



Fostering critical thinking dispositions in higher education: A process-driven curriculum model

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Abstract

When students come to study at Australian universities from other countries, they often bring with them experiences that can be vastly different to dominant epistemological and ontological frameworks manifest in Australia. It may be difficult for them to adjust to these dominant epistemological and ontological frameworks particularly if their formal educational backgrounds did not provide them with opportunities to engage in in-depth critical thinking (CT), which is foundational in Australian higher education. This paper therefore examines the way in which international students may be disposed towards engaging in CT in higher education settings. Five interviews were conducted with students enrolled in an in-sessional EAP program at one Australian university. Students were asked questions related to their family, cultural, linguistic, and educational backgrounds, their understanding of CT, their confidence using it in academic contexts, and their perceptions of the impact of AI on their ability to think critically. The RICA CT curriculum model, which is based on dialogic theory and informed by these students' narratives, is then presented. This model utilises a sequential iterative design to help students build confidence using CT, thus enabling them to better apply CT skills in their academic activities.

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Introduction

International students are drawn to anglophone countries such as Australia for a variety of reasons. These include being able to speak English fluently, securing lucrative and personally rewarding work, and navigating possible pathways to permanent migration, all of which make the high cost of tuition and living worth the investment. In Australia, international education is the largest export ‘industry’ and has contributed between \$22–40 billion annually over the last five years (Steele et al., 2024) despite the threat of global pandemics and political uncertainties. International students have been unfairly referred to as ‘cash cows’ in the media (e.g. Cassidy, 2024) because of their significant contribution to the national economy. However, as a nation, Australia (and many other anglophone countries) is missing out on the immense potential contributions that international students can make to academic discourse (Tibbets & Chapman, 2023).

To utilise the full potential of this richer, more vibrant academic discourse, it is argued here that universities not only need to provide language support but also support the development of confidence to express their own ideas based on their own diverse lived experiences and critically analyse those experiences through that discourse. In terms of providing second language support, this is obviously targeted towards second language learners, but that is not to say that there is a deficit of critical thinking (CT) or of thinking skills generally. CT skills are already taught and embedded in the learning and teaching done in universities around Australia and many other countries. It is argued here though, that there needs to be more support for the development and nurture of dispositions towards engaging in CT, especially for students who, through their educational background, have not been encouraged to utilise CT. CT is essential for individual academic success at university, as demonstrated on all Australian university websites and embedded within unit outlines. Moreover, the richer discourse created through inclusive academic debate also greatly benefits international students as they are more disposed towards finding and expressing their identities within it, and it also benefits the academic culture of universities more broadly.

Research questions

This study seeks to address the following questions: How do international students at Australian universities perceive the significance of CT and how confident do they feel engaging in it, especially when evaluating different perspectives to take a considered stance on a particular topic? This is an important question because being disposed towards thinking critically and exhibiting the confidence to use it will determine these students’ academic success and ultimate transition into their chosen professions.

Another key question this study seeks to address is how curriculum can help students build confidence. Based on Dialogic Space Theory and qualitative data from interviews with international students, the RICA Critical Thinking Disposition model is presented below. Through its process-driven (rather than outcome-driven) approach, this model is designed to

encourage international students to become more confident in expressing their ideas and thereby develop habits and dispositions towards CT.

This study aimed to explore how international students studying in Australia experience CT from their perspectives and to subsequently develop a curricular framework to support both international students and in-sessional EAP practitioners working within student support service contexts in Australian universities. Recognising that a one-size-fits-all approach is inadequate, the framework integrates pedagogical insights grounded in the literature and promotes the co-construction of knowledge, skills, and dispositions by both teachers and students.

Literature review

CT is considered an essential part of education, and research demonstrates that international students who travel to countries such as Australia to undertake degree programs tend to find it very challenging to develop academic literacies, including CT for academic purposes (Maldoni, 2018; Wingate, 2015; Steele et al., 2024), and this may be especially true if they have come from countries where CT is not utilised in educational contexts in the same way or to the same extent (Jaffar, 2025). This is not to say that CT is not utilised in non-academic settings because it invariably is (Wu, 2023) as demonstrated through general life decisions that people make daily. However, to contribute to and participate meaningfully in academic discourse, international students, who predominantly come from countries that have very different education systems and implement very different ways of thinking and learning, may very quickly need to adapt to a substantially different academic culture (Tomlins, 2026). The importance of CT is amplified with Artificial Intelligence (AI) being made more accessible, but also subject to inaccuracy. With this burgeoning proliferation, teaching to improve students' ability to think critically is more vital than it has ever been and needs to be maintained as the core business of university teaching (Papanephytous & Nicolaou, 2025; Ruiz-Rojas et al., 2025; Walter, 2024).

There are many definitions of CT in the literature (e.g., Atkinson, 1997; Breeze, 2017; Dewey, 1910; Halpern, 2014; McCuen, 2023; Rear, 2017; White, 2021) making it a rather abstract concept. Davies and Barnett (2015) note that most definitions have three main elements: dispositions, skills, and critical pedagogy. An exhaustive and what was heralded as an 'authoritative' definition was composed by forty-six academics considered expert in the area in 1990. It considered CT as "purposeful, self-regulatory judgement that results in interpretation, analysis, evaluation and inference as well as explanation of the evidential, conceptual, methodological, criteriological or contextual considerations upon which that judgment is based..." (Facione, 1990, p. 2). Absent from this definition was any reference to a diversity of cultural traditions and ideologies, and it is notable that all members of the panel came from North American backgrounds. A plethora of studies investigate these aspects of CT, many of which espouse more culturally nuanced views of CT (e.g. Floyd, 2011; Karakuş, 2024;

Li, 2020; Sanjakdar & Apple, 2024; Teo, 2024). Nevertheless, traditional notions continue to pervade as Steele et al. (2024) point out, which may in part be because the deficit discourse referred to above being amplified by neoliberalist values within higher education systems. Steele et al. (2024) assert that the teaching and learning within these systems has evolved to create an environment where human values can be seen as measurable economic units. Troiani and Dutson (2021) similarly contend that teaching and learning has become auditable, and the process of thinking and working has become rushed to accord with economic efficiencies.

Some researchers (e.g. Manalo & Sheppard, 2016; Paton, 2005) argue that when demonstrating language output skills, it is not learners' ability to think critically that is lacking, but that their language skills need to be developed further. Other researchers (e.g. Jones & Richards, 2015; Li, 2020) contend that there are areas of both language and CT that need addressing, but this can sometimes foster a deficit discourse that is popular even though it remains a very complex issue. Tibbets and Chapman (2023) discuss the notion of a deficit discourse in the context of EAP, noting that specific student cohorts can be targeted where they are considered 'deficient' in certain essential skills that are often language oriented. While there will invariably be a correlation between English proficiency and CT in terms of an ability to express one's thinking, careful consideration is needed to avoid this deficit discourse. Manalo and Sheppard (2016) note that international students studying in anglophone countries who lack the adequate English proficiency to read and comprehend academic texts, which would be considered an *academic task*, may also demonstrate a low level of confidence or self-efficacy for engaging in *CT tasks* such as analysing, evaluating, and synthesising ideas to create cogent arguments.

Bandura (1986, p. 391) defines self-efficacy as "people's judgements of their capabilities to organise and execute courses of action required to attain designated types of performances". Usher and Schunk (2018) argue that self-efficacy can determine the extent to which an individual who is motivated to be self-regulated, and that those who have faith in their own efficacy, in other words, those who are self-confident, are likely to continue to struggle with activities such as evaluating and synthesising ideas in the process of constructing an academic argument for something even when encountering adversity. Conversely, those who doubt themselves are more likely to shy away when faced with challenges such as a feeling that they are not proficient enough using English as the medium of instruction.

Within an academic context, Kidd (2016) considers a confident person to be someone who has a measure of 'assumptive capability', and he contends that confidence in the context of CT is often thought of as being based on a foundation of 'intellectual humility'. Fabio and Suriano (2025, p. 1) refer to this as "the ability to accept one's cognitive limitations while maintaining a willingness to update one's beliefs based on new evidence". Intellectual humility is considered an epistemic virtue that frames the student as an enthusiastic learner rather than a moral one that frames the student as being of good character. Possessing it allows students to espouse their convictions with confidence while being receptive of alternative perspectives (Krumei-Mancuso and Rouse, 2016). Pritchard (2020) considers the encouragement of confidence in oneself to be a significant function of education generally, and it would therefore follow that a lack of self-confidence may be manifest in an L1 English speaker as easily as it

may be in an L2 English speaker. Linguistic competence is still a significant factor because a confident ability to express oneself obviously includes an ability to articulate one's perspectives on a particular topic, but so too is the confidence in oneself to firmly commit to those perspectives.

Methods and data analysis

In this study, five international student participants (one from Mongolia, one from India, one from Myanmar, and two from South Korea) were interviewed at one Australian university from March to June 2025. They were interviewed about their confidence level and ability to use various skills required for their academic studies, such as analysis and evaluation. Within a social constructivist lens, the study aimed to highlight the role students (in this case, international students) should play in curriculum development and give prominence to their voices.

The students interviewed were enrolled in the International Student English Program (ISEP), which is a voluntary, non-credit bearing, in-sessional EAP development program delivered during each semester at one Australian university. ISEP is designed for international students who are already enrolled in their chosen university degrees to help boost their language and meta-cognitive skills. All international students for whom English is a second language, whether they be undergraduate, postgraduate coursework or higher degree by research candidates, are welcome to participate in the program in the interests of inclusive practice. The program therefore focuses on in-sessional EAP that is subject/discipline-specific, as opposed to pre-sessional EAP that is taught in pre-tertiary university entry programs (Hyland, 2016). Whereas most in-sessional EAP is manifested through a student support approach where students have short one-on-one appointments (Tibbetts & Chapman, 2023), ISEP also utilises a student development approach as advocated by Dyson and Ramia (2024) which gives students more time to learn.

ISEP incorporates a personalised learning framework, meaning that learning is customised to individual needs (Fake, 2023; Gunawardena et al., 2024), based on Kim's (2023) Personalised English Language Enhancement (PELE) model. Each student is required to create a short-term measurable goal that can be achieved during the six-week course, and they are assigned pre-service TESOL teachers who work with small groups to provide appropriate resources and support to achieve them. The curriculum focus is therefore student-driven because they determine what language skills they want to learn based on their specific interests and needs. Although there is no specific language syllabus content, resources are created and built up iteratively by the pre-service teachers to cater to these interests and needs. Although ISEP is a language development program, many students who enrol in it report having trouble thinking critically in the Australian academic context.

Interviews were semi-structured and conducted face to face. Participants were not limited to a particular cohort (undergraduate, postgraduate, or research) because it was not considered relevant which cohort they belonged to; it was considered enough of a justification that they had expressed a need to improve their English. They were asked about their family, cultural, linguistic, and educational backgrounds, their understanding of CT, their courage to engage in certain activities such as asking probing questions and problem-solving, and any processes or strategies they use to help them think critically. They were also asked about their use of AI platforms, such as ChatGPT, given their current predominance in higher education (Papaneophytou & Niccolaou, 2025; Ruiz-Rojas et al., 2024). Questions about CT were mainly focused on students' dispositions towards using CT (demonstrating a desire to engage in CT) rather than their proficiency in using the skills because student perceptions and attitudes towards CT were of primary interest. The interview questions used can be found in the Appendix.

In line with the socio-cultural interpretivist paradigm (Johnson & Christenson, 2020) and the focus on students' understandings, critical discourse analysis was utilised to incorporate students' sense of identity and ideological stance (Fairclough, 2001; Hyland, 2023; Paltridge, 2022). To achieve the overarching aim of developing a curriculum framework, it was considered essential to incorporate student voices, and these voices are expanded upon in the following section.

As part of the PhD study which utilises an iterative design-based research approach (McKenney & Reeves, 2018) and based on an extensive literature review, a draft of the RICA (Reflection, Inquiry, Collaboration, Application) model was created before the student interviews were conducted. The qualitative data, which are discussed below, were then used to calibrate the model to international student experience with CT at this university, thereby aligning it with socially constructed bottom-up curriculum design (Goodson, 1991; Zhu et al., 2021). Although the initial dataset reported here was small, it generated an abundant richness of international students' lived experiences that mostly validated the model. It was found from this data that certain elements of the model were more important than others, and this is detailed below. Because it is iterative and broad enough to accommodate change while maintaining its structural integrity, the model and any curriculum based on it is designed to be flexible and adaptive to student needs.

The three themes identified below were derived inductively from the students' responses to the interview questions. The highly conversational nature of the interviews was intended to create a "safe space" so that students would feel comfortable engaging in honest and comprehensive discussions. CDA was used to capture their voices and then incorporate them into the development of the RICA model, particularly in the reflection stage discussed below. For example, the richness of students' reflections during the interviews demonstrated the need for a strong emphasis on self-reflection in the curriculum.

Results

This section presents data collected from the interviews addressing three broad areas that participants were asked about: their family and educational background, their understanding of CT, and how confident they felt using it, and their attitudes toward the impact of artificial intelligence (AI) on thinking. These areas are important because they inform the development of the RICA model and CT dispositions. Students' family and educational backgrounds may provide valuable context underpinning their confidence to engage in CT, and this in turn may cause students to conceptualise it in certain ways. Overuse of AI for academic activities may also adversely influence a student's ability to think critically.

Family, broader social and educational background

The impact of family background on individuals' exposure to CT not only in an academic context but also in a 'life' context was significant. Three of the interviewees were able to draw a connection between their family backgrounds and their attitudes towards using CT for academic purposes in both their home country education and Australian university settings. Regarding family, the predominant notion that one must follow culturally prescribed norms and values was not always applicable. For example, one of the interviewees (I5), a female Bachelor student from South Korea, asserted that "if there is like son and daughter [in the family], they are mostly focused on like sons' education rather than daughter. But it is previous culture and now it's all changing." This indicates that because she grew up in a family where her parents paid significant attention to their daughters' education, she was able to prosper in school despite living in a culture which she said valued boys' education more highly than girls' education. This student also noted "I think like I was told to take responsibility, when I like take action or choose something. I think it is from primary school" demonstrating that her father, though loving and supportive, was quite strict and required his daughters to take responsibility for the choices that they made. She noted that while she was given the freedom to make choices, she had to exercise that freedom wisely and critically analyse any possible eventualities of the choices she made. This also made her family in her words "quite independent" from what she considered to be the typical South Korean family to be, and her family life created a foundation from which she could prosper in her schooling. It gave her a grounding to nurture a disposition towards CT in her native language.

Another interviewee (I1), a female PhD student from Mongolia, also pointed to her family as a foundation for her attitude towards learning, noting that she came from a family line of teachers and educators:

And then my grandfather and grandmother, they were teachers who graduated from the same university I graduated. And then my mom and my dad, they met first time at that teacher's university, so they are teachers actually. My mom worked as a teacher for a secondary school almost, like ... 30 years. So, like a lot of teachers then. I'm actually, I was the fourth-generation teacher.

Both I5 and I1 stated that their favourable family situations allowed them more freedom than what they considered was the cultural norm in their respective countries. These students' family backgrounds operated as a bubble or a layer of protection within which they were able to think freely and construct their own perspectives. This was one major characteristic of what they identified as integral parts of CT when asked to define it (refer to the section below on understandings of CT). However, I4 (a male bachelor student who, like I5, is from South Korea) mentioned a lack of freedom, especially regarding social relationships outside family life. He noted that "working in Korea was very hard because of human relationship" and "we use kind of honorific words to older person [and] it's quite difficult to be friend" because communication in this social context is more formal, rigid, and difficult. Thus, it was evident through I4's narrative that rigid communication resulted in this lack of freedom, which then affects CT in the sense that CT should be liberating and not restrictive.

Asking each student about their backgrounds – specifically about family, education, language, and culture – produced rich conversations showcasing lived experiences that carried with them strong personal associations, and this was used as the first stage (*Reflect*) of the RICA model, upon which the other stages (*Inquire*, *Collaborate*, and *Apply*) are based. Students' lived experiences and backgrounds are also key influencers in terms of their understandings of CT and their confidence level in using it.

Understandings of CT and level of confidence using it

There are two interrelated parts to this theme in the sense that confidence in doing something can be based on one's understanding of it. When asked to define CT, a common theme of considering different perspectives was identified. For example, I1 noted that "it's like more about seeing the certain aspect from trying to see it from the different perspectives, like, from the different angles. So, it's not just from my side. It could be looked like different from the other side." I2 (a male Bachelor student from India) also referred to different perspectives, noting their manifestation through the exchange of ideas during conversation and attributing this conversation to the production of logic: "So, this makes like the conversation or whatever you can call, like if we are trying to exchange ... any idea that makes healthier or, uh, logical conversation, the way of conversation [will be] more logical." This was also mentioned by I3 (an aspiring female PhD student from Myanmar):

I think critical thinking is, um, uh, capacity of, uh, thinking. And for each person ... thinking about one subject or one [set of] facts. At that time, there are many point of view, uh, positive or negative, or agree or disagree for this part.

Here, I2 and I3 refer to a dialogic notion of how CT operates, with I2 describing it as a *conversation* that will be *more logical* and an *exchange of ideas*, and I3 mentioning *many points of view at one time* flowing simultaneously. This is a prominent feature of Bakhtin's (1990) Dialogic Theory, which is the foundation upon which the RICA model is based. However, I4 states that he is "not familiar with critical thinking because ... in Korea, we don't focus on [it] in like elementary, middle [and] high school" and that "we don't have the kind of opportunity

to learn and assess critical thinking”. Related to this, I5 discussed in depth the differences between the way people are encouraged to think in South Korea and Australia, noting that:

...in South Korea, we always have one predominant answer for the question, but in Australia I feel like there is no one answer, not one predominant answer for the questions. Even if there is like at the best or it is reasonable or something like that, it can be answered. It is quite different to [South Korea].

I5’s use of the word *predominant* here (which she repeats twice in the sentence) suggests the presence of hegemonic, ideologically dominant notions that are perhaps partially alleviated through the dialogic approach taken in the Australian higher education context where “there is no one answer”.

The complementary nature of these responses (examining different perspectives through conversation and discourse) suggests that students are keenly aware of differences in ways of thinking. When discussing her confidence to extend her thinking beyond the information she was absorbing, I1 also highlighted cultural differences, stating “we were from that culture, like this is right, this is wrong, and we were taught in that way”. Underpinning the RICA model, this denotes Bakhtin’s (1984, 1990) concept of a *homophonic* construct, where there is one voice, rather than a *polyphonic* construct where many voices are heard. I1 exemplified this point when she stated, “our voice was not there ... but now its changed”, indicating that she had to undergo a process of changing her mindset.

When asked about their engagement in certain CT activities such as analysing and evaluating sources, participant responses varied. Some noted that they were not confident that their analytical or problem-solving skills were sufficient for their studies, while others were very confident. Others identified stepping out of their *comfort zones* as a challenge, by which they meant communicating in English (and thereby being able to use English to express their thoughts) not being comfortable for them. I1, for example, acknowledged that she had to challenge herself but noted that “of course it’s, it’s not comfort, you know, like because I’m stepping out of my comfort zone”. I4 (a male bachelor student from South Korea) referred to this too, noting that when he steps out of his comfort zone too much where he finds himself in “English-only” contexts, he often feels stressed. This may indicate a need for a process-driven (rather than an outcomes-driven) CT disposition curriculum approach to fill the gap. It is not that students lack the knowledge to apply CT skills because they are taught these skills and practice them when completing assessment tasks in their coursework; rather, the variance in their responses here highlights a lack of confidence to do so which impacts their dispositions towards engaging in CT.

Attitudes towards AI and the impact on CT

Participants had a variety of opinions about the use of AI and its impact on them generally, and in terms of their engagement with CT. Some of the questions they were asked related to their general use of AI and their use of it for educational purposes. A common response was that it

was used as a tool to help answer questions, to find information, to translate from the L1 to English, and to correct grammar. It was also noted by several of the students that they use it more frequently than more traditional search engines like Google. I1, for example stated that she “used Google [before], but these days it’s easy for me to ask ChatGPT, like some Google-like information, but not academic of course”. Like others, she also stated that she used ChatGPT to correct her grammar because “that was easy, and it was saving time for me” but noted a certain reticence to accept what ChatGPT was producing: “still I was thinking maybe just I have to check just one more time. And then there was a feeling like, oh, I could have done this work just on myself if I had time”. I4 stated that, “when I want to ask a question about English, normally in English I always ask to ChatGPT” and considered this a definite advantage, but also that he did not always trust the information that the platform was generating: “sometimes they lie, it lies. With 70%, I need to cross check.” I5 agreed, noting that it “cannot give me the reliable knowledge”. Interestingly, an over-reliance on it affecting people’s ability to think for themselves was also identified. I3 reacted negatively towards the use of any AI at all, stating “when I use the AI, uh, answer is not, uh, how to say, it's not useful ... and I don’t want to waste time.”

The participants’ responses varied in terms of using it as a knowledge resource to help answer content questions. I2 referred to this by comparing AI to what he perceives the role of a teacher to be: “So you can consider AI as teacher, which has got multiple information. But how are we using? Teacher is not going to write answer for you. Yeah, just he is going to help you.” He goes on to state that “if you're not using an ethical way, if you're relying on AI, then AI is really not good” and “...without putting your own brain, if you're just saying, ‘Okay, I'm going to take help of AI’. Definitely AI will do, but what your brain is doing. You're not doing anything for yourself”. This correlation between AI and ethicality is interesting because it shows that this student is thinking about this despite admitting to using AI to source information for his learning. His views accord with Papaneophytou and Nicolaou (2025) who argue that while AI creates new potential and ways of doing things that were not previously considered possible, it is important for those involved in higher education (academics and students) to critically evaluate ideas and information that are generated by AI. They further argue that the role universities play in nurturing a culture of CT should equip students to productively and ethically utilise AI technologies, thus ensuring that CT has an impact on AI rather than the other way around.

Implications

The general themes reported above suggest that CT dispositions need to be addressed in higher education. It is argued here that this can be most effectively achieved through curriculum development in in-sessional EAP programs like ISEP while students are actively engaged in learning their disciplines. The RICA model is therefore posited in this section as a starting point for curriculum development.

Theoretical underpinnings of the RICA model

Based on Bakhtin's (Bakhtin & Holquist, 1990) dialogic theory and the notion of *dialogic space* (Wegerif, 2018), the RICA model is designed to help students develop CT dispositions by incorporating confidence and the habit of thinking critically in their academic endeavours. Through the process of academic discourse, it uses Barnett's (2015) notion of critical being, taking the learner on a journey of self and knowledge discovery that they can use to affect solutions to real-world problems in discipline-specific contexts. The model (shown in Figure 1) is also informed by the students' voices who were interviewed in this study and is designed to address many of the concerns raised by these students through its implementation.

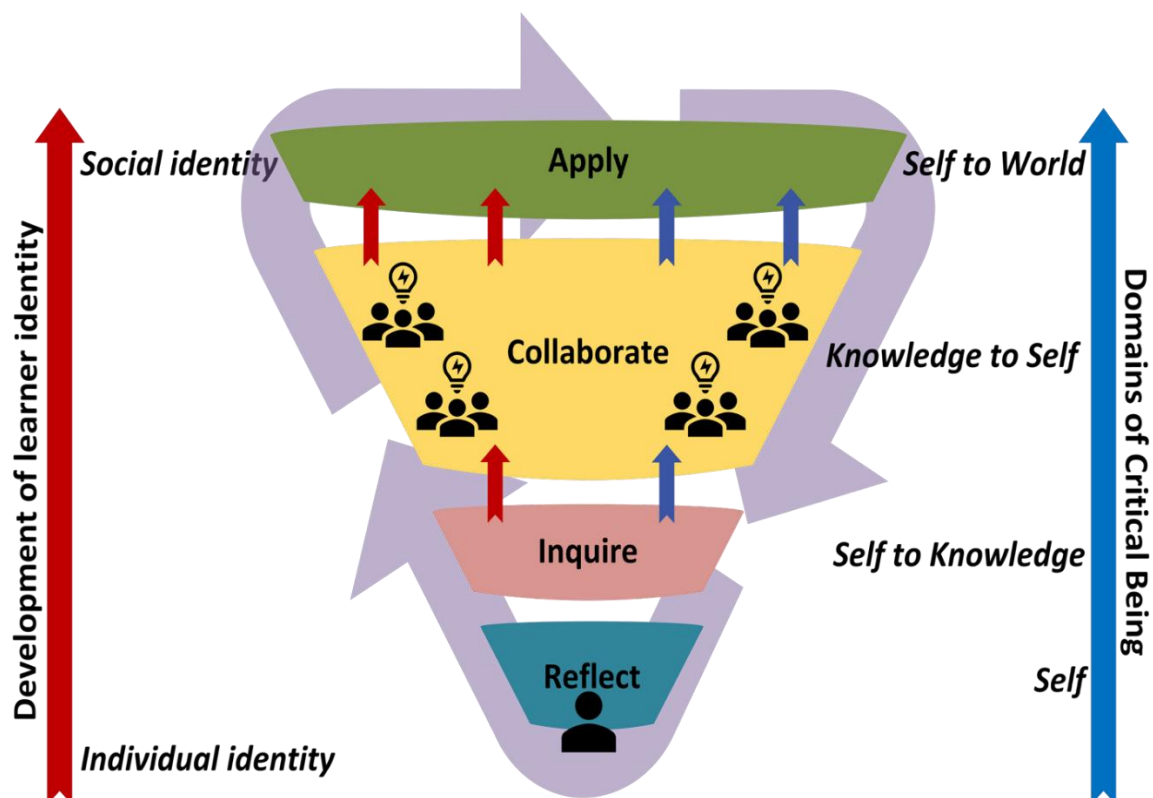


Figure 1. The RICA Critical Thinking Disposition Model.

Dialogism and dialogic space

Skidmore (2019) defines dialogism as “a philosophy of language which places central importance on the reality of socio-verbal interaction in understanding the kind of phenomenon that language is” (p. 27). Predominantly coming from the work of Mikhail Bakhtin (1895–1975), it views language as an instrument used for communication and incorporates notions of *addressivity*, or “the quality of turning to someone” and “a constitutive feature of the utterance” (Bakhtin, 1987, p. 99), *semantic permeability*, or “the social diversity of speech types” (Bakhtin, 1990, pp. 262–263), and *voicing*, incorporating the notion of polyphony or many individual voices, which Bakhtin refers to as “a plurality of independent and unmerged voices

and consciousnesses” (p. 6). In other words, dialogism encourages the articulation and generation of ideas through dialogue, and it is therefore a theoretical framework that allows our international students’ voices to be heard, no matter where they come from. While the RICA framework assumes that students speak fluently with appropriate vocabulary and grammatical knowledge to enable them to articulate their ideas, it is intended to work in tandem with curricula designed to improve speaking fluency. If students can build confidence using CT while also building speaking fluency (rather than first building speaking fluency and then addressing CT), they will feel more confident to contribute to academic discourse. They can also test others’ ideas through their use of CT.

Accordingly, students are expected not simply to be the recipients of information transmitted to them through their lecturers or learning resources, as mentioned by some of the interviewees above. They are expected to absorb and process information, and then subsequently shape and create new knowledge (Basturkmen, 2016) for which they need to exercise CT. Students are required to assume an active role in being responsible for their own learning, and therefore need to be afforded opportunities to engage in academic discourse (Alexander, 2020; Basturkmen, 2016; Carter, 2015). Developing the confidence to independently shape what they learn from literature in ways that relate to them (from their lived experience, for example) and then creating new knowledge is where the RICA model is intended to step in. One of the key objectives of the RICA model is to facilitate this progression from information gathering to critical and creative thinking about this information.

Wegerif (2018) advocates the notion of a *dialogic space* to encourage this type of learning, arguing that knowledge is a socially constructed activity that integrates and intertwines multifarious perspectives and worldviews through discussion. He relates this intertwinement with the concept of entanglement in quantum theory when two or more particles interact with each other in such a way that each particle cannot be considered singularly, but as a fragment of something larger in the sense that ideas in dialogue also become intertwined. The word dialogic itself means considering and understanding concepts from alternative perspectives, in contrast to the word monologic, which means considering only one perspective. Three of the five international students interviewed for this study directly mentioned this dichotomy (as quoted above) or at least alluded to it when referring to the differences between Australia and their native countries in terms of their respective education systems. Using dialogic theory and this concept of dialogic space and applying it to a framework to develop CT dispositions could help transform cultural differences between styles of learning into cultural integration through academic discourse if implemented with a pedagogy that embraces cultural diversity. This in turn would transform a situation where a deficit discourse may exist with students being acculturated into a particular academic tradition to an assets-based discourse that perceives the ideas international students bring with them from their rich cultural heritages (Collins, 2018; Lin, 2020; Steele et al., 2024; Wingate, 2015).

Elements of the RICA model

The inverted pyramid

The inverted pyramid in the centre of the diagram demonstrates how a process-driven, ecological curriculum can be structured, and how a schema can be used by teachers to guide students towards embodying CT in the sense of them discovering a deeper knowledge of something that interests them, having an inquiry mindset, and being creative (Thorgeirsdottir & Haraldsdottir, 2024). The model does not assume that students do not have these qualities, but that they may not be confident to embody these qualities within an Australian higher education context. The four stages (*Reflect*, *Inquire*, *Collaborate*, and *Apply* – hence the acronym RICA) are presented in the model linearly, but the model is not designed or intended to be reductive, and flexibility to allow learners to revisit earlier stages is a significant feature of this model. Indeed, it is expected that they will invariably do so.

As a foundation from which to start in this model, learners begin from a position of self-reflection on their individual lived experiences. Before they can move on, they must first practice being reflective thinkers. This is the first stage of the inverted pyramid: the **Reflect stage**. Reflective thinking involves exploring one's own sense of identity to develop new understandings (Rodgers, 2002), and it is therefore particular to the individual and applicable to a particular learning interest and discipline. Normile (2024) argues that critical thinking is reliant on *critical being*, described as a convergence of critical reasoning, critical self-reflection, and critical action (Barnett, 2015), and that critical being is in turn reliant on a more general sense of *being* akin to self identity and self expression. What students (and people generally) are likely to reflect on most is what identifies them, and what is familiar to them. This is why the questioning and the resulting discussion relating to family, cultural, and educational background in the interviews was so vital to this study. Interviewees were easily able to discuss who they were and where they came from, and they felt quite comfortable and confident to do so. As an extension to reflecting on identity, active engagement in self-reflection is also required for an individual to engage in a critical examination of a particular academic or worldly topic of interest. Barnett (2015) uses the term *reflexivity* (see Figure 2) to refer to this transition from reflecting on one's own identity to then reflecting on one's understanding of critical knowledge and flexibly adapting that understanding to the world around them.

Levels of criticality	Domains of critical being and forms of criticality		
	Self (critical self-reflection)	Knowledge (critical reason)	World (critical action)
1. Reflexivity	Self-reflection (reflection on one's own identity)	Critical thinking (reflection on one's understanding)	Reflexive practice (meta competence, adaptability, flexibility)
2. Critical skills	Self-monitoring to given standards and norms	Discipline-specific critical thinking skills	Problem-solving (means-end instrumentalism)
3. Refashioning of traditions	Development of self within traditions	Critical thought (malleable traditions of thought)	Mutual understanding and development of traditions

4. Transformatory critique	Reconstruction of self	Knowledge critique	Critique-in-action (collective reconstruction of world)
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Figure 2. Levels, domains, and forms of critical being (adapted from Barnett, 2015).

The next stage of the inverted pyramid in the **Inquire stage**. Once learners have a more conscious level of how their own sense of identity and lived experiences shape their understandings of both their particular academic disciplines and potentially more general areas of interest, they are able to expand their ideas through individual inquiry involving an examination of other's ideas and viewpoints found in literature. It cannot be assumed that students will be fully adept at finding relevant information, and researching skills may need to be taught or at least revised. Scaffolding notetaking (again, in the sense of making meaning, rather than simply deriving meaning) and explicitly teaching note-taking techniques, such as the Cornell method, will allow students agency to apply their own perspectives to what they are reading. In so doing, they can be encouraged to create an internal dialogue with the writer as proposed by Bahktin (1994), Gee (1990), and Wells (1999, 2002). This stage is therefore intended to strengthen students' confidence and willingness/desire to learn more about their discipline.

The application of dialogic theory is most noticeable in the **Collaborate stage**. In this stage, the student's internal dialogue is tested in open collaboration through an external dialogue with other students who will have similar discipline-specific interests. Wegerif's (2018) notions of entanglement (referred to above) and dialogic space will be applied here to help students develop and test their thinking as it builds on the individually sourced knowledge from the first two stages. To support this, unstructured thinking (unbound by linguistic correctness) will be encouraged to allow freedom and spontaneity. Students who have similar discipline interests will form small working groups in this stage, as represented in the model by the group icons. Through active group inquiry in discussion, it is intended that they will explore issues that they have been researching in their individual explorations.

Regarding language support within the model, there is an emphasis on English for Specific Academic Purposes. Hyland (2016) distinguishes between English for Specific Academic Purposes (ESAP) and English for General Academic Purposes (EGAP), where ESAP relates to English and academic literacy skills that are particularly useful in certain discipline-specific contexts and EGAP is concerned with academic English and literacy skills that are useful in all academic contexts and ESAP. Because the various disciplines employ specialist vocabulary banks that may not generally be used in other contexts, EGAP (generally taught in pre-sessional settings) would not provide the right level of support to the student cohort the RICA model is targeting. Different disciplines are likely to present information in different ways. A report written by a student on something related to health or information technology, for example, may utilise a more factually oriented writing style and structuring of ideas, whereas an essay written in a humanities subject may use a more interpretive style.

By encouraging CT dispositions using dialogic theory in this way, students are enabled to use CT and other academic literacy skills that they need in specific research contexts, as demonstrated through language output (speaking and writing) skills. This is represented by the **Application stage** in the inverted pyramid. By following the process shown in the inverted pyramid, students will be able to use English for both general and specific academic purposes. This is both a culmination of the RICA model (in the sense that the new knowledge has led to a significant student contribution to academic discourse) and a foundation upon which the whole process can begin.

The process-driven nature of the model and the relationship between the major elements listed above are reinforced through the arrows in the diagram. The whole process is dialogic, discursive, and progressive. The arrows between the Inquire and Collaborate stages in the inverted pyramid represent the progression from the internal dialogue between learners, their lived experiences, and the knowledge they are absorbing through literature to the external dialogue they are required to engage in through academic discussion with peers. The circular arrows around the inverted pyramid recognise that the progression from one stage to the next is iterative, and learners may revert to previous stages if required. For example, learners may access secondary knowledge through literature in the Inquire stage and then revert to the Reflect stage to consider and analyse whether (and if so, how) what has been discovered through the literature has affected their lived experience. In this sense, the learner is progressing from the reflect stage to the inquire stage and then progressing from the inquire stage back to the reflect stage, and this is not considered a regression to a previous stage because the learner is now reflecting on previous lived experience and on knowledge gathered through secondary source material. It highlights the importance of self-reflection in the critical thinking process.

The learner identity and critical being axes

The learner identity axis shows the psychological progression from the development of individual learner identity and self-confidence to synthesise new ideas and incorporate them into lived experiences to the development of social identity within academic discourse that fosters not only new information but also develops the learner's disposition towards learning and critical thinking about that information. However, while this is represented as a relatively straight-forward progression in the diagram, it is recognised that this may not be such a smooth progression because the learning process is rarely so smooth. Especially where confidence is concerned, learners will inevitably experience achievements and setbacks throughout this development. Learners will also inevitably encounter conflict in the process of this development, particularly where social interactions with peers and others are concerned in the collaboration stage.

The critical being axis incorporates Ronald Barnett's (2015) knowledge, the self, and the world domains, but reorganises these domains in a more interactive fashion rather than making each domain a separate entity. As can be seen in Figure 2, primacy is given to the self (critical self reflection), which then progresses to knowledge (critical reason), back to the self, and then to the world (critical action) in the RICA model, rather than being constructed as a linear

progression from knowledge to self to world as is portrayed by Barnett (2015). The rationale for this is that it would likely be more correct in the mind of the learner (psychologically) to reconstruct this as a progression from self to knowledge to world, as it is reflected in the RICA model. Self-reflection has been identified as an essential element of the thinking process and viewing the self first and knowledge as secondary to that allows the learner to personally interact with the knowledge they acquire. Therefore, knowledge is not just something that is taught in the classroom; it becomes acquired through that personal interaction. The knowledge domain, as it applies here to the RICA model, consists of both knowledge that is internally derived by the learner and knowledge that is socially constructed through social interactions that contribute to academic discourse on a given topic. Knowledge is seen as being constructed interpretations of sets of facts and truths in ways that are meaningful to the learner(s) rather than simply being sets of facts and truths as it is represented within Barnett's (2015) model.

Conclusion

The RICA model discussed above is important because it seeks to address an issue that has not received much attention (developing international students' CT dispositions in higher education settings in Australia), especially for those students who may not have been exposed to CT in the education systems of their home countries. Even those students who have been exposed to CT, such as some of the students interviewed for this study, may still find it difficult to engage in CT in the Australian context or in another country where English is used as the native language. Language is a barrier to this because students must be able to communicate their ideas in ways that can be understood by their colleagues around them, but so too are cultural differences and perceptions because new ways of thinking amplified within a different cultural context will likely be unfamiliar to these students to some degree. The emergence of new technologies such as AI can also impact CT depending on how they are used because, even as some of the interviewees in this study commented, they can make learning processes too easy. These technologies, if used unproductively and unethically, not only affect students' ability to use CT skills but also their dispositions towards using them.

The benefit of a process-driven curriculum model may be that it encourages students to develop their dispositions towards CT in the sense that dispositions are acquired over time. Introduced into an outcomes-driven higher education system where it is generally assumed that students should be able to use CT in their academic activities, the curriculum model is designed to complement learning while that learning is occurring (i.e., while students are enrolled in their degrees) to give greater prominence to the process of learning. Working through the stages of the model, from self-reflection to individual knowledge inquiry to collegial dialogic collaboration in discipline-specific contexts, the model is intended to support students in applying their ideas and their thinking about critical concepts to make the world a better place.

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Appendix A: Interview Questions

The following list of questions was taken from the semi-structured interviews conducted for this project. They are categorised according to the themes delineated in the results section. The average time taken for each interview was approximately 1 hour.

Family, broader social and educational background

1. I'd like you to tell me a little bit about yourself. Tell me about where you grew up, your family background, where you went to school, your favourite memories – that kind of thing.
2. Did you speak any other languages at home and/or at school?
3. What was your favourite subject at school?
4. How long have you been speaking English?
5. What motivated you to study in Australia?

Learning transition, understanding of critical thinking and confidence using it

6. Was it difficult making the transition from learning in {your home country's} setting to learning in an Australian setting?
7. Can you describe your way of thinking before you left {your country}?
8. Is the way you think here in your Australian learning context different to your way thinking in {your country}?
9. Can you tell me what you think critical thinking is?
10. Do you think critical thinking is important in education?
11. Do you like engaging in critical thinking activities?
12. Do you use one particular process to help you think critically?
13. How would you rate your confidence to:

- a. ask questions?
 - b. solve problems?
 - c. extend your thinking beyond what you read/listen to?
 - d. step out of your comfort example (e.g. using English)?
14. When you have the opportunity to engage with other people in academic debate and discussion, do you feel listened to?

CT and artificial intelligence

15. How do you feel about AI?
16. Do you use AI for educational purposes/uni work?
17. How do you think we should be using AI in education?
18. Do you think AI affects the quality of your thinking?
19. Do you think AI affects your ability to express your ideas the way you want to?

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