Critical Reflection, Asking Better Questions: Understanding the Phenomenon of Critical Reflection through the Experiences of Three 4Cs Educators

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Abstract

Critical reflection is a vital 21st-century capacity required by students to navigate their increasingly complex world, yet many educators experience uncertainty when attempting to conceptualize this phenomenon. This study originated in response to this need and the need to elucidate the relationship between critical reflection and questioning, achieved through the experiences of 4Cs educators working within an Australian primary school. A phenomenological case study involving three teacher participants was designed to explore their experiences as they implemented Jefferson and Anderson's (2017) teaching tool, the critical reflection crucible, in their respective classrooms. Qualitative data was collected using semi-structured interviews and analyzed using Interpretive Phenomenological Analysis (IPA). The findings in this sample reveal a strong correlation between teacher questioning and students' ability to critically reflect during learning. Although participants encountered difficulty when defining critical reflection, a clearer image of how this phenomenon manifests during learning emerged from the appraisal of their transformative classroom experiences.

Keywords: critical reflection, critically reflective learning, questioning practice, transformative learning, the 4Cs approach, hermeneutic phenomenology, primary education

Introduction

This research posits critical reflection as a complex phenomenon, which is captured and expressed through the teaching experiences of Australian, 4Cs educators in the primary classroom. A key dimension of this phenomenon is questioning, which through a dialogic model of teaching and learning catalyses critical reflection through the active process of "problem-posing" by both teachers and students in schools (Freire, 2005, p. 83). A phenomenological case study was used to grasp the fundamental "essence" of critical reflection (Eddles-Hirsch, 2015, p. 258), as an observable phenomenon that occurs during teaching and learning in a primary school that adopts the 4C approach (Jefferson & Anderson, 2017). Jefferson and Anderson's (2017) 4Cs are distinct from the 4 C's approach adopted by organisations like Project Zero, as the 4C approach (Jefferson & Anderson, 2017, p. 48) adopts critical reflection in place of critical thinking to cultivate a sense of "critical agency" for students that offers them hope, purpose, and autonomy over their learning. This study traverses the experiences of three 4Cs educators within the context of a south-western Sydney primary school. This school implements the 4C approach coined by Jefferson and Anderson (2017), which focuses the organisation of the school's leadership team and the design and delivery of pedagogical experiences around four, interrelated capabilities (the 4Cs), namely: creativity, critical reflection, collaboration, and communication. Since adopting the 4Cs, the school's teaching staff is undergoing professional learning to understand the transformative education practices that inform the 4Cs and how they can be used to transform learning and leadership.

Robert and Rose are 4Cs educators who presently oversee professional learning for 4Cs primary teachers, and therefore offer a lived knowledge of how the critical reflection crucible (the crucible) is recognised and used by teachers as a pedagogic tool that can foster critically reflective learning. Sally is a stage three language teacher working within this 4Cs school, who has used the

crucible to foster critical reflection in her classroom for over two years. The selection of teacher participants for this study was purposive, as it enabled us to capture the reflective way that primary students intrinsically learn, whilst being immersed in a schooling environment where their discovery of knowledge is framed in a multidisciplinary manner (Boix-Mansilla, 2016). A hermeneutic phenomenological methodology was used in this study, since critical reflection is conceptualised as a lived phenomenon that occurs and can be experienced through dialogue and questioning in the classroom (Smith & Osborn, 2003). This approach was chosen as it aligns with the interpretive nature through which educators can derive meaning from critical reflection through their evaluation of the crucible, which is a pedagogic tool closely bound with this phenomenon (Henriksson & Friesen, 2012; Jefferson & Anderson, 2017). A prevalent gap that arose in the literature highlights the dichotomy between educators' aspirations regarding critical reflection, and what this tangibly looks like at the classroom level (Giroux, 2011; Jefferson & Anderson, 2017). Although few qualitative and multidisciplinary studies have endeavoured to bridge this gap, they still reveal a lack of definitional clarity regarding critical reflection and the shape it takes during learning in primary schooling contexts (Fook & Gardener, 2007; Jefferson & Anderson, 2017; Roche, 2011).

Research Questions

Our first research question informed this study and guided us as we came to comprehend the "essences" or underlying meanings that distinguish critical reflection, when analysing participants' first-hand experiences (Eddles-Hirsch, 2015, p. 252). This first question is framed by a hermeneutic phenomenological view of experience as something that can be consciously discerned by an individual (Eddles-Hirsch, 2015). Furthermore, the second research question enabled us to affiliate questioning as a dimension of this phenomenon, with how critical reflection is experienced by these educators in their respective classrooms.

1. How do educators recognise and experience the phenomenon of critical reflection in a primary classroom?

2. How can teacher questioning engender the phenomenon of critical reflection in a primary classroom?

Review of the Literature

Finding a place for Critical Reflection and Questioning in Education

Since the late 20th-century, educators and academics alike have problematised the way education continues to authorise the practice of "unquestioned truths" (Apple, 2004, p. 12) in schools, rather than cultivating a culture of critical reflection that stimulates students to critically question their assumptions (Giroux, 2011; Fook et al., 2016; Jefferson & Anderson, 2017). Today's learners are propelled into a 21st-century society that is enveloped by a zeitgeist of uncertainty and confusion, where political instability, rapid global change, and chaotic behaviour has become normalised and there is little discernment of a sustainable future (Sardar, 2010). To begin to conceptualise *how* and *why* our society is functioning in this manner, educators must develop a common language for learners to cogitate these issues. This can be achieved through a critical pedagogy which applies both teacher and student questioning as a method to engender critical reflection (Giroux, 2011). A way that educators can begin to implement a transformative, discursive, and agentic form of teaching is by aligning their pedagogy with Jefferson and Anderson's (2017) 4C approach. The 4Cs situates learning through a critical pedagogy lens, where Critical Social Theory [CST], Transformative Learning Theory [TLT], and reflective pedagogies intersect to represent education as a "social structure that transforms" and dismantles the hegemonic systems of power that authorise *what* and *how* students learn (Jefferson & Anderson, 2017, p. 20). The transformative potential that critical reflection wields is acknowledged in the work of several seminal scholars including Apple (2004), Brookfield (2016), Freire (2005), Mezirow (1990; 1998), and Giroux (2011), yet its application as a dynamic, speculative, and imaginative tool through questioning methods has seldom been explored. Only a handful of qualitative studies have attempted to investigate critical reflection as a transformative and

questioning practice, yet the majority are multidisciplinary studies conducted within healthcare settings, preservice teacher education, and adult learning contexts (Fook & Gardener, 2007; Fook et al., 2016; Fook et al., 2016; White et al., 2006). Although Jefferson and Anderson (2017) affirm the importance of asking questions that can engender critical reflection, a stronger evidence base that situates this research in Australian primary schools is needed to validate such theoretical claims.

The Threat of Postnormality and the Significance of Possibility Thinking

To examine the conditions that render critical reflection necessary for 21st-century learners, we must first address the subject of postnormality and its impacts on the Australian education system. The proposal that our world has entered "postnormal times" was first postulated by Sardar (2010, p. 435). This period of postnormality is marked by transition and uncertainty, as the conventional doctrines underpinning our society have become untenable and multiple and concurrent political, economic, and financial crises have generated a global climate of fear and unpredictability (Sardar, 2010). Scholars like Cairns (2017) repudiate the absolutism of this paradigm. Cairns (2017, pp. 414–415) suggests that what we consider as "normalcy" when interpreting historical phenomena can in fact be characterised as "postnormal," thereby arguing that society never really entered "postnormal times" but perpetuated an existing *Geist* of confusion. Whilst acknowledging this argument, it seems that the societal transformation we are currently experiencing is far more rapid and unprecedented than the gradual change experienced over the last century. For example, as observed through the uncertainty and devastation generated by the COVID-19 global pandemic. What is propelling the present epoch are three distinct, yet interdependent forces known as the 3Cs, namely: chaos, contradiction, and complexity (Sardar, 2010). This research is significant as it equips primary educators with the reflective capabilities to unpack and confront this postnormal world with students by questioning *why?*

According to Greene (1995), an individual's social imagination is a dynamic and humane capability that empowers them to conceptualise new beginnings by articulating what they believe to be deficient in society. This requires perceptiveness, agency, and curiosity from the learner to want to transform their world to imagine a more fulfilling and democratic social order (Greene, 1995). However, although the literature posits this as a hopeful endeavour for renewal and social change in schools, it will be challenging for learners to adopt this creative disposition and contest traditional forms of knowledge that have been normalised by the same institution that now seeks to disrupt them (Morgan & Saxton, 2006). Although learners demonstrate a developmental predisposition to curiosity from an early age, educators must implement scaffolded modes of questioning that will guide them to contemplate these pressing issues and go further to conjecture, "really why?" (Jefferson & Anderson, 2017, p. 78; Sawyer, 2012). To inspire the curiosity required to critically reflect, educators must first adopt a paradigm of open-ended questioning that "ponders possibility" (Jefferson & Anderson, 2017, p. 96) through the verbalisation of new ideas (Fook & Askeland, 2006). This necessitates that teachers support their students to ask better questions, so that questioning practices progress "from lower-order questions such as *what* and *when* to asking the deeply emphatic question *what if?* (Grove O'Grady, 2020, p. 48). The critical reflection model developed by Fook and Gardener (2007) frames critical reflection through such questioning methods. Although this model is generally targeted towards corporations, it can be used to encourage primary students to critically consider their assumptions about knowledge by asking "why" questions. The power of asking "why" is significant to the success of transformative learning, as it encourages deep learning that provokes students to consider new perspectives and possibilities (Fook & Gardener, 2007).

Framing Definitions of Critical Reflection

As Giroux (2011, p. 41) affirms, an examination of critical reflection necessitates a "hermeneutic understanding that is historically grounded," as the interpretive dimensions of this practice are steeped in notions of knowledge, democracy, and power. This implies that educators must comprehend the way that systems of power influence what students learn, to identify how student agency can be strengthened in schools. As a productive and progressive movement, critical pedagogy takes as its theoretical foundation key assumptions derived from CST (Duncan-Andrade & Morrell, 2007; Jefferson & Anderson, 2017; Leonardo, 2004). This theory frames the acquisition of knowledge

within the context of education as both enlightening and empowering, yet it defines critical reflection in quite broad terms (Leonardo, 2004).

The notion that students must be taught *how* to read their society unifies this philosophy, yet is problematic, as it only serves as a surface approach for how educators can comprehend the magnitude of critical reflection as a creative and collaborative capability (Jefferson & Anderson, 2017) and an inquisitive "way of being" (Roche, 2011, p. 340). Thus, critical reflection can be both embodied and exercised by learners across primary classrooms. An action-research study conducted by Roche (2011) validates this assertion. Roche (2011, p. 329) observed that aspects of her pedagogy were inhibiting students from becoming critically reflective learners due to a "didactic" model of instruction. Our epistemological values regarding knowledge align with Roche's (2011) here, as it appears that many schools are still dominated by what Freire (2005, pp. 91–92) theorises as a "banking-model" of education. As Freire (2005) concurs, instilling a predominately lecture-style form of instruction in schools inhibits active learning, as it considers students as objects that are spoken about but are seldom offered the opportunity to speak for themselves. Students in Roche's (2011) classroom were initially regarded as such empty vessels into which knowledge was deposited, hence the transaction of information could only ever be static and detached and remained uncontested. By adopting a questioning stance to critical reflection, Roche (2011, p. 331) challenged this notion of passive learning through the implementation of what she coined as "thinking time" discussion groups. Notably, the qualitative findings revealed how learners who were rarely afforded the chance to speak in class, began posing thoughtful questions and developed a meta-awareness concerning the construction of knowledge as a prescribed "truth" (Roche, 2011). However, when scoping the field of qualitative research conducted around critical reflection and questioning in education, it seems that Roche's (2011) study stands alone. The gap presented by the literature became an important impetus for this study, as the theoretical basis for critical reflection in primary schools cannot be legitimised unless a stronger evidence base is constructed (Jefferson & Anderson, 2017).

Transformative Learning and the 4Cs

Aligning their pedagogy with the principles of transformative learning offers educators a radical and thought-provoking way of nurturing a generation of learners skilled to meet the needs of our 21st-century world (Mezirow, 1997). To achieve this, learners must modify what Mezirow (1997, p. 5) terms as their "frame of reference," to re-evaluate the experiences, beliefs, and assumptions that define their lives. As Jefferson and Anderson (2017, p. 22) affirm, "transformation in the 4C approach is charged emotionally and cognitively because it involves a complete change in a person's 'frame of reference.'" Critical reflection enables such transformations to occur, so that students can begin to adopt a frame of reference that is more inclusive, self-reflective, and discriminating (Jefferson & Anderson, 2017; Mezirow, 1998). It is assumed that the outcome of quality learning would ideally be transformation, for example, as evidenced by the transformative process of acquiring a new language. However, the reality is that change is slow in the Australian education system, and this resistance to change becomes problematic when we consider the rapid pace at which our society is transforming both locally and abroad (Jefferson & Anderson, 2017).

Fostering Critical Reflection through the 4C Approach

The 4C approach (Jefferson & Anderson, 2017) is foundational to this research, as it foregrounds how an understanding of critical reflection rests in the learner's ability to interrogate knowledge in terms of agency and power (Jefferson & Anderson, 2017). To implement this effectively, schools must understand how the 4C approach is supported by the 4C capabilities, the coherence makers, and the Learning Disposition Wheel [LDW]. The term "4Cs" organises the four capabilities that bind this approach (creativity, critical reflection, communication, and collaboration) (Jefferson & Anderson, 2017). Jefferson and Anderson (2017, pp. 31–32) created the coherence makers to "illuminate and harmonise the complexity of learning the 4C capabilities" and explain how each capability can be understood and taught in practice. The critical reflection crucible (the crucible) is one of these coherence makers that attempts to portray the intricacy of the critical reflection process, through the more simplistic analogy of a scientific crucible that is heated to test the purity of a substance (Jefferson & Anderson, 2017, p. 34). When applying this analogy to the process of critical reflection, the crucible acts as a blueprint that allows learners to test the veracity of their knowledge

by exposing it to questioning and dialogue, so that this knowledge is made stronger and more transparent to others. The four stages of the crucible are listed below and can be used by teachers as a pedagogic tool to foster critical reflection when adopting the 4C approach (Jefferson & Anderson, 2017, p. 98):

1. Identifying assumptions
2. Why this? Why so?
3. Contesting, elaborating, and adapting
4. Re-solving

To use the crucible effectively, educators must be well-versed in the theoretical underpinnings of this coherence maker, so that they understand its capacity to transform learning through a critical pedagogy lens. Most importantly, the crucible is reinforced by a questioning framework, where learners are first encouraged to "identify assumptions" about the information they are pondering, and progressively consider "why" to contest, interrogate, and substantiate their interpretations in order to "re-solve" these preconceived truths (Jefferson & Anderson 2017, pp. 98–99). Since the 4C capabilities are deeply interlinked, critical reflection therefore becomes a collaborative, creative and dialogic enterprise between teachers and learners in schools (Jefferson & Anderson, 2017). As the implementation of the 4Cs in Australian primary schools is still in its inception stage, this research offers valuable insight into the use of the crucible as a pedagogic tool and its implications for critically reflective learning.

The Role of the Learning Disposition Wheel [LDW] in the 4C Approach
The LDW was conceived by Jefferson and Anderson (2017, p. 38) as a type of diagnostic tool used to better grasp and aid how the 4C capabilities are taught when using the 4C approach in schools. Any school that adopts the 4C approach must become familiar with the LDW both on a personal and pedagogical level, so that they foster a common meta-language to talk about each competency and how it can be imagined during teaching and learning. Conceptually, the LDW draws upon the principals of Self-Determination Theory [SDT] proposed by Ryan and Deci (2000) to foster agentic and self-regulated learners who are better equipped to face the challenges and complexities posed by our modern world. Nine interconnected competencies join to form the LDW and are categorised into three domains: the intrapersonal, the interpersonal and the cognitive (cognition). As Jefferson and Anderson (2017, p. 42) argue, these three domains "develop a disposition for deeper learning" and correspond to the domains of competence outlined in the US National Research Council's report titled *Education for life and work: Developing transferable knowledge and skills in the 21st century* (Pellegrino & Hilton, 2012). Notably, a reciprocal relationship exists between the LDW and each of the 4C capabilities. For example, the LDW helps foster critical reflection through its competencies, whilst practising critical reflection can simultaneously allow students to develop and demonstrate competencies on the LDW including "empathy," "grit," "curiosity," and "build new ideas" (Jefferson & Anderson, 2017, pp. 39–40).

The Significance of Researching Critical Reflection as a Phenomenon
Critical reflection offers teachers interpretive versatility in the way they posit knowledge as something that can be critically questioned by learners. This premise poses significance for both the scholar and the educational practitioner in two decisive ways. Firstly, critical reflection ceases to exist as a conceptual entity framed in theoretical terms as expressed in the prevailing scholarship, but instead is understood as a lived experience that emerges in the classroom. Across phenomenological research, an experience is outlined as an event or 'happening' that can be witnessed through observation or understood through the stories that participants tell about their lives (Kafle, 2011, p. 188). Critical reflection is interpreted as a "human experience" in this research, as it can arise through an individual's speech, questions, or actions (Kafle, 2011, p. 191). As opposed to other phenomena, critical reflection can be described as both an intentional and unintentional experience, since it can be intentionally cultivated in classrooms by using the crucible or can sporadically occur through the discussions or questions that people pose (Eddles-Hirsch, 2015). Unlike traditional phenomenological studies, this research is equally concerned with the first-hand descriptions of the phenomenon and

values how the participant interprets the phenomenon during the interview process (Eddles-Hirsch, 2015).

Methodology: Overview and Limitations

An important distinction was made to concentrate on the disciplinary field of phenomenology, and in particular the hermeneutic branch of this school of thought in this study (Smith, 2003). This decision ensured that the research was rooted in knowledge about phenomena as they are experienced by individuals, which was then applied to examine the participants' experiences of critical reflection. Hermeneutic phenomenology seeks to understand an individual's "subjective experience" in relation to phenomena, by heightening the role of interpretation in unveiling this experience (Kafle, 2011, p. 186). Framing the research questions through a hermeneutic approach recognised the meaning that could be sourced from both the participants' and the researchers' interpretations of critical reflection (Eddles-Hirsch, 2015). Hermeneutic phenomenology has received considerable criticism from supporters of Husserlian phenomenology for the limitations of its interpretive method, which rejects the process of reduction by which the researcher "brackets" their own predilections, to prevent unconscious bias from distorting the validity of the data (Kafle, 2011, p. 182; Larkin & Thompson, 2012, p. 102). Whilst upholding the fidelity of a hermeneutic approach, our participants' experiences of critical reflection remained at the forefront of the study and took precedence over our own experiences during the data analysis process (Finlay, 2012).

A collective case study design was adopted to critically examine the experiences of the three teacher participants (Stake, 1995). This research took place in a government primary school located in the south-western suburbs of Sydney, Australia. The school has an ICSEA (Index of Community Socio-Education Advantage) value of 1,087, signifying that a moderate number of students reveal a level of socio-educational advantage. At least 97% of students from this school also come from a language background other than English (LBOTE). Our 4Cs educators, Robert and Rose, have overseen professional learning at this primary school in the recent years and have worked with Sally, who has adopted a leadership role alongside her teaching load to lead 4Cs transformation in this school. The choice of this setting allowed for a deeper examination of the phenomenon through the participants' diverse experiences of critical reflection, in a manner that also limited the possibility of receiving a surplus of qualitative data that could lead to the superficial reporting of the results (Yin, 2003). The names of the teacher participants included in this study have been de-identified and replaced with pseudonyms to ensure their confidentiality.

Data Collection Methods

Semi-structured, face-to-face interviews with 4Cs teacher participants were the primary means of qualitative data used to answer the research questions. Each interview ranged from 30 to 45 minutes in length and was conducted at a pre-arranged location off-site. The interviews were informed by a selection of guiding questions that directed the conversation yet remained flexible enough to permit each participant to define this phenomenon and vocalise diverging insights about their experiences of fostering critical reflection (Yin, 2003). Each interview began with the question, "could you tell me about your experiences with teaching critical reflection in the classroom?" Encouraging participants to relate to their own pedagogical experiences to begin the interview generated rich discussion about their teaching strategies and helped prime their responses to the resulting questions. Participants were also asked how they would define the term critical reflection, what would demonstrate to them that a student was critically reflecting during learning, and to describe their experiences of using the crucible as a teaching tool. To explore the connection between critical reflection and questioning, participants were asked to consider if posing questions can encourage students to reflect more critically about knowledge, and if so, the types of questions that would help foster this. Two interviews were conducted using audio-recordings and transcribed as written data, whilst the third was initially transcribed through notetaking.

Data Analysis Methods

Interpretive Phenomenological Analysis (IPA) endeavours to closely understand how a phenomenon is perceived from the participant's perspective (Smith et al., 2009). An important

limitation is illuminated by Smith and colleagues (2009, p. 33), as they confirm that "experience is never accessible" as it is only witnessed after the event. Therefore, this research can only ever be "experience-close," as the 'root' of critical reflection can never completely be unearthed (Smith et al., 2009, p. 33). This analytical method is entrenched in a hermeneutic approach, which applies an ideographic strategy to richly detail the nuance of an individual's experience as they encounter the phenomenon, thereby entering what Smith and Osborn (2003, p. 53) term as a "double-hermeneutic."

Once the interviews were transcribed into written data, analysis was undertaken case by case, to read and revise each transcript meticulously and annotate recurrent themes (Smith & Osborn, 2003). Themes in each transcript were then collated under apparent "theme titles," and corresponding themes were grouped into clusters (Smith & Osborn, 2003, p. 74). Each cluster was assigned at least one identifier (an example) from the transcript to support analysis. For example, in interview one the cluster titled "Multimodality" included the themes, "it's maker-focused," "it's an active process," and "critical reflection is not form bound." The clusters apparent in each transcript were then tabulated and transferred into a "master table of themes" that were visible across all three semi-structured interviews (Smith & Osborn, 2003, pp. 66–76). Thirteen theme categories were included in this master table and are presented in order of recurrence below:

1. The LDW
2. What is critical reflection?
3. The critical reflection crucible
4. The importance of questioning
5. The assumption landscape
6. Agency in schools
7. Social and emotional learning
8. The social imagination
9. Deep learning
10. Explicit processes
11. Engaging with power
12. Re-solve to create action
13. And Multimodality

Results

Four predominant themes and associated findings emerged from this study, namely: defining critical reflection, the importance of questioning, the LDW, and social and emotional learning. These themes were evident across the experiences of all three teacher participants, as described in their semi-structured interviews. The interview data reveals a strong correlation between questioning and the process of critical reflection as enacted and experienced by 4Cs educators through the crucible. The inclination to question-pose can be seen as both natural and necessary if a learner is to identify and challenge their assumptions during the critical reflection process. However, asking the right questions that encourage introspection and elicit empathy is vital. Although critical reflection is still an inherently complex phenomenon, its critical nature is strongly linked to students' ability to derive agency from their understanding of power. Furthermore, critical reflection cannot be genuinely nurtured in the classroom unless all students possess the interpersonal, intrapersonal, and cognitive competencies that enable the crucible to operate within a 4C approach. The subsequent discussion will evaluate these findings further and consider each theme in light of the research questions that have guided this study.

Discussion

What is Critical Reflection?
The notion that students should be trusted to "bring the learning" (Sally) into the classroom encompasses a crucial dimension of how educators define critical reflection. Since Sally has been engaged in the practical side of teaching critical reflection to her students, her definition was more pragmatically informed by the question, "what do I bring to the learning?" This question resonates

closely with what Robert termed as the "assumption landscape," where learners begin to identify their assumptions about knowledge within the first stage of the crucible (Jefferson & Anderson, 2017). Similarly, Rose drew upon the second phase of the crucible to suggest how critical reflection involves "challenging assumptions." Participants recognised and experienced critical reflection as a "making process," where learners forge their own understandings by unpacking the perspectives and uncontested beliefs that they bring to school. As Robert and Rose expressed, both "agency and action" should result from critical reflection.

However, agency is also afforded to students throughout their engagement with the crucible, in the way they perceive their role in directing and "bringing" the learning to fruition. When assessing what makes critical reflection truly "critical," the term "assumptions" is a recurring motif that explicitly links this phenomenon with the concept of power (Fook & Askeland, 2006; Fook et al., 2016). As contended by Foucault (1980, p. 93), the dissemination of power in a society depends upon the production of "discourses of truth." The manufacture of such "truths" directly influences our students' assumptions, and questioning those assumptions generally unsettles learners as they find it challenging to believe that other possibilities may exist (Foucault, 1980). When speaking about the crucible's potential to challenge assumptions, Robert considered the link between assumptions and power, since the assumptions we form as adolescents generally dictate our actions as adults. Since Robert is well-versed in the theoretical underpinnings of the crucible as a facilitator of 4Cs professional learning, he termed critical reflection as "the way you recognise power and navigate systems." In Sally's stage three language class, recognising the influence of the media (as a system of power) on students' assumptions concerning Mexican people was pivotal to re-solving their understanding of Mexico as inherently multicultural. Therefore, critical reflection can be defined as a process of understanding the complexities of power and the way it influences our students' beliefs, assumptions and actions.

Another way that educators can identify and experience critical reflection is by exploring its intrinsic multimodality. When reflecting upon the form critical reflection takes in the classroom, Robert noticed how "it's not form bound, but what I would say is that critical reflection often works best when it is spoken, because it means you're in dialogue with somebody else."

Robert affirms the usefulness of a dialogic approach to critical reflection here, to demonstrate how educators can facilitate oral modes of reflection through spoken class or group discussions about a topic. Contrastingly, Rose described the importance of affording learners various opportunities for embodied reflection as a method of communicating their assumptions "giving people opportunities to physicalise their reflections…to explain things that they haven't necessarily developed a capacity in the language of reflection yet."

By offering students different ways to explore their assumptions, Rose captured how her use of the crucible facilitated a form of critically reflective learning that is simply not attainable through traditional instructional approaches (Greene, 1995; Robinson, 2001). Sally, in turn, presented a more holistic view of what critical reflection could look like during learning; "it's a bit of everything…you cannot do it just through writing…artistic elements are also reflected in it…students can represent it through an image or a painting."

Sally continued to explain how she used images as forms of provocations to enable students to generate emotional responses towards the content. Sally achieved this through a "gallery walk," an activity derived from drama pedagogy where students observed various images of people along the Mexico-United States barrier, yet were not given the context for these images. By initially concealing this information, Sally cultivated her students' empathy towards these problematic scenes in an attempt to make their assumptions apparent once this information was revealed. Therefore, educators in this research experienced the power of critical reflection as an accessible and multimodal capacity that can be used to re-solve misconceptions held by their students.

The Importance of Questioning

The interview data reveals a strong relationship between teacher questioning and students' ability to critically reflect within each stage of the crucible. When asked to relate her experiences of teaching critical reflection, Sally made explicit reference to questioning, despite not being asked to comment on the role of questioning in the interview. This was evidenced by her recurrent use of phrases such as, "I asked" and "answering questions like…" This finding was curious, as it reflected

how teachers cannot escape using questions to instruct the teaching and learning of critical reflection in 4Cs schools. Sally consistently mentioned how she posed diverse questions, such as "could it be multicultural in Mexico?", so that her students could demystify their assumptions about Mexican people and begin to question-pose themselves. Furthermore, Sally quoted examples of the types of enquiring questions she communicated to her students, such as, "what do you know about Donald Trump?" What is crucial about these questions is their open-ended nature and specificity to the crucible. When asked about the importance of questions when teaching the crucible, Robert strongly concurred that "questions are critical at every component." Thus, questioning must be recognised as the impetus that drives critical reflection, by acting on the assumptions that students bring to their learning. As Fook and Gardener (2007, p. 85) assert, questions are not only used to "aid reflection" but to simultaneously "unearth [and challenge] assumptions." Yet, the key to fostering deep and meaningful reflection noticeably stems from asking 'why' questions (Jefferson & Anderson, 2017; Fook & Gardener, 2007).

When challenging assumptions in the crucible, educators must keep asking "why" to push beyond a surface response to their questions. As Sally asserted in her interview, "the more *why's* and the more *why so's,* the better!" When interpreted through a critical pedagogy lens, Freire's (2005) standpoint on the importance of problem-posing education is relevant for educators here. It is only by posing "why" questions that individuals are empowered to break free from the systems of power that seek to oppress them, as "no oppressive order could permit the oppressed to begin to question *why*?" (Freire 2005, p. 86). As educators, we have unconsciously created a culture of "yes and no questions," where pre-determining the answer has become so engrained in our praxis that our students anticipate this and frequently disengage when asked provocative and probing questions (Lindfors, 1987, p. 419). This reality is something which Sally poignantly observed, as she discerned how some students don't answer "why" questions because "they think you (the teacher) can fill in the rest of the information." Not only does this prevent learners from engaging in deep learning, but it increases their disinclination to pose challenging questions themselves (Chin & Osbourne, 2008). Questioning is intrinsic to the process of critical reflection, regardless of whether it is experienced by educators through Jefferson and Anderson's (2017) crucible. Nevertheless, as Robert urged, educators must develop the skills to "question better" and "question deeper" if this is to successfully transform how students learn.

The Learning Disposition Wheel [LDW]

All three participants acknowledged the importance of the LDW as the foundational knowledge for understanding the function and power of the crucible (Jefferson & Anderson, 2017). Robert and Rose distinguished the LDW as a useful tool for framing assumptions during critically reflective learning. The complexity of the LDW was underscored more prominently by Robert, having spent more time overseeing professional learning for 4Cs teachers around the cognitive, intrapersonal, and interpersonal competencies that it develops (Jefferson & Anderson, 2017). Robert recalled how it takes schools "at least two years to get their head around the LDW." Although I initially expressed consternation at this statistic, Robert later revealed that once schools begin to grasp the complexity of the LDW, they are better able to understand the context in which these coherence makers function. Crucially, Robert identified the connection between the LDW and its capacity to facilitate schools to "engage with" and "speak to power." By nurturing an inquisitive disposition that supports learners to ask "why" and "how," the LDW prepares teachers and students to engage in a process of critical reflection that questions the regulation of power throughout their world. Rose similarly validated the LDW's expediency as a "useful tool," through its capacity to "frame assumptions" against its "structure and schema." When reflecting on the most notable examples of action generated by teacher engagement with the crucible, Rose noted how one educator based their assumptions regarding a student's proficiency on their supposed "laziness," without considering whether this capability could be measured and enacted against the competencies that form the LDW. Thus, the LDW facilitates the critical reflection process, as it contains the "cognitive, intra and interpersonal competencies" required to promote self-regulation in learners (Jefferson & Anderson, 2017, p. 39).

There is a distinct correlation between the competencies nurtured by the LDW and the forms of "action" that teachers reported were created through the process of re-solving in the crucible. Educators recognise the phenomenon of critical reflection through the behaviours observed within the

LDW. As Robert discerned, the re-solving component of the crucible is a process of "bringing to bear" all the new knowledge that has been gained, to "generate meaningful action" from the learning. Significantly, when asked if she could recall tangible action that resulted from the process of re-solving, Sally revealed how her stage three class developed in three noteworthy ways: students gained new knowledge, student questioning expanded the project, and learners nurtured their curiosity and empathetic development. Although these actions are not as concrete as initially intended by Jefferson and Anderson (2017), they do represent moments of transformative learning (Mezirow, 1997). These transformations all connect to associated competencies on the LDW, including "empathy," "curiosity," and "build new ideas" (Jefferson & Anderson, 2017, p. 39). Sally noticed how the mini unit on the construction of walls that separate communities "was not a part of [her] intended plan for the unit," as it was spurred by a question from one of her students. Sally's noticing here exemplifies how her student exercised their curiosity to "expand the project" into something that was markedly "bigger" and "better" than she had first imagined through their understanding of the LDW. Sally's reaction affirms the importance of stepping into this learning process with the expectation that through critical reflection, increased "awareness will lead to change" (Gardener et al., 2006, p. 231). In this case, change was experienced on a personal level through increased student agency and the realisation that their questions can have meaningful impacts on their learning.

Social and Emotional Learning

It is clear from the data that expressing empathy is indispensable to an individual's capacity to critically reflect (Boler, 1999). In her recent publication, Grove O'Grady (2020, p. 14) discusses "how empathy can be distilled into a tangential and teachable pedagogy and thus a habituated practice." This conceptualises empathy as a productive, "deeply cognitive and deliberative act" that is closely tied to how we recognise another's individuality and lived experience (Grove O'Grady, 2020, p. 45). In this research, Sally notably accentuated the value and challenge of nurturing her students' "empathetic development" whilst using the crucible. Sally was noticeably moved by the "profound empathetic response" that the mini unit had on both herself and her students, confessing that it left many students "in tears." Sally's response identifies the display of observable emotion as a step toward empathetic development, as this emotional response illustrates how students developed an understanding of the psychological hardship endured by these communities. In one instance, Sally instructed her students to respond to Donald Trump's comments about the construction of the US-Mexico border wall. Sally distinguished how it was important for students to push beyond the conventional "that's sad" response and realise that even though these quotes upset them, they could not simply "let it be." Encouraging students to critically consider their emotions is vital, as learners could decide whether this issue affected them personally and question *why* it was meaningful (Grove O'Grady, 2020). Yet, by taking this a step further and utilising emotion as a productive tool to prompt action in her students, Sally created an environment where critically reflective learning could occur. Crucially, the connection that empathy shares with critical reflection runs far deeper than this. If students are to understand the how systems of power sway their assumptions, they must first recognise power as a tool for dehumanisation (Freire, 2005). The process of understanding the way communities are dehumanised by powerful people or institutions requires empathy and lies at the heart of what it means to critically reflect. To do this, students must cultivate empathy as a disposition that enables them to adopt the perspective of both "the oppressed" and "the oppressor," to question how power is exercised in ways that are potentially harmful or undemocratic (Freire, 2005, pp. 44–47).

Demonstrating empathy during critical reflection simultaneously involves social learning, so that students can "talk out" these perspectives and emotions with their peers in a respectful manner. Sally's experience was unique here, as she noted how as a class their "social and emotional learning intermeshed" to the point where she required two crucibles to illustrate how she underwent this learning journey alongside her students. The power of such transformative learning cannot be mistaken here, as Sally transitioned from "teacher" to "teacher-learner" through her deep engagement with the crucible. This pivotally illustrates how schooling is enriched when students are given the agency to direct their learning and educators are flexible and open to such opportunities. What Sally has demonstrated from her experience is a greater understanding and commitment to a culturally responsive pedagogy, which places students' empathetic development at the forefront of teaching and

learning (Warren, 2014). However, Sally encountered challenges during this process. Sally remarked how some students "did not like to be questioned or challenged." She believed that learners were "holding onto their feelings" and were not psychologically willing to "open up" about their assumptions. Although engaging with these students was testing, Sally attempted to cultivate a safe and courteous classroom environment that encouraged learners to be open and honest with their feelings. A major implication for 4Cs educators here is the ability to exhibit a willingness to experiment and embrace the challenges that come from teaching critical reflection. Without her own passion and perseverance, Sally believed that her students would have simply "cooked some Mexican dishes and danced." Instead, students developed a form of social intelligence by fostering critical empathy towards the content.

Conclusions

Critical Reflection starts with the Learner

Assumptions are foundational to critically reflective learning as they stimulate deep and meaningful conversations about knowledge (Fook & Gardener, 2007; Jefferson & Anderson, 2017). By unpacking and demystifying these assumptions, primary educators can better unearth the hidden systems of power that influence what learners know, thereby facilitating students to cultivate a greater awareness about and agency to change their world (Gardener et al., 2006). For educators like Sally, critical reflection could not be separated from the notion of assumptions, as it begins by asking, "what do I bring to the learning?" In the future, 4Cs research must expand to employ classroom observation as a viable data collection method, to concurrently allow the researcher to closely connect with this phenomenon and see its occurrence in the classroom (Van Manen, 2016).

Questioning is the Impulse that drives Critical Reflection

This research has illustrated that posing the right questions and progressively asking "why" provokes learners to act upon the assumptions that they bring to the classroom (Freire, 2005). If education is to become truly transformative, the questions posed during the primary stages of learning must foster curiosity, open-mindedness, and possibility thinking (Greene, 1995; Jefferson & Anderson, 2017). As Rose urged, educators need to ask questions "that elicit deeper thinking in others, but also don't make presumptions [about] what's in other people's heads." For future 4Cs research, the task will be to investigate the questioning nature of Jefferson and Anderson's (2017) crucible, so that the types of questions used during this process are accessible to all educators. Furthermore, a greater focus on student questioning will better inform future research when assessing how primary students become agentic learners.

Cultivating the Competencies in the LDW is necessary for Critical Reflection

The LDW lies at the crux of all 4Cs learning. To ensure that critical reflection leads to transformative learning and is taught explicitly and meaningfully, learners must be given the time and space to foster these competencies (Jefferson & Anderson, 2017). This finding is especially significant for primary educators, as it is through the LDW that young learners will develop the confidence to share their assumptions openly and honestly, whilst respectfully unpacking the perspectives offered by their peers. Prospective 4Cs research should concentrate on the transformative potential of the LDW when used to develop critical reflection and what this tangibly looks like at a classroom and whole-school level. Professional learning that affords teaching staff the opportunity to deeply unpack and apply each of the nine competencies to their own classes and student cohorts should be undertaken on a regular basis. This should be an ongoing and iterative process that is directly linked to each school's strategic plan, so a common language is developed around the LDW and 4Cs approach amongst the teaching staff and leadership team.

Nurturing Empathy creates a Critically Reflective Learning Environment

Social and emotional learning forms part of how students critically reflect (Jefferson & Anderson, 2017). Since critical reflection is a collaborative and dialogic capability, students must be encouraged to work together to articulate their beliefs and questions about knowledge (Freire, 2005). By fostering an empathetic awareness towards curriculum content, students will build their emotional

learning to see the world through different perspectives and critically consider how complex problems implicate different communities (Grove O'Grady, 2020). Educators can facilitate this by asking empathic questions such as, "what other perspectives are there?" and "what if?" (Grove O'Grady, 2020, p. 48). Future 4Cs research should strive to investigate the relationship between empathy and critical reflection and examine how primary educators and students can ask more empathic questions during their engagement with the crucible.

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