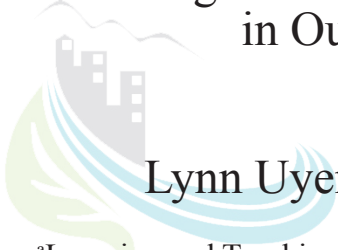# Rebuilding Our Teams to Be Critically Conscious in Our Educational Work

Lynn Uyen Tran[a] and Preeti Gupta[b]

[a]Learning and Teaching Group, Lawrence Hall of Science, University of California Berkeley, USA; [b]Youth Initiative, Education Department, American Museum of Natural History, New York, USA

Correspondence concerning this article should be addressed to lynn.u.tran@gmail.com.

Lynn Uyen Tran, Ph.D., is a Research Director in the Learning and Teaching Group at UC Berkeley's Lawrence Hall of Science. Her work focuses on relating the science of learning to the teaching practices of informal educators and university faculty. She designs professional learning experiences to develop shared language and build learning communities, in-person and virtual.

Preeti Gupta, Ph.D., is Director for Youth Learning and Research at the American Museum of Natural History. She is responsible for strategic planning, program development, human capital development, and research and evaluation for out of school time for youth initiatives.

Rebuilding Our Teams to Be Critically Conscious in Our Educational Work

It is never easy to realize that, despite good intentions, one's efforts to be helpful may cause more harm. That is, in part, the reckoning the ISE field must address as we emerge from the global pandemic striving to do and be better. While there are instances and examples of educational work that exemplify our vision for equity, access, and inclusion, for the most part, ISE practice continues to operate within paradigms from the larger systems of society that perpetuate inequalities. We argue work towards the just and egalitarian goals in ISE organization's equity and access statements fall short without the organization's staff (the humans who do the work) engaging in critical consciousness together. Building on a model from youth

development scholars, we advocate for the need to include humility, compassion, and belonging in critical consciousness. Without these components, unconscious biases shade people's abilities to see the strengths in those different from them, to offer care to everyone (especially people who have been pushed into the margins), and to work towards ensuring everyone is rightfully welcomed, just as they are. Importantly, we must embody these ideas with our staff and in our work culture before we can genuinely practice them for our audiences. Doing so requires a mindset towards professional learning and reflective practice, and then intentionally designing and refining structures to support learning from individual staff into the collective organization.

Keywords: professional learning; reflective practice; critical consciousness; belonging; humility; compassion

Introduction

Setting the Context

The informal science education (ISE) field has been engaging in efforts to address equity and inclusion for several decades. Scholars (e.g., Dawson, 2014a; Feinstein & Meshoulam, 2014) offer evidence of particular practices and insights for ways to advance the work in our designed settings (e.g., science centers, zoos, aquariums; referred to here as ISE organizations). These works take a critical stance on the hopeful narrative the ISE field crafted at its nascency, as we strived to legitimize ourselves alongside learning science in formal, school environments (National Research Council, 2009). We believed ISE organizations to be places that could serve all people of the community, especially those who have been marginalized, through engaging and accessible programs and exhibits. Referencing the US National Research Council's first comprehensive scholarly review, Feinstein and Meshoulam (2014, p. 269) called attention to the argument that:

> … museums and science centers may be better at eliciting positive emotional responses to science, better at demonstrating the relevance of science to everyday life, better at embodying the nature of science, and better at positioning science as something that young people can do. They even suggest that informal science education can bring science to a broader audience, helping to address the persistent inequities of science education.

The argument at the time was based on mounting evidence that supporting science learning and engagement was not the exclusive purview of schools, and that the significant influence of ISE organizations needed to be recognized and understood.

Indeed, the free-choice nature of experiences outside of school are valuable for social, emotional, and motivational reasons. Equity-focused scholars urge us to be more critical of the reality of these contributions. Using visitor demographics, they point out visitors to such cultural organizations were predominantly White, middle class (Dawson, 2014a; Farrell & Medvedeva, 2010). Other research and evaluation efforts shine light on the ways in which the design of these designed

settings uphold the values, ways of knowing, and languages of the dominant culture, making ISE organizations potentially unwelcoming and inaccessible to marginalized communities (Ash, 2004; Dawson, 2014b; Garibay, 2009), and especially for Black populations (Martinez, 2020). Programs in such learning spaces are often designed to attract the elite (Chaffee & Gupta, 2018), or perhaps designed with a deficit-approach that positioned visitors as void of capital and opportunity (Habig et al., 2021). In other words, we are potentially widening disparities in science education by enriching those who are already enriched or problematizing those who are othered. As Feinstein and Meshoulam put it, "unless the situation changes, museums and science centers could even worsen the inequities of science education, rather than improving them" (2014, p. 369).

These are prescient words considering the current global situation. The COVID-19 pandemic has impacted the ISE field in devastating ways. When the doors closed to the public in March 2020, so too did the revenues. An estimated one-third of ISE organizations may remain closed permanently (American Alliance of Museums (AAM), 2020; Collins et al., 2020). Among those who can reopen, staff size and composition has changed, as layoffs and furloughs led to loss in talent. Moreover, due to concerns over virus transmission, the ways people move through spaces and physically interact with each other and things in their surroundings has changed. "Hands-on" science cannot be done in the ways they always have without some modifications, at least within the immediate future. Amidst global interruption from these closures, the murder of George Floyd, an unarmed Black man, while in police custody on May 25th propelled the dialogue about the pervasiveness of systemic racism and anti-Blackness into the mainstream. This incident is not the first to be publicized. But with no place to go and a constant stream of social media, people could not hide from the images of violence and inequities that marginalized groups, and particularly the Black community, have endured for centuries. More people are finally talking about racism, anti-Blackness, and systemic oppression at their dinner tables and in their (video) conference rooms; conversations that we, as a nation, have been taught to avoid. All this to say, the situation has changed, albeit likely not in the way Feinstein and Meshoulam had in mind.

From these tragedies is the opportunity to rebuild teams in ways that put ISE organizations (and the field more broadly) in a better position to address the issues of equality and justice in science education. There cannot be a return to the "normal" that advantaged a select segment of our society and marginalized so many others. Normal is "the usual, average, or typical state or condition" (New Oxford American); it is what we have become accustomed to in this moment, in this place. What is normal here today (e.g., smartphones, composting) is not normal everywhere or a few years ago. Normal can be designed. Recent fieldwide inquiries suggest cultural institutions place high value in doing work in diversity, equity, access and inclusion (DEIA), though many do not have a clear plan or know how to begin (AAM, 2018; Garibay & Olson, 2020). It is important to recognize there is no single solution to fix a problem within a system. People's tendency towards a centralized mindset (Resnick, 1996) leads to the erroneous assumption that "this one thing" will fix the problem of racism or social inequality. The system could be society; it can also be an organization and the delicate network of departments that collectively create the identity of that organization. In this article, we look at the part in the system where we have knowledge, experience, and influence, and begin

there to make changes. We specifically focus on ISE professionals whose job roles involve creating, offering, and supporting learning experiences for audiences (i.e., primarily education departments and educators, but not exclusively).

To begin, we consider the proposed framework for equity in ISE organizations that Dawson (2014a) articulates. Her thinking is inspiring. We argue, however, all of that change is not possible if the humans doing the work are not critically conscious. Next, we describe our theoretical framework in considering the relationship between staff and organizations, and how we think about this relationship for making systems-level change. In the second half of the paper, we offer two propositions (on professional learning and critical consciousness) for rebuilding education teams to enable ISE organizations to work towards the visions of equity and justice.

Framing the Argument

Emily Dawson (2014a) has a call to action for those of us who lead and work in ISE organizations. She asks us to think deeply about the socio-cultural practices and ways of thinking that shape our institution's engagement with audiences through exhibits and programs. She points out working towards DEIA is challenged, in part, because our practice tends to operate within existing paradigms that favor dominant groups. We are enacting assimilation practices. Dawson describes interlocking constructs to reshape an ISE organization's approach to DEIA work: infrastructure access, literacy, and community acceptance.

Infrastructure access refers to whether people can access ISE spaces and experiences. Barriers to access can be visible (e.g., wheelchair ramps, reachable by public transportation) and invisible (e.g., awareness of the institution, unappealing marketing, and staff demographics that do not represent the community). ISE organizations knowingly or unknowingly hold the power for who is welcomed or not (ibid, p. 214). While there are good examples, the reality is that organizations still maintain power when calling the meetings and setting the agendas for collaborative work with communities (Bandelli & Konijn, 2013). With patterns of participation and access to ISE venues consistently narrow (white, middle class, cisgender), organizations are potentially reproducing the disadvantages that exist in the social systems in which they are a part. So, how do we break this cycle?

Literacy examines the rules of engagement when people access ISE spaces; put differently, can people use what they have accessed. There are power dynamics in our designs, such as assumptions about fundamental literacy, scientific background knowledge, or ways of knowing. Learning experiences in ISE organizations often favor English language practices and Western representations of science and people in both exhibits and signage. The physical spaces are structured in ways that exclude people with disabilities. Thus, contrary to Frank Oppenheimer's (1975, p. 11) now infamous statement, "no one ever flunks a museum," our ISE practices can result in people from some communities feeling like they "flunked" (Dawson, 2014b; Martinez, 2020). We add that organizations double down on these exclusionary practices through the ways that educators are prepared and supported to do their work. For instance, youth floor facilitator programs are training grounds

for science communicators (Gupta & Negron, 2017) wherein diverse young people learn how to engage visitors in conversations about science. However, oftentimes, these programs focus on science content and facilitation practices that perpetuate dominant ways of knowing and speaking, even as youth are taught to engage with cultural competence. *This situation begs the question, how can we re-balance the power dynamics to disrupt narrow forms of literacy and re-imagine the processes that have historically privileged certain communities and left out the majority of people?*

Community acceptance inquires whether people are made to feel they belong in the ISE spaces, and how the organization is situated in its local community. This construct pushes staff to take responsibility for practices and mindsets that unintentionally exclude or position audiences at a deficit. There is need to shift towards asset-based schemas that leverage the cultural wealth and capital marginalized communities possess through their lived experiences (Yosso, 2005). *So, how do we value and celebrate differences without fetishizing and essentializing groups?*

Dawson's review provides examples across the field for each of these constructs where organizations, programs, and individuals are addressing social inequities in their work. Indeed, there are instances from which to learn. Knowing all the thought, planning, and resources put into designing ISE spaces and experiences, we are confident that the prevailing persistence of inequalities in ISE practice is not due to intentions to exclude. We argue they continue, in part, through staff's lack of critical consciousness when designing and engaging with the public.

Theoretical Underpinnings

We posit that changes towards DEIA in ISE practice fall short without the organization's staff (the humans who do the work) engaging in critical consciousness together. The work culture to enable developing critical consciousness requires a mindset towards professional learning and reflective practice. To understand this argument, it is helpful to articulate how we build on Sewell's (1992) theorizing of structure and agency. Structures include the resources, tools, ways of thinking, and rules of engagement in different aspects of society, such as an ISE organization or our field. Structures facilitate and organize social activities and interactions. They contribute to what becomes the "culture." Structures can be visible/invisible and formal/informal.

Each staff individually contributes to the organization's mission, and many individuals comprise the collective that constitute the organization. Individuals carry with them the socio-cultural and political views, histories, beliefs, philosophies, styles, knowledge, abilities, and skills from their lived experiences. They bring these characteristics of themselves and the structures that shaped them into the organization as they work. The organization also has its history and structures (e.g., ways of working with partners, approaches to designing exhibits and programs, protocols for proposal writing and fundraising) that come from the collective over time. Since humans have agency and individuals make up the collective, each of us is supposed to be able to influence the organization's structures and transform

the culture of the collective. But that does not always happen. The structures of the individual might or might not align with those of the organization, resulting in tension and exclusion among those with less agency when organizational structures do not value their voices. Due to their social position (Kezar & Lester, 2010) from their job role, gender, race/ethnicity, sexual orientation, etc., some individuals have more agency than others (Sewell, 1992).

With care and attention, we believe structures can be designed to ensure all staff have agency within the organization, not just those in particular groups. Since each ISE organization is part of society, we are hopeful these local transformations can mediate changes in societal structures. Building on this theoretical perspective, in the next section, we offer two propositions for rebuilding education teams to enable and empower educators and organizations to engage in equity work.

Two Propositions for Rebuilding Our Field

Proposition 1: Professional Learning Is Foundational for Organizational Transformation

Rebuilding our teams need to be grounded in professional learning and reflective practice, rather than current models and mindsets for training and development that position staff as lacking and cultivate the mentality of "fixing" and "being fixed" (Tran et al., 2019). This shifted perspective moves our focus away from treating learning opportunities for staff as transactional. Calculating whether this amount of investment in staff will yield that amount of return in their work is a futile exercise. Humans are not robots. Efforts to identify direct correlation between staff development and organizational performance has fallen out of favor, in recognition of this futility (Fuller & Unwin, 2004). Understandably, the desire for improved performance from investments in staff remains. While it is valuable for learning acquired by individuals to transfer to the organization, it is important to recognize that learning is done by humans, not organizations as entities. Learning gains by individuals benefit the entity when people can apply what they learned into how they do their work; the organization "learns" when people transform or create new structures for doing and thinking about their work. Consequently, organizational learning falls short if the individual's learning is not attended to appropriately.

By professional learning, we mean practitioners' ongoing learning about their practice in order to develop their expertise and skills; it is valuable for improving practice regardless of the profession (Webster-Wright, 2009). It places professionals in the role of learners, learning about their own practice. As a corollary, reflective practice is integral to professional learning (Tran, 2019) because reflective practice is the process of learning from one's work experience (Dewey, 1933; Schön, 1983). The educators themselves are hungry for deepening their practice. In a recent survey of 400 educators across a spectrum of ISE organizations, 80% of respondents expressed interest in learning more about how to actively engage with visitors (Ennes et al., 2020). The field has been trending towards these foundations over the past decade (Martin et al., 2019), though progress is slow.

The Workplace as A Place of Learning

Truly anchoring in professional learning involves positioning the ISE workplace as a place of learning for the people who work there (Martin, 2019). This shift can be a challenge because the key objective of a workplace is not learning, but rather successful delivery of their goods and/or services (Fuller & Unwin, 2004). Even in education-focused organizations, like museums and universities, where goods and services pertain to "learning," that learning is for their patrons not their employees. But, learning happens for employees because humans are social organisms who learn as we participate in social activities (Brown et al., 1989; Lave & Wenger, 1991). Work is a prominent social activity throughout our lifetime, especially in adulthood. Places of work are places of learning, regardless of whether workers and managers consider the workplace as such. As we participate in our social activities, humans learn by imitation, collaboration, and instruction (Bransford et al., 2000; Vygotsky, 1978; Wood et al., 1976); in work environments, the places where learning happens have been described as informal, incidental, and formal (Elkjaer & Wahlgren, 2005; Marsick & Watkins, 2001).

Thus, as we anchor education teams in professional learning, we must apply onto ourselves, the robust understanding of learning that we use with our learners (National Academies of Sciences, 2018). That is, learning: is a lifelong process, does not just occur in formal settings, builds on what we know, requires us to dialogue about our thinking, involves space to reflect and wonder, and relies on motivation and emotional engagement. Reflection is an integral part of learning. It involves knowing one's thinking and how to regulate it. Doing so enables a person to detect inconsistencies of thought and identify connections between areas of conceptual understanding. Reflective practice is engaging in the metacognitive aspects of professional learning. It is influenced by a person's motivation, focuses on understanding and solving problems within one's practice, making change from what is learned, and is deliberately learned over time within a community (Tran, 2019).

A Framework for Structuring Professional Learning from Individual to Organizational

In positioning the workplace as a learning environment, professional learning becomes a shared responsibility and opportunity for everyone. However, when it is everyone's responsibility, there is risk that, in practice, no one is responsible. Merely acknowledging that learning at work happens as people participate in doing work can possibly make it difficult for both workers and managers to hold one another accountable for opportunities and gains. In other words, structures are necessary to ensure the informal, incidental, and formal learning that staff engage in at work does not remain compartmentalized, solitary, and invisible. Particularly among those with less agency due to their social position.

Crossan, Lane, and White (1999) offer a multi-level framework to conceptualize links across the three levels of interaction within organizations (individuals, groups, and the organization) based on four social and psychological processes (intuiting, interpreting, integrating, and institutionalizing). These processes inform each other

to lead to organizational learning. Intuiting is "the preconscious recognition of the pattern and/or possibilities inherent in a personal stream of experience" (p. 525) that happens individually; it affects others if they interact with the individual. Interpreting is the process of explaining ideas and experiences to oneself and others, which can occur at both the individual and group levels. Integrating is the process through which a shared understanding is developed among individuals and coordinated action is taken through mutual adjustment, and this process takes place at the group and organizational levels. Institutionalizing occurs at the organizational level when routinized actions transpire or become part of the taken-for granted patterns.

It is possible to use this framework in the architecture for rebuilding departments, as well as designing programs for staff learning (Figure 1). Protocols, tools, and routines for these processes are needed for transparency and consistency. We offer our own experience creating and disseminating the Reflecting on Practice program (Tran & Halversen, 2021), and implementing it at the American Museum of Natural History (AMNH) specifically (Tran et al., 2019) to illuminate this possibility.

Figure 1.

Application of Crossan, Lane, and White's (1999) multi-level framework for organizational learning in Reflecting on Practice
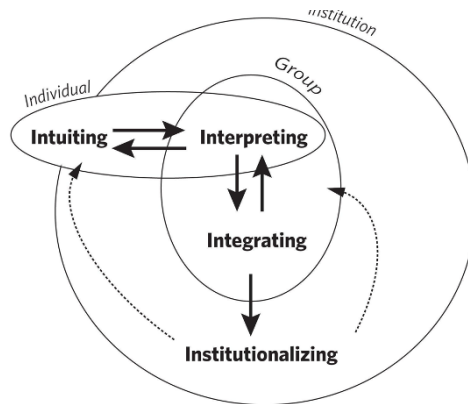
The Youth Initiatives (YI) group that Gupta directs made a collective commitment to learn together using the Reflecting on Practice program to strengthen their sense of community (Tran et al., 2019). The program comprises a suite of routines, activities, and readings (the structures) that push individual staff to express their intuitions and interpretations of learning and teaching for colleagues to consider. The readings are information, arguments, and ideals from the research literature that members take in, ponder, and interpret for their own and shared use. These structures from the program enable individuals to make their practice public, thus pushing the exchange of ideas, values, and experiences between the individual and collective. Meanings are negotiated as the staff interpret their thinking and actions together. The structures become normalized and get integrated by the group as "the way they do things." Members of the group facilitate movement of their new habits and meanings across the institution as they interact with other groups within

the organization.

YI is one group nested within a larger group (Education Department) that also sits alongside other large groups within the organization (AMNH). As members of YI move across these arbitrary boundaries that organize work, they bring with them the structures from Reflecting on Practice and their shifted ways of thinking and doing. Members of YI contribute to transforming the Education group and AMNH in a cohesive way, while also being shaped by these interactions because the movement is two-ways. YI continues to evolve, and the group is not without its flaws. However, the structures that facilitate the social and psychological processes for professional growth and learning have also helped cultivate trust and connections that enabled members to have tough conversations, especially during a crisis such as a pandemic, knowing that members care for each other's well-being.

Proposition 2: Reflective Practice with Critical Consciousness Includes Humility, Compassion, And Belonging

Rebuilding our teams on the foundations of professional learning and reflective practice makes space for the mindset and culture that is needed for engaging in the ongoing and difficult work towards equality and justice. Current myopic focus on "outreach to underrepresented communities" as the common approach to doing work in equity and inclusion leads us to overlook that educators are members of the same inequitable societies as their learners. Every staff is a member of their society. Even if they are not the targets of exclusionary policies and behaviors, they are affected by them vicariously, by shaping the stereotypes and assumptions educators hold about groups of learners. The human brain is a social organ and is shaped by the social interactions in our culture (Park & Huang, 2010). We learn from the society in which we live to avoid what we feel threatens us and approach what we feel is rewarding (Barrett, 2006; Rock, 2008). We form stereotypes and prejudices of people different from us based on language and images from our surroundings, not just from our direct experiences (or lack thereof). Educators' unawareness of this influence is what is most detrimental because, despite their best intentions, educators can perpetuate the existing harm that marginalizes people. For instance, while educators might aim to build on the strengths of all of their learners, they do not "see" everyone's strengths and instead (unknowingly) privilege certain learners at the expense of others. It is difficult to unlearn our implicit biases built over years of socialization in an inequitable society (Lai et al., 2016); however, people can learn to regulate their behavior against their bias through recognition and intention (Mendoza et al., 2010).

Having critical consciousness (both learners and educators) can help to get us there. Critical consciousness is the ability to recognize and analyze systems of inequality and the commitment to take action against these systems (Freire, 1970, 1974). Developing critical consciousness is foundational in multicultural education and critical pedagogy (Gay, 2018; Ladson-Billings, 1995; Muhammad, 2020; Nieto & Bode, 2018). Ladson-Billings (1995, p. 474) argues for culturally relevant educators to enact three propositions in their pedagogy where students must: experience academic success; demonstrate cultural competence, and;

understand and critique the existing social order. To do so, she (2006) points out the educator needs to be cognizant of social inequities and their causes. Gay (2018, p. 43) specifies culturally responsive teachers are emancipatory and liberating from oppressive educational practices and ideologies as they lift "the veil of presumed absolute authority from conceptions of scholarly truth typically taught in schools." Nieto and Bode (2018) explain, social justice in education involves pushing against the misconceptions and stereotypes that lead to and perpetuate inequities and discrimination based on social and human differences, like race, class, gender, ability, etc. It involves cultivating learning environments and designing learning experiences that encourages learners to be critical thinkers and conscious of the sociopolitical context in which they live. Despite its presence in teacher education thought and scholarship, inclusion of critical consciousness in coursework remains limited (Gorski & Dalton, 2020). Teachers often have persistent faulty and simplistic understanding of multicultural education and critical pedagogy that contributes to marginalizing the use of these pedagogies in the education system (Sleeter, 2012). We argue the lack of developing their critical consciousness can result in educators and educational practices celebrating diversity and essentializing culture without deeper interrogation into social inequities and making change.

The ISE field does not have any professional education requirements, and research on educators' equity-focused practice is scarce (if at all). Unless individuals pursued critical studies themselves (formally or informally), it is not surprising many ISE professionals have not considered systems of inequalities in our society. Without critical consciousness, ISE professionals inadvertently maintain the erroneous narrative that "science is neutral," "education is apolitical," and "informal science education can right the inequities that schools create." At worse, they can become dysconscious, "an uncritical habit of mind (including perceptions, attitudes, assumptions, and beliefs) that justifies inequities and exploitation by accepting the existing order of things as given" (King, 1991, p. 135). For decades, the ISE field, through exhibits and program experiences, has strived to challenge the transmission model of learning and teaching that treat learners as empty vessels to be filled. This model not only does not reflect how people learn, but it also enables dominant oppressive structures to be maintained (Freire, 2018). Unfortunately, we fail to push against this model for ourselves when we emphasize efforts to "train staff."
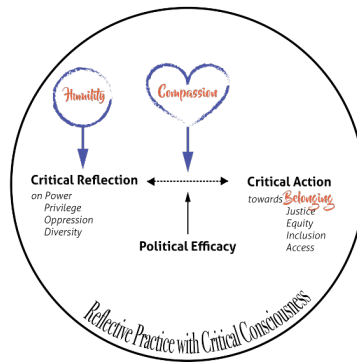
Enacting Critical Consciousness

To guide efforts towards enacting reflective practice with critical consciousness, we build on a framework from youth development. Watts, Diemer, and Voight (2011) describe critical consciousness as having three key components. **Critical reflection** refers to a social analysis and moral rejection of societal inequities, such as social, economic, racial/ethnic, and gender inequities that constrain well-being and human agency. Those who are critically reflective view social problems and inequalities in systemic terms. **Critical action** refers to individual or collective action taken to change aspects of society that are perceived to be unjust, such as institutional policies and practices. This is a broad view of activism that includes participation in activities such as voting, community organizing, and peaceful protests. Watts, et al. add the concept of **political efficacy** from political science

because, sometimes, people do not take action. Instead, they become "armchair activists." Political efficacy is the perceived capacity to effect social and political change by individual and/or collective activism. People will be much more likely to engage in critical action if they feel their actions lead to change.

Figure 2 depicts how we visualize Watts, et al.'s model and add to it, as we consider engaging in reflective practice with critical consciousness in our work. We place power, privilege, oppression, and diversity as concepts on which to reflect critically and belonging, justice, equity, inclusion, and access being efforts to take actions toward. Additionally, we identify the significant role of humility in critical reflection, and how compassion can also push us towards taking critical action. We elaborate further on Figure 2 and how the components apply to ISE practice.

Figure 2.

Building on Watts, Diemer, and Voight's (2011) components of critical consciousness with humility, compassion and belonging.

Critical Reflection

Critical consciousness begins with critical reflection, which is a fundamental part of reflective practice. It is helpful to understand that reflection, critical reflection, and reflective practice are all related concepts (Larrivee, 2000), though they are not mutually exclusive (Fook, 2015). ISE professionals can reflect on what they do, but not make any changes in their thinking or habit from those reflections; in such cases, they are not engaging in reflective practice (Tran, 2019). Educators can engage in reflective practice, but not interrogate "beliefs, assumptions, and expectations and make visible [their] personal reflexive loops" (Larrivee, 2000, p. 296); thus, they are not engaging in critical reflection. Finally, educators can focus critical reflection on themselves (Mezirow, 1998), and remain unaware and inconsiderate of how power operates to perpetuate privilege and oppression in our social systems (Brookfield, 2009). Engaging in reflective practice with critical consciousness requires ISE professionals, within their professional communities, to be mindful of the sociopolitical context and intentional in how they leverage their power.

Power, Privilege, and Oppression in our Diverse Society

ISE professionals cannot enact change towards equity in their work if they do not notice the existence of inequities entrenched in the policies and patterns of education, and how they affect and are affected by these social structures. What this implies is the need for critical reflection to involve recognizing how **power** exists and works in society and education. Power is a feature of social relations in which people have *relative control or influence over outcomes*, for themselves and others (Fiske & Berdahl, 2007; Lammers et al., 2009). It can be a social force (Fiske, 1993; Keltner et al., 2003) and personal agency (Van Dijke & Poppe, 2006). Power can be acquired from privilege because individuals are accorded unearned special advantage through membership in a dominant social group (Bailey, 1998). Importantly, privilege is built into societal structures and so exists at the level of social group (e.g., race, gender, sexual orientation); it is not something a person *takes* or has the option *not* to take, regardless of their intentions (Johnson, 2005; powell, 2012). Power can also be gained from a person's social position within shifting networks of relationships: manager/worker in work environments; adult/child in family units; and constructed hierarchies from social groups. Oppression is the unjust or cruel exercise of power and privilege by a dominant group over others to maintain its domination; it exists on multiple levels — individual, interpersonal, institutional, systemic (Hanna et al., 2000).

Power is not inherently good or bad, though it can be used for benevolent and malicious purposes (Lammers et al., 2009; Sassenberg et al., 2012; Scholl et al., 2018). People can perceive social power as an *opportunity* to advance their own self-interests and emphasize independence. People can also think of power as *responsibility* for the well-being of others and recognize interdependence. People can use their power, knowingly or inadvertently, to keep laws, policies, and "normative" practices in place that repress groups of people and subjugate them to the dominant group (David, 2013; Feagin, 2013; Jones, 1997). People can also leverage their power to change the structures that oppress groups of people. While the choice on how we use our power may not always be easy because it could involve relinquishing control or sharing resources, many people do have a choice.

The dynamics of power and privilege in society that result in oppression also exist in education systems in schools and ISE organizations. Modern society is multicultural and pluralistic, that is, it is diverse. It is necessary for staff to question why doing outreach to "reach diverse audiences" is problematic without examining the extent to which their spaces and practices are inclusive and cultivate a sense of belonging among the diversity of people in their local community. For a field that is dominated by middle-class, cisgender cultural norms and personnel, and where 98% identify as white (Ennes et al., 2020), it is necessary for all staff to be critically reflective of their social identities and positions so they can recognize and change structures in their work to rebalance power dynamics towards the just and egalitarian outcomes they seek.

Humility. Engaging in reflective practice with critical consciousness involves normalizing ongoing critical dialogue among colleagues during their daily work where and when things happen, not relegating them to occasional, training meetings led by outside experts. The significance of dialogue in critical reflection

is well-known. We add the need to be attentive to our cultural humility. Humility is a characteristic within each person (intrapersonal) and emerges when we interact with people (interpersonal) (Owens et al., 2013; Van Tongeren et al., 2019). Intrapersonally, humility involves the degree to which a person seems to have a relatively accurate view of self (Tangney, 2000). This aspect of humility can show up as the ability to acknowledge and own one's limitations and recognize the fallibility of one's beliefs and thinking. It is not simply being modest but includes a willingness to seek and consider feedback. It is not having low self-esteem or being meek and self-deprecating, but instead, having a more accurate view of one's assets and flaws. Interpersonally, humility involves the degree to which a person has an orientation towards the needs and well-being of others (Davis et al., 2013), thus having relatively low self-focus. This aspect of humility can be indicated through restraint of the ego (not being narcissistic) and respectful interpersonal interaction (not being braggadocious).

Importantly, having humility means being teachable (Owens et al., 2013); that is, being open to new ideas and contradictory information, and wanting to learn with and from others because one genuinely believes what others have to share is inherently meaningful and valuable. People can express humility about their own cultural beliefs, values, and attitudes (Van Tongeren et al., 2019). It is having an awareness of the limitations of one's own cultural worldview while curbing the tendency to view one's own values and ways as superior. It is also a genuine willingness to learn the cultural orientation of other people.

Expressing humility in our critical reflection urges us all to be open to learning from one another because we value each other, and simultaneously pushes us to seek feedback on our own thinking and actions as we work to be more accurate in our understanding of ourselves, and the power and privilege we hold. We cannot truly engage in reflective practice without humility, and it needs to be practiced as a part of the broader system. This also means there needs to be differentiated and diversity-sensitive communal structures to support staff of color to practice cultural humility (Moon & Sandage, 2019). The predominantly white educational ISE workforce cannot achieve cultural humility without confronting their own white identities.

Critical Action

Critical consciousness works towards taking critical action to bring forth social change for just and egalitarian outcomes articulated in equity, inclusion, and access statements (AAM, 2018; Garibay & Olson, 2020). Critical action can be both individual and collective. For educational practice in ISE, we echo Dawson's (2014a) well-articulated equity and access framework. At the organizational level, specific actions can involve changes in hiring practices, governance, infrastructure, and funding. For education teams and educators, it can involve changing how learning experiences are designed, and the ways educators interact with learners and one another. For this discussion, we add the need to address efforts towards belonging because all DEIA efforts fall short without it.

Belonging. Belonging is being and feeling that one is a welcomed and rightful member of a group. It is multi-dimensional, and "encompasses citizenship,

nationhood, gender, ethnicity, and emotional dimensions of status or attachment" (Antonsich, 2010, p. 647). Belonging involves perceiving and experiencing interpersonal bonds with people in a group, as indicated by stability in the relationship, concern for one another, and continuation of the relationship into the foreseeable future (Baumeister & Leary, 1995). Social interactions and relationships like these are so fundamentally important to every human being that the pain from a social experience (e.g., breaking up with a partner, being rejected) activates the same regions of our brain as the affective distress from a physical experience (e.g., a broken arm, torn muscle) (Eisenberger, 2012; Eisenberger & Lieberman, 2004). Personal (feeling of being "at home") and public (socio-spatial inclusion/exclusion) sentiments of belonging are intertwined. For instance, the lack of wheelchair ramps or English only exhibit labels exclude people in public spaces, which in turn affects their personal sense of feeling "at home" in these places. The absence of this sense of belonging is not exclusion, but a sense of loneliness, isolation, alienation, and displacement that can lead to motivational and mental health problems.

"The right to belong is prior to all other distributive decisions since it is members who make those decisions" (powell & Menendian, 2017). In other words, members within a group (in this case, ISE professionals) are the decision-makers to redistribute resources, make spaces accessible, ensure practices are equitable, and strive for diversity. ISE professionals must inherently believe all people belong, not simply tolerate and respect differences, in order to genuinely ensure that all people feel welcome and have the right to co-create and make demands of the group. It is important to understand that "any dominant … group tends to fill the notion of belonging with a rhetoric of sameness, which clearly prevents any recognition of difference" (Antonsich, 2010, p. 650). Then, the requisite for belonging means to assimilate to the language, culture, values, behavior, religion, etc. of the dominant group (Yuval-Davis, 2006). This condition is a false notion of belonging. Dawson's review points out how our (historical and current) practices actually embody this flawed thinking.

As we rebuild our teams, we need to adopt more inclusive forms of belonging (Antonsich, 2010; powell & Menendian, 2017) and make deliberate efforts to ensure groups that have been excluded know and feel they belong without flattening differences that naturally exist between people. It involves co-creating structures wherein staff can feel comfortable bringing their voice, pointing out tensions with the intention of improving the system, and engaging in actions that support the learning culture. We must do this amongst ourselves in order to be able apply this understanding towards our audiences. Expanding identities (e.g., what it means to be a woman) and narratives (e.g., multiple stories and voices) widen the narrowed conceptions of people that we have been socialized into forming. Focusing efforts to build bonds within social networks and bridges across social divides can cultivate different forms of social capital that distribute educational resources equitably (Murray et al., 2020). Reviewing policy and practices to ensure structures are in place that normalizes pluralism can broaden who belongs. These efforts push us all to express our humility and learn; doing so, allows for power to be shared with those who are typically suppressed and underscore their actions, voices and ideas.

Political Efficacy

The assumption is that engaging in critical reflection urges people (particularly from oppressed social groups) to take critical action; and as they take action to enact change, they loop back to reflect deeper and more critically (depicted in Figure 2 as the two headed arrow). But sometimes, people do not take action (the shaft of the two-headed arrow is dashed). Within their articulation of critical consciousness, Watts, et al. (2011) consider political efficacy as influencing whether people engage in critical action (the solid arrow pushing on the dashed two-headed arrow). Political efficacy can be internal referring to people's beliefs about their capacity as political actors, and external referring to their beliefs that government structures and officials are responsive to their interests. Politics need not be exclusive to government; it can be found within organizations. In the workplace, this concept can be analogous to staff believing they can affect organizational change to confront and oppose dominant norms that maintain structures that cause harm, and belief that management is responsive to their interests for social change.

Compassion. To Watts, et al.'s model, we add compassion as another influential driver towards critical action. Compassion is a fundamental aspect of multicultural education (Gay, 2018; Nieto & Bode, 2018), with emphasis being on ways culturally responsive educators express their compassion by caring for the intellectual and emotional well-being of students of color. Caring relationships is a fundamental human need. Positive and secure attachments with caregivers and people in our communities stimulate production of neural growth hormones that, in higher levels, can buffer critical regions of the brain against stress, and enhance learning (Esch & Stefano, 2005; Feldman, 2017). They also stimulate more receptors for these neurochemicals to be formed in many regions of the brain, which in turn allow for dampening fear and anxiety while increasing attention, curiosity, and exploratory behavior. This caring framework in teaching, however, is predicated on the assumption that educators offer compassion for all their learners, not just those they (consciously or unconsciously) deem favorable. The hope is that, through critical reflection and awareness, educators will develop compassion for learners who are different from them, and then take critical action in their teaching practice. We push further into this aspiration by inquiring about the roots of compassion and how to practice it. Our belief being that staff who experience compassion in their workplace are more likely to extend it to others in their work.

Compassion involves having a sensitivity to suffering in self and others, and the motivation and commitment to try to alleviate or prevent it (Gilbert, 2015; Singer & Klimecki, 2014). It involves social cognitive processes in our brains to perceive the mental state of others and making inferences about human behavior (Lieberman, 2013). Compassion has two psychological aspects: (1) the intention and act of turning toward and engaging with suffering rather than avoiding or dissociating from it; and (2) the intention to acquire the wisdom to learn how to alleviate and prevent suffering and act on that wisdom (Gilbert, 2015, p. 241). In other words, compassion is being courageous to attend to someone's distress, being wise to learn the person's situation and how to help, and then being strong to take action, in spite of opposition, to mitigate and stop the pain from happening

again.

While being compassionate is being human, people do not offer compassion to everyone. There are other aspects of being human that that shade to whom we offer compassion (Gilbert, 2015; Gilbert & Mascaro, 2017), one of which is grounded in early human history and tribalism. The survival advantage to care for members of our ingroup means we are reflexively less likely to offer compassion towards those perceived as outgroups, especially outgroups that seem to be different, have been stigmatized, or socialized into us as being a threat. Despite changes in the ways that humans live and socialize, this allegiance towards ingroup members is still present in modern humans. Here, cultivating compassion dovetails with belonging. Expanding our notions of who belongs within our ingroup can contribute to extending our reflexes to offer compassion to those who seem to be different from us (Antonsich, 2010; powell & Menendian, 2017).

We draw on research from neuroscience to further clarify the significance of this connection. Social cognitive neuroscientists have identified the area in our brain that is activated when we think of others, suggesting that this region functions to monitor the intermingling of our own action with the actions of others (Amodio & Devine, 2006; Lieberman, 2013). This area of the brain is activated when we consider groups of people society has classified as human (e.g., middle-class, white Americans), but less so for groups social norms have dehumanized (e.g., people who are homeless, refugees) (Harris & Fiske, 2006). Put differently, it is difficult to think about the mental state of others, to consider them and their relationship with us, and offer compassion to them, if we unconsciously consider them as being less than human in the first place. An implication from this area of work involves re-humanizing marginalized individuals and groups of people so that we re-socialize ourselves to view them as worthy of empathy, compassion, and social engagement. In short, doing this work correctly means activating those areas of our brain that will be involved in helping us regulate our behavior against our implicit biases against certain groups of people and offer them compassion.

As we rebuild our teams, it is imperative that we practice compassion towards one another all across the organizational hierarchy. Compassion as a part of reflective practice with critical consciousness can nudge staff to understand the power structures that cause harm and suffering among marginalized communities in order to know better how to help, and then take action where they can prevent or mitigate the pain. Simultaneously, encouraging more inclusive forms of belonging works toward reshaping our conceptions of human differences and members of our ingroup, and enables staff to offer compassion to all, not just to those based on narrowed definitions of who belongs.

Final Thoughts

In this paper, we engaged in critical reflection to consider to how to take critical action to heed the inequities in ISE that scholars across the field have raised for many years. Absent critical consciousness in reflective practice on how educational work is done, good intentions to leverage the value of ISE spaces to cultivate joy, curiosity, and passion for science results in enriching the already enriched, problematizing the othered, and inadvertently advocating assimilation practices. We explained the need to include humility, compassion, and belonging in critical

consciousness. Without them, we cannot see the strengths in people different from us, genuinely offer care to everyone (especially people who have been pushed into the margins), and work towards ensuring everyone is rightfully welcomed, just as they are. Importantly, we must enact these ideas for each other and in our work culture before we can genuinely practice them for our audiences.

Doing so means anchoring ourselves in an ethos of professional learning that abandons the transactional and transmission models of training, and instead applies what we know about how humans learn onto ourselves. Structures can be designed to support this endeavor. It can be challenging, but it is doable as we work to rebuild and recover from the pandemic. In moments, one might wonder if the ideas and actions put forth in these propositions blur the boundaries of personal and professional life. Indeed, they do. The problems of social inequality and racism (and other forms of oppression) are systemic, meaning there is no single solution. Fortunately, the field does not start from scratch. There are individual staff within our organizations who have been working within this critical consciousness; it is time we join together to think, talk, and reflect critically. Decades of research and practice across many disciplines provide a wealth of insights on first steps and missteps. We know how humans learn, and the central role of reflection and dialogue in learning. We know compassion sparks learning, and humility keeps our minds and hearts open to be taught. It is time we apply this wealth of knowledge upon ourselves. More discourse, details, and practical ideas are needed. We hope that our thoughts spark imagination for new possibilities moving forward.

References

American Alliance of Museums (AAM). (2018). *Facing change: Insights from the American Alliance of Museums Diversity, Equity, Accessbility, and Inclusion Working Group*. https://www.aam-us.org/wp-content/uploads/2018/04/AAM-DEAI-Working-Group-Full-Report-2018.pdf

American Alliance of Museums (AAM). (2020). *National survey of COVID-19 impact on United States Museums*. https://www.aam-us.org/2020/07/22/a-snapshot-of-us-museums-response-to-the-covid-19-pandemic/

Amodio, D. M., & Devine, P. G. (2006). Stereotyping and evaluation in implicit race bias: evidence for independent constructs and unique effects on behavior. *Journal of Personality and Social Psychology*, 91(4), 652-661.

Antonsich, M. (2010). Searching for belonging–an analytical framework. *Geography Compass*, 4(6), 644-659.

Ash, D. (2004). Reflective scientific sense-making dialogue in two languages: The science in the dialogue and the dialogue in the science. *Science Education*, 88(6), 855-884.

Bailey, A. (1998). Privilege: Expanding on Marilyn Frye's' oppression'. *Journal of Social Philosophy*, 29(3).

Bandelli, A., & Konijn, E. A. (2013). Science centers and public participation: Methods, strategies, and barriers. *Science Communication*, 35(4), 419-448.

Barrett, L. F. (2006). Valence is a basic building block of emotional life. *Journal of Research in Personality*, 40(1), 35-55.

Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497.

Bransford, J. D., Brown, A. L., & Cocking, R. R. (Eds.). (2000). *How people learn: Brain, mind, experience, and school*. National Academy Press.

Brookfield, S. (2009). The concept of critical reflection: Promises and contradictions. *European Journal of Social Work*, 12(3), 293-304.

Brown, J. S., Collins, A., & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18(1), 32-42.

Chaffee, R., & Gupta, P. (2018). Accessing the elite figured worlds of science. Cultural Studies of Science Education, 13(3), 797-805.

Collins, M., Dorph, R., Foreman, J., Pande, A., Strang, C., & Young, A. (2020). *A field at risk: The impact of COVID-19 on environmental and outdoor science education*. https://www.lawrencehallofscience.org/sites/default/files/EE_A_Field_at_Risk_Policy_Brief.pdf

Crossan, M. M., Lane, H. W., & White, R. E. (1999). An organizational learning framework: from intuition to institution. *Academy of Management Review*, 24(3), 522-537.

David, E. J. R. (2013). *Internalized oppression: The psychology of marginalized groups*. Springer Publishing Company.

Davis, D. E., Worthington Jr, E. L., Hook, J. N., Emmons, R. A., Hill, P. C., Bollinger, R. A., & Van Tongeren, D. R. (2013). Humility and the development and repair of social bonds: Two longitudinal studies. *Self and Identity*, 12(1), 58-77.

Dawson, E. (2014a). Equity in informal science education: developing an access and equity framework for science museums and science centres. *Studies in Science Education*, 50(2), 209-247.

Dawson, E. (2014b). "Not designed for us": How science museums and science centers socially exclude low-income, minority ethnic groups. *Science Education*, 98(6), 981-1008.

Dewey, J. (1933). *How we think: A restatement of the relations of reflective thinking to the educative process*. D.C. Heath & Company.

Eisenberger, N. I. (2012). The pain of social disconnection: examining the shared neural underpinnings of physical and social pain. *Nature Reviews Neuroscience*, 13(6), 421.

Eisenberger, N. I., & Lieberman, M. D. (2004). Why rejection hurts: a common neural alarm system for physical and social pain. *Trends in Cognitive Sciences*, 8(7), 294-300.

Elkjaer, B., & Wahlgren, B. (2005). Organizational learning and workplace learning—similarities and differences. In E. Antonacopoulou, P. Jarvis, V. Andersen, B. Elkjaer, & S. Høyrup (Eds.), *Learning, working and living: Mapping the terrain of working life learning* (pp. 15-32). Palgrave Macmillan.

Ennes, M., Jones, M. G., & Chesnutt, K. (2020). Evaluation of Educator Self-Efficacy in Informal Science Centers. *Journal of Museum Education*, 45(3), 327-339.

Esch, T., & Stefano, G. B. (2005). The neurobiology of love. *Neuroendocrinology Letters*, 26(3), 175-192.

Farrell, B., & Medvedeva, M. (2010). *Demographic transformation and the future of museums*. T. A. Press. https://www.aam-us.org/wp-content/uploads/2017/12/Demographic-Change-and-the-Future-of-Museums.pdf

Feagin, J. (2013). *Systemic racism: A theory of oppression*. Routledge.

Feinstein, N. W., & Meshoulam, D. (2014). Science for what public? Addressing equity in American science museums and science centers. *Journal of Research in Science Teaching*, 51(3), 368-394.

Feldman, R. (2017). The neurobiology of human attachments. *Trends in Cognitive Sciences*, 21(2), 80-99.

Fiske, S. T. (1993). Controlling other people: The impact of power on stereotyping. *American Psychologist,* 48(6), 621-628.

Fiske, S. T., & Berdahl, J. (2007). Social power. In A. W. Kruglanski & E. T. Higgins (Eds.), *Social psychology: Handbook of basic principles* (pp. 678-692). The Guilford Press.

Fook, J. (2015). Reflective practice and critical reflection. *Handbook for practice learning in social work and social care: Knowledge and theory*, 3.

Freire, P. (1970). Cultural action and conscientization. *Harvard Educational Review*, 40(3), 452-477.

Freire, P. (1974). Conscientisation. *CrossCurrents*, 24(1), 23-31.

Freire, P. (2018). *Pedagogy of the oppressed* (50th anniversary ed.). Bloomsbury Publishing.

Fuller, A., & Unwin, L. (2004). Expansive learning environments: Integrating organizational and personal development. In H. Rainbird, A. Fuller, & A. Munro (Eds.), *Workplace learning in context* (pp. 126-144). Routledge.

Garibay, C. (2009). Latinos, leisure values, and decisions: Implications for informal science learning and engagement. *The Informal Learning Review*, 94, 10-13.

Garibay, C., & Olson, J. M. (2020). CCLI *National Landscape Study: The state of DEAI practices in museums*. https://community.astc.org/ccli/about-us/landscape-study

Gay, G. (2018). *Culturally responsive teaching: Theory, research, and practice (3rd ed.)*. Teachers College Press.

Gilbert, P. (2015). The evolution and social dynamics of compassion. Social and Personality *Psychology Compass*, 9(6), 239-254.

Gilbert, P., & Mascaro, J. (2017). *Compassion: Fears, blocks, and resistances: An evolutionary investigation*. The Oxford handbook of compassion science, 399-420.

Gorski, P. C., & Dalton, K. (2020). Striving for Critical Reflection in Multicultural and Social Justice Teacher Education: Introducing a Typology of Reflection Approaches. *Journal of Teacher Education*, 71(3), 357-368.

Gupta, P., & Negron, J. (2017). There is no "off button" to explaining: Theorizing identity development in youth who work as floor facilitators. In P. G. Patrick (Ed.), *Preparing informal science educators: Perspectives from Science Communication and Education* (pp. 153-168). Springer International Publishing.

Habig, R., Gupta, P., & Adams, J. (2021). Disrupting deficit narratives in informal science education: applying community cultural wealth theory to youth learning and engagement. *Cultural Studies of Science Education*. https://doi.org/https://doi.org/10.1007/s11422-020-10014-8

Hanna, F. J., Talley, W. B., & Guindon, M. H. (2000). The power of perception: Toward a model of cultural oppression and liberation. *Journal of Counseling & Development*, 78(4), 430-441.

Harris, L. T., & Fiske, S. T. (2006). Dehumanizing the lowest of the low: Neuroimaging responses to extreme out-groups. *Psychological Science*, 17(10), 847-853.

Johnson, A. G. (2005). *Privilege, power, and difference* (2nd ed.). McGraw-Hill.

Jones, J. M. (1997). *Prejudice and racism*. McGraw-Hill Humanities, Social Sciences & World Languages.

Keltner, D., Gruenfeld, D. H., & Anderson, C. (2003). Power, approach, and inhibition. *Psychological Review*, 110(2), 265.

Kezar, A., & Lester, J. (2010). Breaking the barriers of essentialism in leadership research: Positionality as a promising approach. *Feminist Formations*, 22(1), 163-185.

King, J. E. (1991). Dysconscious racism: Ideology, identity, and the miseducation of teachers. *The Journal of Negro Education*, 60(2), 133-146.

Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. *American Educational Research Journal*, 32(3), 465-491.

Ladson-Billings, G. (2006). "Yes, but how do we do it?" Practicing culturally relevant pedagogy. In W. Ayers, G. Ladson-Billings, & G. Michie (Eds.), *City kids, city schools: More reports from the front row* (pp. 162-177). The New Press.

Lai, C. K., Skinner, A. L., Cooley, E., Murrar, S., Brauer, M., Devos, T., Calanchini, J., Xiao, Y. J., Pedram, C., & Marshburn, C. K. (2016). Reducing implicit racial preferences: II. Intervention effectiveness across time. *Journal of Experimental Psychology: General*, 145(8), 1001.

Lammers, J., Stoker, J. I., & Stapel, D. A. (2009). Differentiating social and personal power: Opposite effects on stereotyping, but parallel effects on behavioral approach tendencies. *Psychological Science*, 20(12), 1543-1548.

Larrivee, B. (2000). Transforming teaching practice: Becoming the critically reflective teacher. *Reflective Practice*, 1(3), 293-307.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.

Lieberman, M. D. (2013). *Social: Why our brains are wired to connect*. Broadway Books.

Marsick, V. J., & Watkins, K. E. (2001). Informal and incidental learning. *New Directions for Adult and Continuing Education*, 2001(89), 25-34.

Martin, L. W. (2019). Can reflective practice be sustained in museums? In L. W. Martin, L. U. Tran, & D. B. Ash (Eds.), *The reflective museum practitioner: Expanding practice in science museums* (pp. 39-50). Routledge.

Martin, L. W., Tran, L. U., & Ash, D. B. (2019). *The reflective museum practitioner: expanding practice in science museums*. Routledge.

Martinez, N. (2020). Increasing Museum Capacities for Serving Non-White Audiences. Curator: *The Museum Journal* (Virtual Issue). https://curatorjournal.org/virtual-issues/increasing-museum-capacities-for-serving-non-white-audiences/

Mendoza, S. A., Gollwitzer, P. M., & Amodio, D. M. (2010). Reducing the expression of implicit stereotypes: Reflexive control through implementation intentions. *Personality and Social Psychology Bulletin*, 36(4), 512-523.

Mezirow, J. (1998). On critical reflection. *Adult Education Quarterly*, 48(3), 185-198.

Moon, S. H., & Sandage, S. J. (2019). Cultural humility for people of color: Critique of current theory and practice. *Journal of Psychology and Theology*, 47(2), 76-86.

Muhammad, G. (2020). *Cultivating genius: An equity framework for culturally and historically responsive*

literacy. Scholastics.

Murray, B., Domina, T., Petts, A., Renzulli, L., & Boylan, R. (2020). "We're in This Together": Bridging and Bonding Social Capital in Elementary School PTOs. *American Educational Research Journal*, 57(5), 2210-2244.

National Academies of Sciences, E., Medicine (Ed.). (2018). *How people learn II: Learners, contexts, and cultures*. The National Academies Press. https://doi.org/doi:10.17226/24783.

National Research Council (Ed.). (2009). *Learning science in informal environments: People, places, and pursuits*. The National Academies Press.

New Oxford American. (n.d.). *New Oxford American Dictionary*.

Nieto, S., & Bode, P. (2018). *Affirming diversity: The sociopolitical context of multicultural education*. Pearson.

Oppenheimer, F. (1975). The exploratorium and other ways of teaching physics. *Physics Today*, September, 9-13.

Owens, B. P., Johnson, M. D., & Mitchell, T. R. (2013). Expressed humility in organizations: Implications for performance, teams, and leadership. *Organization Science*, 24(5), 1517-1538.

Park, D. C., & Huang, C.-M. (2010). Culture wires the brain: A cognitive neuroscience perspective. *Perspectives on Psychological Science*, 5(4), 391-400.

powell, j. a. (2012). *Racing to justice: Transforming our conceptions of self and other to build an inclusive society*. Indiana University Press.

powell, j. a., & Menendian, S. (2017). *The problem of othering: Towards inclusiveness and belonging*. http://www.otheringandbelonging.org/the-problem-of-othering/

Resnick, M. (1996). Beyond the centralized mindset. *The Journal of the Learning Sciences*, 5(1), 1-22.

Rock, D. (2008). SCARF: A brain-based model for collaborating with and influencing others. *NeuroLeadership Journal*, 1(1), 44-52.

Sassenberg, K., Ellemers, N., & Scheepers, D. (2012). The attraction of social power: The influence of construing power as opportunity versus responsibility. *Journal of Experimental Social Psychology*, 48(2), 550-555.

Scholl, A., de Wit, F., Ellemers, N., Fetterman, A. K., Sassenberg, K., & Scheepers, D. (2018). The burden of power: Construing power as responsibility (rather than as opportunity) alters threat-challenge responses. *Personality and Social Psychology Bulletin*, 44(7), 1024-1038.

Schön, D. A. (1983). *The reflective practitioner: How professionals think in action*. Basic Books.

Sewell, W. H. (1992). A theory of structure: Duality, agency, and transformation. *American Journal of Sociology,* 98(1), 1-29.

Singer, T., & Klimecki, O. M. (2014). Empathy and compassion. *Current Biology*, 24(18), R875-R878.

Sleeter, C. E. (2012). Confronting the marginalization of culturally responsive pedagogy. *Urban Education*, 47(3), 562-584.

Tangney, J. P. (2000). Humility: Theoretical perspectives, empirical findings and directions for future research. *Journal of Social and Clinical Psychology*, 19(1), 70-82.

Tran, L. U. (2019). The how and why of reflective practice for science museum professionals In L. M. W. Martin, L. U. Tran, & D. B. Ash (Eds.), *The reflective museum practitioner: Expanding practice in science museums*

(pp. 7-22). Routledge.

Tran, L. U., Gupta, P., & Bader, D. (2019). Redefining Professional Learning for Museum Education. *Journal of Museum Education*, 44(2), 135-146.

Tran, L. U., & Halversen, C. (2021). *Reflecting on practice for STEM educators: A guide for museums, out-of-school, and other informal settings*. Routledge.

Van Dijke, M., & Poppe, M. (2006). Striving for personal power as a basis for social power dynamics. *European Journal of Social Psychology*, 36(4), 537-556.

Van Tongeren, D. R., Davis, D. E., Hook, J. N., & Witvliet, C. v. (2019). Humility. *Current Directions in Psychological Science*, 28(5), 463-468.

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Harvard University Press.

Watts, R. J., Diemer, M. A., & Voight, A. M. (2011). Critical consciousness: Current status and future directions. *New Directions for Child and Adolescent Development*, 2011(134), 43-57.

Webster-Wright, A. (2009). Reframing professional development through understanding authentic professional learning. *Review of Educational Research*, 79(2), 702-739.

Wood, D., Bruner, J. S., & Ross, G. (1976). The role of tutoring in problem solving. *Journal of Child Psychology*, 17(2), 89-100.

Yosso, T. J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race Ethnicity and Education*, 8(1), 69-91.

Yuval-Davis, N. (2006). Belonging and the politics of belonging. *Patterns of Prejudice*, 40(3), 197-214.