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Minding the Gap: Comparing Student and Instructor Experiences with Critical Reflection

ABSTRACT

Critical reflection (CR) is regarded as essential for learning in higher education. Many instructors want students to reflect deeply and critically, but lament perceived deficiencies in students' value and understanding of CR. This qualitative study explored four undergraduate courses across disciplines to appraise how instructors' perceptions of CR compared to the perceptions of their students. We uncovered similarities and differences in how instructors and students define, engage, identify, and value CR. Our findings reveal tensions around how to explain CR to students, and around different methods and meanings across disciplines and contexts with implications for practice. The findings suggest that although facilitating CR remains a challenging and often-nebulous endeavor, both instructors and students value the process and the gap may not be as insurmountable as commonly perceived.

KEYWORDS

critical reflection, student perspectives, instructor perceptions, pedagogy, qualitative

LITERATURE REVIEW

Scholars have long theorized about the role of reflection in learning. Musings date back to Socrates who contended that writing straitjacketed reflection; yet we know this only because Plato wrote about it (Phaedrus 274B). La Rochefoucauld's 151st *Maxime* considered reflection as a readiness to avoid being governed. Twentieth-century philosophers tended to adopt Martin Buber's (2004) "relational (*gegenüber*)" view of reflection as requiring mutual respect between the learner and the learned-about; every concept accepted as contestable, personal, and provisional. In the Education literature, Dewey (1916) theorized we do not learn from experience but from reflecting on those experiences. So too, Schön (1983), coming from an organizational studies background, conceived professional reflection-in-action as thinking about one's behavior and experiences (current and prior) and adjusting to generate new understandings.

Despite this rich tradition of exploring roles of reflection in learning, it remains nebulous. The Scholarship of Teaching and Learning (SoTL) literature on reflection evidences the concept has evolved but contains theoretical inconsistency (Fook et al. 2016b; Moon 1999; Thompson and Pascal 2012). Even so, many agree that reflection serves to distill meaning from experiences as "an active process of exploration and discovery which often leads to very unexpected outcomes" (Boud, Koegh, and Walker

1985, 7). Moon (1999), working in higher education professional development, provides an overarching definition of reflection as a mental process with a purpose and/or an outcome recasting meanings and applying them to complicated ideas or problems.

The concept of "critical" reflection implies additional intent and adds to its theoretical evolution. Critical reflection (CR) can be understood akin to critical thinking processes, such as to critically examine opposing opinions or thoughts. In other cases, the word "critical" either implies a focus on social change and power structures, as in critical theory, or it examines subjectivities of self, identities, and beliefs (Wilson 2002). In social theory, CR is also a way to examine individual 'positionality' within social systems (Foucault 1982; Giddens 1976). For example, Brookfield, an adult education scholar, defined CR as "the uncovering of power and hegemony" (2016, 11). Hatton and Smith emphasize considering "the broader historical, social, and/or political contexts" in CR (1995, 41). Known for their scholarship in social work, Fook, Collington, Ross, Ruch, and West (2016a) conceptualized CR in two ways: 1) as a focus on critical dimensions uncovering, confronting, and possibly shifting power; and, 2) as a process leading to change in practices and meaning-making processes. Fook, Collington, Ross, Ruch, and West suggest considering "how to marry a critical approach with ... meaning-making processes" (2016a, 184). Mezirow (1990), an adult educator, conceived CR as transformative thinking addressing presuppositions constraining how people perceive and understand the world. We adopt these broader perspectives to define CR as involving awareness of potential for transformational learning. CR elicits change in individuals' understanding of self and belief, within broader contexts and relationships with others and learned behaviors (Hoggan 2016; Mezirow 1981).

Amidst much theorizing, CR is widely perceived to be a valuable thinking process. The SoTL literature suggests contexts that best support CR. Reflection can occur in contexts either thrusting students into experiential learning, querying happenings during a field placement, being invited to critique, or scrutinizing results of a laboratory experiment. Moon (1999) suggests the underlying process of reflection may be similar across different situations; however frameworks for how it is defined, used, and valued vary by context and discipline. Many studies have investigated how to encourage reflection; most relate to specific course contexts, such as experiential learning, professional practice, and personal development (Moon 1999). Apart from Schön (1983), the literature about CR in STEM (Science, Technology, Engineering, and Mathematics) disciplines is notably sparse. Many teaching approaches rely on reflection to further student learning, yet the literature is quiet about transferability of findings (approaches, methods, outcomes) across disciplines or how contexts and cultures influence and need different types of reflection (Fook, Psoinos, and Sartori 2016).

As well, the student perspective on reflection is largely overlooked (Fook, Psoinos, and Sartori 2016; Moon 1999). The literature tends to dwell on faculty models of CR. For example, Brookfield (1995) and Shadiow (2013) model CR as a process for educators to improve their practice. Many studies also focus on encouraging CR through teaching practices (Kaplan et al. 2013). Most studies of CR assess a course or a teaching practice by demonstrating changes in learning, but with less concern for students' experiences (Fook, Psoinos, and Sartori 2016). The student voice, especially how students' and instructors' understandings of CR interact, seems absent.

Our research team was drawn to the topic of facilitating CR through a call for an International Collaborative Writing Group (ICWG). After months of exploration of the literature, discussions about our own experiences, as well as discussions with colleagues during a three-day retreat at the 2019 International Society of the Scholarship of Teaching and Learning conference, we solidified a common

perception that students hold different views and values of CR from their instructors. Combined with a lack of literature on student experiences of reflection, this disparity focused our inquiry. Because CR can be conceptualized and implemented differently in different contexts (Moon 1999), we sought to explore how a given instructor and their students view CR relative to each other within a course, rather than compared to a specific academic definition. Additionally, because intentions and practice can conflict, we developed a framework to explore how someone perceives and defines CR, and how they actually see CR happening in practice.

Research question

We six members of an ICWG investigated multiple disciplinary contexts to bring forth the student voice and learn more about the perceived gap between how instructors and students perceive and experience CR. We hoped our insights could support instructors in facilitating CR. Our research team formulated the research questions and analytic framework during the ICWG retreat based on our review of the literature, colleagues' feedback, and many team discussions designed to extrapolate the essential elements of exploring how faculty and students perceive CR in practice.

Our research question was exploratory in nature: How do instructors' perceptions of critical reflection compare to those of the students in their courses? Sub-questions included:

- How do instructors and their students define critical reflection?
- What does engaging in critical reflection look like from the perspective of instructors and their students?
- How do instructors and their students know when they are doing critical reflection?
- How do instructors and their students value critical reflection?

These questions explored overlapping and also differing aspects perceptions of CR perceptions that seemed important to distinguish. For example, someone's overall value of CR may differ given different understandings of what constitutes CR. Thus, our exploration led us to and informed our analytic process to consider how analyze these questions using this framework: how do instructors and students define, engage in, identify, and value critical reflection?

METHODOLOGY

We used a multi-site case study method to examine these research questions across multiple contexts (Creswell 2013), "to gain an in-depth understanding of the situation and the meaning for those involved … [i.e.,] the process rather than the outcomes." (Merriam 1998, 19) Our cases investigated the perspectives and practices of instructors and students toward CR in different courses/disciplines. We recruited four instructors from varied disciplines, from three public institutions in Canada and the United States, who self-identified as incorporating CR in their undergraduate courses (see table 1). The definition of CR, then, varied slightly across instructors.

Table 1. Cases by discipline, course level, number of participants

Case	Discipline	Course level	# of students	# of survey participants	# of focus group participants
1	Social Work	Undergraduate, Year 4	21	18	0
2	Education	Undergraduate, Year 3 and 4	31	28	1
3	Chemistry	Undergraduate, Year 3 or 4	20	14	3
4	Interdisciplinary critical thinking Honors seminar	Undergraduate, Year 1	35 (2 sections of 18 and 17)	30	3

Recruitment and participant selection

With ethics approval or exemption from all three institutions, we used purposeful sampling to invite four instructors whose work was known to members of the research team and who self-identified as incorporating CR in their courses. These instructors were not present during student recruitment that was carried out by a research team member to mitigate coercion or a conflict of interest. To maintain confidentiality, students were given the option to complete an online survey or remain in class but not participate. Students were also invited to participate in a follow-up focus group, which occurred after the course, to mitigate undue influence. Instructors were not informed of participants' identities. Neither students nor instructors were provided with participation incentives beyond supporting the exploration of CR.

Data collection

We conducted four stages of data collection. First, each instructor was interviewed for approximately 45-60 minutes by one research team member using a semi-structured interview protocol to explore their understanding, use, awareness, and valuation of CR. Instructors were asked eight open-ended questions (see Appendix for data collection instruments). Each instructor provided their own definition of CR and listed CR related activities for their course, which we then incorporated into the respective student survey.

Second, students completed an anonymous, 20-minute survey which included closed- and open-ended questions, their instructor's definition of CR, and a list of CR activities for that course. We designed the survey so students first defined CR on their own before being given their instructors' definition to mitigate students' repeating their instructor. These surveys captured how students defined, valued, and perceived the use of CR, and how they described engaging in relevant CR activities and assignments.

Third, we shared aggregate student survey data and a written summary of our initial findings with each instructor prior to a second interview (30 minutes). During this interview, instructors were asked to reflect upon and share their reactions to the student survey data to unpack potential differences between instructor and student perceptions of CR. Capturing how instructors interpreted student

understandings of CR was itself a reflective practice. The interview questions focused on gaps and successful student understanding of CR, as well as challenges and future plans for teaching the course.

Fourth, we invited students to focus groups (30 minutes). Due to participation inconsistencies (table 1), we did not use these data as a primary source, but instead to bolster our interpretations of the survey data. As a final step, we shared summaries of our theme analysis back to each respective instructor via email for comment.

Data analysis

As an exploratory study, our goals and research questions aimed to describe and explore, rather than generate, predictive models or theories (Miles, Huberman, and Saldaña 2013). Thus, our coding processes was conducted manually using descriptive coding and thematic analysis to find commonalities within each theme. We used our research questions as broad codes (define, engage, identify, value) to organize data for the emergence of themes and sub-themes. We analyzed the results within and across cases, as detailed in table 2.

Table 2. Data analysis stages

Stage	Data	Analysis
1	Instructor first interview (transcribed)	• Two researchers, who did not conduct the interviews, conducted initial descriptive coding using four broad codes (define, engage, identify, value).
2	Student surveys	• Two independent research assistants reviewed the coding for inter-rater reliability, which confirmed consistency in our coding.
		• The same two researchers conducting the initial coding wrote summaries of broad themes for each case.
		• The researchers conducting the interviews reviewed the summaries for accuracy and further theme analysis.
		• Ongoing research team meetings and summary reviews served as peer debriefing inter-rater reliability checks.
3	Instructor follow-up interview (transcribed)	• The same two researchers conducting the initial coding conducted descriptive coding using the same process.
4	Student focus-group interview (transcribed)	
5	Within-case thematic analysis	• Written summaries were revised to include findings from follow-up interviews and case studies and were reviewed by all researchers.
		• Instructor participants reviewed the summaries for accuracy and further comment.
6	Cross-case themes and implications	• All researchers reviewed the four summaries separately and generated analytic memos detailing similarities, differences, tensions, and implications across the cases.
		• All researchers met multiple times to discuss broader abstractions underlying the categories and agree on final themes across cases.

We six research team members and authors of this paper are all higher-educational instructors and researchers of academic fields of Education, Linguistics, Social Work and History, who are interested in the topic of critical reflection in their own work. To enhance trustworthiness in this qualitative study (credibility, transferability, dependability, and confirmability), the research team combined strategies, as noted in table 2, including independent review of our coding in Stage 1 and 2 by external research assistants; however, the research assistants did not contribute to authoring this paper (Marshall and Rossman 2016). The research team gathered information from multiple sources, including thick description and using participant quotes. We reviewed our emerging findings with instructor participants at multiple points in our analysis as a form of member-checking and participant validation (Merriam 1998). The research team also maintained an audit trail documenting decision making, data analysis, and data construction files for internal transparency. Finally, to assist reflexivity, we reviewed our data analysis at each stage with open discussion about the interpretations of our findings, as well as comparing our own experiences and preconceptions.

FINDINGS: CASE SUMMARIES

Case one

In this Social Work research methods course, the instructor described CR as a practice towards social justice, "[to] try to analyze things in a way considering and integrating more structural ways, looking at the social structures" (first instructor interview). The instructor asked students provocative questions to encourage discussions about the profession and its purpose. The instructor never explicitly defined CR with their class. Instead, "I just let them apply their own understanding of critical reflection to whatever I present and so far, I've never felt that they didn't meet the expectation that I expected. They always [performed] more than I expected [of them]" (first instructor interview).

When students demonstrated curiosity and asked questions to interrogate their own values and beliefs, the instructor took this as an indicator of CR. The instructor also tried to make connections between research and broader contexts within their communities and beyond. An intended goal for students was to develop CR as a skill to continually ask questions as part of their professional practice. In doing so, the instructor's hope is revealed in the research/practice connection, "I don't think many social work students, when they actually work in the field … have [a] chance to practice research … [T]hey might have experienced [research as] more like reading the research … I'm hoping, instead of accepting the research just as it is, they try to critically think about whether they applied the right methodology" (second instructor interview).

Many student participants described that CR occurred during discussions about their choice of research topic and methodology, in a sociopolitical location assignment, in reflective assignments (discussion posts) following experiential activities such as field trips to community agencies, and in discussions with guest speakers. In particular, discussions with Indigenous knowledge keepers resonated with students as an example of CR; this way of knowing challenged their own values and beliefs about knowledge production. For example, "it really reframed how I saw research in a colonized world" (student survey response).

Students described reflection as looking back on a topic or event, while CR was about thinking about a topic "not as fact but as fallible" and "think[ing] about a topic from different perspectives" (student survey responses). Being critical toward one's biases and social location to consider changes in perspectives and future actions were also described as CR. Several students also noted CR as making

personal connections to what they learned. According to students, CR helped "make us more self-aware which can help us to understand our bias and how our past experiences influence our work" (student survey response). CR challenged some students where critical practice was not part of their cultural backgrounds and norms.

One student expressed frustration about class discussions that did not have a definitive resolve, to which the instructor reflected that confusion and frustration were signs of engaging in CR. The instructor believed that CR was essential to professional practice, but realized from participating in the first interview that the connections between the course activities and developing CR skills could be more deliberate: "We never talk about critical reflection [as] part of our curriculum because it was [a] research methods course ... so when I reflect [on] this course I don't think they have any moment to think about or talk about the critical reflection part when you apply research method[s] … so, that's a gap" (second instructor interview).

The instructor implicitly encouraged CR through class activities. For instance, the Indigenous guest speaker demonstrated CR when describing their experiences as a research participant and a researcher. This was not explicitly identified as CR by the instructor, however. Based on student feedback, the instructor reported: "for the next time [I want] to provide a more concrete framework for how you can practice critical reflection, especially on research when they actually practice social work" (second instructor interview).

Overall, student participants appreciated the instructor's support and echoed how the absence of explicitly discussing CR can lead to confusion. Even so, most participants said the course activities were helpful, as one participant noted, "It is not only useful, but necessary in competent social work. Social work has a history of past and ongoing oppression, especially with Indigenous communities. It is vital to be critically reflective of one's own role within that, along with … the field itself" (student survey response).

Case two

Case two was a course for Secondary Education majors using fieldwork and centering around issues of identity and social awareness. The instructor defined CR as "an interrogation of both self (beliefs, values, positionality, etc.) and action (decision, choices, etc.)" (first instructor interview), and reflecting on one's identity, place in society, and on social justice. Given the course's practitioner emphasis, the instructor expressed a focus on reflection-on-action (Schön 1983) to inform changes in thinking or behavior.

Students almost uniformly defined reflection as thinking back on a past event and defined CR as improving oneself or changing behavior as a result of reflection. Many definitions were focused on critiquing events or data, or qualifying reflection as being critical when it was uncomfortable or difficult. As one student participant explained, "I would define reflection as looking into certain qualities that I have learned, and how they affect me. I would define critical reflection as looking at those same qualities and trying to find ways to better them" (student survey response).

Students noted multiple examples of evoking CR, such as specific books, discussions, and activities that asked them to consider a different culture and reflect upon their biases, as well as an auto-ethnography and a teaching identity assignment. Students felt the instructor gave them a comfortable space to explore their feelings and appreciated the instructor's "constructive feedback [and] encouraging comments" (student survey response).

Interestingly, a few students said they did not use much CR. They did not perceive introspection and explorations of self as CR. They described these moments as "just kind of talking about things that we did" (student survey response). Some did not see how interrogation of self and action as a component of reflective practice expected in their profession: "I don't really understand why this is an education class. It teaches us to reflect in the classroom, but we still aren't really doing 'teacher-like' things" (student survey response). The instructor found "a disconnect between their [student] understanding of the role of reflection on self and teaching" (second instructor interview), noting that in class, students discussed CR in terms of the self, but in discussions of their own teaching practice, the self was absent from students' conversations.

The instructor stated doing CR meant being vulnerable and taking time to do deep work, going beyond easy thinking, creating a "mindset of doubting … to always make sure that the reflection is critical, and that is not just superficial. And so that word 'critical' really changes things" (first instructor interview). For the instructor, feeling a sense of discomfort was an indicator of CR, "You can see the struggle … you can see it on their faces and in their body. You know, you can see the tension and kind of some concentration … where they're wrestling with the content then that's a key to me" (first instructor interview).

The survey results were enlightening for the instructor. For example, in one activity, the instructor thought the discussion remained at the surface level, but the students expressed doing quite a bit of CR. "That kind of surprised me when I read it because I'm like, 'Okay, I guess this worked more for you than I thought it would'" (first instructor interview).

Yet in other course activities, some students did not believe they were doing CR. This instructor pondered a need to be more explicit: "We don't ever explicitly use the term critical reflection with them. I don't think or really talk about what that entails … part of that is my teaching style … I don't want to tell you; I want you to come to this on your own. But in reality, we don't have enough time for them to come to that on their own" (first instructor interview).

Students valued CR for "learning from experiences different from ones we typically engage in" (student survey response), to be a more critical thinker, and to support personal growth. Students valued reflection within the field of Education to improve practice but did not always connect this with understanding one's identity. The instructor was surprised some students tended to perceive CR as a tool for evaluating teaching practices in a pragmatic sense rather than to reconsider personal perspectives, biases, and social positionality. In the future, the instructor planned to build in more clarity, to discuss the expected metacognitive processes with students more directly, and to re-structure larger projects to include the ability to use reflection to inform and change action (decisions, choices, practices).

Case three

In this upper-division course for Chemistry majors, students defined reflection almost uniformly as 'looking back' or 'thinking back' at something that was learned in the past: asking questions about it or re-assessing it. Students described CR as making connections, improving, or forming conclusions to deepen understanding of disciplinary knowledge. They did not refer to the term "critical" as a reference on one's worldview or a social justice perspective. The instructor defined CR as, "a metacognitive process; one looks back at outcomes of actions, thoughts or emotions and learns from these outcomes in a demonstrable way that allows personal growth. This process allows one to build a deeper, more

multidimensional understanding of one's own experience, but also to be better informed by others' experiences" (first instructor interview).

The instructor noted the students' focus on reflection as an academic exercise was a potential gap in their understanding, commenting that, "Nearly everyone sees the process as external, so connecting knowledge to knowledge … and this is good … but not many are thinking about it with respect to personal transformation, changing internal landscapes like, 'because I connected this I personally changed.' And I think that's missing" (first instructor interview).

Students commented that reflection was supported from the first day of class. They associated many class activities with CR, including journaling and problem-solving summaries. Students said the instructor supported CR through feedback acknowledging their questions and pushing them to go deeper, a process described as: "journaling back-and-forth" (student survey response). The students appreciated having opportunities to explore ideas seemingly off track, but were still valuable. The instructor similarly expressed that CR was supported by giving feedback every day, using a rubric, and by role modeling, especially when making mistakes.

The students reported sometimes struggling to find the time needed for reflection. They expressed nervousness and discomfort in sharing their reflections. In the focus group, students explored this issue further, some maintained grades and a regimented process made reflection less appealing, but also forced them to do a higher level of work. They discussed the tension between reflecting for a grade, doing it for yourself, and how this shaped their approach: "It [reflection] just happens naturally. I don't think you can force it and so the fact that if you're aware of it [grading] happening, whether it's being graded or not, I think it changes people's perspectives about it" (student focus group). Another student agreed, "the reflections you have to do in class, knowing that those were graded I definitely would say that I kind of started towards the end to write towards how I knew it was going to be graded" (student focus group).

To identify CR, the instructor described looking for students constructing knowledge in their own words, "You know when it's your words coming back to you or when it's their words" (first instructor interview). Students characterized CR as moments of surprise or "a-ha" moments, either applying concepts to everyday life, or comparing their thinking with that of other students. Students valued CR to help retain information and guide learning, as well as to encourage inquiry. "It makes me curious and want to dive deeper into the subject so that I can learn even more about it" (student survey response). In science disciplines, students described CR as useful for being able to apply concepts, analyze data, and learn from their mistakes (as in a laboratory setting). The instructor wanted to focus more on reflection throughout the course and to encourage open reflection while also using grades and rubrics. Overall, the instructor seemed pleased with the student's understanding of CR, "Truthfully, I was just elated to see that the students were overtly tying class activities to their own metacognitive development. It is really exciting that they recognize that critical reflection was not limited to the aspects of the course that might overtly carry the label of reflection" (second instructor interview).

Case four

This Interdisciplinary Honors course focused on critical thinking in a two-semester colloquial format. The instructor described CR as a tool: "I think of critical reflection as a means of improvement" (first instructor interview). In addition to improving future work, the instructor believed CR could

support students in thinking deeply about connecting content and the self by building "strong, healthy, [and] engaged student identities" (first instructor interview).

Students believed CR occurred in nearly every class through written responses and discussions about class readings. The course readings were philosophical in nature, prompting students to ponder their life experiences and views. Several participants remarked on epiphanies, questioning "what I wanted my future to entail" or "what I could possibly do in this universe" (student survey response).

In comparison with reflection, the students described CR as more analytic or intentional, and as a way to challenge previous ideas and possibly change them. Depth and formality also were noted as indicators of CR versus reflection. While most students noted CR occurred frequently throughout the course through the readings, writings, and discussions, one student "found little new understanding through our course texts" despite a "metric ton" of writing (student survey response).

The instructor believed having CR as a required task was helpful in getting students over the barrier of self-critique and be more serious when invited to question how well they did on a task. Requiring CR also avoided it being perceived as extra work. The instructor's goal was for students to take stock of their contributions and participation, realising the responsibility of a grade was not just the instructor's, by using "big epiphanies and those things that they haven't thought of before … to improve their performance and to feel stronger about their work and their successful student identities as they keep going forward" (first instructor interview). A marker of CR would be a deepening of identity and sense of self and a best-case for students was "thinking differently about your own positionality in the world" (second instructor interview).

According to students, CR helped them be more self-aware of their beliefs and values, as well as the beliefs and values of information sources. Some students also remarked how CR filtered beyond the class and prompted them to consider how they participated in other aspects of life. However, one student downplayed the value of CR and believed philosophical debates could be thought provoking but were of minimal value.

Students in this course studying STEM consistently conceived CR as secondary: not part of their disciplinary work, "Critical reflection is not too crucial in my discipline simply because I am a science major and everything is mostly straight forward. However, when new data or facts come out in the scientific community, it is important to reflect on it and see what is actually happening" (student focus group). In contrast, students outside of STEM commented CR was highly useful.

The data affirmed the instructors' sense that there was a divide between STEM and non-STEM students in how they interpreted CR relative to their disciplines. They felt more needed to be done to engage STEM students and show them the value of CR. They hoped the inclusion of new topics or more relevant texts would help bridge this gap. The instructor lamented the ongoing challenge of overcoming some students' skepticism about "fru-fru humanities stuff." Overall, the instructor was pleased that students felt they were doing CR throughout the course, but at the same time felt students attributed too many course activities as being CR. The instructor recognized part of the issue was not clearly defining CR from the start and discussing what it was and was not. Going forward, the instructor also wanted to ensure students were not overloaded with reflection tasks.

DISCUSSION

This study was designed to explore how instructors and students define, engage in, identify, and value CR in four undergraduate courses across disciplines. The findings revealed an overall tension

centered around how or if instructors defined and explained CR to students. None of the instructors defined CR explicitly for their students, nor did they articulate direct connections between any specific activity and doing CR. Some scholars wondered whether CR is less about defining the term and more about "mindful contextualizing" (Fook et al. 2016a, 185); one instructor intentionally did not define CR so students could derive their own definitions. However, both students and instructors recognized that a lack of an explicit definition sometimes blurred how students understood and took up CR.

As a learned skill, we think omitting explicit modeling for undergraduate students may impede students' understanding and use of CR. Students in our study revealed an emerging understanding of CR with some expressing a deeper appreciation of its complexity than others. For example, while some students understood CR as metacognition (thinking about their thinking), others considered CR as being mindful of the social, cultural, and political influences shaping their positioning. Some of our cases invoked a more "critical" focus of CR than others in terms of exploring identity and social power structures. This may be related to the discipline or the instructor's definition of CR. Yet, these varied definitions mirror what Mezirow (1990) called "meaning perspectives": ways people interpret experience based on their level of reflective judgment. Compared to students, instructors had markedly more sophisticated definitions of CR; they used formal academic language. While perhaps unsurprising, we note this similarity counters common perceptions about students "not getting it" or "not caring" about CR. Instead, we re-frame students' understanding of CR as emergent. Even if students did not yet have the formal language, multiple students expressed moments of transformation in their learning and perspectives—a key goal of CR.

Engagement in CR was frequent and diverse across the cases. Writing and discussion were common mediums and CR was taken up in two broad ways: individual (e.g., journaling) and collaborative (e.g., class discussion). From instructors' standpoints, engaging in CR regularly as part of class activities served to encourage CR as an ongoing process, forming habits students could carry forward. As one instructor noted, making CR required could help students be more comfortable with discomfort. At the same time, while most students saw value in CR, there was ongoing tension with having CR being done for grades, rather than for oneself. Some students reported a fine line between the benefits of doing CR regularly and the point where CR became busy work.

When asked how they knew that CR was happening with students, instructors cited indicators such as moments of instability, vulnerability, or uncertainty as students reconsidered previous perspectives or actions. The instructors looked for rawness and personal connection in students' contributions: reconsidering assumptions, questioning knowledge construction, shifting identities, and expressions of discomfort or tension leading to new thinking. These indicators were malleable and contextual.

In comparison, students sometimes felt they were doing CR more than the instructor perceived. We suggest the ostensible indicators instructors expect do not always suffice in evidencing student CR. Notably, many of the markers for instructors were the same actions noted to be challenging for some students. Some of the students' frustrations—i.e., discussions without clear answers, voluminous amounts of writing, reflections perceived as hypothetical or removed from professional practice—are precisely the indicators of CR that instructors hoped to see.

One tension we anticipated, but did not find, was a wide gulf between how CR was valued by instructors and their students. Instructors viewed CR as essential and were pleased overall with how students viewed and used CR in their courses. Students valued CR for personal growth, self-awareness of

biases, and perspective taking. Some STEM students de-valued this model of CR. In case three, upper-level chemistry students valued CR as a way to apply concepts, analyze data and learn from their mistakes. Yet in case four, first-year students with a STEM background struggled to link CR with their disciplinary work. We suspect these differing perspectives may be related to students' stages in their academic program; less experienced students may still be developing linkages across disciplinary bounds. Distinctions among disciplines remain an area for further study. Yet overall, students expressed positive regard for CR in their courses and in their academic fields.

IMPLICATIONS FOR PRACTICE

We used case study methodology to explore taken-for-granted assumptions and outcomes of CR in higher education. As an exploratory study of modest size, we do not claim any specific instructional practice(s) as being universally ideal or most effective for engaging in CR. We believe our work contributes to ongoing conversations about CR by offering greater illumination of how students' and instructors' perspectives compare. As Moon (1999) theorizes, and our study supports, how CR is used and practiced varies by context and discipline. However, our findings also reveal cross-cutting themes underpinning context-specific nuances around our overall framework: define, engage, identify, and value.

Define CR

Instructors should articulate or co-construct a definition of CR with students. Studies about related learning goals such metacognition have identified gaps in student and faculty perceptions with similar recommendations to provide more explicit communication and shared expectations (Scharff et al. 2017). Developing a shared understanding should provide foundational elements as students develop a reflective practice that is personally relevant and meaningful. The articulation might be class discussions about defining CR in their own words, modeling engagement of CR, highlighting CR as it happens in class, and explicitly linking course activities and content supporting CR. Given that students sometimes mis-identify activities as CR, defining CR in more explicit terms may help students discern CR from other activities. We suggest this not to make firm claims of what does and does not count as CR, nor the extent to which "critical" reflection implies a focus on power structures for all disciplines, but rather for students to better understand the depth and types of thinking involved and to encourage intentionality and patience with discomfort when engaging in CR.

Scaffold engagement in CR

Many different activities can elicit CR and instructors in our study all desired future intentionality in scaffolding CR activities through discussion, modeling, practice, and self-assessment. Students may be hesitant to be vulnerable in their reflections if they don't feel safe in doing so or have not experienced scaffolding and the building of trust. Although ongoing reflection was used in all these cases, students seemed more willing to engage in CR before there were diminishing returns. Reflecting on a schedule presumes students think in lockstep with their peers and instructor. If a goal of CR is for students to challenge their own assumptions, question their biases, and reshape their practices and perspectives, there needs to be time and space to do so. Deep cognitive work is sometimes incompatible with structured timelines. Students could be given choices, options, or variety and be engaged in

conversation about options if they reach a point of saturation. Instructors should explore various ways to scaffold CR in their respective classes.

Identify CR

CR can be an uncomfortable process that is challenging to identify. As instructors discussed with us, there is complexity in knowing when CR occurs and to what degree, which can lead to subjectivity akin to: 'I know it when I see it.' Rubrics assist in starting to identify markers of CR, but because CR is so iterative, personal, and developmental, rubrics remain limited. Similarly, a strong formal grading focus limits the vulnerabilities students are willing to share. Some scholars have argued that reflection is ineffable and formalized assessment methods risk reducing reflection to a mechanical process (Yancey et al. 2013). Ideally, multiple sources of information (e.g., assignments, journals, discussions) should be considered collectively to identify CR over time, as well as the acknowledgement that CR can manifest differently in different people.

Independent of the indicators and markers used, we believe the key challenge for instructors should be to identify a perspective shift in thinking. Adding clarity to the purpose of activities and helping students interpret moments of dissonance as growth assists students to become further aware about their own thinking and any shifts occurring. Instructors should highlight these markers for students. Explicit indicators assure both students and faculty that CR is happening and that it may be uncomfortable. As one instructor noted, doing CR is "really, really, hard work … and it's never going to be clean, it's always going to be messy" (case two, first instructor interview).

Promote the value of CR

Our findings advocate for CR as an ongoing, learned, developmental skill that is useful in many disciplines. CR allows students to consider, challenge, and re-evaluate the assumptions informing their meaning perspectives. CR supports transformational learning and perspective transformation (Mezirow 1990). Students need scaffolds to understand the value and purpose of CR, especially early on in their academic career. This can mean providing multiple opportunities to practice CR as an iterative practice, encouraging explicit thinking processes, and helping students recognize how CR transcends disciplinary boundaries and singular contexts. Students and instructors deem CR to be valuable, and their valuations of CR can be further enhanced through intentionality in practice and facilitation.

CONCLUSION

CR can be challenging to define and encourage, especially given that conceptions of CR vary across disciplines and contexts. Our findings reveal avenues for instructors to help students to further value and reap the benefits of CR through the intentional teaching of CR, not only as a process, but also as a skill to support deep learning. We foresee future opportunities for further exploring how CR manifests in disciplinary work and ways to draw inter- and cross-disciplinary connections. Although there are differences between how instructors and students define, engage, identify, and value CR, the gap may not be as wide or insurmountable as commonly perceived.

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ACKNOWLEDGMENTS

REFERENCES

Boud, David, Rosemary Keogh, and David Walker. 1985. *Reflection: Turning Experience into Learning*. London: Kogan Page.

Brookfield, Stephen. 1995. *Becoming a Critically Reflective Teacher*. John Wiley & Sons.

Brookfield, Stephen. 2016. "So What Exactly is Critical About Critical Reflection?" In *Researching Critical Reflection. Multidisciplinary Perspectives*, edited by Jan Fook, Val Collington, Fiona Ross, Gillian Ruch, and Linden West, 11–22. Abingdon, Oxon: Routledge.

Buber, Martin. 2004. "Samuel and Agag" In *Levinas and Buber: Dialogue and Difference*, edited by Peter Atterton, Matthew Calarco, and Maurice Friedman, translated by Maurice Friedman, 29–31. Pittsburgh, PA: Duquesne University Press.

Creswell, John. 2013. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*. Thousand Oaks, CA: Sage.

Dewey, John. 1916 [1980]. Democracy and Education. In *The Middle Works of John Dewey, 1899-1924* edited by Boydston, 1–384, Carbondale and Edwardsville, IL: Southern Illinois University Press.

Fook, Jan, Val Collington, Fiona Ross, Gillian Ruch, and Linden West. 2016a. "A Research Agenda for Critical Reflection in the Professions." In *Researching Critical Reflection: Multidisciplinary Perspectives*, edited by Jan Fook, Val Collington, Fiona Ross, Gillian Ruch, and Linden West, 183–91. Abingdon, Oxon: Routledge.

Fook, Jan, Val Collington, Fiona Ross, Gillian Ruch, and Linden West. 2016b. *Researching Critical Reflection: Multidisciplinary Perspectives*. Abingdon, Oxon: Routledge.

Fook, Jan, Maria Psoinos, and Daniele Sartori. 2016. "Evaluation Studies of Critical Reflection." In *Researching Critical Reflection: Multidisciplinary Perspectives*, edited by Jan Fook, Val Collington, Fiona Ross, Gillian Ruch, and Linden West, 90–105. Abingdon, Oxon: Routledge.

Foucault, Michel. 1982. "The Subject and Power." *Critical Inquiry* 8, no. 4: 777–95. https://doi.org/10.1086/448181.

Giddens, Anthony. 1976. *New Rules of Sociological Method*. London: Hutchinson.

Hatton, Neville, and David Smith. 1995. "Reflection in Teacher Education: Towards Definition and Implementation." *Teaching & Teacher Education* 11, no. 1: 33–49. https://doi.org/10.1016/0742-051X(94)00012-U.

Hoggan, Chad. 2016. "Transformative Learning as a Metatheory: Definition, Criteria, and Typology." *Adult Education Quarterly* 66, no. 1: 57–75. https://doi.org/10.1177/0741713615611216

Kaplan, Matthew, Nomi Silver, Danielle Lavaque-Manty, and Deborah Miezlish. 2013. *Using Reflection and Metacognition to Improve Student Learning: Across the Disciplines, Across the Academy*. Portland: Ringgold.

La Rochefoucauld's 151th Maxime.

Marshall, Catherine, and Gretchen Rossman. 2016. *Designing Qualitative Research*. Thousand Oaks, CA: Sage.

Merriam, Sharan B. 1998. *Qualitative Research and Case Study Applications in Education.* San Francisco, CA: Jossey-Bass.

Mezirow, Jack. 1990. *Fostering Critical Reflection in Adulthood*. San Francisco: Jossey-Bass.

Mezirow, Jack. 1981. "A Critical Theory of Adult Learning and Education." *Adult Education* 32, no. 1: 3–24. http://doi.org/10.1177/074171368103200101.

Miles, Matthew, Michael Huberman, and Johnny Saldaña. 2013. *Qualitative Data Analysis: A Methods Sourcebook and The Coding Manual for Qualitative Researchers*. Thousand Oaks, CA: Sage.

Moon, Jennifer A. 1999. *Reflection in Learning and Professional Development: Theory and Practice*. Abingdon, Oxon: Routledge.

Plato. Phaedrus 274B.

Scharff, Lauren, John Draeger, Dominique Verpoorten, Marie Devlin, Lucie S. Dvorakova, Jason M. Lodge, and Susan Smith. 2017. "Exploring Metacognition as Support for Learning Transfer." *Teaching & Learning Inquiry* 5, no. 1: 78–91, 92. https://doi.org/10.20343/teachlearninqu.5.1.6.

Schön, Donald. 1983. *The Reflective Practitioner: How Professionals Think in Action*. New York: Basic Books.

Shadiow, Linda. 2013. *What Our Stories Teach Us: A Guide to Critical Reflection for College Faculty*. San Francisco, CA: Jossey-Bass.

Thompson, Neil, and Jan Pascal. 2012. "Developing Critically Reflective Practice." *Reflective Practice* 13, no. 2: 311–25. https://doi.org/10.1080/14623943.2012.657795.

Wilson, Timothy D. 2002. *Strangers to Ourselves: Discovering the Adaptive Unconscious*. Cambridge, MA: Harvard University Press.

Yancey, Kathleen, Leigh Graziano, Rory Lee, and Jennifer O'Malley. 2013. "Reflection, ePortfolios, and WEPO: A Reflective Account of New Practices in a New Curriculum." In *Using Reflection and Metacognition to Improve Student Learning: Across the Disciplines, Across the Academy*, edited by Matthew Kaplan, 175–202. Sterling, VA: Stylus.

APPENDIX: DATA COLLECTION INSTRUMENTS

First Instructor Interview Questions

1. What does critical reflection mean to you in your discipline? (i.e., definition)
2. What does critical reflection mean to you in this particular course?
3. Why do you value critical reflection in your course?
4. In what ways do you support students in critical reflection? (i.e., including framing)
5. What do you expect/want from students engaging in critical reflection (i.e., connection to action?)
6. How do you know when students are engaging in critical reflection?
7. In your experiences, what are the challenges of teaching students how to reflect critically? (i.e., do you think a student's major makes a difference?)
8. In what ways do your students' conceptions of critical reflection match your own?

Student Survey Questionnaire

Please answer the questions below in relation to this course.

1. Think of a time in this course when you feel you were engaged in reflection or critical reflection. Please describe these activities/assignments.
2. In your own words, how would you define reflection? How would you define critical reflection?

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Your instructor defines critical reflection as [customized for each instructor]

3. When do you think you have engaged in critical reflection in this course? And why?
4. What value, if any, do you see in these types of activities?

5. How useful is critical reflection in [your discipline]?

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6. How did your instructor support you when you were doing critical reflection? (For example, how they communicated the concept and its value, feedback that they provided, etc.)
7. Which of these activities do you associate with critical reflection in this course? (select all the apply) [Customized for each instructor—included items such as: reflection essay, journal, community engagement project, class discussions, other]
8. Please share how these activities helped you reflect critically.

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9. Please share your birth year.
10. What is your year in school? (first year, junior, etc.)
11. What is your major?

Second/Follow-Up Instructor Interview Questions

1. What stands out to you from the survey and focus group findings?
2. Based on this information:
   a. where do you see gaps in student understanding of critical reflection?
   b. where do you see successful student understanding of critical reflection?
   c. what will you plan to do differently when teaching this course in the future?
   d. what will you keep the same when teaching this course in the future?

Student Focus Group Protocol

1. Describe one example of your critical reflection from this course.
2. In what ways has your understanding of critical reflection in your discipline changed within this class?
3. Would you have engaged in critical reflection the same way had it not been assessed/graded?
4. How might critical reflection be better supported in this course? In your discipline?

1. [Additional questions to clarify understanding of survey results]