# Preparing Educators for Culturally Responsive Teaching Through Technical Cultural Representations

Kevin M. Oliver, Angela M. Wiseman, & Cori Greer-Banks

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*This paper describes a professional development program that is designed to prepare in-service educators for culturally responsive teaching (CRT) through practice with the development of technical representations of cultural themes in an international context. Six categories of technical cultural representation are introduced with examples from both CRT literature and our program: cultural mapping, inquiring, writing, augmenting, documenting, and making. Our program features Saturday classes in spring, a two-week study abroad immersion in summer with portfolio development, and follow-up classes in fall with project sharing and lesson planning. The program has run seven times in four countries between 2011 and 2019, introducing 128 educators to CRT strategies enabled by technology while developing identities as culturally responsive educators with expanded cultural perspectives. Findings from an impact study are shared, suggesting the program has been successful in helping most educators learn new technologies and strategies for cultural representation with writing frames and global projects, in particular, being reapplied in classrooms. Some educators also noted they had increased in their understanding of culture-focused activities and themes that were more meaningful and tied into social justice issues, while others had learned to better recognize diverse cultures in their own classrooms and were modifying teaching practices to honor those perspectives and traditions. The paper concludes with design recommendations for others seeking to offer professional development in CRT.*

## Introduction

According to the National Center for Education Statistics (2020), the percentage of American students from Hispanic, Asian, and mixed race backgrounds will continue to increase through 2029 while the percentage of white students will decline by 17% between 2000 and 2029. A majority of students in future classrooms will be culturally and linguistically diverse. A widening gap is forming between teachers who are predominantly white and the increasing number of

minority students they serve. Research has shown a lack of "cultural synchronicity" between teachers and students can have negative effects on minority student achievement in some subjects such as math, and elevated minority behavioral referrals, with calls to better recruit a more diverse teacher pool and to better train existing educators in culturally responsive teaching (CRT) (Joshi et al., 2018; Lindsay & Hart, 2017; Wright et al., 2017). The purpose of this paper is to share the design of a unique professional development (PD) program that aims to prepare in-service educators for CRT (cidre.weebly.com), along with some preliminary evidence of classroom impact and design recommendations for others interested in similar preparation.

## Culturally Responsive Teaching (CRT)

Culturally responsive teaching (CRT) is the theoretical framework underlying our program. CRT is a broad concept based on honoring and building on students' cultural assets "to make learning encounters more relevant and effective for them" (Gay, 2000, p. 29). CRT is an extension of multicultural education (Gay, 2015) which has important tenets of recognizing the importance of culture and integrating diverse perspectives into the curriculum. An important premise of equity-centered instruction, such as CRT, is the acknowledgement that children have been marginalized based on their culture, language, or identities in school settings. Therefore, CRT involves acknowledging the legitimacy of different ethnic groups to incorporate diverse content delivery, cultivating bridges between home and school experiences, using a wide variety of instructional strategies, incorporating appreciation of students own and others' heritages, and bringing multicultural resources across the curriculum (Gay, 2000).

Teachers have particular cultural biases that can affect the expectations and opportunities of children in their classrooms (Gay, 2015); therefore, the way teachers engage and support students' cultural and linguistic diversity could be considered the most important aspect of their teaching. It takes a conscious effort to understand and learn across cultures because our own interpretive lens is based on our own cultural assumptions (Hollie, 2019). For instance, it has been well documented that students are positively affected by exposure to diverse perspectives and characters in literature where they can see themselves but also gain understanding of others (Karam et. al., 2019). Furthermore, teachers' cultural biases can affect how they encourage students to participate, engage, and succeed in classroom contexts.

For teachers to consider their own biases and cultural expectations, they must reflect on their own background and cultural identities and how that impacts their interactions with students, particularly students who come from diverse backgrounds (Byrd, 2016; Haddix, 2016). Teachers must take "critical perspectives on policies and practices that may have direct impact on their lives and communities" (Ladson-Billings, 2014, p. 78). An important first step is to recognize how pedagogies are aligned with linguistic, literate, and cultural hegemony, and that white middle class students should not be the norm for how everyone should learn and communicate (Paris & Alim, 2014). The classroom research of Ladson-Billings (1995) and Gay (2000) has been foundational to how we view CRT and has provided frameworks for expansive thinking and the potential for inclusive learning (Smith, 2020).

As our world becomes more connected through technology and our classrooms more diverse, the goal is for all students to not only feel respected but also respect and engage with different cultural and linguistic backgrounds beyond their own worlds (Milner, 2010). Helping educators become interculturally competent from a global perspective is one way to integrate CRT that is inclusive and respectful in classroom settings. Deardorff (2006) refers to intercultural competences as the way that skills, attitudes, and knowledge take into account diverse cultures in classrooms. Like CRT, interculturally competent teachers support linguistic and cultural diversity, are open to diverse ways of knowing, and approach curriculum in inclusive and expansive ways (Dimitrov & Haque, 2016; Murray-Garcia & Tervalon, 2017). As with CRT, in order to develop cultural competence, teachers should understand their own cultural identities, be able to anticipate and respect that students are different, incorporate perspective-taking so that students begin to understand that people have different perspectives, and model acceptance and non-judgement for exploring diverse cultural or social orientations.

At the beginning of our PD program, global and cultural frameworks are introduced to set up opportunities for teachers (and later their students) to examine cultural differences. For example, global pathways such as the UN Sustainable Development Goals are issues faced by most countries (e.g., climate change, immigration) for which solutions (or apathy) tend to be cultural in nature and highlight differences in cultural approaches and values (Peters, 2009; UN Foundation, 2020). Also, cultural universals are items found in all countries that vary across cultures, again providing an opportunity to study cultural differences (e.g., leaders, marriage, birth and death rites, toys) (Payne & Gay, 1997). Global pathways and cultural universals can overlap with social justice issues in certain areas (e.g., inequities in education and economics; lack of access to clean water and energy in the poorest nations). Social justice issues are those where privilege and hegemony impact opportunities (Fabionar, 2020) and one's ability to participate in social and political life (Thrift & Sugarman, 2019). As with global pathways and cultural universals, social justice issues are often common across nations, but cultures differ in perspectives toward issues and the cultural products and practices they apply or fail to apply in resolving them (Cutshall, 2012).

Research demonstrates that it can be challenging for teachers to engage critically with social justice topics since they have limited time, materials, and resources alongside pressures to follow standards and scripted curricula. Our PD program aims to provide educators with experiences investigating cultural themes with social justice ties and representing those themes digitally. Afterward, they can work more effectively with their own students to elicit and honor inclusive cultural perspectives and identities while building cultural understanding.

## Applied Strategies with Technology in Support of CRT

A recent review of interventions to prepare in-service educators for CRT revealed most employed role play or simulation, while only one was based on immersion (Bottiani et al., 2018). International context factors into the design of our program, providing educators with an opportunity to immerse themselves in another culture from a minority perspective, learning what it feels like to speak a different language or to hold alternative views relative to cultural themes they choose to study. To model CRT and provide training that builds on tenets of CRT (Gay, 2000) and cultural competence (Deardorff, 2006), educators in our program select a cultural theme to digitally represent with encouragement to choose themes that elevate understanding of social justice issues. For example, the third author of this paper participated in our program and chose to represent issues of inequity for the immigrant Roma people when visiting Czechia. Themes ideally tie into an educator's content area, with that theme guiding the development of artifacts (cultural representations) within a development-competence portfolio (Baumgartner, 2009) that fosters growth in techniques employed by culturally responsive educators and educator identity development. Opportunities to consider identities are further supported by allotted time for reflection on developing competencies and changes needed in teaching practice, as recommended for CRT training (Byrd, 2016).

Table 1 summarizes the six categories of technical cultural representation currently introduced in our program. This model has evolved across our seven cohorts with each testing new representations and tools. Earlier programs had a strong focus on *cultural writing* merged with media owing to our association with a National Writing Project site. *Cultural mapping* has been applied across all programs, although uses have become more focused on particular cultural themes, as well as nuanced to include a division between maps with cultural details that are simply viewed online contrasted with *cultural augmenting* in digital layers that rely on maps to enhance site-based exploration. All programs have promoted *cultural documenting* of themes on site using traditional audio and video methods with people, whereas recent programs have added support for *cultural inquiring* into data as the field of cultural analytics has emerged and *cultural making* in informal spaces as after-school makerspaces have become popularized.

**Table 1**

*Categories of Technical Cultural Representation Introduced During Training*

| Categories | Descriptions |
| --- | --- |
| Cultural Mapping | relates to layering researched cultural information within placemarks on maps with those details shareable to others via web browsers |
| Cultural Inquiring | relates to the study of digital cultural resources (primary sources, popular media, data sets, social media) to answer a culture-focused question; inquiry results can be shared via cultural writing, maps, or data dashboards |
| Cultural Writing | relates to the use of varied writing frames (poems, travel writing, book/film reviews, timelines) to present one's own cultural identity or one's understanding of another culture |
| Cultural Augmenting | relates to digitally layering cultural details or perspectives over a geographically-based scene, setting, or context; can empower or give voice to persons who are not typically represented in traditional ways (markers, monuments, museums); given its geographic drivers, augmenting typically merges with mapping |
| Cultural Documenting | relates to the study of cultural topics by capturing authentic cultural perspectives and details directly from persons in a culture; similar to cultural inquiring but more person-based than data-based, and more likely to be represented as audio-visual stories |
| Cultural Making | relates to popular approaches applied commonly in after-school settings such as maker clubs and coding clubs with the potential for "made" artifacts to be reflective of culture (3D prints, games) |

In the following subsections, each category is elaborated with related CRT literature, details about our general application with specific tools, and examples from author three's Roma-focused portfolio to illustrate how one cultural theme can be represented in multiple forms.

## Mapping

Increasingly educators are employing digital mapping tools as a pedagogical approach for researching and representing social justice themes that might otherwise be invisible or abstract to students such as: the prevalence of colonial monuments relative to markers about indigenous people (Mercier & Rata, 2017): the connection between pineapples with ties to slavery in the West Indies and the American south (Dawson & Mitchell, 2017): the aerial comparison of settlements in South Africa highlighting the consequences of apartheid (Schoeman, 2018); the study of political maps and changing borders to understand impacts of genocide (Fitchett & Good, 2012); and the study of access to economic institutions such as banks versus pawn shops, variable by neighborhood income level (Rubel et al., 2017). Customized maps can honor students' cultural heritage as recommended in CRT (Gay, 2000), since included placemarks may not be found in more traditional forms (e.g., monuments, books).

The use of mapping tools to represent cultural themes has become more specific over iterations of our program. Initial cohorts collaboratively edited Google Maps to note any cultural elements they were noticing abroad. We shifted to more coherent Google Maps and History Pin collections that prompted educators to focus on particular themes (e.g., Finnish design economy, cultural museums, recreational opportunities in a given city). While improved, these maps still lacked focus on more critical social justice themes; hence, in current programs, participants are introduced to aforementioned examples of cultural mapping and only include a custom map in their portfolio if it helps to represent their cultural theme. For example, the third author constructed a map to represent Czech Roma genocide during World War II and current immigration of Roma from Hungary and Slovakia to Czechia (see Figure 1).

**Figure 1**

*One Waypoint From a Personalized Google Map Conveying the Czech-Roma Story*
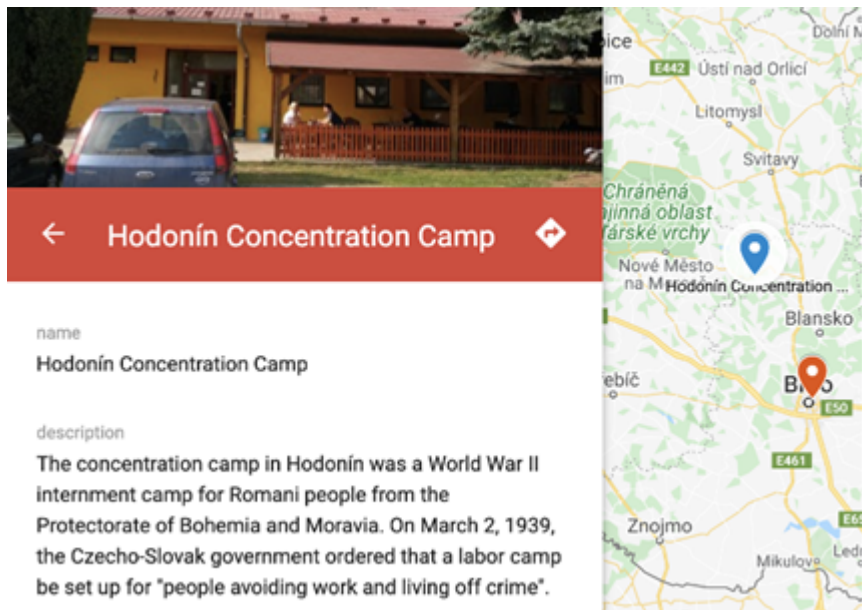
Image shows a Google Map with waypoint that when clicked opens a textual description of the Hodonin concentration camp.

## Inquiring

Another effective strategy to introduce social justice issues and cultural perspectives is inquiry into primary sources, data sets, and social media, with technical representation of emerging themes. Franquiz and Salinas (2011) used inquiry into primary sources to support English development among immigrant students in the context of social justice lessons (e.g., school integration, Mexican civil rights). Students crafted identity texts and letters that illustrated their personal connections to documents. Inquiry into public data sets is supported by tools like *ArcGIS* that allow students to filter public databases, reveal inequities on maps as patterns or hot spots, and answer their own research questions. A related "geo-inquiry" process is available for students to investigate and represent issues in their local communities around which they can take some civic action (e.g., rural access to health care) (Oberle, 2020). A further opportunity to examine cultural trends is afforded by access to user posts on social media sites like Twitter and Instagram (Boy & Uitermark, 2016; Greenhalgh, 2020).

As our program is held abroad, data sets in a different language can be challenging to work with (e.g., public data about schools in Sweden, or social media posted in Czech). Typically, participants can find some resources to inquire into their themes (e.g., online news sites and exhibits, YouTube videos, tweets). We introduce content curation tools such as Wakelet or Padlet to capture and annotate related resources. The third author did not include an inquiry project in her portfolio given underserved communities like the Roma are often not reflected in formal records or popular social sites. However, other educators used Padlet to curate content on topics such as protest music in Prague during the communist occupation and Czech perspectives on green living (see Figures 2 and 3). Such inquiries can provide a lens through which we gain an understanding of diverse perspectives as recommended in CRT (Karam et al., 2019).

**Figure 2**

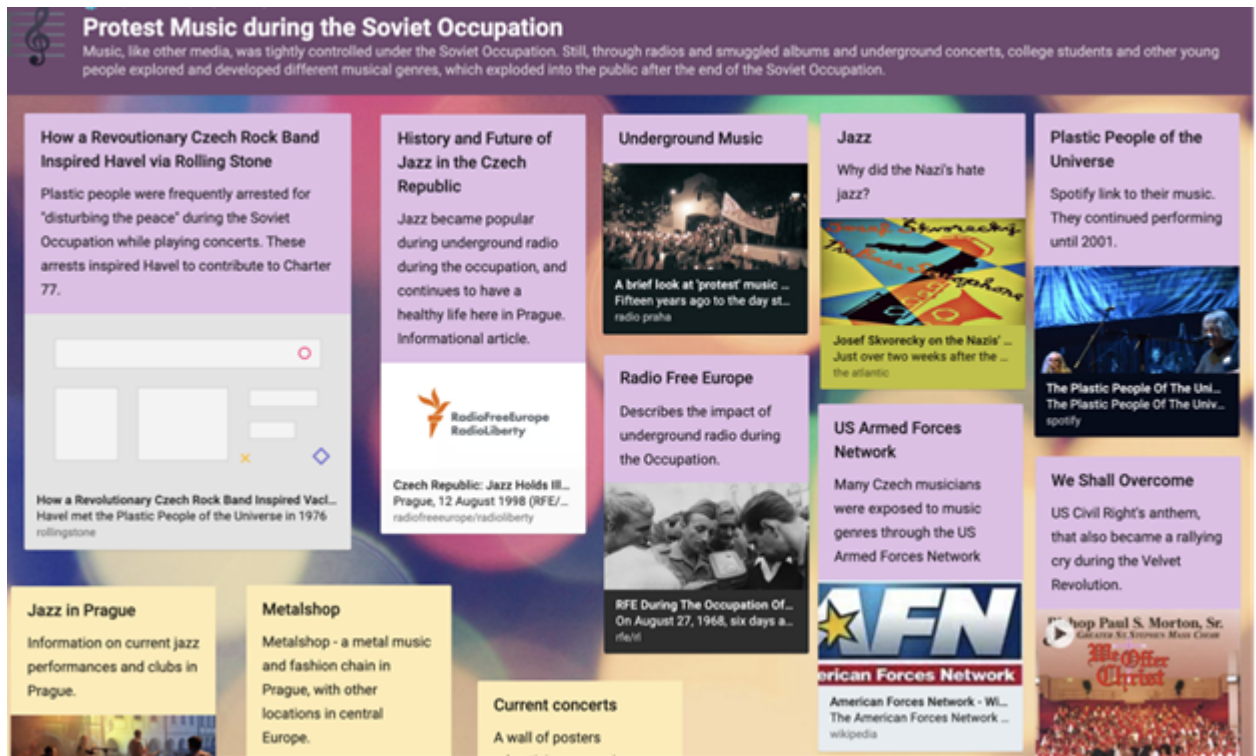*Portion of Curated Padlet on Protest Music in Prague*

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Image shows a sample Padlet page where the student has curated a selection of web-based resources on the larger topic of "protest music during the Soviet occupation."

**Figure 3**

*Portion of Curated Padlet on Green Living*



Image shows a sample Padlet page where the student has curated a selection of web-based resources on the larger topic of "green living" in the city of Prague.

# Writing

Written cultural representations are widely varied and very flexible given writing can be merged with media into multimodal representations with the potential to provide more details than text alone (e.g., Voicethreads with spoken voice and images, ArcGIS StoryMaps with images and geographic details). Educators have applied frames that invite participants to write about their own cultural identities such as identity texts applied to help immigrant youth develop writing cohesion (Daniel & Eley, 2017, p. 244); *Where I'm From Poems* used to elicit "culturally lived experience" (Certo & Beymer, 2020); and *Bio Poems* utilized to build community among teacher candidates and reflect on elements of identity underrepresented in literature (Ness, 2019). Writing frames can also guide reflections on culture during travels such as visual thinking about objects in museums and cultural sites (Yenawine, 2013), and applications of travel writing (Duffy, 2012). As culture is often reflected in books and film, preparing written book and film reviews can provide opportunities to examine and discuss cultural differences as encouraged in CRT (Corrigan, 2015; Hartley, 2006). Finally, expository notes can be written about cultural themes and added to informative timelines presenting cultural information.

In our PD programs, we have introduced and worked with all of the aforementioned writing frames and tools (e.g., poetry and travel writing, analyzing visuals in museums, writing book and film reviews, creating timelines). Writing and sharing personal poems and opinions on books, films, and travels, provides educators opportunities to feel respected within our community while building respect for diverse cultural backgrounds as recommended in CRT (Milner, 2010). Travel writing and visual analysis provides opportunities for educators to develop consciousness about their own cultural assumptions that influence how they interact with or view others who are different (Hollie, 2019).

The third author employed a number of writing frames in her portfolio to help represent the Roma people, with that writing presented in different multimodal forms. A bio poem highlighted characteristics of the Roma figure Radoslav Banga (see Figure 4), while a site-based travel writing entry in our blog shared details about the Roma people as discovered in Brno's Museum of Romani Culture (see Figure 5). A book review of *Jakob's Colors* about a half-Roma boy fleeing persecution in Austria was shared within a GoodReads group set up for our program (see Figure 6). She also wrote about key events in Roma immigration to central Europe and integrated these facts into a media-rich TimeMapper presentation (see Figure 7). Through these projects, she expanded her knowledge of cultures while developing identity as a culturally responsive educator equipped with strategies and tools to apply toward inclusive teaching.

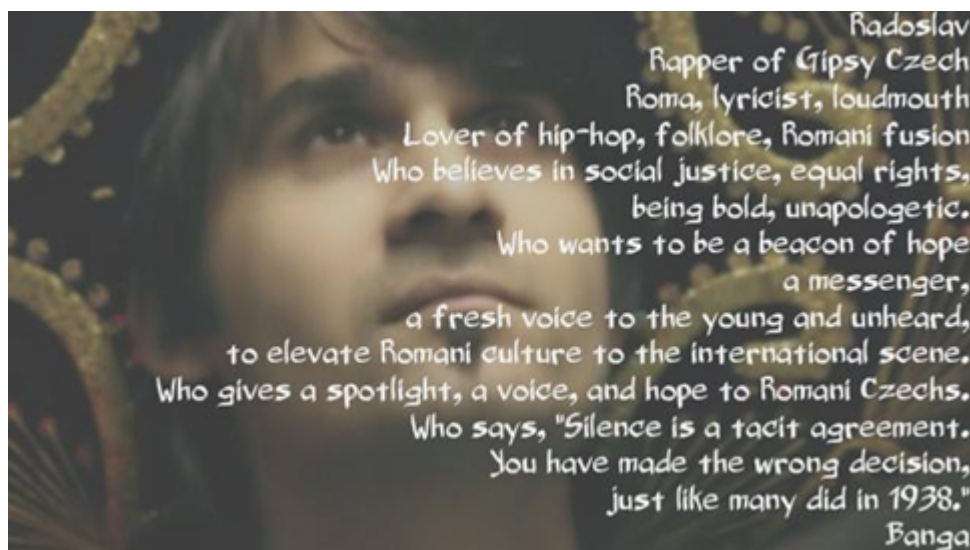**Figure 4**

*Bio Poem on Radoslav Banga*



Image shows a photograph of a Roma rapper Radoslav Banga, with a bio poem about the poet superimposed over the image.

**Figure 5**

*Excerpt from Site-Based Travel Writing Piece*

In the museum, I learned a lot about the history of the Romani in the Czech republic. I learned about their origins from northern India, about their early history throughout Europe, the devastation suffered during WWII, and about the social stigmas they still face today. It was illuminating- a lot of their history is similar to the discrimination and hardships African-American faced, and still face, in the United States today. Romanis also have a rich and varied culture- I highly recommend you go if you have the chance.



Image shows an excerpt from a travel writing piece written by the third author during her participation in the professional development program. The image includes photos the teacher took during a visit to a Romani museum and notes what she learned during that visit: Romani history and social stigmas.

**Figure 6**

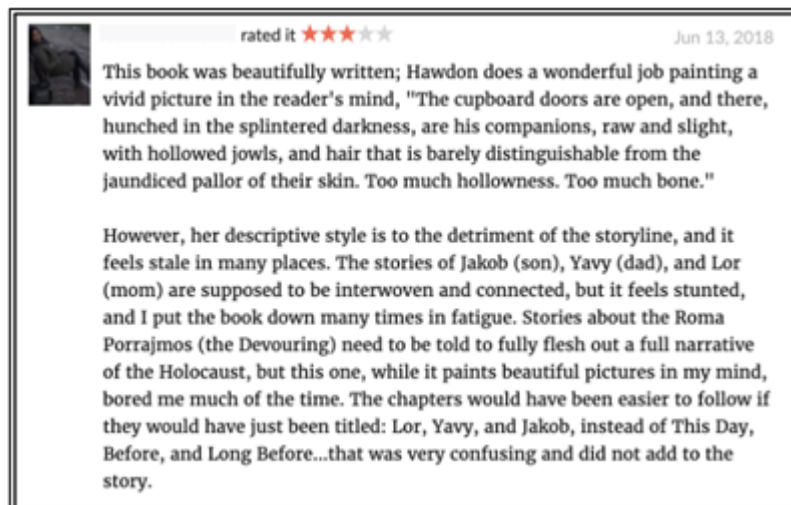*Excerpt from Review of Jakob's Colors Posted on GoodReads*



Image shows an excerpt from a book review written by the third author about the book Jakob's Colors using the GoodReads tool during her participation in the professional development program. The review includes quotations from the book and critiques its descriptive style.

**Figure 7**

*TimeMapper Project Conveying Expository Details About Roma Immigration*
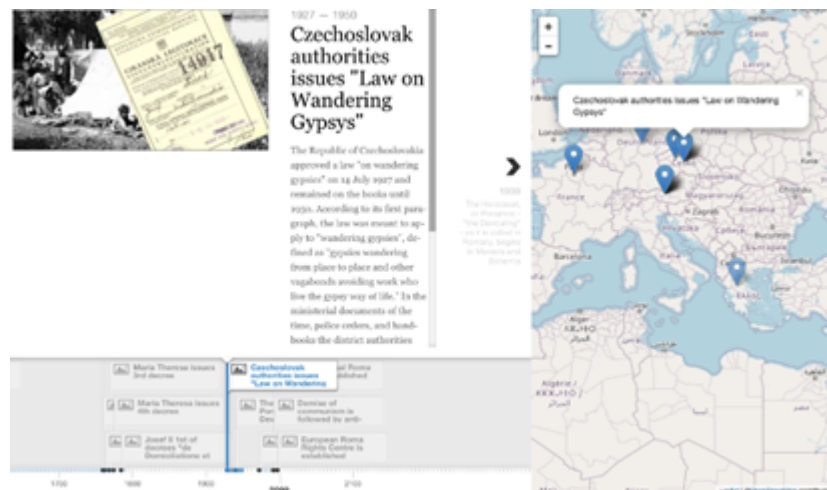


The image shows a screen shot from the third author's Time Mapper timeline project with a map of Europe, several waypoints, and one waypoint selected that relays the story of Czechoslovak authorities issuing a law against "wandering gypsys" in 1927.

# Augmenting

Augmenting activities tie in well with the concept of "participatory literacies" recommended by Peck and Cretelle (2020) in which students have increased "ownership of the curriculum" and produce their own texts (p. 79). As with research methods like photo voice, augmenting gives voice to its creator who can choose what they want an audience to see, read, or hear in a space or when viewing an object like a work of art. Authoring tools for locative stories or tours also fit within this augmenting strategy as a way for creators to walk users/readers through a physical space using mobile devices that retrieve layered information at designated waypoints (augmented layers, or more static images and text). Silva et al. (2017) applied community-based locative storytelling with low income, low literacy adults who were tasked with representing personal stories using HistoryPin, noting they were able to bring visibility to "forgotten" communities (p. 8).

In our program, we introduce available tools for creating augmented layers over objects or scenes as a mechanism to layer further cultural details over the obvious reality (e.g., Overly, ARToolKit, Google ARCore). Also, a classroom-friendly option for augmenting is now provided by the popular FlipGrid tool for video-based discussion. After a user records a video, perhaps with cultural details, a QR code generated by FlipGrid allows viewers to play back that video in a particular context. For example, QR codes could be placed on a Google Map, such that when viewers get to a particular address or place in the community, the video corresponding to that part of the cultural story can be played. Alternatively, a QR code on a map could link back to an open FlipGrid topic to elicit different perspectives on a geographically-based topic from persons walking around a site (e.g., "Who does this monument represent? Who does it exclude? Scan this QR code and record your thoughts").

Since augmenting is new to our program, the third author did not apply the strategy to her portfolio. With traditional AR tools, she might have chosen a national square as a target image and layered a photo of a drawn or 3D-printed monument over the scene as a way to highlight otherwise silenced Roma contributions to that society. With FlipGrid, she might have recorded interviews with Roma persons around Prague and presented them back in their neighborhood context via QR codes on a map. Our 2019 cohort in Prague did have the opportunity to collaboratively construct a locative tour on the social justice theme of Czechia occupation and oppression between 1938 and 1989. Each educator researched a different site that told part of this story, adding it to a locative tour built with the Clio application. The [tour with eighteen stops](#) can be played back online or by walking through the sites in Prague with a mobile phone (see Figure 8). Augmenting in physical spaces is an excellent way to represent and honor the cultural assets and heritage of marginalized students whose voices have not been heard, as recommended in CRT (Bekele et al., 2018; Gay, 2000).

**Figure 8**

*Clio Tour of Sites Related to Nazi/Communist Oppression in Prague*
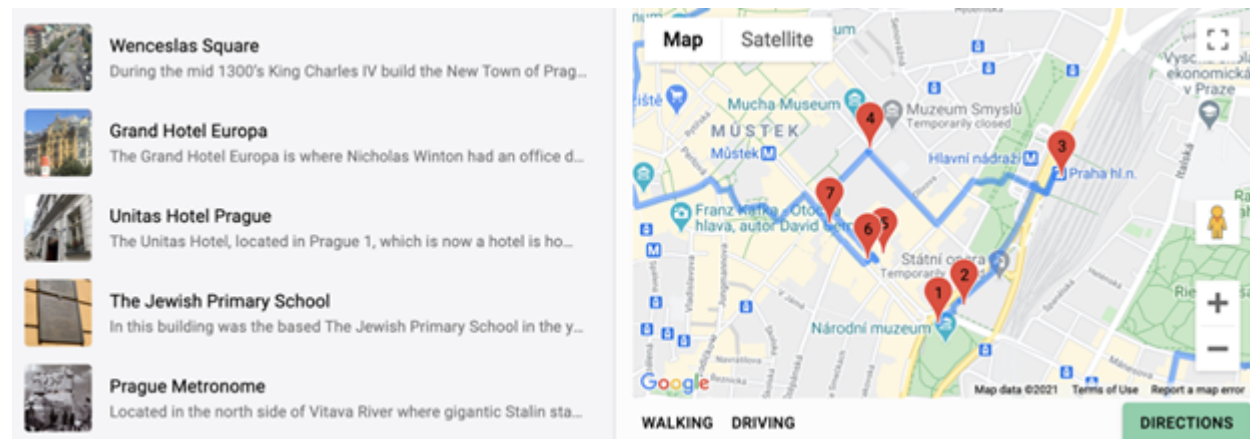


The image shows a screen shot from the tool Clio in which teachers in the professional development program co-created a walking tour to relay different stories of Nazi and Communist oppression in the Czech city of Prague. The right-hand side of the screen shot shows a map with several waypoints marked on the map, and the left-hand side of the screen shot shows a partial list of those waypoints.
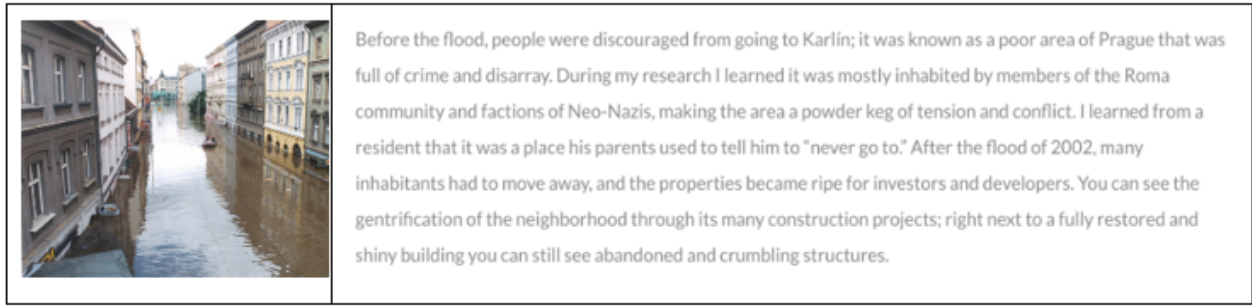
## Documenting

Documenting or documentary provides a means of capturing the stories or perspectives of a cultural group directly from persons in that community. Documentary allows for bridging between home and school as recommended in CRT (Gay, 2000), with students interacting with family members to develop their own cultural identities or with diverse community members to develop understanding of cultural perspectives. Projects can be externally reflective of others, or internally self-reflective as in a study by Phelps-Ward and Laura (2016) of black adolescent girls' video logs that offered "counter narratives to dominant discourse" about their appearance (p. 807). Documentary products take many forms: videos, websites with recorded interviews, photo stories, and even locative tours if they incorporate community perspectives (Allan et al., 2018; Luchs & Miller, 2016). The documentary strategy is touted for its ability to support both the learning of process skills such as interviewing and multimedia composition (Allan et al., 2018) as well as outreach skills when students are given opportunities to share their work in the community and engage in dialogue about presented issues (Luchs & Miller, 2016).

 In our program, one documentary strategy we apply is neighborhood analysis or field research with participants making observations, taking notes and photographs, and speaking with persons in a selected area (Brewer & Solberg, 2009; Krusko, 2009). Participants write about this research in their portfolios and embed slide shows as a type of photo story. The third author conducted two neighborhood analyses in Prague and Brno in settings that were reported to have Roma populations, Karlin and Cejl, discovering Karlin had been gentrified after 2002 floods, while Cejl had an active Roma population that stood out from other areas of Czechia (see Figures 9 and 10). Another documentary strategy we apply encourages participants to join local MeetUp groups or register for AirBnb City Experiences where they can meet with persons from the host country. Participants write short duologues from these experiences to convey conversations they had that revealed cultural perspectives, then import their scripts into animating tools such as Powtoon to layer further contextual details into their stories (setting, artifacts, accents).

**Figure 9**

*Excerpt from Karlin Neighborhood Analysis*

Before the flood, people were discouraged from going to Karlín; it was known as a poor area of Prague that was full of crime and disarray. During my research I learned it was mostly inhabited by members of the Roma community and factions of Neo-Nazis, making the area a powder keg of tension and conflict. I learned from a resident that it was a place his parents used to tell him to "never go to." After the flood of 2002, many inhabitants had to move away, and the properties became ripe for investors and developers. You can see the gentrification of the neighborhood through its many construction projects; right next to a fully restored and shiny building you can still see abandoned and crumbling structures.

The image shows a screen shot from the tool Clio in which teachers in the professional development program co-created a walking tour to relay different stories of Nazi and Communist oppression in the Czech city of Prague. The right-hand side of the screen shot shows a map with several waypoints marked on the map, and the left-hand side of the screen shot shows a partial list of those waypoints.

**Figure 10**

*Excerpt from Cejl Neighborhood Analysis*



The few people I observed seemed to be locals going from one apartment to the next, or kids meeting up with their friends. I received quite a few stares as well- I imagine a black women in this neighborhood is quite out of place. However, the lack of white faces was startling- after a week in Prague I thought most everyone in this country was white! It was quite a shock to realize I had stumbled into a Roma neighborhood, and I was eager to observe all I could without being intrusive. I saw groups of people congregating on stoops, many open windows in buildings, a young mom rocking her baby, and groups of boys walking together. A young boy and a girl rode their bikes in front of me as I walked the neighborhood, curiously looking back at me from time to time. I bet they wondered what the heck I was doing there.



The image shows an excerpt from the third author's neighborhood analysis assignment in which she has presented a collage of photographs taken during her visit to the Cejl neighborhood in Brno which still has Roma residents. As a black woman, the third author's text indicates she was shocked to find a diverse neighborhood in Brno since every neighborhood she had visited in Prague was mostly white.

# Making

The final strategy introduced in our program reflects popular technology-supported activities found in informal, after-school programs, lately under the term making or makerspace. Makerspaces align with some of the core tenets of CRT in leveraging shared equipment and shared expertise among a community which can be mixed-culture or mixed-generational in helping to provide expanded perspectives and skills, and in drawing on students' background interests and experiences to drive design (Gay, 2000; Sias et al., 2016). Hughes (2016) discusses a type of making called "critical making" that "concerns itself with the relationships between technologies and social life, with emphasis on their liberatory and emancipatory potential" (p. 105). This author worked with at-risk youth to construct "all about me" books reflective of cultural identity texts. To ensure after-school activities are culturally responsive, Simpkins et al. (2017) recommend including opportunities to belong, build skills, and integrate work with family and community. Murphy

(2018) relays the story of a school in Ontario where the confidence of English Language Learners was bolstered once they discovered their expertise with hand tools was valued in the makerspace with an opportunity to belong.

Maker projects can be reflective of cultural products, practices, and perspectives such as: sewing soft circuits into traditional garments or quilts; printing 3D objects reflective of cultural tools or "missing monuments" (Maloy et al., 2017); navigating Ozobots along meandering paths to reflect patterns of immigration; engineering shelters reflective of traditional housing with MakeDo kits; or coding games that are reflective of cultural stories and themes (Sandovar, 2016). Some of our earlier PD programs utilized LEGO Story Starter kits with educators conveying cultural stories by making and photographing scenes, then combining those images into comic-like strips (see Figure 11). We currently introduce cultural game coding in Scratch as a means of conveying cultural traditions (see Figure 12). While the third author did not include a maker project in her portfolio, she could have coded a Scratch pong game to conceptually convey the caretaker role of the Roma phuri dai (elder female) by tasking players to keep women and children under the care of the phuri dai in play.

**Figure 11**

*Excerpt from LEGO Story Starter Project on a UN Sustainable Development Goal*
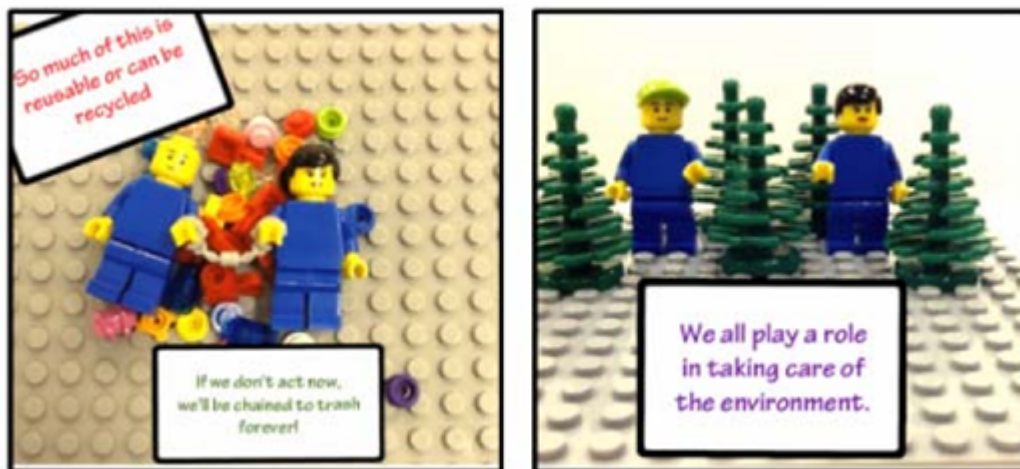


The image shows two built LEGO sets constructed with LEGO Story Starter kits, with superimposed text over the images of the sets. The first set shows LEGO characters on top of varied materials with the characters noting the items can be recycled, while the second set shows LEGO characters among trees noting everyone has a role to play in caring for the environment.

**Figure 12**

Scratch Game Conveying the Italian Cultural Tradition of Flag Tossing
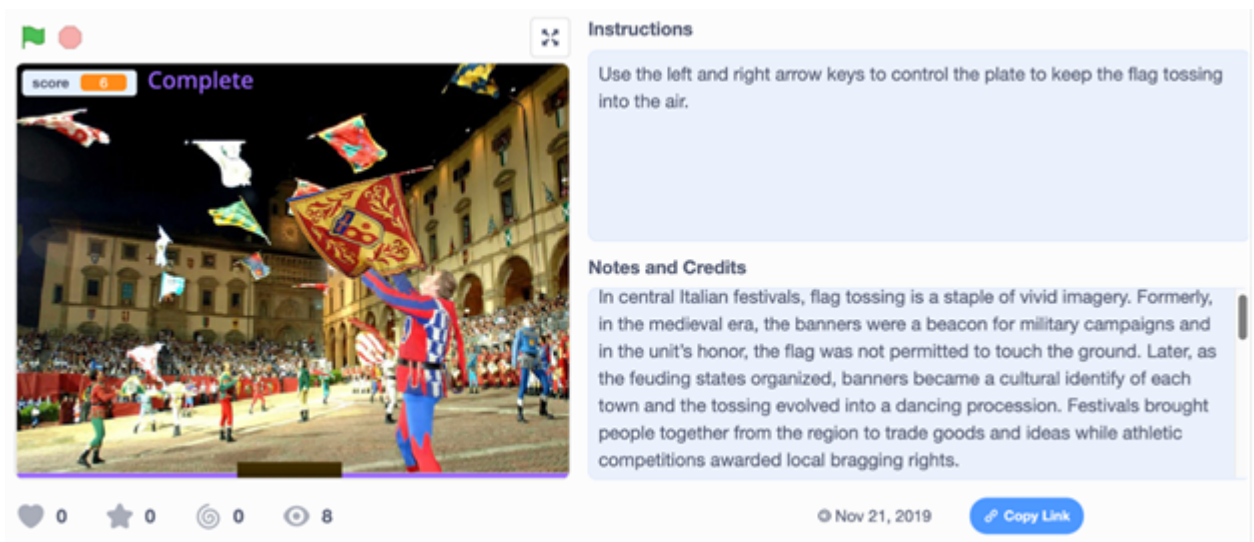
The image shows a Scratch game that conveys the Italian cultural tradition of flag tossing. The game screen includes a background photo of flag tossing, with a paddle along the bottom of the screen that is used to keep a virtual flag which bounces around in play.

## Impacts on Culturally Responsive Teaching

Evaluations and targeted studies about our PD programs have informed educator growth in writing, technical, and cultural competencies (Oliver et al., 2018), as well as pedagogical approaches applied in the classroom (Oliver et al., 2019). An impact study conducted in Fall 2018 with 108 past participants of six programs provided evidence directly related to this paper regarding the generation of more culturally responsive classroom practices after PD. Forty respondents completed a survey reporting how the program had impacted their classroom practice (37% response rate). Thematic analysis was applied to open-ended questions, generating categories to illustrate common areas of impact across educators (Miles et al., 2014).

The first and largest area of impact related to changed teaching practice with new uses of technology and particular pedagogical strategies capable of drawing out cultural elements for deeper reflection and understanding. Almost all respondents cited usage of new technologies in their teaching after the programs with some apparent culturally-reflective uses (e.g., creating custom Google Maps based on classmates' Where I'm From Poems and character travels in non-fiction and historical fiction). Sixteen educators discussed applying written representations of culture that they had practiced in our programs with their own students, including *Where I'm From Poems, Bio Poems*, and travel writing. Sixteen educators across two cohorts also discussed their intent to continue offering global projects between their classroom and international classrooms that had been tested out as a required element in our program.

A second area of impact described by twelve educators related to applying the cultural frameworks introduced and researched in our program in their own classrooms with students subsequently introduced to social justice issues:

> *After the program I changed some units to incorporate more global themes. My 6th grade 'belonging' unit where we used to read one novel together turned into giving the students a choice between 10 books about topics like immigration, refugees, individuals with special needs, books having a connection to the theme.*

> *During this program, I worked with my third-grade team to introduce the UN Sustainable Development Goals to our students. We thought our students would understand that young people can have an impact on helping solve global issues, but the inventions they drew as prototypes to help solve a global goal of their choosing surpassed our expectations. I now have concrete ways to include intercultural competencies and skills.*

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A third area of impact described by five educators related to growth in educator noticing or better recognizing the diverse cultures in their own classrooms and being more responsive by asking students to share and process those differences:

> My school has had an influx of 100 refugee students this school year. Participation in this program was a fantastic reminder to look for the cultural differences in a manner that elevates understanding and is allowing me to build stronger relationships with my students and their families as a result.

> The program impacted me as a teacher because I was inspired to learn more about my students' cultures and backgrounds. As a Language Arts teacher, I was able to bring diverse texts into my lessons and give more opportunities for students to share about their unique cultures.

> I implemented time during morning meetings to allow 'student stories.' . . . during their interactions with each other they are becoming more curious of each other's cultures versus seeing each other as being different and therefore a threat . . .

## Design Recommendations

The design of our program has shifted across seven iterations in a manner that better supports enhanced practice with CRT strategies enabled by technology. We offer the following design recommendations for similar CRT training programs:

- Encourage in-depth inquiry into cultural themes that tie into educator content areas (e.g., an art educator developing projects reflective of art during the Weimar period). Require educators to reflect beyond "cultural celebration" (highlighting Weimar art styles) to also address more political "issues of power and equity" that underlie systemic racism and oppression (looming Nazi/nationalist restrictions on Weimar-related creativity). Encourage educators to engage critically with the curriculum (Paris & Alim, 2014), consistent with appropriately focused, culturally responsive pedagogy (Sleeter, 2011).
- Pair depth of inquiry into cultural themes with breadth in options for technically representing those themes. As shown, a single theme like Roma inequity can be represented using varied strategies (writing, inquiring, mapping, etc.), and having options ensures characteristics of a given theme can be captured while expanding educator tool sets to flexibly empower students of diverse abilities and backgrounds. As reported by Brown and Crippen (2016), educators may better understand the purpose of CRT when evaluating exemplars and looking for contextually-appropriate "leverage points in their classrooms" (p. 488). Ultimately, intercultural competence can be developed around the need for and the means of providing inclusive approaches in the classroom (Dmitrov & Haque, 2016; Murray-Garcia & Tervalon, 2017).
- Build time into PD for sharing projects to give educators exposure to multiple themes and technical modes of representation, as well as opportunities to critically discuss implications for practice. Lopez and Bursztyn (2013) note that cultural responsiveness training must move beyond cultural knowledge to also encourage critical thinking about how "human diversity" influences values, beliefs, and learning (p. 218). Bookend travels with advanced classes to learn tools for representation, and with follow-up classes to share favorite projects and lesson plans that indicate how educators intend to apply the modes.
- Weave inter-cultural interactions into PD as a means of building greater cultural understanding and informing themes. We have supported interactions through specific projects (documentary neighborhood analysis, global projects) and travel (tours and seminars at cultural sites, participation in local groups and experiences). Prater and Devereaux (2009) recommend culturally responsive training include not only opportunities for self-reflection but also opportunities to study those who are different through such means as interviews. Such connections are important to construct knowledge of diverse cultures and intercultural understanding (Deardorff, 2016).

In conclusion, we advocate for PD opportunities that train educators in the noted CRT strategies for connecting with and representing cultural themes. Ideally, opportunities will be immersive in communities or international locales that are

rich in culture and differ from the educator's own background in allowing one to experience difference and develop cultural understanding and competence to empathetically teach increasingly diverse students.

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## Kevin M. Oliver

North Carolina State University

Kevin Oliver is a Professor of Learning, Design, and Technology at North Carolina State University in Raleigh. His research focuses on student acquisition of cultural and scientific outcomes in technology-rich distant (online/abroad) and informal learning settings. He co-directs the CIDRE professional development program discussed in this paper.



## Angela M. Wiseman

North Carolina State University

Angela Wiseman is an Associate Professor of Literacy Education at North Carolina State University in Raleigh. Her research focuses on visual and multimodal literacies, children's literature, and trauma-informed approaches to family literacy. She co-directs the CIDRE professional development program discussed in this paper.

## Cori Greer-Banks

The Exploris School

Cori Greer-Banks teaches 8th grade Humanities at The Exploris School in Raleigh, North Carolina, and formerly taught at the Ramstein American High School in Germany. She holds a BA in History from the University of Maryland, and an MA in English from Old Dominion University.