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Enabling critical thinking development in higher education through the use of a structured planning tool

Brighid Golden

Faculty of Education, Mary Immaculate College, Limerick, Ireland

ABSTRACT

Critical thinking is a core component of higher education teaching and learning across multiple disciplines. However, supporting students to develop critical thinking skills can be challenging due to their prior experiences of education which may have emphasised rote learning and due to the high volume of approaches available to choose from as a teacher. This paper explores a self-study action research project which took place within initial teacher education and focused on exploring approaches to critical thinking development. Data collection took place with students and included interviews, surveys and collection of class work. Additionally, critical reflections and conversations with critical friends informed the research process. Through the analysis of data which emerged from action research cycles, and in line with best practice outlined in literature, a planning tool was developed to support critical thinking instruction. The planning tool includes pre-conditions for learning necessary to ensure due attention is given to the impact of the learning environment, four lesson elements which support student critical thinking development, and an awareness of the multiple outcomes of critical thinking engagement in education.

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Introduction

Critical thinking is commonly claimed to be one of the most important outcomes of education across all disciplines and levels in the western world. However, teaching students to become critical thinkers is not always straightforward. As this paper will outline, there are a wide variety of teaching materials available related to critical thinking, and many theoretical papers which outline the variety of approaches that can be taken in the classroom. However, when it came to supporting my own students to become critical thinkers, I struggled to synthesise the available approaches and apply them to my own context. I am a teacher educator, working with large cohorts of students on modules that include multiple staff members. It was crucial for me to identify an approach

CONTACT Brighid Golden Brighid.golden@mic.ul.ie Mary Immaculate College, South Circular Road, Limerick, Ireland

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which I was sure would be in line with best practice but would also be adaptable and responsive enough to be used by different lecturers simultaneously. This paper will outline the outcomes of a self-study action research project which enabled me to develop an adaptable, flexible planning tool to support critical thinking education.

Why critical thinking?

UNESCO, the OECD and the Change Leadership Group at Harvard University have all identified critical thinking as a key skill necessary for future-proofed education, which prepares learners to live in the twenty-first Century (Ananiadou and Claro 2009; Luna Scott 2015; Wagner 2009). The purpose of critical thinking, promoted within the context of twenty-first Century Skills, is to enable learners to have a constructive and positive influence in addressing evolving problems and enact necessary change in responding to new and evolving challenges faced by communities globally (Luna Scott 2015). The twenty-first Century Skills framework focuses on supporting learners to pre-empt and respond to evolving challenges such as migration, changing markets, new technologies or transnational environmental and political challenges (Luna Scott 2015).

Although not the direct focus of the twenty-first Century Skills framework, critical thinking also offers a skillset which can be harnessed in response to threats to democracy. Internationally, we have seen a rise of hate speech and xenophobic populism (Council of Europe 2018) and support for political parties and perspectives with narrow nationalistic agendas (Global Education Network Europe 2020). These changes represent a threat to democracy and an erosion of democratic values (McCartney 2019). A focus on critical thinking in education presents an opportunity to equip learners with the skills necessary to counteract rising xenophobic populism and recentre democratic values in society (Golden 2023; Westheimer 2019).

What is critical thinking?

One of the most commonly cited definitions of critical thinking is from the 1990 Delphi Report, written by the American Philosophical Association, which reflects a landmark two-year project which was undertaken to establish an international expert consensus on the definition of critical thinking. The resulting definition maintains that critical thinking is:

> … purposeful, self-regulatory judgement which results in interpretation, analysis, evaluation, and inference as well as an explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgement is based (Facione 1990, 3)

Furthermore, through an exploration of a variety of definitions of critical thinking, Fisher (2011) identified commonalities present across various definitions highlighting that many definitions present critical thinking as a skill-based activity which must meet various intellectual standards, including clarity, relevance, adequacy, coherence and that it requires the interpretation and evaluation of observations. Furthermore, many authors (Daniel and Auriac 2011; Ennis 1987; Johnson and Hamby 2015) include within their conceptualisations of critical thinking an indication that its purpose is

oriented towards the thinker making decisions and judgements about what to believe and how to act.

Additionally, Fisher and Scriven (1997) propose that thinking is not critical simply because the thinker aims to be, but that they must be competent in the associated skills. This is a significant development in the understanding of critical thinking; the implication is that for thinking to be considered critical, it must meet specific criteria and that a person can demonstrate different levels of competency (Fisher 2011).

Critical thinking has also been conceptualised as a multidimensional construct which includes cognitive, dispositional, motivational, attitudinal and metacognitive functions (Bensley and Spero 2014; Wechsler et al. 2018). Bensley and Spero (2014) define metacognition as an awareness and control of one's cognition, and they position this self-awareness as central to critical thinking, enabling learners to assess their knowledge and skill levels.

Teaching critical thinking

The Foundation for Critical Thinking (2019) claims that although thinking is a natural process, without intervention and structured support, it can often be biased, distorted, partial, uninformed and potentially prejudiced. Their assertion highlights the need for educators to be cognisant in their teaching approaches of cultivating good thinking habits in their learners. Furthermore, Stupple et al. (2017, 92) claim that 'many students struggle to understand critical thinking, lack confidence in its application, are unsure how they can develop critical thinking skills, and struggle to demonstrate them in their assessments'. It is, therefore, crucial to be cognisant of the particular needs of your class group when choosing a teaching approach. Additionally, although many educators believe critical thinking to be an essential element of education, they often feel unequipped to teach critical thinking (Sezer 2008).

Multiple meta-analyses of empirical studies have indicated that critical thinking is a skill that can be taught to all groups. However, there was considerable variance in the success of different approaches to critical thinking instruction across different groups (Abrami et al. 2008; Abrami et al. 2015; Bensley et al. 2016; Facione 1990; Paul and Elder 1997; Willingham 2008). Smith, Rama, and Helms (2018) encourage educators to explore a variety of different styles of critical thinking instruction within their own settings to find the most appropriate one.

In considering appropriate approaches to teaching critical thinking, many authors draw on Ennis (1989) who categorised four different approaches, namely general, immersion, infusion and mixed. The distinction between these four approaches relates to the extent to which critical thinking instruction is explicit and the relationship between critical thinking instruction and course content. The general approach to teaching critical thinking as defined by Ennis (1989, 4) includes 'attempts to teach critical thinking abilities and dispositions separately from the presentation of the content of existing subject-matter offerings, with the purpose of teaching critical thinking'. This approach to critical thinking instruction aims to teach learners to think critically both inside and outside of school through an explicit focus on the development of critical thinking skills Ennis (1989). This approach does not rely on learner's content knowledge in any specific area, and often includes abstract logic problems (Bensley and Spero 2014).

In contrast, the immersion approach is subject matter driven and involves learners getting 'deeply immersed in the subject, but in which general critical thinking principles are not made explicit' (Ennis 1989, 5). This approach relies on learners picking up critical thinking skills through 'intense, thoughtful exposure or immersion to critical thinking in subject matter' (Bensley and Spero 2014, 56). Therefore, this approach relies heavily on the modelling of criticality in their presentation of content and students acquiring the implicit skills and dispositions being promoted. Indeed, Rahimi and Sajed (2014) stated that educators must themselves be practitioners of critical thinking in their teaching practice in order to empower their learners to be critical thinkers. Similarly, Hooks (2010, 10) advocates for educators to adopt 'radical openness' and to become comfortable with not always being right. In modelling this openness to new and evolving ideas, learners can learn to value the multiplicity of opinions and develop this aspect of critical thinking (Hooks 2010).

Thirdly, the infusion approach is also subject matter driven and includes a thoughtful approach to subject matter instruction which leads to deep understanding (Ennis 1989). However, this approach also involves encouraging learners to think critically about the subject matter they are exploring through an explicit focus on the principles of critical thinking dispositions and skills (Ennis 1989). This approach involves the intertwining of subject matter and explicit critical thinking instruction to support learners to knowingly apply critical thinking dispositions to the subject matter they are familiar with (Bensley and Spero 2014). Bensley and Spero (2014) found this method effective in facilitating the acquisitions of critical thinking skills such as argument analysis, critical reading skills and self-reflection through a joint focus on modelling of thinking in practice and time for practice alongside feedback.

Finally, the mixed approach involves a combination of the general approach with either the infusion or immersion approaches. Instruction includes a separate thread exclusively concerned with teaching critical thinking dispositions and skills alongside subject-specific instruction (Ennis 1989). This approach was adopted by Smith, Rama, and Helms (2018) and found to be effective in supporting educators who had limited experience in teaching critical thinking. In separating the teaching of critical thinking skills from subject-specific instruction, this model does not rely as heavily on modelling critical thinking in relation to the subject matter as it is explored in the same way that the immersion and infusion models do. In this way, it may provide a model to support educators beginning their journey to teach critical thinking. Williams (2005) maintains that within initial teacher education (ITE) critical thinking instruction should be explicit rather than emerging as a by-product of teaching subject matter, as with Ennis' (1989) immersion approach. He (Ennis 1989) maintains that this works best when included within the framework of course content, making instruction applicable to students learning, which mirrors Ennis' (1989) infusion approach.

Furthermore, Abrami et al. (2015), through a meta-analysis of research studies, identify two types of instructional interventions that were found to support the development of critical thinking skills. Both interventions could be used across all four teaching approaches developed by Ennis (1989). Firstly, providing opportunities for dialogue and discussion emerged as crucial in improving the development of critical thinking skills (Abrami et al. 2015). Discussion was found to be particularly successful when led

by the teacher in a combination of whole-class and small-group settings guided by teacher-posed questions (Abrami et al. 2015).

Secondly, ensuring learners are exposed to problems or examples that reflect reality when practicing their critical thinking skills was found to support them in developing high-quality problem-solving skills (Abrami et al. 2015). Abrami et al. (2015) assert that this was particularly effective when employing role-playing methodologies. While opportunities for dialogue and the exposure to authentic problems were found to be effective in combination, the impact for learners was improved when mentorship was also present (Abrami et al. 2015). Although mentorship was not found to be very effective on its own, Abrami et al. (2015) found that in studies where it was applied in conjunction with the other two interventions, it led to improved results. They (ibid) conclude that mentorship may therefore serve as a catalyst for critical thinking in supporting other strategies.

Both interventions stress the importance of teacher involvement in the teaching of critical thinking through mentorship or teacher-posed questioning (Abrami et al. 2015). Conceding that although critical thinking is often manifested as self-directed and disciplined continual questioning, Hooks (2010) maintains that it is also necessarily an interactive process that requires participation on the part of both learner and educator. Similarly, Brown (2014) stresses the importance of the role of the educator in facilitating the development of criticality. However, he (ibid) stresses that it can be challenging to maintain a balance between valuing the multiplicity of opinions in the classroom while simultaneously ensuring an adherence to rationality in assessing value and merit in each perspective. Siegel (1985, 72) clarifies the role of the educator in ensuring this balance, stating that 'by encouraging critical thinking, then, we teach the student what we think is right, but we encourage the student to scrutinise the evidence and judge independently the rightness of our claims'.

Mirroring the assertions of Hooks (2010) and Wechsler et al. (2018) in their definitions of critical thinking, Bensley and Spero (2014) stress the importance of viewing critical thinking in education as a multi-dimensional construct. They (ibid) assert that the importance of focusing on knowledge and skills should be balanced with developing critical thinking dispositions. However, this needs to be done while accounting for individual differences in academic ability and achievement variables that may also be related to critical thinking performance. The teaching of critical thinking must therefore be cognisant of this multi-focus. Research highlights the importance of being cognisant of lecture sequencing in supporting student acquisition of critical thinking skills (Maphalala and Mpofu 2017; Snyder and Snyder 2008). Lecture sequencing involves incorporating the multiple dimensions of critical thinking within lessons by activating students' prior knowledge, building new knowledge through discussion and working to apply and integrate these with students' own experiences (Maphalala and Mpofu 2017).

Measuring critical thinking

The challenge of measuring or assessing critical thinking is commonly cited across literature. Indeed, the challenge of teaching and measuring such an ambiguous concept is heightened when critical thinking is considered as a multidimensional construct which

includes broad concepts such as self-reflection, self-awareness, or dispositional and motivational functions.

One approach to critical thinking assessment which is proposed by Lipman (1988) maintains that there are certain criteria against which critical thinking can be measured. These criteria are included within his definition which states that 'critical thinking is skilful, responsible thinking that facilitates good judgment because it (1) relies upon criteria, (2) is self-correcting and (3) is sensitive to context' (Lipman 1988, 40). Lipman (ibid) equates criteria, in the context of critical thinking, to reliable reasons, the use of criteria, or reliable reasons, to assess critical thinking is important to Lipman as he (ibid) maintains that it distinguishes critical thinking from haphazard and unstructured 'uncritical thinking'. While the skills of critical thinking presented by Lipman appear to be generalisable, the criteria required to engage in and judge criticality, he maintains, are subject-specific.

Contrastingly, Elder and Paul (1996) maintain that critical thinking success is predominantly measured through self-assessment given its personal nature. They (ibid, 34) propose that critical thinking is 'the ability and disposition to systematically subject one's thinking to rigorous self-assessment'. Furthermore, they (ibid) contend that a critical thinker must do this in all aspects of their lives, and therefore set up critical thinking as a generalisable skill in contrast to Lipman's conceptualisation of it as a subject-specific skill.

Consequently, the challenge of measuring critical thinking will rely on educator's conceptualisation of the subjective and much debated concept. Whether adopting Lipman's subject-specific, criteria reliant, approach or Elder and Paul's individualistic and generalisable conceptualisation of critical thinking, educators must decide for themselves what specific critical thinking skills they wish to measure. If choosing to align with Lipman's approach, formal assessments can be constructed to measure and identify the extent to which students reasoning relies on pre-identified criteria and shows sensitivity to their context. Whereas, if adopting Elder and Paul's reflective conceptualisation, educators must provide opportunities for students to engage in self-assessment and develop strategies for observing instances of self-reflection and the extent to which students employ rigour in this activity.

Identifying the problem

Fisher (2011, 11) likens critical thinking to an 'academic competency akin to reading and writing', maintaining that within education reading, writing and critical thinking should be awarded equal importance. Lipman (2003) highlights that, although young children often display critical thinking skills through curiosity, imagination and inquisitiveness, often they do not retain these innate qualities as they grow older, and blames the school environment for this loss. Similarly, Hooks (2010, 8) notes that children often lose their passion for thinking when 'they encounter a world that seeks to educate them for conformity and obedience only'. Alternatively, Lipman (2003) recommends an approach to schooling which is more fluid and allows for children's imaginations to flourish in order to foster the development of their naturally curious natures.

Due to their prior educational experiences, students often come to higher education either presuming that they will not be required to think and question or dreading

thinking (Burns et al. 2018; O'Leary and Scully 2018). Therefore, the teaching of critical thinking must be approached slowly; learners must first relearn to embrace the joy and power of thinking itself (Paul and Elder 1997). The recognition of students' lack of prior experiences or understanding of critical thinking was the starting point for this research project. Over time, I had observed a repeated inconsistency between students' professed levels of criticality and those they demonstrated during classes or in assessments. As I was passionate about supporting students to develop their critical thinking skills and dispositions, I was motivated to research this discrepancy and explore avenues to address it. At the heart of this research problem lies each students' awareness of their own criticality, their understanding of critical thinking and the academic expectations within higher education, and the approach critical thinking learning and development adopted in the classroom.

Impact of high stakes testing

The Irish education system is held in high regard internationally, with post-primary pupils consistently performing above the OECD average in international testing of literacy, mathematics and science (OECD 2018). However, O'Leary and Scully (2018) highlight the question posed by many in the field of education, namely whether the Leaving Cert Programme (LCP) is fit for purpose. In their overview of senior cycle education, the NCCA state that education should contribute to 'the promotion of social cohesion, the recovery and growth of the economy and the adoption of the principle of sustainability in all aspects of development' (NCCA 2009, 6). They (ibid) envision that through engagement with the LCP, pupils should be supported to develop as people, as citizens and as learners. However, there is a clear tension between the vision the NCCA declare and the experience of pupils on the ground. If the purpose of the LCP is to contribute to social cohesion and support pupil development, the focus on high stakes summative testing of lower-order recall skills does not match this goal. The focus of the LCP on memory recall is characteristic of international approaches to high stakes testing which typically do not assess criticality or other higher order skills due to a focus on performativity (Ball 2016). The result is that students are disadvantaged from the outset when they enter higher education. In order to get a place in higher education, they have to refine their memory recall skills and not employ creative or critical thinking during assessments in order to achieve high grades. They then struggle when entering higher education where they learn that memory recall will often not help them to succeed and are instead asked to employ criticality in their assessment submissions.

Methodology

The planning tool for facilitating critical thinking development in classrooms was developed as part of a three-cycle self-study action research project which took place across three academic years. The research focused on addressing two core aims, namely to ascertain the factors which contributed to student motivation, participation and achievement, and the opportunities and barriers which impacted on critical thinking development.

As is typical in self-study action research, the focus throughout was on improving my practice and taking action to respond to challenges that emerged. During cycle one, I

taught the module very closely to what I had done in the past and observed what was working, or not. In each subsequent cycle, I made changes to my teaching approach in response to the challenges I had experienced in the previous cycle. Following each cycle, interviews were transcribed and analysed alongside other data to generate emergent findings which were then used to inform and shape ongoing data collection The culmination of these changes was the planning tool, which this paper presents, and which was trialled and tweaked during the final action research cycle.

The primary participants in this study were my students who were in the second year of the Bachelor of Education degrees. As there were in excess of 430 students in the year group, I worked with just one group of sixty in the first cycle, and two groups of sixty in cycles two and three.

Data collection with students included a variety of approaches. I collected materials from class tasks, and analysed assessments when I had consent to do so. Additionally, students completed surveys and Most Significant Change Stories (MSCSs). Furthermore, students were invited to participate in focus group interviews outside of class time. In cycle one, three focus groups took place, then four in cycle two, and six in cycle three. The number of focus group interviews was higher in cycle three to accommodate student availability and the same topics were repeated at different times for different groups.

In addition to data collection with students, I also worked collaboratively with two critical friends throughout the three cycles of research. One critical friend, pseudonym Anna, taught the same content as me within the same module and so we could have critical conversations about the successes and challenges we were experiencing with specific teaching approaches. The second critical friend, pseudonym Maria, was a colleague who did not teach on this module, but who would observe my teaching and offer independent feedback and observations. Data generated with critical friends included recorded critical conversations, written feedback following observations of my teaching, and written reflections offered by each critical friend following our conversations or in response to particular challenges being encountered.

Additionally, I engaged in ongoing reflection throughout the three cycles. Reflection enabled me to track what was happening during lectures, how I perceived student engagement and responses to particular teaching approaches, and my own thoughts and feelings on the impact of my teaching. Reflections were used to supplement other data and provide context for findings which emerged from student- or critical friend-generated data.

Ethical considerations

Both ethical and institutional approval were granted for this research project ensuring that due consideration was given to participants safety and the impact of this work on my teaching practices and consequently my students learning. I adopted a conscious mindset (Costley and Fulton 2019) in relation to the set of behaviours I endeavoured to embody as I navigated this research in as ethical a manner as possible.

Data collection took place during a social studies module, which was a core module for all students. I worked with students for one hour per week as part of that module. At the outset of the module, students were asked for their informed consent for participation in

the project. At this stage, and continually throughout data collection, students were reassured that their participation was optional, and that they could chose not to participate without impacting their learning or their relationship with me.

While some data collection took place during class time, students could choose not to participate without impact to their learning as data collection was designed not to impact on the teaching and learning experience. Consent was negotiated on an on-going basis with students. When I wanted to collect data during class, students were informed and could choose to contribute their data or not by submitting tasks, leaving answers visible on their tables for me to collect, or removing them if they did not want to contribute on that day. At all times, the learning experience for students who participated in data collection did not differ from the experience of students who chose not to participate by removing their tasks or answers themselves.

Context

The research project described in this article which led to the development of the below Planning Tool took place within the context of my professional work. I work within ITE for primary school teachers, and I teach global education. Global education is defined as

> education that enables people to reflect critically on the world and their place in it; to open their eyes, hearts and minds to the reality of the world at local and global level. It empowers people to understand, imagine, hope and act to bring about a world of social and climate justice, peace, solidarity, equity and equality, planetary sustainability, and international understanding. It involves respect for human rights and diversity, inclusion, and a decent life for all, now and into the future (GENE 2022, 3)

The Planning Tool presented in this paper was designed for this specific context and in response to the particular challenges which that context gives rise to. However, it is offered here as an adaptable and flexible tool which can be altered by others wishing to incorporate critical thinking into their own teaching. The tool was developed in response to empirical data from working with students in higher education in Ireland. Furthermore, the tool was developed as a means of collating relevant literature and designing a practical tool which makes established, research informed, best practice accessible in the classroom. Therefore, it is proposed that the planning tool as it is presented here, is applicable beyond the contexts of ITE and global education.

Critical thinking planning tool for educators

The Critical Thinking Planning Tool (Figure 1) was developed in response to empirical data collected across two cycles of action research, and tested and refined during a third cycle with due consideration given to findings from critical thinking education literature. The Planning Tool is an instrument for use by lecturers wishing to plan for the fostering of critical thinking within their practice. The tool is not designed to be shared directly with students, but to inform lecturers approach to enabling the development of critical thinking in their classrooms. The tool includes both pre-conditions for learning to which the lecturer should be attentive to in setting up their learning environment and elements which should be included in each lesson aiming to foster criticality in students.

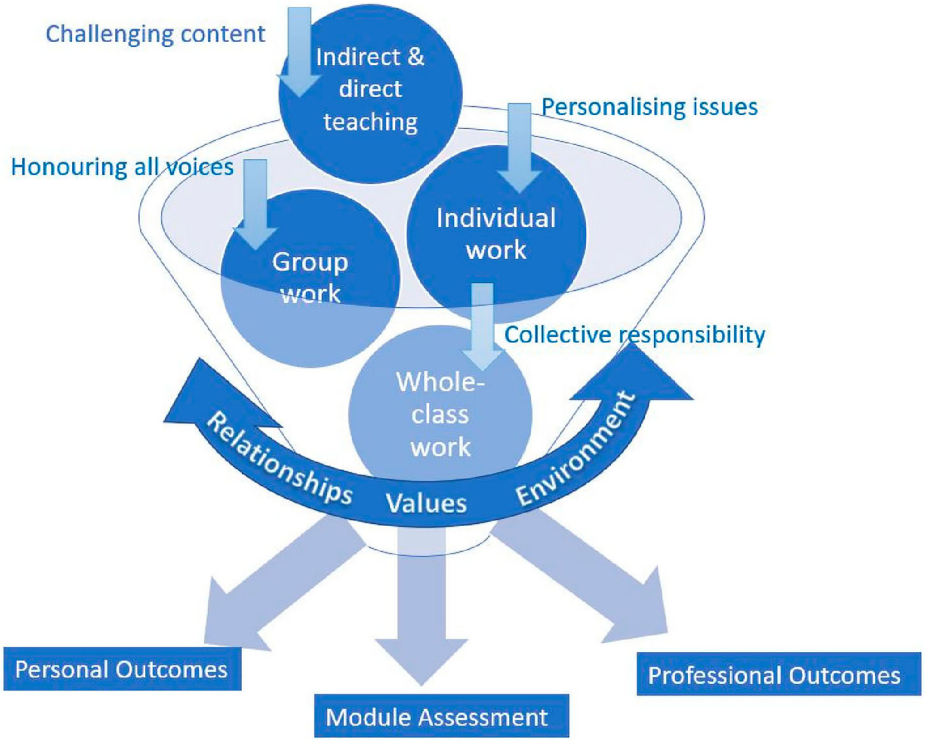

Figure 1. Critical thinking planning tool.

The tool was designed to ensure that students with a variety of backgrounds and levels of ability within and across multiple groups could be supported by different lecturers simultaneously. The tool responds to the challenges of working with large groups and large cohorts of students by providing a structured approach to teaching and learning grounded in data and synthesising established approaches from literature.

I use the metaphor of a funnel to present the Planning Tool (Figure 1). The funnel itself represents the pre-conditions for learning which scaffold students learning, namely relationships, values and environment. Within the funnel are the lesson elements which include both what happens (namely indirect and direct teaching, individual work, group work and whole class work), and how it happens (by focusing on challenging content, personalising issues, honouring all voices and collective responsibility), in every lesson to enable students to develop their critical thinking skills. Finally, the anticipated outcomes which emerge at the base of the funnel include personal outcomes, module assessments and professional outcomes.

The overall structure of the Planning Tool enabled me to focus systematically on consistency in my planning and teaching. The lesson elements and the pre-conditions for learning detail practical actions necessary to implement the tool.

In particular, the development of the Planning Tool drew influence from Freire's conceptualisation of praxis. Freire (1970, 60) defined praxis as 'reflection and action directed at the structures to be transformed'. He (ibid) conceptualises praxis as a dialogical approach which enables people who engage in it to acquire critical consciousness of

their own lives and their place in the wider world. Additionally, I endeavoured to honour Freire's (1970, 61) contention that 'human beings are not built in silence, but in word, in work, in action-reflection' through centring opportunities for dialogue and interaction in the lesson elements included within the funnel. The lesson elements provide opportunities for discussion both in small groups and at a whole-class level.

Pre-conditions for learning

The three pre-conditions for learning within the Planning Tool are the foundations upon which lessons are to be built. They constitute the necessary circumstances to enable students to get the most out of their learning. While they take inspiration from my findings, they were refined through engagement with literature.

Relationships

Noddings (2003) describes teaching as a 'relational practice'. She (ibid) posits that many of the positive outcomes from education come as a result of relationships, with the examples of 'the feeling of safety in a thoughtful teacher's classroom, a growing intellectual enthusiasm in both teacher and student, the challenge and satisfaction shared by both in engaging new material, the awakening sense (for both) that teaching and life are never-ending moral quests' Noddings (2003, 249). Similarly, I found that building relationships with students was an element of my teaching that was important for supporting student learning during cycles one and two, thus I wanted to ensure that it was embedded within the Planning Tool. I found that when students felt a connection with me, they were more likely to engage with the content being explored. Additionally, it was clear that my disposition as a teacher educator was critical in supporting the development of my relationship with students. Students indicated this in surveys and focus groups, stating that they appreciated the energy, enthusiasm and passion that I approached lectures with, which helped them to engage with me and the content we were exploring. Furthermore, Maria, who observed my teaching throughout the cycles, described how she believed I promoted and nurtured respectful relationships in the classroom:

> It is so much part of what you do, from the moment they were coming in, you were chatting to them, you were smiling, you were moving around, it was very inclusive, it was very warm, it was a very relaxed atmosphere and yet you demand the respect too, as soon as you started teaching you wait for silence and expect it.

The approaches mentioned in Maria's description were those that I instinctively drew upon as a trained primary school teacher. However, I wanted to ensure that I included specific strategies going forward to make sure that I was consistently and consciously focusing on developing my relationship with my students rather than relying on instinct. Furthermore, by focusing on relationships within my practice, I aimed to respond to established literature, with the knowledge that building relationships with learners can support educators to ensure their practice is intentionally inviting (Purkey and Novak 2015).

Some of the strategies I began to consistently employ to develop my relationships with my students included saying welcoming students as they enter the classrooms and

thanking them for their participation at the end of a lesson, asking students to put their names on their desks to enable me to use their names while teaching, and finding a way to say each student name every class. Due to the large group and cohort sizes, learning the names of hundreds of students was not possible, but by finding ways to personalise their learning experiences, I could still form relationships with students.

Environment

The learning environment includes both physical and psychosocial conditions that influence learning and engagement in the classroom (Baars et al. 2020). During early action research cycles I attempted to make use of the learning environment to support student engagement, however, I found that my efforts were not always successful, and I often tried something new every week. In preparing for the final cycle, I implemented approaches to support the learning environment that did not encroach unnecessarily timewise, and which allowed me to develop a routine that students could rely on for each session. These included ensuring that students sat in groups of no larger than four, using table packs which included individual whiteboards and voting sticks to enable multiple forms of engagement, developing and implementing a dependable routine for lessons, and utilising displays that reinforce key messages and values.

Lambert (2011, 28) uses the term psycho classrooms in which the design and use of space works to 'disrupt and redistribute what forms of knowledge might be sayable, audible, visible and do-able'. With the aim of encouraging deeper reflections and more frequent interactive discussions, I aimed to use the classroom environment in this way. Small group sizes and table packs enabled engagement, while displays and reliable routines and structure supported students peripheral learning and reinforced the desired hidden curriculum.

Values

The context I work within, global education, has a strong values dimension. While the development of values is often cited as a core outcome for global education, values can also play an important role in supporting student receptivity to critical thinking. The pre-existing values that students bring to the classroom can be either barriers or enablers to their learning and openness to new ideas. The deficit model of education assumes that facts will speak for themselves and will unfailingly convince people to change their understanding and attitudes towards an issue (Seethaler et al. 2019). However, communication and learning can truly break down when educators fail to account for learners' values (Seethaler et al. 2019).

From early research cycles, it was clear that at times there was a tension between the values being promoted within the modules and the values held by some of the students. This impacted on their learning and engagement. Conscious of this tension, I endeavoured not to shut out divergent values but to provide opportunities for students to share and discuss values that ran counter to those of the module. This provided opportunities to share counterarguments, engage in debate and consequently build students critical thinking practice and capacities.

By providing opportunities such as participation in walking debates or ranking exercises, students have the opportunity to discuss and share their perspectives in the context of those of their classmates, in line with a social-constructivist approach (Vygotsky 1978).

These approaches often help students to recognise where their opinions may be founded on a different values-base than that of their classmates. Where counterarguments do not emerge from their classmates, I would step in and share alternative perspectives on topics, or ask probing questions to support students in recognising the underlying values informing their perspectives. In this way, I wanted to ensure that students came to recognise where their own values were acting as barriers or enablers in the development of their criticality.

In designing the Planning Tool, I wanted to ensure that values were consistently threaded through all interactions with students. Thus, I included an awareness of values as a pre-condition for learning by deliberately adopting strategies that enabled me to be responsive to students while still retaining a focus on supporting them to develop their criticality. Such strategies included using values-based language, being open and honest about my own values, providing explicit opportunities for students to reflect on their own values, and ensuring that the approach to building relationships and being attentive to the learning environment contributed to living out the values I wanted to reinforce in the classroom.

Lesson elements

The four lesson elements, visible on the balls within the funnel of the Planning Tool (Figure 1), evolved from the challenges encountered during research cycles, are informed by literature, and were refined through critical conversations with colleagues. The four elements, which are outlined further below, are direct and indirect teaching through the use of challenging content, group work which focuses on honouring all voices, individual work which enables students to personalise issues, and whole-class work through a focus on collective responsibility.

Throughout cycles one and two I was frustrated that erratic attendance and unpredictable interest levels meant that not all students engaged meaningfully with the development of the knowledge and skills of the module. While acknowledging that attendance rates and interest levels are often beyond my control, I wanted to mitigate against their potentially harmful impact on students' learning. My frustration led me to realise gaps in my practice, which prompted me to develop the lesson elements within the Planning Tool to address these challenges. The inclusion of all four elements in each session ensures that all students have the opportunity to interact meaningfully with each of the lesson elements throughout the module, regardless of attendance or differing levels of interest depending on the topic.

The four elements are designed to be included in all lessons, and include both what happens (written on the balls within the funnel) and how (the arrows entering the balls in the funnel). Depending on the session, each element might have a more or less significant role. However, in planning for each session, the aim is to consider ways to include all four. While it may be ambitious to do this in short sessions, it is possible, this structure responds to the challenges identified in cycles one and two by providing opportunities for engagement in a variety of ways in every session and ensuring a focus on providing ambitious yet achievable opportunities for criticality. The combination of the four lesson elements aligns with Ennis' (1989) infusion approach to teaching critical thinking. The infusion approach combines a focus on subject-matter

instruction with explicit teaching of critical thinking skills through emphasising thinking critically about the subject-matter being explored (Ennis 1989). This approach supports students to acquire critical thinking skills through a joint focus on teacher modelling of criticality in practice and providing time for students to practice their skills supported by feedback (Bensley and Spero 2014).

Direct and indirect teaching: challenging content

Within this lesson element, students engage with information which may disrupt or challenge their established beliefs or ideas about the world. This focus on content aims to enable students to begin the process of learning to unlearn 'status quo stories' (Keating 2007) or challenge common stereotypes by broadening their understanding of the world.

This lesson element consistently includes an explicit focus on the power relationships which have shaped and influenced the topic being discussed. This is done through mindful selection of resources and deliberate design and use of prompts, questions and statements while exploring content. Andreotti and deSouza (2008a, 3) highlight the need to deconstruct status quo stories about the world when learning to unlearn by 'making visible the origins and hidden agendas of taken for granted concepts'. Consequently, it is crucial that within this lesson element, students not only engage with new information but are supported to consider it in light of the ways in which it differs from commonly held beliefs about the topic in question. Depending on the topic and teaching methodology being used, this may be explicitly discussed through direct teaching or may indirectly emerge naturally as a result of student engagement with content in light of prompts or activities provided.

Group work: honouring all voices

Early in this research project I noticed that there was often a significant disparity in the participation levels from different students. The same voices were heard repeatedly, while other students remained noticeably silent. Therefore, this lesson element is designed to ensure there is a structure in place to provide opportunities for all students to participate and share their opinions during each session. This is done by providing dedicated time during every session for students to work in small groups on a set task where all members of the group are asked to contribute. This provides opportunities for students to hear others' opinions and experiences which can be helpful in supporting them to broaden their understandings and awareness. Additionally, for students who typically remain silent during whole-class work, having the opportunity to voice ideas in a small group setting initially makes it easier to then share ideas with the larger group. As part of the pre-condition for learning related to the classroom environment, students are already sitting in small groups which helps to facilitate the implementation of this lesson element.

Furthermore, this lesson element supports the facilitation of highly interactive teaching which can be challenging with large groups when it is not possible to have in-depth conversations or give one-to-one support to all students. Good and Brophy (2008, 182) posit that 'small group formats also hold potential for contributing to students' sense of belonging and community, which may enhance commitment to schooling'. Therefore, this lesson element provides a mechanism to support students' interaction and ensure

opportunities are consistently provided for all students to engage with content, practice skill development, and express opinions. Within smaller groups, students can also engage in peer-evaluation and feedback to supplement the support which a teacher educator would be able to give more readily in smaller group sizes.

This lesson element is important in supporting students to 'learn to recognise the effects and limits of our perspective, and to be receptive to new understandings of the world' (Andreotti and deSouza 2008b, 29). By working in small groups, hearing the perspectives of classmates and working together to question and challenge both the lesson content and each other's contributions, students are supported to develop a habit of consistently scrutinising what they hear and read. In this way, students learn to recognise the limitations of relying only on their own assumptions, and to consider different perspectives on topics.

Individual work: personalising issues

The inclusion of this lesson element affords students the opportunity to link topics to their own lives and reflect on their reactions to the information and ideas they engage with as part of the learning process. Acknowledging and reflecting on personal reactions supports students to develop a better understanding, and promotes more frequent exploration of their personal opinions and values. This element of lessons supports students to reflect on why they embrace some ideas, while finding others more difficult to accept. Ultimately, encouraging students to personalise issues enables them to develop feelings of empathy and responsibility and to engage with issues on a deeper level.

This lesson element represents a process of learning to learn, which facilitates students to engage in a process of applying new learning to their own lives in order to re-arrange, expand and deepen their own perspectives and understandings about the world (Andreotti and deSouza 2008b). During this process, students are encouraged to consider issues not only from their own perspective but to try to see 'through other eyes' (Andreotti and deSouza 2008a) to broaden and enhance their own understanding and empathy within a broader context. This lesson element can cause discomfort for students who are asked to confront their own biases and privileges in light of the perspectives of others. In applying this element to lessons, I embrace a 'pedagogy of discomfort' (Boler 1999) by asking students to adopt an open-minded and flexible approach to examining their own lives and perspectives.

Whole-Class work: collective responsibility

This lesson element provides opportunities for students to share their ideas with the whole group, either as individuals or on behalf of their smaller groups, following a task or activity completed at their tables. This affords students the opportunity to hear from a wider variety of voices than those sitting at their tables. Critically, by including opportunities where students are asked to feedback or share with the whole group in every session, they are encouraged to remain engaged throughout the entirety of the session in order to be able to participate in this element. The core purpose of the inclusion of this lesson element in every session is to counteract the tendency for some students to disengage from their learning during sessions through ensuring that they are accountable for their engagement and learning in some way. Additionally, by consistently asking students to share their perspectives and ideas with the whole

group, I aim to instil in students the message that not only are they expected to contribute but that their contributions have value within the classroom.

This process supports students to experience what happens when they expose themselves to difference by sharing their own perspectives and hearing those of other people. The process often results in mutual teaching and mutual learning through the sharing of different perspectives (Andreotti and deSouza 2008b). By sharing with others in the context of the classroom, students should be better prepared to reach out in other contexts and learn from others in other aspects of their lives. Westwood (2015, 174) posits that when engaged in large group teaching, utilising methodologies to capture and interpret large volumes of feedback in a short time 'ensures a high rate of interactive participation by all students'.

Outcomes

There are three categories of outcomes included in the Planning Tool: personal outcomes, professional outcomes, and module assessments. The module assessment embodies the visible and measurable outcomes from the module, while the personal and professional outcomes for students are likely to remain less visible and be complex or unfeasible to accurately quantify. However, while the module assessment reflects students' competence at a moment in time, it does not indicate the extent to which they are likely to transfer their learning to their lives beyond the module. In contrast, the personal and professional outcomes for students relate to the longer-term impact that the module can have for students' lives beyond the module.

The overarching objective of modules focused on critical thinking is to have an impact both personally and professionally for students regardless of whether or not these can be easily measured or tracked. The planning tool is designed to support students to develop their critical thinking skills which, it is hoped, should impact their lives both personally and professionally.

The personal development students experience can be observed through their contributions to the module by the language they use, the questions they ask and the comments they make. Very often these contributions can reveal students' underlying attitudes and values and reflect any learning journey they have taken. However, personal development is not always straight forward to measure or observe as the impact the module has will be unique for each student and can take time to manifest as students continue to think about issues explored in class. This means that the results may not be visible within the life cycle of the module.

Professionally, it is hoped that students adopt a critical thinking approach within their own career as a result of their participation in modules focused on developing critical thinking. However, the reality of how they choose to implement their learning is only visible when they enter the workforce. It is beyond the scope of college modules to track or observe how students choose to apply their learning to their professional practices.

Evidence of success

The planning tool was designed in response to data and tested in practice with multiple groups of students and by two different lecturers. The tool has been experienced to be

responsive and adaptable, enabling flexibility when being used simultaneously by different staff members with the same aim, but often with different teaching styles or group dynamics to respond to.

One of the key successes of the Planning Tool was in supporting students to feel comfortable in the classroom and enthusiastic about learning. As the module progressed, I observed that the biggest impact that using the Planning Tool was having was on student motivation and engagement. During early research cycles, my focus had been predominantly on the knowledge and skills I wanted students to develop rather than ensuring that I was creating the best conditions for learning. It quickly became clear to me that focusing on developing and maintaining student motivation and engagement was a critical precursor to them developing the knowledge, skills and dispositions the module sought to engender.

From the outset of the module in which we implemented the planning tool, Anna and I both noticed not only greater engagement from students, but also greater depth and reflection in their answers and contributions during class than we had seen during previous iterations of the module. One of the key factors to which we attributed this success was through offering multiple ways for students to engage with the content and have their voices heard in each session. The lesson elements of the Planning Tool helped us to ensure that, in each session, students could expect to be asked to reflect or contribute individually, in small groups, and as part of the whole class. We captured these contributions in multiple ways by asking for responses orally, on individual whiteboards, on sticky notes, on virtual platforms, or using voting sticks. These approaches were very successful in gathering inputs from a large number of students simultaneously and so increased opportunities for students to contribute during classes.

Having quick methodologies, such as voting sticks and digital surveys, throughout classes ensured students were practicing their criticality skills while also keeping them engaged. Quick strategies were combined with those that required more time and in-depth reflection such as written responses to vary the levels of criticality as students' comfort levels developed. The importance of offering multiple and diverse opportunities to contribute during classes was captured well by one student who stated that:

> I think we get to do so much interactive and group work and it's not all just sit there and put up your hand with an answer or … I feel like a lot of people are given opportunities if they didn't want to talk in front of the whole class, they still have an opportunity to get their opinion across. The different methodologies has already made it open to a lot of different learners and styles.

Furthermore, students indicated that when they had opportunities to practice sharing their perspectives throughout multiple classes and in a variety of ways, this helped them to build their confidence and continue to increase their engagement as the module progressed. One student highlighted this by stating that 'If you keep doing it like, you get more comfortable with it'. While other students described the impact group work had on their confidence, stating that when they had the opportunity to discuss topics in small groups first, they gained confidence to then offer opinions in front of the whole class.

The aspect I observed as the most significant contributor to continued student engagement was the opportunity to contribute ideas and answers in ways that

allowed for a level of anonymity which encouraged depth and honesty and enabled students to situate their ideas in context of those of the wider class. This approach supported students to move out of their comfort zones in a supported way. Critical thinking asks students to move beyond their typical comfort levels, which can be challenging. The use of methodologies such as the whiteboards provided a stepping stone for students to move into more uncomfortable spaces without feeling too exposed. In a conversation with Anna in December 2019 we reflected on the success of using individual whiteboards as a way for students to contribute during classes without feeling under pressure. I noted that 'often I found that students would hold up a board but not make eye contact with me, knowing I could read it out, they could distance themselves from what they had written but still be heard'. Anna, confirming she had noticed this too, added that she found the whiteboards helped her to acknowledge a wide variety of responses very quickly, something that wasn't possible previously with the large groups. Additionally, we often used content on the whiteboards as the basis for discussion, and students were asked clarifying or probing questions. We agreed during our conversations that this approach had kept classes more dynamic than previous years.

Ultimately, I found that when students were more consistently engaged in each lesson, they were more receptive to the content being shared and more likely to develop the skills and dispositions being promoted. Students knew that when they came to classes, they could expect a dynamic and active teaching approach which encouraged them to take responsibility for their own learning rather than passive delivery of information. This is highlighted by one student who stated that 'criticality happens every week because there are always debates at the tables and things to talk about and think differently about'.

Conclusion

The planning tool presented in this paper offers a new approach to the planning process for educators focusing on critical thinking development amongst their students. While the findings from the self-study action research project are context bound within global education and ITE, the approaches within the planning tool are grounded in literature and empirical data gathered through implementation of the tool with multiple groups and by multiple teachers. Therefore, this tool should offer other educators in different contexts a new structure against which to examine their own practice when aiming to support students to become critical thinkers.

Notes on contributor

Brighid Golden is an Assistant Professor in global citizenship education at Mary Immaculate College, Limerick, and a member of the national Development and Intercultural Education (DICE) project network. Brighid is a trained primary school teacher with experience working in Ireland, England and India. Brighid has a Master's in International Approaches to Education with International Development from the University of Birmingham, and a PhD in Education from the University of Glasgow which focused on global education within initial teacher education. She also has experience designing and developing teaching resources for primary and post-primary settings in relation to human rights.

Ethical approval

Ethical approval for the research project outlined in this paper was given by the University of Glasgow. Institutional approval for data collection with students was granted by Mary Immaculate College.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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