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Developing critical thinking in EAP: pathways for students



Li Li



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Executive Summary

- It is hard to define the concept of critical thinking, but we can identify a set of a 'good' thinking skills associated with it, such as reasoning, examining evidence and offering interpretations.
- Regarding the English for Academic Purposes (EAP) context, criticality involves analytical skills and critical thinking. Knowledge (especially about the discipline) is found to be strongly associated with critical thinking.
- Cultural practice and language proficiency have been identified as key factors influencing EAP learners' critical thinking skills – in addition to the fact that 'critical' thinking can often be misinterpreted as something negative.
- Critical thinking can be a challenge for many EAP students, as they have not likely had sufficient training in their prior learning experiences.
- Different approaches are proposed to enhance critical thinking. While a general approach treats critical thinking as an independent transferrable skill, the explicit and implicit approaches treat it as a disciplinary-specific skill. A mixed approach proves to be most effective.
- For students and teachers, Socratic questioning techniques, awareness of genre, using corpus analysis and collaborative work are all useful strategies to develop critical voice.
- When using a simulation/game-based approach, student language level and task complexity need to be taken into consideration.
- Teachers' training and support in fostering critical thinking is vitally important.
- Artificial intelligence (AI) has has the potential to significantly impact critical thinking skills in EAP. By carefully integrating AI tools into the learning process and emphasising the importance of critical engagement, learners can harness the benefits of AI while developing robust critical thinking skills that are essential for academic success.



Introduction

Demonstrating criticality, or critical thinking, is vital for success in academic work (Wallace & Wray, 2006). For a student studying at a university – or preparing for university – in addition to gaining sufficient discipline knowledge, they also need to develop a skill that enables them to evaluate information, solve problems and make informed decisions. (Woodward-Kron, 2002; Moore, 2013; Quinn et al., 2020; Shanta & Wells, 2022) and information. Such a skill is even more demanding in today's society as students live in an information-loaded era. Additionally, critical thinking is now considered a key skill required by many employers (Pithers & Soden, 2000). Its importance is further heightened due to the unique challenges and opportunities that artificial intelligence (AI) presents.

For these reasons, critical thinking, together with communication, creativity and collaboration, is considered a 21st-century skill, part of a widely recognised 4C framework. In fact, critical thinking perhaps plays a central and significant role in the other 3Cs, as there is a degree of criticality in all of them.

In highlighting the significance of critical thinking in EAP, Wilson (2016) argues that all EAP students 'need and deserve a curriculum for critical thinking, which prepares them for tertiary study in the new environment', which is especially true for L2 learners who enter 'a new culture of learning' (p.257).

However, developing such a skill is not easy, particularly for those who do not speak English as their first language. There are two prevailing, identified reasons: firstly, critical thinking is a western concept (Atkinson, 1997), which is deeply rooted in western culture. Those who grew up and were educated in other cultures might find this concept difficult to grasp because criticism is not strongly reflected in their own culture (Chan, Ho & Ku, 2011; Durkin, 2008). Secondly, many English as a foreign/second language (EFL/ESL) learners struggle with both general and academic English. Even if they do engage in critical thinking, it might be challenging for them to express their ideas clearly and precisely.

Nevertheless, as we understand, critical thinking is expected in higher education (Andrews, 2010) and, therefore, it is essential to understand some critical aspects of it. This paper intends to address the following questions:

- **What is critical thinking?**
- **Why is critical thinking important for learning English for academic purposes?**
- **What kinds of challenges are there for EAP students and teachers?**
- **What approaches can be used to teach or improve critical thinking?**
- **How can artificial intelligence foster critical thinking in EAP?**
- **What can teachers and students do to foster critical thinking?**

What is critical thinking?

Defining 'critical thinking' is an important first step in addressing these questions. However, this is an almost impossible task as there are so many different definitions, which each take different angles. Moreover, different disciplines have offered different understandings of, and interpretations for, the concept (Kennedy et al., 1991; Lewis & Smith, 1993).

Lipman (1988) argues critical thinking is 'skilful, responsible thinking that facilitates good judgement' (p.9). Such a thinking skill relies on criteria in making decisions and judgements and is sensitive to context.

Ennis (1996) defines critical thinking as 'reasonable, reflective thinking that is focused on deciding what to believe or do' (p.166). Such understanding is closely related to Dewey's reflective thinking, which is defined as 'active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it ends' (Dewey, 1910, p.2).

Bloom et al. (1956) established a renowned taxonomy that identifies six critical aspects of thinking in education: knowledge, comprehension, application, analysis, synthesis and evaluation. They proposed that the first three skills are lower order thinking skills; whereas analysis, synthesis and evaluation demonstrated higher order thinking skills, which are key components of critical thinking.

These aspects are still frequently and widely used by researchers, educators and curriculum developers, in critical thinking-based curriculum and assessment (Reece, 2002).

Despite the plethora of definitions of critical thinking, the concept remains 'elusive' (Davies & Barnett, 2015: 3). This said, Wegerif, Li & Kaufman (2015) argue that we should be able to recognise 'good' thinking and pay attention to the development of it in learning situations.

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Some key features of 'good' thinking are illustrated below:



Figure 1: Features of 'good' thinking skills

With regards to EAP, Pally (2001) suggests that critical thinking includes two key aspects, namely analytical thinking and critical thinking, with specific skills involved as shown below:

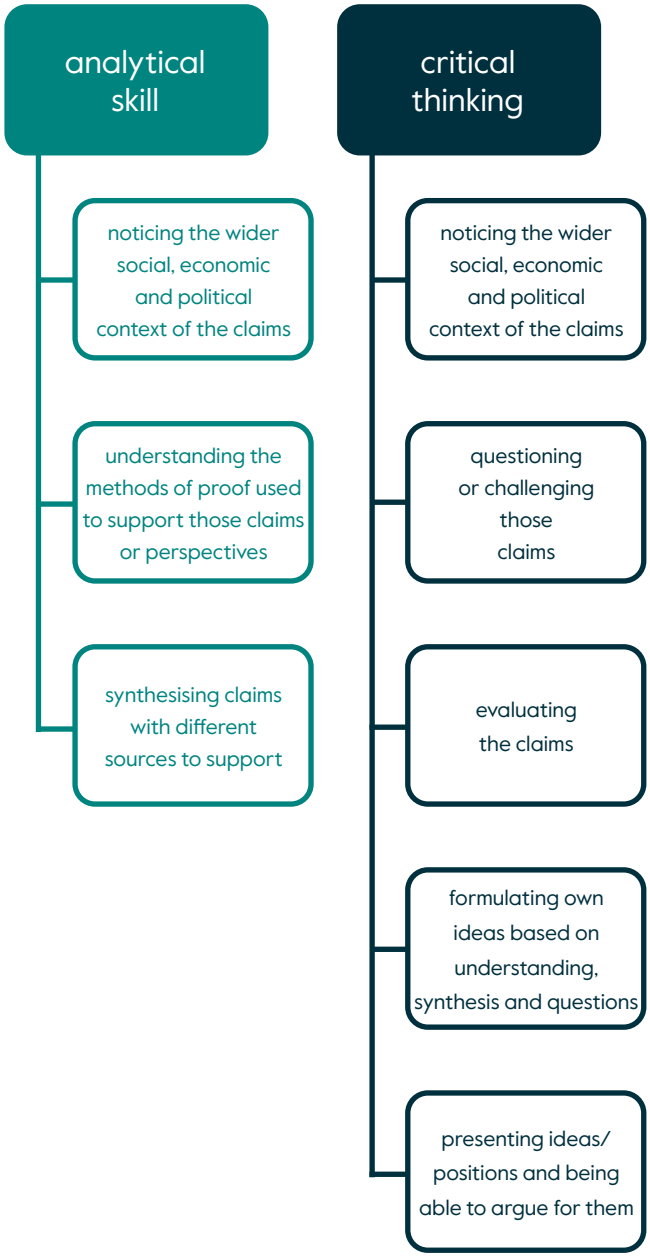


Figure 2: Critical thinking skills in EAP (based on Pally, 2001)

In this framework, we can see that there are two types of skills or abilities that a student needs in academic work:

understanding and summarising, with analysis

taking a stance or perspective in a given context and being able to argue for it.

Similar attempts have been made to clarify the concept of critical thinking. For example, Thomas & Lok (2015) developed an operational framework for critical thinking, which comprises three interconnected sets of attributes:

- **skills**: reasoning, evaluation and self-regulation
- **knowledge**: general information, specific content and experience
- **disposition**: intellectual virtues, habits of mind and attitude.

A recent study (Li, 2023) indicates that teachers' conceptualisation of critical thinking aligns with the literature that the concept entails analysis, evaluation, and inference as the core elements. These elements are by and large evidenced in teaching but sometimes it is not easy to differentiate these skills.

Research suggests there is a strong link between knowledge and critical thinking, especially the specific content knowledge which can be interpreted as disciplinary knowledge. It also includes cultural knowledge that accounts for differences in interpreting sub-themes in critical skills.

For example, 'reflective' thinking in the Confucian tradition has a different meaning from that used in the West (e.g. Dewy's reflective thinking) (Li, 2015).

The importance of critical thinking in EAP

Critical thinking is crucial for everyone, especially during the AI age because it empowers individuals to navigate the complexities of a technology-driven world thoughtfully and responsibly. It enables people to question, evaluate, and make informed decisions.

For many EFL/ESL learners, critical thinking enables them to 'question, challenge and demand reasons and justifications for what is being taught' (Siegel, 1985, p.71). Being able to challenge and question the knowledge they learn or information they gather is a critical skill for life, and a fundamental goal of learning in higher education (Ennis, 1996; Barnett, 1997).

Ultimately, the importance of critical thinking in achieving success in academic (and general) life cannot be stressed enough. For that reason, teaching critical thinking has already been listed as a key area to be cultivated and assessed in higher education in the UK, United States and Australia (Ku & Ho, 2009). In fact, the global movement of enhancing learners' critical thinking in higher education is especially vital for EAP contexts, as the goal of the instruction is to equip students with the knowledge and skills necessary to succeed in their university learning.

The importance of critical thinking in achieving success in academic (and general) life cannot be stressed enough.

It is widely recognised that critical thinking plays a crucial role in academic success in EFL/ ESL and EAP settings. For example:

- **Research suggests that critical thinking is related to student achievement, especially its positive influence on the achievements of learners in EFL contexts (Hashemi & Ghanizadeh, 2012).**
- **Successful learners demonstrate active and creative participation in the learning process, in particular in the use of learning strategies (Nikoopour, Farsani & Nasiri, 2011; Bagheri, 2015).**
- **L2 success is strongly associated with metacognitive knowledge and strategies that students have, despite the differences across cultures (Li & Larkin, 2017).**
- **Successful, argumentative writing depends on students' level of critical thinking (Golpour, 2014).**
- **Critical thinking should be placed "at the heart of EAP" (de Chazal, 2014, p. 12), and empirical evidence suggests that critical thinking skills are integral to academic English language proficiency (e.g., Chen et al., 2022; Yin et al., 2024).**
- **Generative AI (GenAI) has affected EAP positively. Compared to traditional grammar-checking tools, GenAI tools go beyond simple error correction in grammar and lexis to provide detailed explanations of linguistic rules and enhance language output (Dizon & Gayed, 2021; Tan, 2023)**

The challenges for EAP students and teachers

For many L2 learners, it is difficult to identify the voices of the authors when doing an academic reading or to make their own voices 'visible' in their writing. Lack of a critical voice and an inability to identify it usually has something to do with students' language proficiency but, more importantly, also criticality. In EAP courses, especially regarding academic reading and writing, there are widely recognised issues regarding promoting the criticality of students. For example:

- Most English courses focus on developing students' language proficiency level, rather than criticality. Therefore, it is widely acknowledged that there is low critical thinking among EFL learners (Pei et al., 2017; Moghaddam & Malekzadeh, 2011) unless critical thinking is deliberately taught (Halpern, 2014; Gelder, 2005). Critical thinking ultimately becomes a challenge for many students given that they have never studied it in their prior learning.

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- The idea of being critical might be challenging to some students, for example Asian students whose fundamental cultural norms value the opinion of experts and knowledge (Bali, 2015). Moreover, 'being critical' is widely misinterpreted as something negative (Durkin, 2008; O'Sullivan & Guo, 2010).
- Criticality in academic work requires a good level of language. It is clear that sometimes it's not criticality that students lack but rather their L2 language proficiency limits their ability to engage more successfully in critical analysis (Melles, 2009; Tian & Low, 2011; Manalo et al., 2015).
- The convenience and effectiveness of GenAI tools may result in students' overreliance of these tools in their writing and therefore are less motivated to express their views and opinions (Mintz et al., 2023).
- There is a risk that students may accept AI-generated content as accurate and authoritative without questioning its validity. This can undermine critical engagement, as students might not feel the need to verify information or consider alternative perspectives.

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From a teacher's perspective, it can be challenging to teach critical thinking even when students recognise the importance of the concept for their academic success.

- Critical thinking is an abstract concept and, as discussed, it is difficult to define. Many teachers have little training on what critical thinking is or how to teach it. English language teaching and learning is strongly associated with linguistic knowledge and developing accuracy in language, as the assessment is predominantly about grammar and lexical knowledge (Li, 2016). Instructors' own critical thinking skills inevitably affect their teaching and their ability to enhance students' thinking skills (Li, 2011; Mok, 2009; Xu & Li, 2018).
- General English courses do not prepare students to engage in critical thinking, so when they start studying an EAP course, instructors can find it difficult to change students' behaviour, thinking styles and perceptions towards learning English
- There are not enough resources available that

focus on developing students' critical thinking skills, although in recent years publishers/researchers have started to pay significant attention to producing materials for teachers and students. Teachers can still find it challenging to use the materials in their contexts, because there is a lack of guidance on critical thinking pedagogies.

- Assessing critical thinking is another challenging area for teachers to tackle. Thinking-based curricula and pedagogies require changes in assessment processes, which teachers are sometimes unable to realise.
- While AI offers powerful tools for enhancing language learning, learners may depend heavily on AI tools for language practice, there is a risk of focusing only on surface-level language issues (e.g., grammar corrections) rather than understanding the nuances of the language or developing critical analytical skills about content and context.
- AI tools might provide many opportunities to enhance language learning, it might be challenging for teachers to teach critical thinking in an AI environment.
- There is also a concern of academic integrity (Thorp, 2023), especially when students could potentially use AI essay-writing systems to produce academic essays as their work without fully exercising their powers of critical thinking (e.g., Dehouche, 2021; Kasneci et al., 2023).

Having discussed some of the challenges in developing critical thinking skills in EAP, it is vital to see how we can overcome them to facilitate the development of critical thinking. As Pally (2001) emphasised, critical thinking skills 'do not develop automatically in language classes' and a deliberate approach to teaching them is essential.

Approaches to foster critical thinking in EAP

There are different approaches available for critical thinking instruction, depending on how it is conceptualised. If it is viewed as a generic skill, a general approach is used to promote critical thinking, separately and independently of a subject. In this case, critical thinking is considered as a transferrable skill that students can apply in different subjects and in different contexts. However, there are other views regarding what critical thinking is and therefore alternative approaches to teaching it are required – the differences in discipline decide what specific aspects of critical thinking are most important.

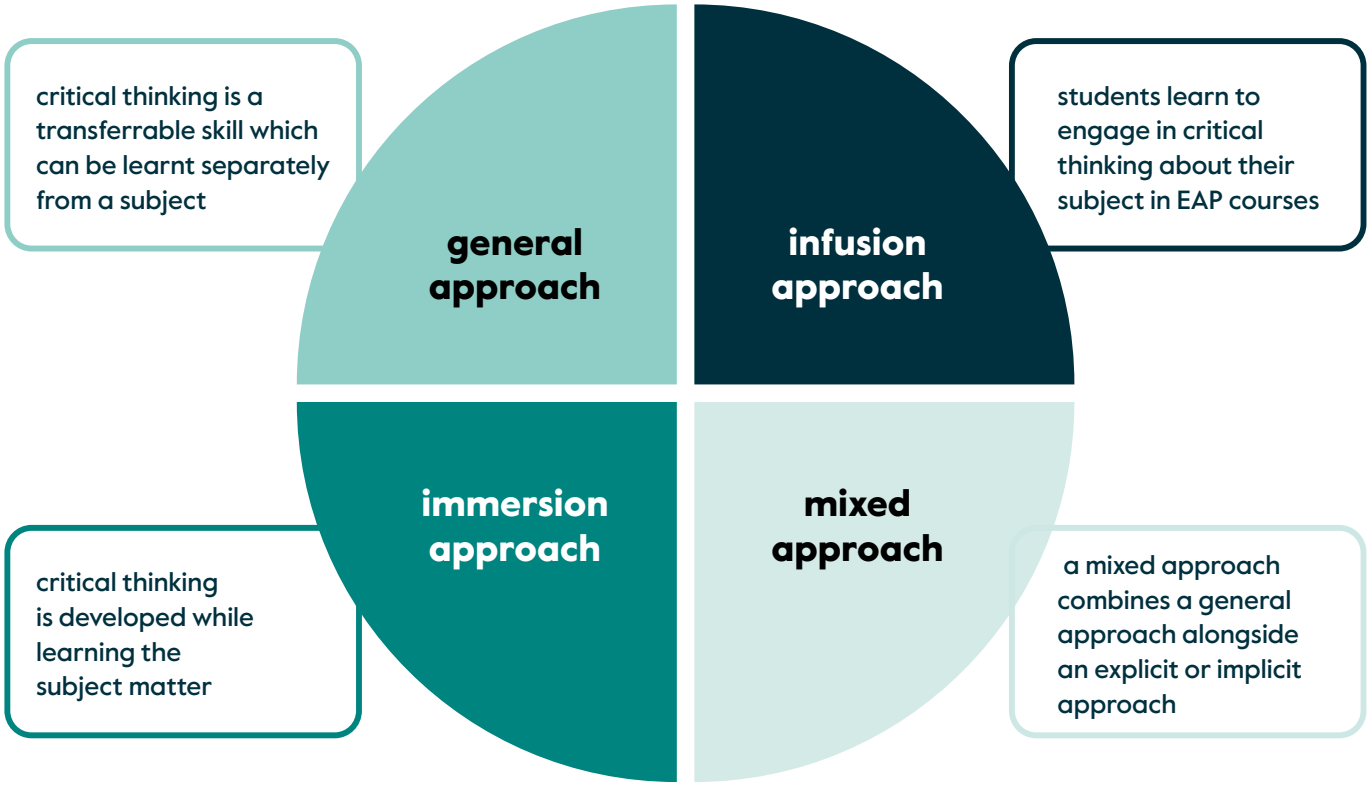


Figure 3: Approaches to foster critical thinking

Infusion approach

The infusion approach is an explicit approach to critical thinking that, in principle, believes different subjects have different perspectives towards critical thinking and therefore the critical thinking sub-skills will be different across subjects (Resnick, 1987; Swartz, 1987). This is a popular approach in EAP instruction, where students are taught to engage in critical thinking explicitly about their subjects.

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Research suggests an explicit approach is effective in developing student's critical thinking (Abrami et al., 2008). Two examples of the infusion approach in developing critical thinking are:

1 Corpus-based approach

Hyland & Tse (2005) argue that using corpus-based materials is particularly useful in 'helping readers towards a preferred interpretation of the information'. Argent (2017) discusses the language of critical thinking, pointing out the areas of language that teachers might want to consider working on in order to improve students' critical thinking in 'critical voice'.

She argues that 'the language of critical thinking is all about voice, and voice needs language: metadiscourse, hedging, distancing, terms for persuasion and caution, attitude, markers, maximisers/minimisers, emphasisers' and so on. Basically, 'a voice' is about doing three things:

- taking and defending a stance
- expressing meaning relations
- making evaluations.

Demonstrating a critical voice in EAP involves making evaluations and judgements based on evidence (Hyland & Tse, 2005), offering own perspective and taking a stance (Hyland, 2005), making a convincing argument (Hyland & Tse, 2007), using language to show positions (which includes the use of hedging, qualification and certainty) and metadiscourse (Liu & Stapleton, 2018).

In this approach, students can select an article (or articles) to analyse the critical voice by engaging the following questions:

- What are the author's claims and perspectives? What reported verbs does the author use to make a claim/point?
- How valid are the author's claims/points? What evidence is used to support the claims? Is there any false generalisation?
- To what extent are these claims true, in a context that you know of?
- How would you support the author's claims? Is there any more evidence you can offer?
- If you disagree with the author, what points can you make? What evidence/material can you use to support your own claims?

This question list is just an example. Teachers and learners can come up with their own lists to help focus on the process of critical thinking. This is also a practical approach to break the task into smaller chunks so that students do not feel it is too challenging or daunting.



2 Simulation/game-based approach

The pedagogical effectiveness of simulation in EAP is well documented in helping to prepare students for academia. There are a few notable advantages of the simulation/game-based approach:

- Simulation provides students with a rich learning experience, which other methods are unable
- to achieve, because students can interact with others in a simulated reality (Garcia-Carbonnell, Rising, Montero & Watts, 2001).
- Simulation gives students opportunities to manipulate the material in their discipline and develop writing skills (Cheng, 2007).
- Simulation enhances generic academic skills, such as presentation and group work (Reese & Wells, 2007).
- Simulation motivates and engages students in learning (Andreu-Andres & Garcia-Casas, 2011).
- Simulation can provide students with opportunities to express their views, thereby facilitating critical thinking (Codita, 2016).

Codita (2016) designed a simulation-based learning activity where students participated in a simulated court hearing, in which they assumed the roles of Supreme Judge, state attorneys, district attorneys and witnesses. In the activity, students assumed different roles to defend their position, disagreeing with and persuading each other. In the writing process, students developed various strategies such as 'seeking, evaluating, and transferring information' that contributed to formulating their own opinions and appreciating different views.

Codita (2016) outlined three phases that a simulation-based approach might have:

1. **Briefing phase**: students get ready for the activity by doing the relevant reading and listening activities to hear different views regarding the law. Students thus build background knowledge about the content and purpose of the (Arizona) law.

2. **Simulation phase**: students receive their roles and participate in a simulated court hearing for the scenario and court procedure – they also need to research the roles they play.

3. **Debriefing phase**: students complete a questionnaire and engage in an in-class discussion.

Codita concluded that 'simulation was effective in creating a learning framework conducive to discussion and debate, which had an impact on the betterment of students' critical thinking skills' (691). However, students' language proficiency level and the task complexity need to be taken into consideration if a simulation/game-based approach is adopted.

Immersion approach

Different from the infusion approach, the immersion approach focuses on developing critical thinking skills within a subject. As the name suggests, when an immersion approach is adopted, lecturers and tutors teach the subject matter but challenge students with that subject matter so that they engage in analysis, evaluation, problem solving, arguments and decision-making. Sometimes this approach requires both EAP teachers and discipline instructors to work together to address the relevant written 'genre', such as lab report, market analysis and research report. Two examples of the immersion approach are:

1 'Sustained' content-based EAP

An example of the immersion approach is 'sustained' content-based EAP instruction (Pally, 1997), which embeds language learning and critical thinking in the content of a discipline (McDonough & Neumann, 2014; Thompson, 2002).

Such an approach requires students to engage in analysis, including synthesising sources and incorporating the ideas in their work (Pally, 2001). It includes both description and evaluation of the material with which the students are engaging (Woodward-Kron, 2002).

Melles (2009) adopted the 'sustained' instruction in teaching engineering students to write a literature review to develop their critical appraisal skills. In his design, the 'sustained' critical appraisal, language and writing focus was staggered by four assignment milestones – within the 12-week semester – in the development of a literature review. The students 'sustain' the same topic throughout so they can build a coherent understanding of a particular topic and area:

1. The first assignment requires students to evaluate one source from their field (750 words).
2. The second assignment focuses on comparing and contrasting two sources (1000 words).
3. The third assignment is a literature review in which students engage with 12 articles in their field, to produce a written review (3000 words).
4. The final assignment is an oral presentation where students give a 12-minute presentation on the topic of assignment 3 (500 words).

This approach, according to Melles (2009), has helped students to 'develop a good understanding of critical appraisal as analysis and evaluation' and students seem to 'recognise the analytic/critical appraisal approach emphasised in the EAP course while also interpreting its relevance and significance as intrinsic to engineering' (168).



2 Process-genre writing approach for thinking

A similar approach is the process-genre approach in writing (Badger & White, 2000) to promote critical thinking. Xu and Li (2008) adopted this writing approach to focus on criticality in an academic writing course. In their design, there are four stages:

1. In stage one, students are asked to select two original journal articles – published within ten years, in journals – which have been written by renowned scholars in the topic area. This activity focuses on selecting material based on criteria.
2. In stage two, students work in groups to set up an online forum where they can submit their commentaries online. Students also need to review each other's work. This stage focuses on developing and presenting ideas and providing an evaluation.
3. In stage three, students engage in a group discussion after class, based on their readings. During this stage, students are also guided to view video clips on the samples of expert writing, conferencing and round-table discussion. Students are expected to submit a group commentary, with a focus on the argumentation development and an in-class report on the linguistic and generic features of the papers they read. In this stage, collaboration is required and reasoning skills are fostered through jointly producing a commentary. At the same time, different perspectives are valued through different types of input and group task.
4. In stage four, students are required to write a simulated research proposal. This stage focuses on using process writing skills, such as brainstorming, planning, drafting and proofreading. Format and content are both emphasised.

Xu and Li (2018) claim that explicit teaching of academic writing, through a process-genre approach, does facilitate students' thinking skills as well as their academic writing skills.

A mixed approach

Sometimes lecturers and tutors mix the general approach with either the infusion approach or immersion approach. This is normally divided into two parts, with the first part teaching students critical thinking (general approach) and the second part teaching and applying critical thinking to the subject (explicitly or implicitly). It is not surprising that this mixed approach is proven to be most effective (e.g. Abrami et al., 2008; Solon, 2007).

Use AI to foster critical thinking

Developing critical thinking using AI in EAP or general language learning requires an appropriate integration of technology and pedagogy. The goal is to leverage AI tools to facilitate learning and develop students' abilities to critically analyse, evaluate, and create knowledge. Below are some possible approaches to teaching critical thinking using AI.

1. **Integrate AI tools into EAP writing process.** Various research cautions that using AI tools may also likely decrease students' creativity and critical thinking when they are not trained to use the tool and evaluate the information it offers. Barrot (2023) highlights that teachers need to encourage students to think creatively, treat writing as a means of intellectual and personal growth, and develop a deeper understanding and appreciation of the writing process. AI tools could offer real-time feedback on grammar, vocabulary, coherence, and writing quality. This instant feedback allows students to see the impact of their choices, think critically about their work and revise it accordingly. In addition, Kohnke (2024) suggests that the immediate, context-specific feedback that AI tools provide allows students to perform tasks they could not accomplish independently, thereby extending their current capabilities. The key is to design appropriate tasks to teach students to improve their work by using AI tools with ethical considerations. Barrot (2023) offers an example of

using ChatGPT throughout the writing process to encourage effective writing practices and quality output among students. During this process, students' critical thinking is enhanced by evaluating the information generated by ChatGPT, and making a personal reflection based on the feedback provided by the tool.

- Students brainstorm a contemporary topic or issue with their peers and use ChatGPT to generate additional relevant responses.
- Students are required to source model texts from two credible sources and examine their structural features. Students may use ChatGPT to get additional model texts.
- Students conduct preliminary research on their topic and create an outline following the designated format. They may only use ChatGPT to refine their initial outline.
- Students then begin to write their essays, using reputable sources and incorporating personal experience, critical reflection, and writing voice. At this stage, ChatGPT is not allowed.
- Once the draft is ready, they may utilize ChatGPT to receive feedback on their first draft regarding content, organization, and structure.
- They will then revise their work based on their self-evaluation and ChatGPT-based feedback
- At the final stage, they will use ChatGPT's editing feature to improve the language style, vocabulary, and grammar of their final draft.

2. **Simulate real-world academic scenarios:** AI-based simulations, such as those provided by Labster for science students, can also be adapted for EAP contexts to simulate academic environments. For example, students can practice presenting or defending their thesis in a simulated environment. These simulations provide a safe space for students to engage critically with content, make decisions, and receive feedback on their performance. AI can create realistic academic scenarios where students must apply critical thinking skills. For instance, students might be tasked with solving a problem based on a case study or analysing a dataset. These scenarios encourage students to integrate knowledge, apply critical thinking, and develop solutions.
3. **Create interactive, game-based assessments that facilitate personalised learning and problem-solving.** Cotton et al. (2023) propose that GPT-3 could be used to create chatbots or virtual assistants that challenge students to solve problems or answer questions through natural language interaction. This application of GPT provides a fun and engaging way for students to demonstrate their knowledge and skills and improve communication and problem-solving skills.

Incorporating AI into EAP instruction can support language development and encourage students to think critically about how they use language, structure their arguments, and interact with information. By providing personalised, adaptive learning experiences, AI has the potential to help students engage with academic content meaningfully, fostering the critical thinking skills essential for academic success.

Two additional vital points are developing ethical awareness and information literacy for students. EAP teachers need to help students be more aware of the importance of academic integrity and the ethical use of information. EAP teachers also need to take advantage of AI-generated EAP materials to teach students how to critically evaluate the reliability and validity of information produced by AI, which includes understanding biases, recognising limitations, and discerning the quality of AI-generated research or text. As AI continues to evolve, its role in enhancing critical thinking in EAP will likely grow, offering even more sophisticated tools and opportunities for students to develop their academic English skills. Given this likely ongoing prevalence, EAP teachers are encouraged to experiment with the safe and critical use of AI tools so that they can support their learners in doing the same.

Guidance for students and teachers

In terms of developing critical thinking, there are several implications for teaching and learning EAP. Let's look briefly at what teachers and learners can do to foster critical thinking.

Kuhn (1999) argued for the importance of teacher training in critical thinking, claiming that teachers did not have sufficient knowledge about critical thinking skills or how to assess them. Twenty years on, this issue still exists, despite the widespread belief about the significance of critical thinking skills in academic work.

Although there are more and more peer-sharing activities going on in the academic community (e.g. the critical thinking skill forum at IATEFL 2019), there is a pressing need to offer teachers training opportunities to increase their theoretical understanding and pedagogical knowledge about developing critical thinking skills. Professional development courses with practical guidance will have a significant impact on teachers' knowledge of and ability to teach critical thinking skills.

Similarly, teacher education programmes should consider critical thinking as an essential part of the curriculum so that teachers can develop a systematic understanding of the concept, its applications in education and its assessment.

Teacher education programmes are also an ideal place for teachers to engage in community learning where they can share ideas and design programmes to combine theory and practice. The experiential learning model, where student teachers experience critical thinking, would be beneficial as they would:

- understand what critical thinking is;
- engage in reflection based on observation;
- conceptualise the concept in their own way;
- implement it in a specific context.

One effective method is to enhance teacher learning in a 'collaborative dialogic space' where teachers are able to identify an issue, conduct research, and propose a possible solution in a collaborative manner (Li, 2017).

Despite the popularity of the infusion approach, a mixed approach might be more effective if a good balance can be achieved. Of course, instructors should always assess their students' language proficiency, learning preferences and available resources to decide on the approach most suitable in their contexts. Apart from these approaches that teachers can follow, there are also some generic practical guidelines that instructors and students might find useful in fostering criticality in academic work. For example:

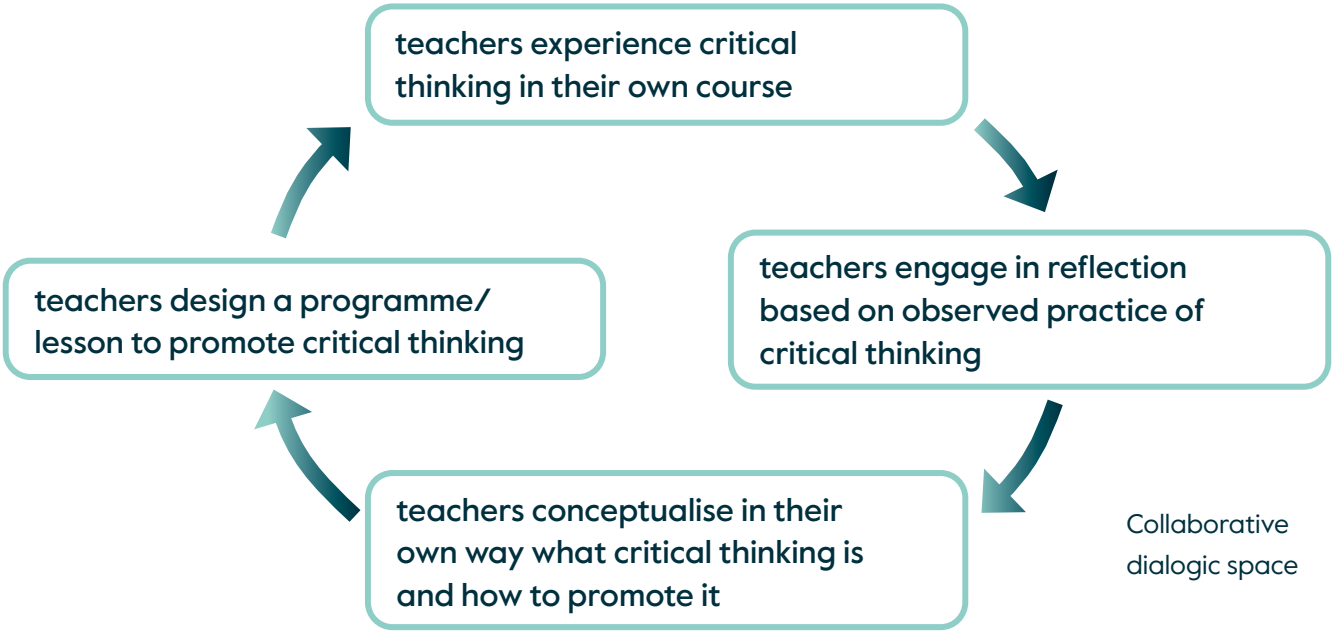


Figure 4: Experiential learning for teachers to enhance critical thinking

- Generally speaking, Socratic questioning is an effective strategy to engage students in critical thinking. In Li's 2011 study, she observed that when teachers asked more referential questions, students were more engaged in critical, creative and reflective thinking. For example, teachers can always follow up with questions like: Why is this the case? What alternatives can be offered? How is it different/similar?
- Students should try to elaborate their thoughts, to offer reasons and use evidence to support their arguments when presenting their viewpoints. When engaged in academic work, students can also try to ask themselves: To what extent do I find the presented argument solid and sound, and what alternatives can I offer?
- Awareness of genre is very important in developing a critical voice. Alexander et al. (2008) argue that purpose and audience should be part of a writing task. In fact, these should be considered an essential part of academic practice. In reading and listening activities, students should pay attention to the purpose of the text or material and who the intended audience/readers are. Questions can be asked, for example: What does the author want to achieve? What communicative strategies are used to achieve the aims?
- Teachers can also guide students to engage in analysing genres and communicative strategies in groups and compare their analyses. Similarly, in speaking and writing tasks, students need to bear in mind the context in which they develop the speech and text, for example: Who are they writing this material for/speaking to? What are their aims? The language (e.g. lexical choices) should be matched with their purposes.

- If students are required to evaluate a text and take a stance in their writing, perhaps one of the most effective ways is to use corpus analysis in developing critical thinking. Students and teachers can start with authentic texts of the discipline/subject and analyse them to understand how the authors evaluate others' work and then display their perspectives. For example: Do they show agreement/disagreement? How do they evaluate others' work? Do they show certainty and hedging? What metadiscourse is there? Do the authors deliberately make a connection between materials and ideas? With these questions in mind, students and teachers can use a concordance to analyse the text. This practice helps the reader develop an ability to communicate effectively with 'adequate reasons and evidence for these claims' (Wallace & Wray, 2011: 7).
- When students produce written work, they can engage in collaborative revision and peer feedback to analyse how they successfully and unsuccessfully demonstrate critical thinking (either in a traditional way, or using GenAI tools). By considering what they attempt to express and discussing how to make the valid point, students can engage in evaluation of their critical voice through a dialogic process. In this sense, multiple-drafting and dialogic peer learning can also help students engage in identification of critical voice, taking a stance with support from evidence, selecting appropriate material and making an evaluation.
- When incorporating GenAI tools in assisting peer feedback, teachers should teach students how to use the tools critically and effectively (e.g., Moorhouse & Kohnke, 2024). More importantly, teachers need to guide students to understand the benefits and drawbacks of using GenAI tools in assisting their own writing, and assessing others'. Teachers can help students understand the purpose of using the tool in L2 writing classrooms and provide appropriate ways/examples to engage with this kind of technology, including ethical considerations and precautions (Barrot, 2023).
- When a simulation/game-based approach is adopted, careful consideration should be given to its format, content and structure concerning the pedagogical aims and learning context (Cummings and Genzel, 1990). A simulation/game-based approach might require students to have an advanced proficiency level. When students have a low proficiency level, individual or group presentations and open debate could replace a more challenging task, such as a court hearing. Usually, a complex topic is required to allow simulations to be possible. If the issue at hand is beyond students' cognitive level, brainstorming ideas and negotiating their stance on the issue is essential. Building in thinking time before conducting the tasks is another useful strategy. In this sense, group discussion and concept mapping can create a space where students begin to engage in collaborative group thinking (Li, 2011).

Conclusion

This paper aims to shed light on the development of critical thinking in EAP. After reviewing the concept of critical thinking and its importance, approaches to teaching it and implications for teachers and students, I would like to stress once again that critical thinking is very closely related to the success of academic work and life, so it should be considered a core element in academic practice.

Considering the different approaches available, I want to highlight the importance of context in selecting an approach to teach critical thinking. The context here covers both the cultural and disciplinary dimensions, as well as the language proficiency level of the students. Equally, teacher knowledge about critical thinking is of utmost importance (Li, 2016). Teachers need to be equipped with the subject and pedagogical knowledge of critical thinking in order to successfully and effectively integrate critical thinking with EAP instruction.

Of course, developing critical thinking requires students to play an active role. In particular, students need to consider context (including target audience), the variety of language to present their voice, and being self-regulated and motivated. They can take any approach outlined above to try to self-direct their learning to address their needs.

The power of AI has provided more potential to enhance critical thinking for EAP learners. Teaching critical thinking using AI requires a balanced approach that integrates technology with thoughtful pedagogy. By encouraging students to question, analyze, and reflect on their use of AI, teachers can foster critical thinking skills that are essential for success in the AI age.

Finally, cautions have to be taken here as critical thinking cannot be developed overnight. It takes time for students to fully develop the capacity to synthesise, select, critique, evaluate and create new ideas.

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Author biography

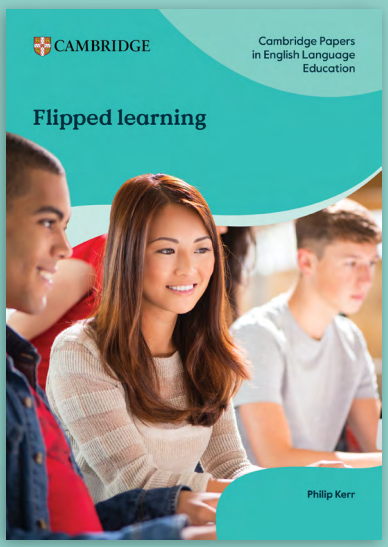
Li Li is professor of applied linguistics and language education at the University of Exeter. Her research interests include language teacher cognition, developing thinking skills, the use of new technologies in language learning, and classroom discourse. She has published widely in these topics in international journals. She is on the editorial board for a prestigious journal: Thinking Skills and Creativity, and served as guest editor twice. She is the editor of the book Thinking Skills and Creativity in Second Language Education (Routledge) and has also co-edited the Routledge Handbook for Researching in Teaching Thinking Skills (with Rupert Wegerif & James Kaufman) (Routledge). She is also the author of Social Interaction and Teacher Cognition (Edinburgh University Press) Language Teacher Cognition: A sociocultural perspective and New Technologies and Language Learning (Palgrave).

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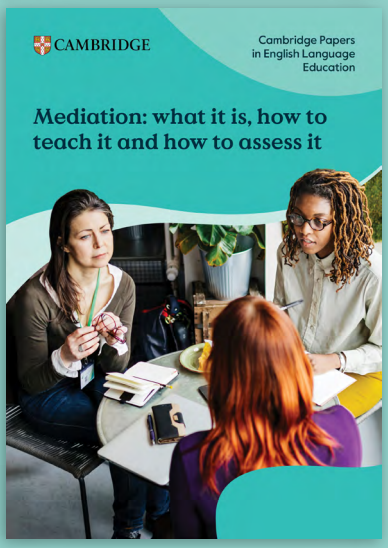
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