Towards a Socio-technical System of Culturally Responsive Teaching: The Interplay between Individuals, Communities, and Resources

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Culturally Responsive Teaching (CRT) [8] is a set of instructional practices that acknowledges and incorporates students' identities and backgrounds into the classroom in a way that makes learning more effective and relevant for culturally, rhetorically, and ethnically diverse students. As classrooms becoming more diverse, recognizing and celebrating students' cultural traits and characteristics are becoming increasingly effective to cultivating positive educational outcomes [3, 13]. However, most curricula are designed having middle-class white students as the main audience, which causes students outside of this group to often be imposed to "forget" their own cultural practices and adapt to the "norm" [14]. Due to these gaps in the curricula design, an opportunity gap between students of diverse backgrounds and those whose backgrounds align more with the focus of the curricula is created [11]. Embedding students' cultural knowledge and experience into the education materials can improve their engagement and academic achievement [16]. Further, CRT cultivates students' "cultural integrity and individual abilities" because their backgrounds are acknowledged and represented in teaching practices [9]. While CRT directly helps students with diverse cultural backgrounds, it is also useful for other students as it gives them the opportunity to learn about different cultures and perspectives than what they are familiar with [15]. Therefore, it is of the upmost importance to create a space where (1) all students are respected and empowered, and (2) their differences are acknowledged, discussed, and incorporated in a meaningful manner. This will not only help foster a culturally responsive classroom, but one that is supporting social justice.

Social justice can be broadly defined as equal rights, opportunity, and treatment for all [18]. In the field of education, social justice involves exposing students to different real-world issues and worldviews, and encouraging them to critically analyze inequities that arise [17]. Dell'Angelo [6] relays four teaching practices that can be done in creating classrooms for social justice: connecting to students' lives, discussing real-world problems and multiple perspectives, creating classroom community, and including authentic assessment. These practices are similar to those that we found are recommended for CRT. A research study conducted a qualitative analysis to identify the instructional strategies used to teach diverse learners in terms of language and culture; the five emerging practices were: dialogue, collaboration, visual representation, explicit instruction, and inquiry [15]. Through these teaching practices, both CRT and social justice in education aim to expand students' perspectives of people from diverse backgrounds to help them relate and empathize with others, and also embrace their own identities [4, 15, 2]. Through a review of both CRT and social justice works, Bassey [2] concludes that social justice can be achieved through CRT, as this approach "activates civic citizenship of all students, keeps students awake, and makes them active participants in the fight for social change".

However, researchers have found that teachers encounter practical challenges with both CRT- and social justice-informed teaching. For CRT, one of the barriers is an individual's insufficient knowledge about different cultures, and even for those who do have such knowledge, few have been able to extend it beyond the classroom and incorporate it with real-world problems [10, 15, 5]. In addition to being unfamiliar with different cultures, a lack of proper training was another challenge that many teachers faced in meeting the

academic needs of culturally diverse students [15]. Researchers also found that the curriculum itself poses a barrier for teachers because they feel that they may not meet both the curriculum requirements and the academic performance standards imposed on them [12, 16]. In justice related education, teachers face similar issues including "restrictive school policies, a lack of support from colleagues, resistance from students, and insufficient personal or professional resources" [7, 1].

As a means to overcome these challenges and facilitate CRT- and justice-informed education, we aim to design a socio-technical system of CRT practices by creating a "CRT agency" between teachers in diverse locations and expertise. As the first step, we investigated how 16 secondary teachers understand and implement their students' cultural identities in the classroom. Based on qualitative analyses of the interviews with the teachers, several challenges that teachers face emerged involving either the lack of, or abundance of diversity in their classrooms. There were some participants who felt that they could not effectively incorporate different cultures because they did not have any examples that they could reference to in their class due to the lack of diversity in their school. This challenge may also cause participants to feel like it is difficult to have a classroom that advocates for social justice. For one participant whose school is located in a culturally-homogeneous region, while she had knowledge of other cultures, she felt that including them in her lessons would not make an impact: "I worry that sometimes projects that really try to explore differences in culture would lose a lot of power just because they have so much of their shared history." On the opposite end of the spectrum are participants who have difficulty in trying to incorporate their students' cultural identities due to the high cultural diversity they have in their classroom. These teachers felt like they could not celebrate or incorporate the diverse cultural backgrounds of their students due to time constraints. So, while these participants still participated in CRT, they did so in a lesser manner than their counterparts who did not encounter this challenge.

These two extreme cases suggest that challenges in CRT stem not only from a lack of awareness and resources, but also from teachers' perceptions of students' diversity and expected education outcomes. In other words, our preliminary findings indicate complex interactions between (1) individual-level characteristics such as knowledge, perception, and history, (2) school- or community-level features such as cultural diversity, curricular requirements, and collective experiences, and (3) material resources such as time, budget, and facilities. We argue that designing a socio-technical system of CRT practices needs to begin with acknowledging these complex interactions. Particularly, designing educational technology for CRT as an agency for facilitating CRT practices requires an understanding of how the interplays between these factors manifest in classrooms and how the technological components embedded in educational practices could mediate or moderate such interplays in equitable and effective ways.

These observations lead us back to our original question: how can we facilitate CRT for socially equitable and inclusive education? Theoretically, understanding justice in educational contexts is already challenging, because tensions are created on teachers' practices due to the interplay between resources, teachers' perception of students' backgrounds, and community characteristics. To thoroughly examine the concept of justice in educational contexts, particularly the CRT-related one, it is necessary for researchers to understand how such tensions are created, what factors contribute to these tensions, and what opportunities of agencies exist. From a design perspective, it is imperative to understand the roles of technology in CRT practices. As many teachers rely on their own discretion in using technology for implementing CRT, there are ample opportunities to create a technological agency in the socio-technical system of CRT practices, but this is possible only based on a thorough understanding of the existing tensions and the interplays between key factors. Finally, this research direction informs practical approaches to engage the community of educators. As the tensions on CRT are identified, technological and cultural probes can be actively developed to elicit teachers' values, beliefs, and attitudes on the CRT agency that could be embedded in their CRT practices.

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