**What is critical thinking? Pre-commencement perceptions of enabling students entering into university studies**

**Frank Armstrong**

School of Access Education

CQUniversity

*f.armstrong@cqu.edu.au*

**Trixie James**

School of Access Education

CQUniversity

*t.james@cqu.edu.au*

**Abstract**

Critical thinking is an implicit skill expected of students entering university, and yet many students are uncertain about what it means to be a critical thinker and how to apply this skill within their units of study. This is particularly evident within enabling programs as students who enter university through an enabling skills pathway often present with lower level academic skills and confidence. This is due to a multitude of reasons, some of which include being away from the educational environment for a number of years through to not achieving well in their high school years. Ultimately, this can have negative implications in their confidence to handle academic study because once students have transitioned into the undergraduate arena, they are expected to engage critically with a vast body of knowledge and then proceed to analyse, synthesise and evaluate arguments (James, 2016). Critical thinking is a skillset that is an implicit expectation, yet often not an academic skillset that is explicitly taught. This paper will share the preliminary findings from a research project that is piloting a critical reflection instructional booklet. The findings from this paper are drawn from an initial survey that was completed prior to students starting their first term of study in the Skills for Tertiary Education Preparatory Studies (STEPS). The participants in this study initially completed a standardised critical thinking test that gauged their conceptions of what critical thinking means to them and how they expect to apply it within the course. They then undertook a practical activity where they critically analysed a short excerpt. The data, which was analysed using thematic analysis, and the resulting findings are shared within this paper.

# **Introduction**

‘Enabling’ education, otherwise known as ‘preparatory’, ‘bridging’, ‘access’, ‘foundation’ and ‘preparation’ programs, ensures accessibility to university for students who otherwise would not be able to follow a higher education trajectory. However, research within this area has identified that the students who are required to enter via this pathway tend to present with lower level academic skills, are diverse in age, come from culturally diverse backgrounds, are often linked to low socio-economic regions, and have a vast array of life experiences (James, 2016; Klinger & Tranter, 2009; Willans & Seary, 2007, 2009). Many students do not meet the academic standards required, nor do they possess the higher level thinking skills or academic rigour needed for university level study, where they are expected to be able to engage critically with a vast body of knowledge and then proceed to analyse, synthesise and evaluate arguments with a critical lens (James, 2016). Critical thinking is an implicit skill that is expected as students enter into university and yet many students are uncertain about what it means to be a critical thinker and how to apply this skill within their units of study.

This paper reports on the findings from an initial survey undertaken to ascertain enabling students’ pre-commencement conceptions about what is expected of them when they are asked to be a critical thinker and how they believe they will achieve this. Students were concurrently asked to review a text and apply critical thinking skills by responding to a series of questions. The findings from this stage will form part of a broader project involving the development of critical reflection skills in students as they undertake a scaffolded intervention program using critical reflection journaling.

# **Background**

The purpose of this pilot program is to improve the critical writing and reflective skills of students enrolled in STEPS. This enabling program commenced in 1986 and is, at present, offered across 10 CQUniversity campuses as well as in online mode. STEPS arms students with the skills to successfully transition to undergraduate studies and, according to Klinger and Wache (2009), offers hope to students that they can succeed in this new setting. This transition is achieved through a holistic curriculum that covers core units that assist students to develop the skills and academic rigour that is expected when undertaking undergraduate studies (James, Conradie & Armstrong, 2014). Students entering enabling programs come from different socioeconomic backgrounds. Some are first in the family to go to university (Cantwell et al., 2001, cited in Morison & Cowley, 2017), while others want a second chance at gaining an Australian Tertiary Admission Rank (ATAR) (Morison & Cowley, 2017). These programs cater for a diverse range of people from mature aged students and people with disabilities to those from rural and isolated areas (University of Newcastle, 2015, as cited in Morison & Cowley, 2017). Willans and Seary (2007, 2009) state that enabling programs have a positive effect on many mature aged students who enter university via this pathway. STEPS comprises one core unit, Preparation Skills for University (PSU) and a collection of 11 electives from which students may choose to establish an individualised study plan based upon entry test results and career goals. The units encompass a range of mathematics, academic writing, computing and science based subjects. The primary focus of this pilot program centres around PSU which is an 11-week unit and each week a different set of skills is looked at, including active reading and listening, time management, oral presentations and critical thinking (in Week 10).

# **Literature review**

Willingham (2008, p. 21) defines critical thinking as “seeing both sides of an issue, being open to new evidence that dis-confirms your ideas, reasoning dispassionately, demanding that claims be backed by evidence, deducing and inferring conclusions from available facts, solving problems”. Lai (2011) suggests that most adults exhibit a deficit in the ability to reason or think critically about an issue, a belief which is supported by Halpern (1998) who concludes that most adults fail to think critically in many situations. Tim van Gelder (2005, pp. 41-42) argues that critical thinking is not a natural process and for some people it is one that is difficult to master. This type of thinking is considered by cognitive scientists as a “higher-order skill”, whereby the complexity of critical thinking consists of skills that are easier and simpler to achieve. For example, to critically respond to a statement, the person in question needs to be able to read and understand what is being said. Anderson (2004, p. 2) introduces the idea of critical intelligence, arguing that “teaching the habits of critical thinking is perhaps the fundamental goal of progressive education”. The aim of this type of teaching is to encourage students to investigate and pull apart events or ideas by themselves: “to seek independent, penetrating understanding” (Anderson, 2004, p. 2). In simple terms, it is the ability to objectively analyse facts to form a judgment. What is evident in the research is that critical thinking entails cognitive skills, ability and dispositions. However, researchers working within the area of critical thinking recognise that the *ability* to think critically is distinct from the *disposition* to do so (Ennis, 1985; Facione, 2000). Lai (2011, p. 11) claims that dispositions can be aligned to a student’s attitudes or habits of mind, and this is evidenced through their propensity to seek reason, a desire to be well-informed and a respect for and willingness to entertain diverse viewpoints. The disposition to think critically has been defined by Facione (2000, p. 65) as the “consistent internal motivation to engage with problems and make decisions by using critical thinking”. Thus, student motivation is viewed as a necessary precondition for critical thinking skills and abilities. In support of this, Happern (1998) argues that effort and persistence are two of the principal dispositions that support critical thinking and Paul (1992) maintains that perseverance is one of the “traits of mind” that renders someone a critical thinker (p. 13). Therefore, it is intimated that motivated individuals are more likely to exhibit critical thinking.

Researchers within the field of critical thinking suggest that it is a form of metacognition (Kuhn, 1999; Flavell, 1979). Flavell (1979) argues that “critical appraisal of message source, quality of appeal, and probable consequences needed to cope with these inputs sensibly” can lead to “wise and thoughtful life decisions” (p. 910). Therefore, he suggests that there is also a link to critical thinking as a valuable life skill. Van Gelder (2005) and Willingham (2007) both argue that a component of critical thinking is the ability to deploy the right strategies and skills at the right time. This is often referred to as conditional or strategic knowledge and also considered part of the construct of metacognition (Kuhn & Dean, 2004; Schraw et al., 2006). Halonen (1995) identifies metacognition as the ability to monitor the quality of critical thinking. Therefore, metacognition can be seen as a supporting condition for critical thinking, in that monitoring the quality of one’s thought makes it more likely that one will engage in high-quality thinking (Lai, 2011). Thus, like motivation, metacognition appears to be a supporting condition for critical thinking.

# **Methodology**

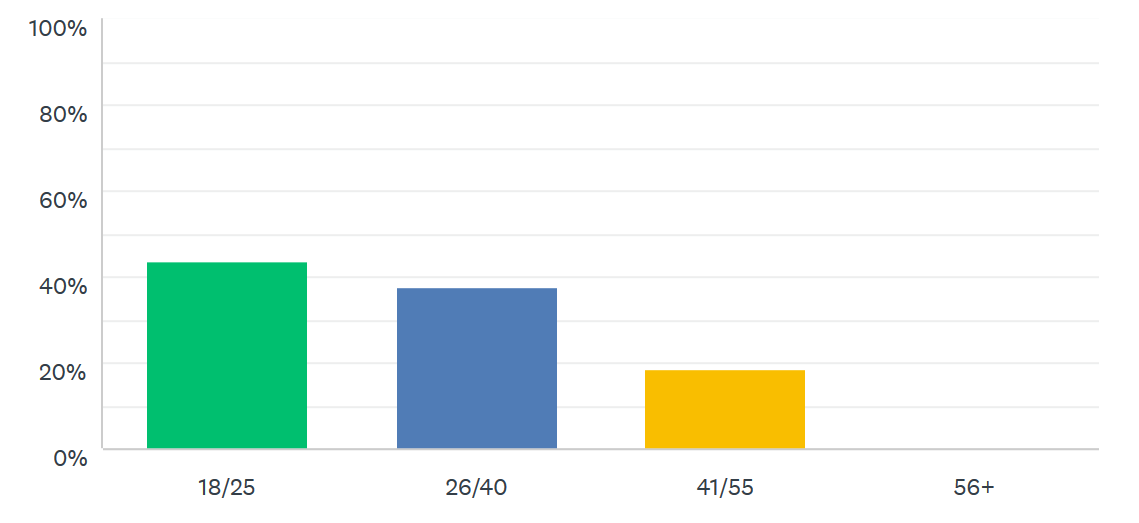
## *Research design*

The first stage of this research was intended to foreground the context of critical thinking by investigating enabling students’ perceptions of what it means to be a critical thinker and then evaluate their actual ability to critically respond to questions around an excerpt from an article about vaccinations. A link to a standardised online survey was emailed to participating students where they were asked to share their pre-commencement conceptions about what it means to be a critical thinker, how they believe they will achieve this and finally respond critically to some questions about a prescribed text.

## *Participants*

## On receipt of ethical clearance for the research study, a small cohort of students was invited to participate in this pilot project. The number of students was limited to those enrolled as internal students on the Mackay campus in the core unit Preparation Skills for University. In total, 32 students were invited to participate in this project at Orientation with a total of 20 expressing their interest to participate. Leading up to the commencement of term, a total of 16 students had completed the online survey.

There was a diverse age range with seven aged 18-25; six between 26-40 and three between 41-55 years of age (Figure 1).



*Figure 1*. Age demographics of student participants.

## *Data analysis*

The data from the surveys was analysed using Braun and Clarke’s (2006) thematic analysis in order to explicate themes within the data. Thematic analysis involves the search for, and identification of, common threads that extend across the entire set of data and provides a qualitative, detailed and nuanced account of data (Vaismoradi, Turunen & Bondas, 2013). Using thematic analysis requires a relatively low level of interpretation as it allows the data to speak and guide the findings. Braun and Clarke (2006) suggest that thematic analysis is a flexible and useful research tool which provides a rich and detailed, yet complex, account of the data. The process of analysis follows Braun and Clarke’s (2006) six phases of analysis. Firstly, the researchers became familiar with the data from the survey, paying attention to patterns that were occurring. Next the patterns were coded and labelled and the themes identified to accurately depict the data. These themes were described in the context of the research in order to link to the concept of critical thinking. A secondary unit of data was sourced from the individual responses. Each response was reviewed and graded to reflect the overall level of critical reflection being demonstrated. Each score given was graded on a Likert scale from 1-5 with 1 being a very low level response with limited critical thinking demonstrated, 3 demonstrating some critical thinking ability but requiring more depth, to 5 reflecting quite a strong reflective ability with higher level questioning. As can be seen in Table 1, the students aged between 26-40 demonstrated the highest level of critical thinking ability at this stage of their learning journey, with a mean score of 3.4, while those in the 18-25 and 41-55 age groups showed a similar level of ability with a mean score of 2.3 for the 18-25 year-olds and 2.6 for those aged 41-55; the 26-40 age group all scored average and above and demonstrated stronger responses compared to the other two age groups.

Table 1

*Level of critical thinking*

|  |  |  |
| --- | --- | --- |
| 18-25 | 26-40 | 41-55 |
| 3/5 | 4/5 | 3/5 |
| 2/5 | 4.5/5 | 2/5 |
| 1/5 | 3/5 | 3/5 |
| 2/5 | 3/5 |  |
| 3/5 | 3/5 |  |
| 3/5 | 3/5 |  |
| 2/5 |  |  |
| 16/35 | 20.5/30 | 8/15 |
| 2.3 average score | 3.4 average score | 2.6 average score |

# **Findings**

The first question on the survey asked “When you hear the term ‘critical thinker’ what do you think that means for you as a student”? A majority of students recognised that being a critical thinker allows them to observe opposing viewpoints and make a judgement call on the information given. There were also some responses where students realised that they cannot believe everything that is presented to them and that they need to be able to determine useful and credible information from further research. However, there were a few responses that suggested that a few may not have truly understood or appreciated how the term critical thinker is determined in the academic arena. For instance, one student said “stepping outside the box and not being afraid to have a say”, whilst another shared that it “is someone who can narrow down on a topic or issue and get straight to the point without shifting from the topic too much”. Although there is merit in these thoughts, critical thinking in an academic sense requires the ability to be able to differentiate points of view and make an informed decision based on the information retrieved. Therefore, an understanding of what it means to be a critical thinker in the academic arena needs to be introduced early on so that all students have a base understanding that can be further developed.

When asked how the students believe they may use critical thinking skills as a student, the responses ranged from being more informed, gaining a deeper understanding of the material presented to making better judgement calls, and having different perspectives. Some students also recognised that they will use critical thinking with their academic writing and when using research skills. One even felt that it would advantage them as they go into the outside world. The responses demonstrated awareness of how critical thinking could benefit them as students; however, nothing was mentioned about the actual skills involved when using critical thinking and how it could be applied to their journey as a student.

Students were presented with an article from YourNewsWire.com on 25 January 2018 (see Figure 2) with questions posed around it.

|  |
| --- |
| ***Justin Timberlake: ‘Mandatory Vaccination Schedules Are Un-American’***  “*The whole concept of mandatory vaccination schedules is un-American*,” according to Justin Timberlake, who says “*Why risk damaging your precious child for the sake of the herd?*”  “*Take care of your own child. That is your duty. That is your God given right,”* said Justin Timberlake, while readying himself for his long-awaited Super Bowl Halftime show appearance*.*  *“If everyone took care of their own children, we wouldn’t have to worry about taking care of the herd, or making anything mandatory, or any of that communist stuff.*”  “*I’d also like to know*,” continued the Cry Me A River hit-maker, “*why a child who has been ‘immunized’ is not actually immune to the disease… Why are these kids always catching the very disease they are supposedly immune to?… and they spread these diseases too…”*  “*And yet sanctimonious parents of immunized kids, they get on their soap box and say my unvaccinated child is a threat to their child? Get a grip already. Isn’t your child supposed to be immune?”* |

*Figure 2*. Mandatory Vaccination Schedules

Firstly, students were asked whether they felt it was a balanced article and if this should be important. The majority of the students recognised the biased nature of the article with only one student stating that it was objective. This student also presented very weak responses in all areas indicating a lower level of academic ability. Overall, the students understood the importance of needing both sides of the story in order to substantiate the given text as an objective piece of writing and to provide a balanced argument. It was noted by a few that it was a one-sided argument that presented only the view of one person, in that “the article is one sided and I think with a topic such as immunisation it is important to have a balanced argument.”

When asked what they thought the purpose of the article was, there were mixed responses. About half of the respondents felt that it was a way for the actor to voice his opinion and share his beliefs. As one student stated: “This news article is a persuasive and reflective piece. It provides no actual facts just a singer’s biased opinion”. One felt that it allowed the reader to make their own decision based on another’s view. Others felt that the purpose was to stir up a response in the reader and some were personally affected. One student commented, “To enrage those who disagree with his statement and to evoke a response”. Another stated “To argue why we should vaccinate our kids when, even after being vaccinated are still not immune to the disease and that the whole idea of vaccinating our children is pointless”. However, most felt that the main objective of the article was to use the voice of a celebrity to push an agenda. For students to identify this, shows that they have a basic understanding and are able to use critical thinking skills; yet, the emotive responses throughout indicates that some students were not able to remove their own feelings from the topic.

The article presented a one sided view of immunisation and the students were asked how impartial they felt over this emotive issue. The range of responses was diverse, with only two stating they were very impartial on this topic. Five felt that they needed more information to make a judgement call but were willing to listen to another’s point of view. One student presented a clear and open minded response saying “It is thought provoking his accusations and it makes me want to know more details. In being in Steps I look forward to learning how to research topics such as this and being able to identify real facts opposed to personal opinions”. However, eight still held very strong views on this topic and found that this opinion piece just made them more inclined to stick to their belief. “I hear what he is saying, but with no evidence to back it up, it won’t influence me, even if he is a big star. I already had strong views about vaccinations so it is a hard decision for me,” said one student. As one stated, “I do not think I am impartial. I feel like this subject for me hits me hard. I already have a strong opinion about the matter”.

When asked whether enough evidence had been provided to back up the argument, only one said yes, though this student’s responses demonstrated low levels of critical thinking throughout the survey. The remainder all stated that there was no evidence provided and that it was purely an opinion being stated with insufficient evidence. One student stated “There is no evidence, he stated that he has heard people complaining about it but it's purely hearsay and whether or not you as an individual believe and trust his argument without any further research”. Another highlighted that this point of view comes “from a privileged and affluent perspective as he says [article]-Take care of your own child. That is your duty”.

Students were asked whether they felt that YourNewsWire.com was a reliable source. Overwhelmingly, all the students identified that this site was not a reliable source of information and there was insufficient evidence to back up the opinion stated by the celebrity and that it was a purely an opinion piece designed to solicit a response from the reader. A few actually took the time to review the site and this confirmed their reservations about its validity and credibility.

# **Discussion**

The students responding to this survey have a certain level of motivation to start this course and complete the task assigned to them. However, this does not indicate whether this initial motivation can be aligned to what Ennis (1985) and Facione (2000) claim is the disposition to think critically. As identified, the *ability* to think critically is distinct from the *disposition* to do so (Ennis, 1985; Facione, 2000). It is hoped that through this project, the participating students’ ability and disposition to engage in deeper levels of critical thinking will strengthen and this will be evidenced through their propensity to seek reason and a newfound desire to be well-informed and develop respect for diverse viewpoints. The disposition to think critically has been defined by Facione (2000, p. 65) as the “consistent internal motivation to engage problems and make decisions by using critical thinking”.

When referring to Willingham’s (2008, p. 21) definition of critical thinking—“seeing both sides of an issue, being open to new evidence that dis-confirms your ideas, reasoning dispassionately, demanding that claims be backed by evidence, deducing and inferring conclusions from available facts, solving problems”— there is insufficient evidence within this portion of the project to conclusively state what level of critical thinking these students are currently displaying. The initial claim for critical thinking involving the ability to see both sides of an issue was one element lacking within the responses, with most students presenting an emotive response and unwilling to disconfirm their personal views on the matter. Additionally, the findings indicate that although the students show a base level understanding of critical thinking and applying it to a situation, many are not able to reason dispassionately, linking their argument to their own personal opinions. However, one aspect that they excelled in was identifying that there was insufficient evidence to back up the argument and identifying that only one side had been presented. The article presented did not allow for students to deduce and present a conclusion from the facts presented as the main goal was to investigate their initial level of critical thinking ability as they begin their foray into higher education.

# **Conclusion**

This paper shares the preliminary findings from a research project investigating critical thinking. The data from this paper was drawn from an initial survey that was completed prior to students starting their first term of study alongside a graded synopsis that identified their individual level of critical thinking. Data was analysed using thematic analysis and key themes identified. The participants in this study completed a standardised critical thinking test that focused on their perceptions of being a critical thinker alongside their skill in using higher level thinking. Their conceptions of what critical thinking meant to them as a student identified that the majority recognised its importance in making better informed decisions while a few did not. When asked how they expected to apply critical thinking within the unit, students believed it would involve making more informed judgment calls and decision making. What was highlighted by its absence was that there were no responses around the actual skill of using critical thinking and how it could be applied to their journey as a student. When students reviewed a short excerpt about vaccinations, some demonstrated a solid ability to critically reflect while others found it difficult to remove their own feelings from the topic. These initial findings indicated that, although the students demonstrated a basic understanding around critical thinking, there was still room for further development in how to enhance and apply these skills.

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