ricci, 2013).

Providing Multiple Means of Representation

Barriers to students' ability to process information are complex, multifaceted, and often compounded by educational inequities. For example, dependent learners do not retrieve background information about a subject without prompting while independent learners have internalized cognitive strategies to retrieve information from their long-term memory (Hammond, 2015). Adding superficial cultural references to the existing curriculum does not build a student's ability to process complex information (Hammond, 2015). The representation principle of UDL focuses on how teachers can proactively address areas of the brain's recognition network to teach their students strategies to process complex information.

A key question for teachers to ask about the information they present to their students is does the information provide options that help all learners (a) reach higher levels of comprehension and understanding, (b) understand symbols and expressions, and (c) perceive what needs to be learned (CAST 2020). For example, UDL Checkpoint 1.3 *Offer alternatives for visual information* ensures equal access to information among all learners (CAST, 2018b). In addition, UDL Checkpoint 2.3 *Support decoding of text, mathematical notation, and symbols* ensures equal access to knowledge by removing barriers to decoding by providing options for information processing and comprehension. As another example, UDL Checkpoint 2.4 *Promote understanding across languages* prompts teachers to make all key information in the dominant language (e.g., English) also available in the first languages (e.g., Spanish) for learners with limited English proficiency. Ensuring that all students can process information strengthens and expands students' cognitive capacity so that they can engage in deeper, more complex learning (Hammond, 2015). Modeling, one of the evidence-based practices of CRT identified by Aceves and Orosco (2014) is another example of a teaching strategy that is organized within this principle under UDL Checkpoint 3.3 *Guide information processing and visualization*. The UDL Guidelines provides teachers with a systematic means of identifying and addressing such barriers to information processing.

Learning how to provide students with multiple means of representation is well suited to our department's methods coursework. Here the focus is on assignments that provide our teacher candidates opportunities to use the UDL framework to systematically identify barriers to learning and develop and implement lessons for diverse learners. Strong university-school partnerships are essential here to ensure that our teacher candidates are placed in classrooms where they can observe robust examples of UDL implementation and receive meaningful and actional feedback that is aligned with their coursework from their host teachers.

Figure 2 illustrates the alignment between Hammond's CRT Themes and UDL Checkpoints pertaining to providing students with multiple means of representation. Some UDL Checkpoints are applicable across Hammond's CRT Themes. For instance, UDL Checkpoints 1.1, 1.2, 1.3, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, and 3.4 can be applied to address Awareness, Learning Partnerships, as well as Information Processing. The following examples provide teachers with concrete examples of how to intentionally choose strategies and materials that are educationally appropriate and culturally relevant for their students.

For example, UDL Checkpoint 1.1 *Offer ways to customizing the display of information* is aligned with Hammond's CRT Theme of *Awareness, Learning Partnerships,* and *Information Processing.* To implement this UDL and CRT alignment, teacher can incorporate inherently

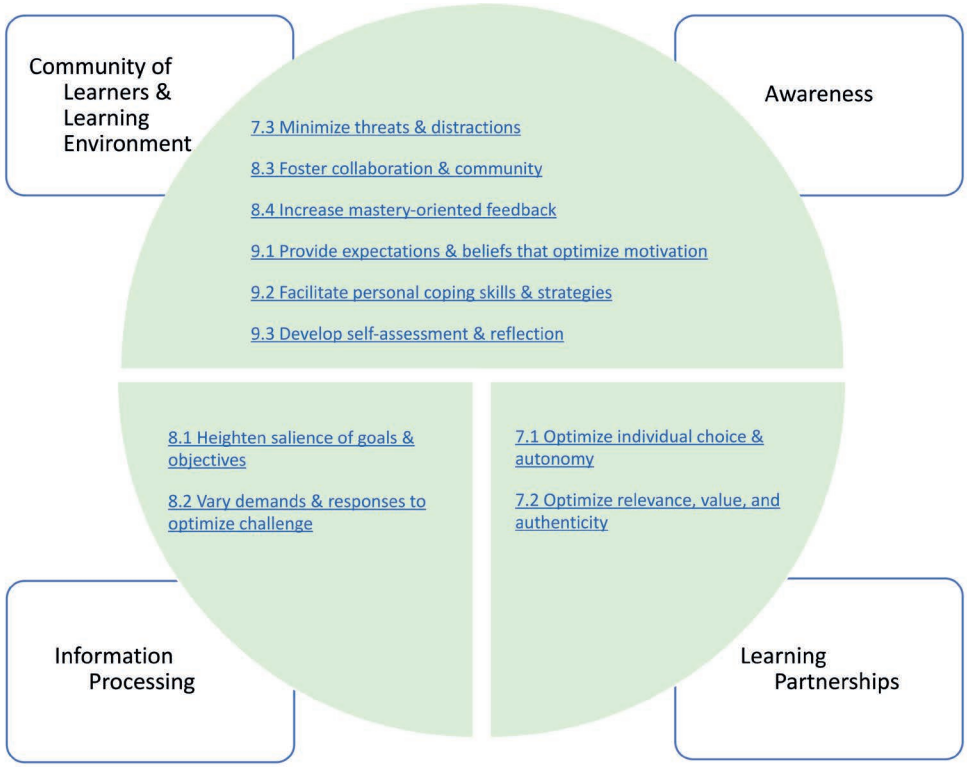

Figure 1

flexible approaches to customization instead of a one-size-fits-all approach (Hackman & Rauscher, 2004). As a result, students can work with their teacher to flexibly match customized display features with learning strengths and needs (Hackman & Rauscher, 2004). Another example is the alignment between UDL Checkpoint 3.1 *Activate or supply background knowledge* and Hammond's CRT Themes of *Awareness, Learning Partnerships, Information Processing,* and *Community of Learners and Learning Environment.* To implement this alignment, teachers can use a variety of examples, scenarios, and vignettes that are ethnically and culturally diverse to represent concepts, principles, skills, and ideas (Gay, 2002). As a result, students can process learning concepts, principles, skills, and ideas through ethnically and culturally diverse examples, scenarios, and vignettes in accordance with their dominant linguistic and cultural background. To implement the alignment between UDL Checkpoint 3.3 *Guide information processing and visualization* and Hammond's CRT Theme of *Awareness, Learning Partnerships, Information Processing,* and *Community of Learners and Learning Environment,* teachers can flexibly prepare and use materials that are designed based on students' cultural repertories (Waitoller & Thorius, 2016). As a result, students can process and transfer their learning through materials prepared based on their own cultural repertories including familiar ideas, concepts, and scenarios (Waitoller & Thorius, 2016).

Providing Multiple Means of Action and Expression

The UDL Principle pertaining to action and expression ensures that teachers provide their students with a range of ways to demonstrate their learning (CAST, 2018b). Beyond providing students with different methods of sharing their knowledge such as storytelling and other narratives as recommended by Howard and Navarro (2016), this principle also provides teachers with evidence-based practices to support and strengthen students' executive functions. For example, dependent learners are often unsure of how to tackle a new task, while independent learners utilize strategies and cognitive processes to complete new tasks presented to them (Hammond, 2015). This final UDL Principle addresses the brain's strategic network by providing students with options for physical action, expression and communication, and executive functions (CAST, 2018b).

A key question for teachers here is does this activity provide options that help all learners (a) act strategically, (b) express themselves fluently, and (c) physically respond (CAST, 2020). An example of this can be seen in UDL Checkpoint 5.3 *Build fluencies with graduated levels of support for practice and performance* which ensures that teachers scaffold practice and performance through metacognitive strategies (e.g., self-instruction) for promoting learning independence. Using the UDL Guidelines, teachers can proactively leverage critical CRT practices to support their students to become strategic and goal-directed (CAST, 2018b).

Our program culminates with student teaching, which provides our teacher candidates with rich and continuing complex opportunities to hone their ability to assess and analyze student learning.

Teacher candidates receive ongoing support in their use of the UDL framework to plan and implement instruction from their cooperating teacher, university supervisor, and seminar instructor. Student teaching is arguably the most critical time for robust university-school partnerships to ensure that teacher candidates are placed in classrooms with teachers who will serve as exemplary models for UDL implementation and provide ongoing mentorship in UDL implementation that is strongly aligned with their pre-service preparation.

Figure 3 illustrates the alignment among Hammond's CRT Themes and UDL Checkpoints pertaining to providing students with multiple means of action and expression.

Some UDL Checkpoints are applicable across Hammond's CRT Themes. For instance, UDL Checkpoints 4.1, 5.1, and 5.3 can be applied to address Community of Learners and Learning Environment as well as Information Processing. UDL Checkpoints 4.2, 5.3, and 6.3 can be applied to address Information Processing. The following examples provide teachers with concrete ideas to support students as they strategically navigate their learning process and demonstrate what they learned in culturally and linguistically meaningful ways. The teacher actions illustrate how teachers can intentionally implement ways to support their students' learning processes in culturally relevant ways. This section also calls for teachers to check their own assumptions about students and their cultures (Dray & Wineski, 2011).

For example, UDL Checkpoint 5.3 *Build fluencies with graduate levels of support for practice and performance* is aligned with Hammond's CRT Themes of *Awareness and Learning Partnerships.* This can be implemented by teachers scaffolding practice and performance using metacognitive strategies for promoting learning independence and overcoming challenges to practice and performance (Kieran & Anderson, 2019). As a result, students can use metacognitive strategies to increase their stamina for independent practice and overcome learning challenges (Kieran & Anderson, 2019). Another example is the alignment between UDL Checkpoint 6.2 *Support planning and strategy development* and Hammond's CRT Themes of *Awareness* and *Learning Partnerships.* Here, teachers can enact a vision that explicitly embraces racial equity (Hyler et al., 2021). As a result, students can engage in strategically planned learning activities and strategies built upon racial equity (Hyler et al., 2021). To implement the alignment between UDL Checkpoint 6.4 *Enhance capacity of monitoring*

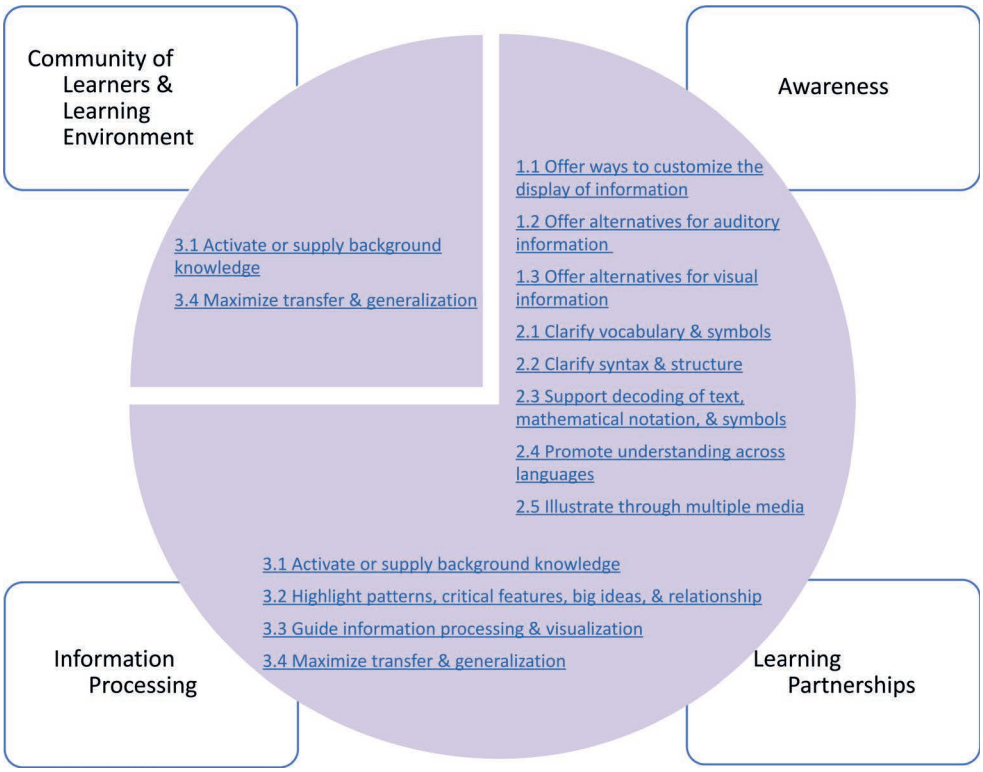

Figure 2

progress and Hammond's CRT Themes of *Awareness* and *Learning Partnerships,* teachers can reflect on the preconceived attributions that they have about students to challenge teacher assumptions (Dray & Wineski, 2011). As a result, students can build behavioral and cognitive strengths and overcome challenges (Dray & Wineski, 2011) while building their capacity for monitoring their progress.

Final Thoughts

This article provides a rationale for the cross-pollination of two asset-based pedagogies: UDL and CRT and specific examples that illustrate the important role that strong school-university partnerships play to address potential barriers to UDL and CRT implementation. Concrete examples of implementation at one university along with specific teacher and student actions further illustrate implementation of this cross-pollination. Since teaching and learning are culturally situated and vary across and within cultural and linguistic groups (Gay, 2010), it is important for pre- and in-service teachers to understand this cross-pollination when using the UDL Guidelines as an implementation tool in their classrooms to proactively identify and address potential barriers to student learning while sustaining their students' cultural and linguistic identities.

PDSs and school-university partnerships have a long history of embracing teaching practices and structures that support equity and social justice (Zenkov et al., 2013). This commitment to addressing issues of inequity is evident in their scholarship (Myers & Jenkins, 2020; Savick & Logan-Washington, 2021; Zenkov, et al., 2020) and the NAPDS Second Edition of the Nine Essentials (NAPDS, 2021, p. 4):

A PDS is a learning community guided by a comprehensive, articulated mission that is broader than the goals of any single partner, and that aims to advance equity, antiracism, and social justice within and among schools, colleges/universities, and their respective community and professional partners.

Given the complexity of the UDL Guidelines and the culturally situated nature of teaching and learning, the cross-pollination of UDL and CRT operationalized in this article is ideally suited to the collaborative and trusting partnerships that exist within PDSs and school-university partnerships (Tseng, et al., 2017). It is our belief that the complexity of this work, coupled with the imperative need to address equity issues in our PK-12 classrooms, requires strong school-university partnerships guided by the revised National Association for Professional Development School's (NAPS) Nine Essentials (National Association for Professional Schools, 2021).

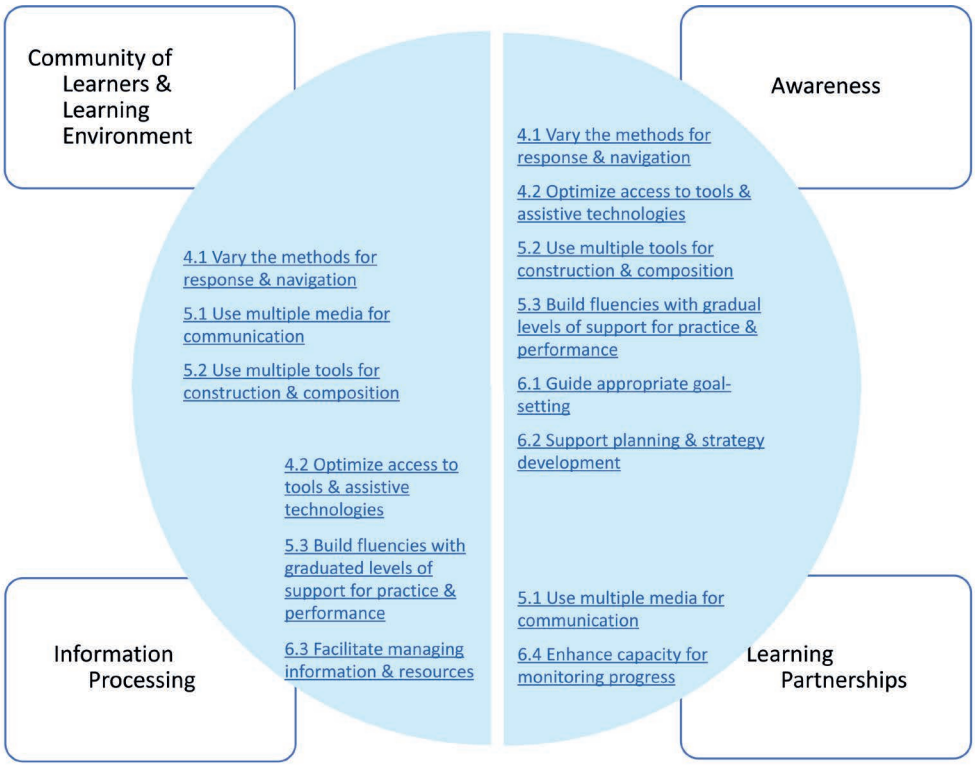

Figure 3

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A version of figures with active links can be found here- https://tinyurl.com/pdsp-17-1-udl.

Digital Storytelling Workshop: A PDS Community Collaboration

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Introduction

Communication is a 21st century success skill (Thompson, 2020), a complex, essential literacy that has been transformed by the vast array of new technologies (Miller, 1996; National Education Association, 2010; Partnership for 21st Century Learning, 2015; Selber 2004). Many public school students struggle to develop critical literacy skills necessary for the demands of 21st century communication. Therefore, there is a definite need to enhance and support the development of these skills, which will boost their chances of success in school and in the future workplace. Communicators in the 21st century not only need to be able to read and write, but they must also decode a variety of images and develop proficiency with the tools of technology (Thompson, J., 2020, p. 6) used for communication purposes. Consequently, educators need to provide mixed-media learning environments in which students can develop and enhance their ability to communicate through digital platforms.

Such learning experiences allow teachers and students alike to construct knowledge—one of the pillars of a Professional Development School (PDS) community (Holmes Partnership, 2007)—while developing important communication literacy skills. Using a medium such as digital storytelling provides students a relevant, interactive, and engaging format to develop 21st Century success skills. Additionally, providing opportunities for students to connect with the local public library is critical because it familiarizes students with an invaluable community resource that can assist with lifelong learning and literacy (American Library Association, n.d.). With this in mind, a digital storytelling workshop was conceived as a way to strengthen university ties with the PDS and the local library, while providing an engaging, essential, skills-focused summer literacy workshop for under-served youth in the community.

Purpose

The purpose of this workshop was two-fold: one, to provide an opportunity to collaborate with the PDS and thereby strengthen our relationship, and two, serve the students in the PDS by providing them with an opportunity to participate in an engaging, skills-focused summer workshop that would be both fun and useful.) In collaboration with the local independent school district, the development of literacy skills was identified as an area of need.

The workshop focused on helping struggling public middle school students develop and enhance their communication skills by providing a summer digital storytelling workshop through a collaboration with the local state university, public library, and independent school district (NAPDS Essentials 1 & 9). Graduate students from the local state university led the workshop and collected and analyzed data based on the following inquiries to assess the efficacy of the workshop: Do students who participate in the creation of digital stories develop enhanced communications skills by learning to organize their ideas, ask questions, express opinions, and construct narratives? Do students benefit from digital storytelling to learn to create stories for an audience, and present their ideas and knowledge in an individual and meaningful way?

Literature Review

Storytelling is at the core of the human experience, a universal experience that ties all cultures past and present (Smith et al., 2017). As Boris (2017, Dec. 20) pointed out, effective "storytelling forges connections among people, and between people and ideas" while the stories themselves "convey the culture, history, and values that unite people." And in their retelling, storytellers perpetuate the ongoing process of story creation and the transfer of knowledge.

Constructing Knowledge

In a similar way, theories related to how learning occurs and how knowledge is transferred have been developed, shared, implemented, and revised. Educational learning theories grapple with the basic questions of how learning occurs and what educational process is most effective. Three of these theories, behaviorism, cognitivism, and constructivism demonstrate these different approaches and perspectives on the learning process. Behaviorism "views learning as a 'cause and effect' mechanism, in which external factors lead to a response, and over time, this response becomes a learnt behavior" (Duchesme et al., 2013, p. 160).

According to Ertmer and Newby (1993), "Cognitive theories emphasize making knowledge meaningful and helping learners organize and relate new information to existing knowledge in memory" (p. 54). Ertmer and Newby find the primary assumption