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**How students make sense of criticality skills
in higher education**

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Abstract

Critical thinking skills in students, employees and citizens are endorsed for a wide range of positive reasons. What seems less well-known and the aim of this research was to investigate how students make sense of these skills. A semi-structured interview was loosely designed, using questions to ascertain criticality skills before, during and at the present time with 7 students in their final year of a BSc Complementary Therapy degree. All participants thought the word 'criticality' was misleading to students unfamiliar with the term. All students used analogies and metaphors when providing their own definitions of what criticality skills are, often using linguistic binary opposed terms to define what criticality is as opposed to what it is not. Using the linguistic binary opposed terms, the author created a pedagogical tool 'The Criticality Wheel' that could be used by lecturers as stimulus for their students to make sense of criticality.

Keywords

Criticality, higher education, meaning-making, epistemology, binary opposition, dichotomy.

Introduction

There is a great deal of literature exploring pedagogies that develop criticality skills; this qualitative study aimed to investigate from the students' perspective their experience in developing criticality skills and how being critical impacted on other areas of their life. The objective was to add to the evidence base of how best to support students in developing these skills and in motivating them to use them.

Critical thinking skills are lauded in all vocations; to create a reflective problem-solving workforce (Yildirim and Özsoy, 2011) and from a sociological perspective to encourage self-reflective, inclusive, empathic, empowered, congruent (Kear, 2012) and socio-culturally aware citizens (Tisdell, 2006; Tolliver and Tisdell, 2006).

Personal meaning research is escalating in the field of health and well-being; particularly in understanding the meaning individuals' attribute to illness (Acheson and Crabtree, 2004; Bolton, 2010; Vachon, 2001). It has been suggested that understanding the meaning people ascribe to health and illness may inform more effective treatment, by adapting the intervention to fit with the patient's personal paradigm (Dubouloz et al., 2008). Meaning-making is less evident in pedagogical research, but it may have valuable applications in ensuring our teaching and learning approaches make sense to our students.

Citation

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Based on this conjecture, the aim of this research was to understand in detail how students make sense of criticality; what it is, and why it is needed.

Methodology

The ontological perspective of the researcher is interpretive, Israel (1999:1) defines interpretive research as:

‘especially helpful when the questions being examined are explanatory in nature. It is then necessary to focus heavily on human intent and meaning, which is at the heart of interpretive research. Interpretive ontology views all reality as subjective reality and that is why it cannot be sufficiently understood from the positivist's distance. Every human being is unique and every bit of social life has its own meaning, feeling, intention and motivation.’

Based on this interpretive ontology the methodology is phenomenological, Yanow (2003:11) explains that ‘Phenomenology provides a constructionist ontology centered on the primacy of context,’ the context in this case is students’ experience developing and making sense of critical thinking in higher education. My motivation as a researcher is a curiosity to determine peoples’ perception of the world; guided by the philosophy that our experience is unique, idiosyncratic and personal.

Literature review

The key words used were: critical*, develop* and higher education. The etymology of the word ‘critical’ derives from ‘kriticos’ meaning discerning judgment and ‘kriterion’ meaning standards (Paul, Elder and Bartell, 1997:12). Critical thinking has many explanations in the literature, Ennis' (1985.45) definition is quite popularly quoted where he describes it as 'reasonable reflective thinking that is focused on deciding what to believe or do.' Petress (2004:461) analyses the processes involved in critical thinking and discerns that critical thinking 'examines assumptions, discerns hidden values, evaluates evidence, and assesses conclusions.'

Most sources agree that critical thinking is a 'higher level' of cognition that generally must be learnt, and is often not present in students arriving at university and some sources question if students have accomplished these skills upon graduation (Castle, 2009). The rationale for developing criticality skills in students is in-depth and the positive implications of becoming more critical vast in its remit; including: more proficient at problem solving (Tumkaya et al., 2009) able and interested to address social injustices (Brookfield, 1987) and culturally competent (Goldberg and Coufal, 2009).

There are tools to support the acquisition of criticality skills in students; such as the use of concept maps, (Ellermann et al., 2006) role play exploring other's perceptions, (Yildirim and Ozsoy, 2011) promoting questioning and communicative competence and argumentation, (Seker and Komur, 2008) practical experience gained via service learning and civic engagement (Goldberg and Coufal, 2009; Kear, 2012), working in novel environments (such as prisons, rural communities, international settings (Kirkham et al. ,2005) and setting tasks and problem-solving (Frijters, ten Dam and Rijlaarsdam, 2008). The above would all be termed non-dialogic, or inquiry-based pedagogy, but lecturers have explicitly taught criticality skills within university in dialogic ways with equally good results (Dumitru, 2012). To measure outcomes, there also exist many rubrics and methods to assess the impact of these teaching and learning interventions (Halpern Critical Thinking Assessment, 2010; Ennis-Weir Critical Thinking Essay Test, 1985; Watson-Glaser Critical Thinking Appraisal, 1980).

Mirroring Borglin and Fagerström's (2012:358) findings that despite the plethora of research undertaken to assess the effectiveness of teaching strategies to promote criticality skills, the student perspective is far less represented, based on this lack of knowledge, this research aimed to assess

this qualitative aspect in relation to students on a complementary therapy Bachelor of Science degree.

Investigation

Ethical consent was gained through the University's ethical approval pathway. Informed consent was gained explaining to the students that the investigation was also an opportunity for them to explore and reflect on their understanding of criticality skills, and also express any difficulties that they encounter now with the aim being that the lecturer/researcher could then support them following the interview in further development and refinement of these skills. This participatory ethical stance was a major influencing factor throughout this project; promoting the reciprocal beneficial nature of the research (Giddings and Wood, 2005). This methodology permeated throughout the project; the interviews were audio-recorded, and transcribed by the author; students were given transcripts of the interview to digest and reflect on, and further comments were welcomed. Semi-structured interviews were arranged with a purposive sample; 7 students currently enrolled in their final year of a BSc in Complementary Therapies.

The interview loosely comprised 3 sections; the 1st related to criticality skills before university, (to gauge a disposition for critical thinking) the 2nd comprising of questions to gauge processes that supported the development of criticality skills and the 3rd section; where are you now? How do you make sense of criticality now? Consideration of non-verbal body cues and their congruence with verbal communication were also noted to provide some validity to self-reported experiences alone.

The interviews were audio-recorded and transcribed by the author, each student's transcription was emailed to them for amendments, and then the transcripts were analysed using Braun and Clarke's (2006) 6 stage method for thematic analysis. The following section combines the results of the interviews and a discussion.

Findings

6 out of 7 students agreed and were available to be interviewed (one student agreed but was unavailable to be interviewed). The subject headings of this section are loosely based on the questions asked in the interview.

Did you critically question before enrolling on your degree?

Only one student did not consider criticality as purely an academic request, as she noted:

'for me personally, generally as a person I'm a critical person, as I question everything anyway, for me it's hard to draw a line between the two. They tend to merge, for me it's something I've applied to my work, I don't accept things on face value, not in a negative way – critical, I just question, it's not a new thing for me'

(Patricia – pseudonym).

Indeed Patricia spoke of her frustration of a society where people are not critical and remain uninformed:

'I get cross when people don't question, they just accept, unaccounted for, he's a doctor, he's a policeman. People are happy with the status quo and don't want to look any further...Doesn't suit them to look any further'

(Patricia – pseudonym).

Similarly another student (Annie) described criticality in life outside of academia as:

'we are critical everyday – it's not a hard thing, all you're doing is reading different authors' opinions and come to a conclusion. Everyone's a critical thinker – buying chocolate at the shops, we assess the worth of something. Shopping around I suppose...I find it easier to apply it to chocolate to make sense of criticality...I've always done this with food and shopping I'm comparing prices for the best one'

(Annie – pseudonym).

Despite this Annie described herself as more 'gullible' before studying at degree level, pairing it with the sentence 'I would take things at face value.' Bramming (2007:54) speaks of this change in students as 'a loss of innocence and an impossibility of returning to the simple state of learning'. For the other 3 students they all agreed that they were not critical in their lives before higher education, one student explained she was 'open-minded,' but that she would not question.

It is interesting to note the ease with which students described criticality skills related for example to shopping and how they came to decisions via a weighing up/comparative process of the 'best deal,' but this became a more difficult process when applied to questioning research or academic books, Annie spoke of this succinctly when saying:

'I've always done this with food and shopping I'm comparing prices for the best one; if information is in a book and it's been published, it's in a library, it must be right. So that's why I've not questioned it, if it's in a book that's gospel, it would have been just that's that...if they've said that it's got to be true'

(Annie – pseudonym).

'Gospel truth' is an English colloquial term used to endorse the inherent truth of something. Annie found it quite difficult to make sense of her statements. Further questioning from the interviewer asked Annie to explain the difference between questioning the price of an item and questioning knowledge, but Annie found it difficult to articulate why this was so.

Exploration of the disparity above should perhaps be stimulated with students tackling criticality skills in higher education; in that what is it about our conditioning and belief systems that disable or limit our right to question experts? Rudinow and Barry (2008:22) in their analysis of criticality skills explain how societal hierarchies lead to citizens conforming, and the power of authority to intimidate people so they refrain from questioning or challenging.

What do you think of the term 'criticality?'

All students resoundingly did not think the word 'criticality' was helpful in describing the process of being critical. They all defined this word as having negative connotations; words used to define 'critical' included 'harsh,' (Antonia) and 'judgemental' (Annie), Annie also went on to suggest that the need to be critical 'may scare some students, it's quite a negative word, it may make you a bit afraid of it.' Sally used the phrase 'bad aspects (of something), with the impact that the positives won't be considered.' Brenda also disliked her interpretation of the word 'critical,' and equated it with 'finding the negative in research', as she felt this was contrary to her innate positive personality. Perhaps this is redolent of Tannen's (2000) discourse on her defined 'argument culture,' in that the negative inferences of the term critical, have led to an argument culture in academia which focuses on the negative/weaknesses in research in which to oppose, rather than evaluating the positives and attempting to find similarities between sources for the development of knowledge.

What processes have supported your understanding of criticality?

Despite there being a module on academic skills in the 1st year of their programme, with a learning outcome focused on criticality, only 1 of the 6 students remembered this, so perhaps this dialogic approach had not been very effective, although other confounding variables may have contributed to this. All students felt that the University's library services had supported their understanding, through group workshops and one-on-one tutorial sessions, but their major source of understanding criticality skills had emerged from formative feedback on written work; particularly via shared group tutorial sessions, where with the lecturer they reviewed samples of each other's work.

The majority of students in the interviews discussed the frustration, fear and stress they experienced in the early stages of developing criticality skills;

'Doing the assignment, very stressed at that time, my understanding of what it was; wasn't there, felt confused, very frustrated, more I tried to understand, the more frustrated I got, I was confusing myself, what I'd interpreted wasn't what I was reading, I hadn't picked up the right meaning in class. My own interpretation was at odds with the real meaning' (Brenda - Pseudonym).

Park (2010:) notes that 'Meaning appears particularly important in confronting highly stressful life experiences, and much recent research has focused on meaning making (i.e. the restoration of meaning in the context of highly stressful situations).' Indeed Park suggests that the 'disturbing emotions' trigger the meaning-making process. Many terms and phrases have been coined to represent the sensation precipitating transformation; 'dissonance,' (Kirkham et al., 2005), 'disorientating dilemma (Mezirow, 1978), 'uncertainty' (Blackiae et al., 2010), and 'discordant' (Park, 2010). Despite the different terms, what is agreed is that once meaning is made; transformation ensues (Bramming, 2007).

Two other students explained that for them, they needed to know 'how' to be critical, one student said:

'how do you want it done; what ways can you go about doing it? Tell me what ways I need to do this; I need to know the skills to do this'

(Sally – pseudonym).

Perhaps for these students their pedagogical preference is didactic.

Has there been an impact in other areas of your life?

All 6 students without coercion applied criticality to their clinical work as complementary therapists, they did this in several ways; commonly reported was the need to work with clients' belief systems in therapy and to try to focus on suspending their personal belief systems. Sally discussed:

'Changed how I think about things; will be helpful for my career; helps if you're open-minded for what we do. The job that we do, dealing with anyone, need to understand them, rather than having a view of they're like this because of this, it may not be'

(Sally – pseudonym).

Similarly Brenda explained that as a therapist she questions:

'Am I seeing things correctly?' and 'we put our own feelings aside, and listen to what they say; we need to take in what our clients are saying; their perception of things.'

(Brenda – pseudonym).

Both these quotes demonstrate students' recognition of an interpretive ontology, and a transformative move away from egocentricity. Paul et al., 1990:393) define ego-centricity as:

'A tendency to view everything in relationship to oneself: to confuse immediate perception (how things seem) with reality. One's desires, values, and beliefs (seeming to be self-evidently correct or superior to those of others) are often uncritically used as the norm of all judgment and experience. Egocentricity is one of the fundamental impediments to critical thinking.'

(Paul et al., 1990:393)

The belief that egocentricity impedes critical thinking is also shared with Shekarey and Rahimi (2006) and Paul (1990 cited in ten Dam and Volman 2004:362). Indeed ten Dam and Volman (2004:371) request that criticality skills should not be reserved purely for academia, but more importantly to develop more socially and culturally aware citizens who oppose injustice, they also deem that 'In our view, democratic citizenship requires not only being able to think critically and politically, it also requires a caring attitude, empathy and commitment.'

Both Brenda's and Sally's narratives also demonstrate their empathy and a pluralistic epistemology, the philosopher Hannah Arendt explained plurality as:

'all human beings belong to the same species and are sufficiently alike to understand one another, but yet no two of them are ever interchangeable, since each of them is an individual endowed with a unique biography and perspective on the world.'

(cited in d'Entrevres 2008:70).

Brenda went onto discuss that her pluralistic epistemology provided insight into her own self-awareness, she explained that:

'how am I listening to this information, am I listening correctly to what the client is saying...did I interpret what she said correctly, perhaps it's me that's not understanding where she's coming from...am I missing something? You understand your strengths and weaknesses and work on this...critically analysing self...being critical about ourselves, looking at your strengths and weaknesses'

(Brenda – pseudonym).

Brenda's critical reflection here, demonstrates transformative learning (Mezirow, 1990), whereby she is questioning her assumptions and being open to alternative points of view. Indeed Brenda then shared how she found herself 'questioning more,' and used the example of looking at art, 'from a cultural sense, questioning more; wouldn't have picked up on things before. Why has this been done, I wonder why they've done this...questioning on a different level,' Brenda explained that previously she used to enjoy art 'as something that pleases my eye; but not understanding what other people were looking at,' she said critical perspectives have made her more curious 'what do other people see that I'm not seeing?'

Brenda's transformation into a curious and critical examiner is redolent of what the German philosopher Gadamer (1960, cited in Jay 2005:402) argued was the most ethically commended definition of 'being experienced'.

'Being experienced does not mean that one now knows something once and for all and becomes rigid in this knowledge; rather, one becomes more open to new experiences. A

person who is experienced is undogmatic. Experience has the effect of freeing one to be open to new experience.'

Patricia also noted the emancipatory feelings associated with being critical when she explained:

'It's better to question, you have a better understanding, you're on a level with people, you can challenge people in an educated way, feel more fulfilled, rather than things being done to you; you have a part in it'

(Patricia – pseudonym).

Several students noted that they found it difficult to assess if critical thinking had had a wider impact on their life, as they were still immersed in their degree, Sally hinted at the positive effects without analysing why, when she explained, '(I) prefer to know there isn't just one view, prefer this, more positive feeling.' As Janoff-Bulman and Frantz (1997 cited in Park 2010:290) note; people tend to 'focus on comprehensibility earlier and on significance later in the meaning-making process'. For some of the students in this study they are in the comprehensibility stage.

How would you explain criticality to another student?

This question generated interesting answers in several interviews, students used analogies to explain criticality, and 3 of the participants used the analogy of food; namely curry and chocolate. Each of the analogies used different aspects to demonstrate the evaluating component of criticality; the curry analogy focused on choice and personal preference:

'looking at criticality from my preference, not good or bad, just my choice, but lots of choices. Bad is not necessarily a negative, an example is curry; I like curry, but I wouldn't have it if it was too spicy, I looked at the critical issue from my own preferences. Someone does like it spicy so it's not a bad thing. It's just not my preference'

(Brenda - pseudonym).

Applying her curry analogy to criticality in university, Brenda explained that there are 'different points of view, different perspectives...nothing wrong with this... for and against research...all views...not just your view but a wider scope.' And Kathryn noted 'you can't exclude something that disagrees with your point, you must include it.'

The chocolate analogy focused on comparing strengths and weaknesses to determine which chocolate to choose; discerning the lowest price for the greatest weight, and evaluating the positive and negative outcomes of eating the chocolate; 'it's full of saturated fat, but tastes good, and releases endorphins.' Based on Kathryn's informed evaluation a decision is then made.

Many students used the word 'compare' to describe being critical, Annie said 'you need to look at more than one aspect to evaluate the opinions...you're weighing it up to get the most rounded view; all opinions are take in.' Other words and phrases that students in this study used to explain criticality, included: 'questioning', searching for 'balance,' and trying to be 'precise.' Annie offered the following advice for future 1st year students, 'don't believe everything you read, don't be too gullible.'

The key themes collated from the findings are depicted in Fig. 1. 'Making sense of criticality.' The combination of the key themes and the students' tendencies to utilise binary opposed terms led to the author developing a pedagogical tool, named 'The Criticality Wheel'. The proposed use of the tool is explained in the next section.

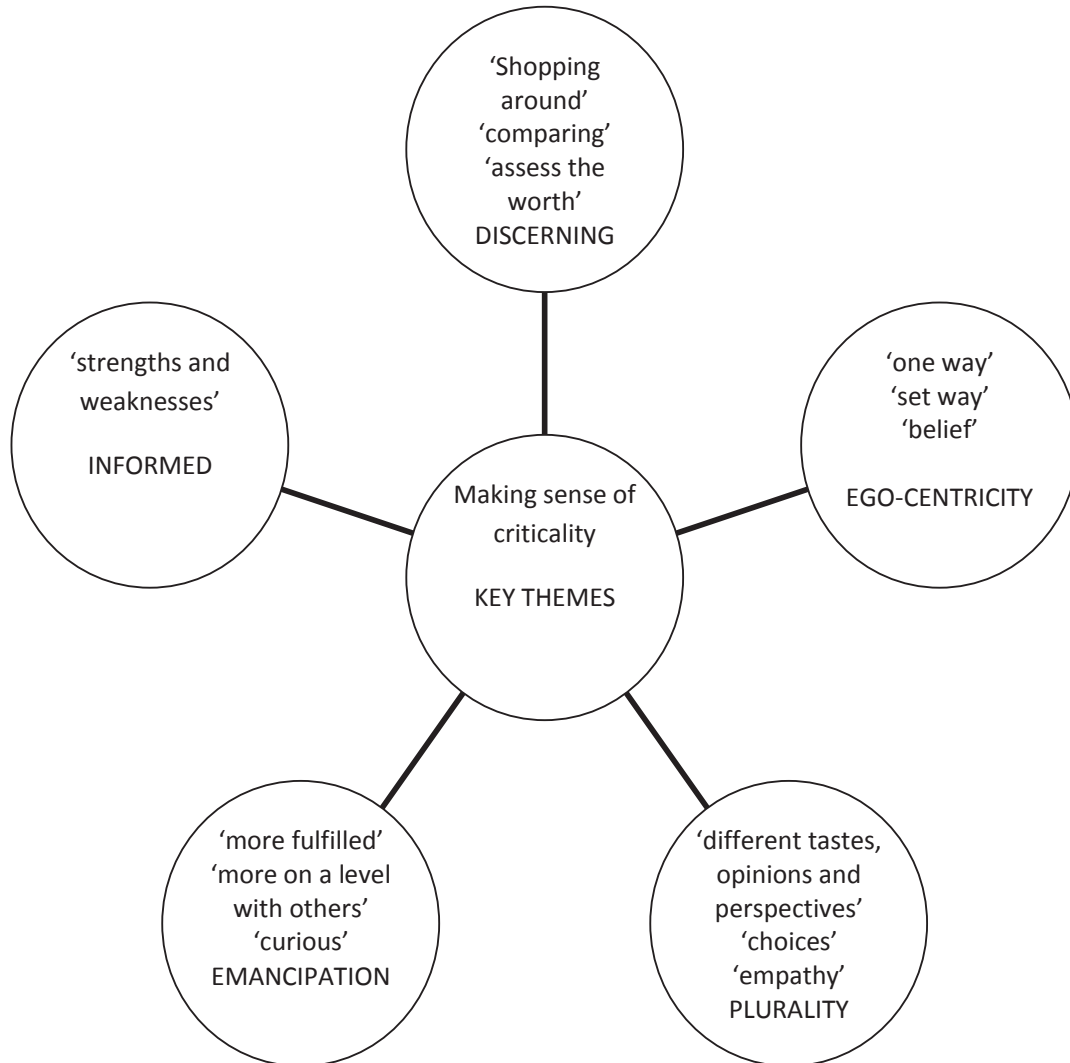


Fig. 1. Making sense of criticality.

The Criticality Wheel

Throughout the interviews, students often made use of what is termed 'linguistic binary opposition' to make sense of criticality; using opposing adjectives such as:

- good/bad
- positive/negative
- strong/weak
- right/wrong
- truth/lie

Binary opposition is a term created by Jakobson (1974 cited in Chandler, 2003) and is a central tenet of post-structuralism. Jakobson posited that opposite pairings such as those listed above can be classed as units of language with values and meanings culturally determined. The pivotal point in relation to learning is that by identifying and defining the opposing terms, this leads to a deeper

understanding of each separate term. An example of this is that one cannot conceive of 'good' if we do not understand 'evil'.

Using the themes identified in Fig. 1. The author searched for suitable antonyms relevant to criticality. On the right side of 'The Criticality Wheel' are listed 4 terms related to criticality, each of the terms has it's antonym listed diametrically opposite.

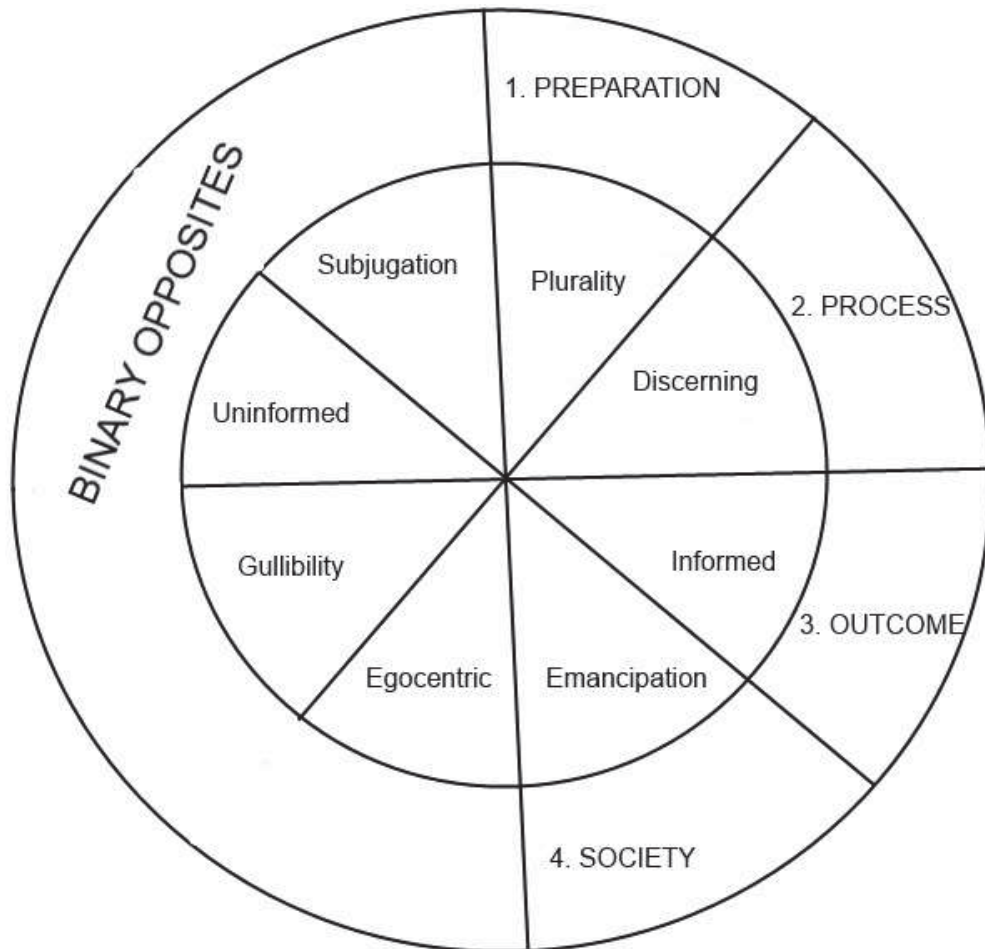


Fig. 2. 'The Criticality Wheel' for exploring criticality with students.

Each of the terms associated with criticality can be considered sequentially, so that:

1. is the PREPARATION needed to become critical
2. The PROCESS of criticality
3. The OUTCOME of becoming critical
4. The wider impact on the individual in SOCIETY

The final part of this paper is a tentative exploration of the 'Criticality Wheel' and how it embodies the findings in the literature review. The Criticality Wheel could be used in future with students beginning their undergraduate education journeys. The visual tool aims to act as a stimulus whereby students discuss their definitions of the opposing terms in the context of knowledge, so for example

'How would you define 'to discern?' and equally what would be the opposite of 'to discern?' or 'What is your understanding of the word 'emancipation?,' 'How could you apply emancipation to the context of knowledge?' and what is the opposite of emancipation?'

1. Ego-centric and Plurality

The 1st spoke of the 'Criticality Wheel' is Ego-centricism and Plurality, this is the beginning point of critical thinking; labelled 'preparation' in the 'Criticality Wheel' as these factors need to be acknowledged to enable criticality to take place, as it's only through recognition that a plurality of perspectives can exist, that criticality can ensue. This is perhaps particularly important in academia due to the tendency of authority to intimidate and trigger conformity (Rudinow and Barry 2008:22) where they refrain from questioning academic sources of knowledge.

The plurality term represents existing research findings listed in the literature review that have found experiential learning of other's experiences effective in the development of criticality skills in students; such as role play exploring other's perceptions (Yildirim and Ozsoy, 2011), working in novel environments (Kirkham et al. 2005) and practical experience gained via civic engagement (Goldberg and Coufal, 2009). However, experiential learning is not guaranteed to lead to criticality, as without an appreciation of what plurality is, 'the belief that no single explanatory system or view of reality can account for all the phenomena of life' (The American Heritage Dictionary of the English Language 2009) critical thinking may not exceed 'egocentric and sociocentric thinking' (Paul 1992 cited in ten Dam and Volman 2004:362).

2. Gullibility and discerning

The 2nd spoke of the 'Criticality Wheel' embodies the process of being critical. Discernment occurs only when we are confronted with several different sources of information, as in the plurality of different belief systems or opinions/findings related to a subject. Brenda also noted that discernment involved determining the context of information too; 'I like to find out where things are coming from,' which mirrors Petress' (2004:461) list of the processes involved in critical thinking; 'discerning hidden values.'

The antonym for discernment was provided by Annie who used the word 'gullible' when describing her approach within previous education and during the 1st year of her degree.

3. Informed and Uninformed

Leading on from the process of criticality; the 3rd spoke relates to the outcome of being critical; using Kathryn's analogy, as weighing the positives and negatives and then deciding whether to eat the chocolate or not. It is only through discernment that we become informed.

This fourth spoke in the wheel could be classed as the outcome of critical thinking, as Drennan (2010:423) explains 'The aim is to allow students to analyse and interpret the situations they face in the real world of work and come to a rational evidence-based solution to the problems and challenges encountered,' or using the popularly quoted Ennis (1985:45) definition of what criticality is: 'competent judgments about what to believe and what to do'.

4. Emancipation and Subjugation

The 4th spoke of the 'Criticality Wheel' relates to the wider implications of being critical for the individual in society, and this was demonstrated when students in the study discussed the impact of being critical on other aspects of their lives, and generally the positive effects becoming critical had had on them. These positive effects should be shared with prospective students for motivation, the students in this study shared the following positive points:

- Feeling more confident in practice
- A sense of comfort that there are pluralistic ways of explaining phenomena, rather than a right and wrong way.
- A sense of curiosity to understand the world through other's eyes.
- To have control over self, and not be acted upon

McArthur (2010:313) discusses in her analysis of Giroux's contributions to critical pedagogy, higher education should not aim to promote 'a 'right' way to be in the world, but rather one that is genuine and true to each student, thus blending personal emancipation and participation in the public sphere,' and asserts that this outcome of emancipation 'frees us from constraining modes of thinking or acting.'

The antonym of emancipation is subjugation, and although this term was not identified by participants, it's meaning was present in students' discussions, 'I think the world would be a better place if we did (question); too much goes unnoticed, unaccounted for; people accept blindly,' (Patricia), and many participants agreed that these skills are not taught or developed before University, 'people should be learnt (sic) to question, it wasn't encouraged when I was at school, shut up and listen'.

This final spoke in 'The Criticality Wheel' is the culmination of the 3 spokes preceding it; in that pluralism, discernment and becoming informed lead to transformation of the individual and emancipation and as Arendt believed if these individuals then 'act'; fairer societies ensue.

Limitations

Using Park's (2010:262) explanation of the process of meaning making; in that it is a 'dynamic process that unfolds over time,' the method of this study would have provided more reliable results if the process of meaning-making was explored longitudinally. Retrospective studies are liable to reporting weaknesses; memory bias where participants either exaggerate or minimise the impact of events (Bowling 2009:217). Ideally base-line measures should have been ascertained at the beginning of the degree and subsequent interviews as part of a longitudinal study could have recorded more accurately the detailed evolving changes in thinking the students experienced.

The participants for this research were all enrolled on the same course and so had experienced similar pedagogical approaches. Future research will focus on the pragmatics of using the 'Criticality Wheel' with other cohorts of students beginning their undergraduate degrees.

Conclusion

This study explored how students make sense of criticality in higher education. What is evident from the rich information gained from the interviews was that transformations had occurred for students in this study. They had all experienced difficulties in acquiring criticality skills, affectively experiencing negative emotions which preceded understanding and subsequent transformation (Mezirow, 1990). Each of them had made sense of criticality using analogies and metaphors from other aspects of their lives and they all felt that becoming more critical was a positive addition to their lives.

Future research will aim to utilise 'The Criticality Wheel' to assess its effectiveness in supporting other students' transition into higher education.

I'd like to conclude with firstly Patricia's and latterly Antonia's words related to the subjective nature of interpretation, 'everybody's meaning of critical thinking is different, the basis might be the

same but your thought processes will be different, as we are all different,' and 'books are difficult to follow, things get lost in interpretation,' as without working with students' idiosyncratic and individual epistemologies, it is more likely that as lecturers: our words and meanings are misinterpreted and lost in translation.

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