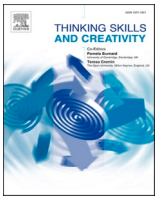
Thinking Skills and Creativity 53 (2024) 101605

Contents lists available at ScienceDirect

Thinking Skills and Creativity

journal homepage: www.elsevier.com/locate/tsc



Characteristics, prevalence and tensions of critical thinking in Indonesian high school English language classes resulting from policy-driven teaching

Ricky Fernandes *, John Willison, Christopher Boyle

School of Education, The University of Adelaide, Australia

ARTICLE INFO

Keywords:
Critical thinking (CT)
English as an additional language (EAL)
Case study
Critical thinking characteristics and prevalence
Listening and speaking
Critical thinking English listening and speaking (CTELS)

ABSTRACT

Indonesian government policy has emphasised Critical Thinking development in secondary school students to position the nation for better engagement with global concerns, including the Industrial Revolution 4.0. A vehicle of choice to achieve this Critical Thinking development is English as an Additional Language in Secondary Schooling. This article presents a qualitative study that investigated the characteristics and prevalence of Years 10, 11 and 12 Critical Thinking in English listening and speaking tasks in an Indonesian high school. Data were generated through sustained engagement with one class in each year level, providing rich and detailed classroom data. These data were analysed with a conceptual framework of *Critical Thinking in English Listening and Speaking* to determine the characteristics of student Critical Thinking. Frequency counts of the characteristics yielded the prevalence of Critical Thinking in the period of engagement with each class. The point of intersection between Critical Thinking policy and its implementation demonstrates the congruence and dissonance between the actualised student Critical Thinking and teacher documents. Results showed that the characteristics and prevalence of Critical Thinking were fundamentally different for each year group, in large part due to the differences in teacher facilitation of Critical Thinking, despite, or because of, the overarching policy directives.

1. Introduction

There is a tension in education policy that supports the development of student Critical Thinking (CT) and endorses reproductive assessments such as tests and exams. In this context, secondary student CT has become central to reforms in curricula and teacher pedagogical practices globally (Ahmed & Ibrahim, 2023; Tan, 2017). Moreover, the centrality of CT has been amplified by concerns that have arisen from the emergence of Artificial Intelligence (AI) in education (Kouzov, 2019), as many students tend to be gullible consumers of information and plagiarism (Ahmed & Ibrahim, 2023; Pate, 2016). On the other hand, large-scale standardised tests and exams have been retained in secondary education (Jenkins & Leung, 2018) because of the perceived transparency and equality that were implied by reproductive forms of assessments (Jenkins & Leung, 2018; Kouzov, 2019). While there is some capacity of tests and exams to validly assess student CT (Lamb et al., 2017), an emphasis on assessment regimes tends to prompt teachers to favour reproductive modes of teaching and learning (Höl, 2023). Reproductive modes of teaching and learning are contraindications for CT

* Corresponding author.
E-mail address: ricky.fernandes@adelaide.edu.au (R. Fernandes).

https://doi.org/10.1016/j.tsc.2024.101605
Received 10 May 2024; Received in revised form 3 August 2024; Accepted 5 August 2024
Available online 13 August 2024

development and speak to the source of the tension noted above. Therefore, this present study explores the tensions of policies that support CT and reproductive assessments. Reasons for the mainstreaming of CT in education globally are outlined, followed by the implementation of CT in Indonesian English as an Additional Language (EAL) in high school contexts.

1.1. Mainstreaming of CT in education globally

While CT in schooling has a long lineage (Dewey, 1910; Glaser, 1941), the prevalence and spread of its importance in education has escalated in the past decade. Enhancing student CT capacities has become a focus in many countries, as it is seen to be vital for citizens to face rapid global changes that include Industrial Revolution 4.0 (Elaish et al., 2023) and AI-supported education, in which some have labelled as Education 5.0 or even 6.0 (Walter, 2024). The support for CT is in part because the concept resonates with educators and policy makers as a conceptual toolkit to prepare students for emerging contingencies including climate change, social upheavals and industrial revolution (Wang & Wu, 2023). This conceptual toolkit of CT encompasses students' capacities to evaluate their own thinking in order to solve problems and make decisions (Davies & Barnett, 2015; Rainbolt & Dwyer, 2012), self-directed learning, academic performance, real-world application and evaluative and reflective thinking that mitigates cognitive biases and misconceptions (Gambrill, 2019; Lin, 2018). Moreover, CT helps students be flexible, adaptive and resilient in natural contexts (Gambrill, 2019) while developing their comprehensive understanding (Davies & Barnett, 2015).

The history of CT has been tracked back at least as far as Socrates, who fostered CT by questioning common beliefs with logical and reasonable explanations (Lau, 2024). CT in education was promoted by Dewey (1910) and Glaser (1941), emphasising that students obtained knowledge through logical reasoning and supporting evidence in order to persistently examine any beliefs or supposed forms of knowledge (Dewey, 1910; Glaser, 1941). Moreover, Ennis (1985) progressed the conceptualisation of CT in education by defining it as reasonable reflective thinking which was focused on deciding what to believe and do (Ennis, 1985). Over decades, CT has been endorsed by many countries as a pre-eminent part of the thinking that was needed to promote sustainable development (Ellerton, 2022) in order to respond to complex changes due to globalisation. In the 1960s, students in the USA were supported to develop thinking skills through reasoning, problem-solving and decision making (RaduloviÄ & StanÄ iÄ, 2017). Following the USA lead, countries such as Australia, England and Norway endorsed CT at a policy level (Johnston et al., 2023). CT has thus been viewed as a foundational component of recent curricula changes to provide students with a comprehensive set of learning outcomes and a detailed learning continuum that outline skills and knowledge when analysing and evaluating information, arguments and evidence across various learning subjects (Johnston et al., 2023).

In countries where English is a second or additional language, including many Asian nations, CT has been widely recognised as an important learning outcome (Wang & Wu, 2023). For instance, Singapore and Hong Kong schools enact CT in their educational policy initiatives in the form of didactic teaching with student active participation for the high-stake exams (Lam, 2020; Low et al., 2017; Tan, 2017). Indonesia also seeks to respond to complex changes due to globalisation, and so the Indonesian Education Ministry considered CT as a pre-eminent part of the thinking needed for that sustainable development (The Indonesian Education Ministry, 2022). Consequently, the Indonesian Ministry of Education mandated secondary school student CT development, a policy mirrored in numerous education ministries in Asian countries (Fernandes et al., 2024).

CT, along with creativity, innovation, independence and tolerance, has been endorsed as one of educational objectives and adopted as policy by the Republic of Indonesia (Ilyas, 2017). CT firstly gained attention in education in Indonesia when embedded in Indonesian 2013 Curriculum, with the aim of helping students engage in comprehending different opinions, formulate clear arguments and develop problem-solving and decision-making skills (Khoiriyah et al., 2015; Setyono & Widodo, 2019). However, as CT was a new concept in Indonesian education, the Indonesian government struggled to provide teacher professional training (Ilyas, 2017), and so many Indonesian teachers did not promote CT in their classrooms (Ilyas, 2015). Consequently, there seemed to be a gap between the educational objective and teacher practices in the classroom.

1.2. CT in Indonesian EAL high school contexts

The Indonesian educational policy mandate has emphasised that CT development should take place in the English as an Additional Language (EAL) curriculum. This was because English language was perceived to be a medium for illuminating thinking that could challenge norms and promote student CT (Starichkova et al., 2022; The Indonesian Education Ministry, 2022). English language was perceived by the Indonesian Education Ministry to foster thinkers who are critical, and so would be a better vehicle than mother tongue or *Bahasa Indonesia* (the de facto language of Indonesia) for the facilitation of CT that encourages students to challenge norms and values (Thomson & Yedidi, 2020). From this policy mandate, teachers of EAL were seen to be already partially equipped to enact the CT policy more effectively than other teachers. EAL teachers are thus expected to have the requisite teaching skills, to prepare their students to be self-directed critical thinkers when learning English (Zein et al., 2020).

Moreover, Indonesian pre-service teachers are assumed to have developed CT in their initial teacher education programmes. This policy mandate was released through the Indonesian National Curriculum in 2013 for EAL teaching and learning in high school contexts (Suarcaya, 2023), transforming pre-service teacher practices to provide students with critical, creative and evaluative learning activities (Gandana et al., 2021). This policy mandate was emphasised because understanding and communicating in English involves student abilities to analyse, evaluate, synthesise and interpret multiple pieces of information (Suarcaya, 2023), and so pre-service EAL teachers should be aware of embedding these critical and evaluative skills in their future pedagogical practices (Irfani & O'Boyle, 2024).

While the Indonesian CT policy mandate in EAL has been included as an educational objective, CT facilitation in Indonesian EAL

Table 1
CTELS analysis (*Evaluate & Determine – Discerning*).

	Clarity	Relevance	Depth	Coherence
Evaluate and Determine *(Discerning)*	Year 10 only	Years 10, 11 & 12	Years 10, 11 & 12	Year 10 only

context requires further investigation. Here, the concept of CT remains unclear and is problematic in its implementation (Fernandes et al., 2024; Ilyas, 2017). The lack of clarity is due, in part, to the diverse definitions and procedures stated in the Indonesian 2013 Curriculum itself (Abkary & Purnawarman, 2020; Ilyas, 2017), making CT an elusive concept that is problematic to discuss. Moreover, in the implementation, many Indonesian teachers have been unwilling to move away from *'monological thinking'* (Abkary & Purnawarman, 2020; Ilyas, 2017), and so such thinking restricts classroom implementation of strategies to develop CT in EAL effectively (Anggraeny & Khongput, 2022). For instance, many Indonesian teachers of EAL still rely heavily on prescribed textbooks and standardised tests that were specified by the government (Ilyas, 2015, 2017; Siregar et al., 2024). In this context, prescribed textbooks and school examinations stressed student memorisation, accuracy and fluency in four EAL skills (listening, speaking, reading and writing) (Ilyas, 2017; Siregar et al., 2024), neglecting students' potentials to think, ask, evaluate, argue and reflect (Hasnah et al., 2023). Consequently, many teachers across Indonesia may not understand how to promote CT in their teaching activities (Ilyas, 2017; Suarcaya, 2023) and tend to adopt rote learning in their classrooms (Defianty & Wilson, 2022), showing a gap between the CT policy mandates and real practices.

Moreover, there is also an internal inconsistency between the education policy aims for secondary student CT and the Education Ministry's directives for approaches, such as test and exam-oriented learning that works against CT development (Fernandes et al., 2024; Ilyas, 2017). This is similar to the EAL context in South Korea where the established examination-orientated teaching, which focuses on grammar-and-reading-based tests, hinders students' opportunities to practise and improve CT in EAL learning (Ro, 2023; Yook & Lee, 2016). CT in Indonesian EAL is also hindered because habit-formation drills are the go-to process for teaching grammar, translation and audio-lingual approaches through an emphasis on linguistic patterns (Hasnah et al., 2023; Ilyas, 2017). Inconsistencies between policy and practice can arise due to various factors, including discrepancies between CT definitions and teaching practices, teachers' cultural norms and values, weaknesses in English language proficiency among both students and teachers, and teachers' epistemological beliefs regarding the teaching of English (Wang & Wu, 2023).

While CT has been a part of Indonesian EAL learning objectives, CT-related objectives are not included in the Ministry-prescribed English textbooks. In Indonesian EAL context, textbooks become one of the most important resources for many Indonesian teachers of EAL to facilitate English language acquisition as well as to propagate knowledge, skills and attitudes, as outlined in the curriculum (Fernandes et al., 2024; Hasnah et al., 2023). Textbooks also support student achievement of pre-determined learning objectives (Siregar et al., 2024). However, many of those EAL teachers still find problems in designing content materials that engage students' thinking skills (Hasnah et al., 2023) in four EAL skills (listening, reading, writing, and speaking). This is partly because the orientation of English textbooks merely pervades linguistic aspects for the successful instruction and acquisition of English as an additional language (Hasnah et al., 2023; Siregar et al., 2024). Studies of CT in EAL, set in non-Anglophone countries, are thus required to determine whether English teaching and learning actually contributes to students' improvements in thinking (Ghanizadeh et al., 2020). This present study was, therefore, conducted in the non-Anglophone context of Indonesian EAL secondary classes to determine whether EAL teaching practices are a medium for students to develop their thinking skills and to discover the characteristics and prevalence of student CT when teachers are mandated to facilitate CT in the classroom.

1.3. CT in EAL listening and speaking

The Indonesian 2013 Curriculum requires students from Years 10 to 12 to develop CT through listening and speaking, as well as reading and writing in EAL courses. Specifically, for listening and speaking, student CT is supposed to be developed through active oral communication in the forms of asking, reasoning, discussing and presenting (The Indonesian Education Ministry, 2022). However, the prevalent goal in Indonesian EAL learning and teaching is for students to pass the standardised tests (Gandana et al., 2021; Ilyas, 2017), solely consisting of reading and writing (Anggraeny & Khongput, 2022). This evidence supports Indonesian teachers who have claimed that only limited numbers of students can fully communicate in English (Fernandes et al., 2024; Zein et al., 2020).

It is no surprise that the teaching and learning in Indonesian EAL secondary contexts outlined above are related to research into facilitated CT that focused on reading and writing (Aunurrahman et al., 2017; Emilia, 2005; Muthmainnah, 2019), neglecting listening and speaking (Purnamaningwulan, 2022). This focus is nurtured by an endorsement of CT that is embedded in EAL reading and writing as a *primary* objective for students to develop skills when accepting or rejecting authors' reasoning and thinking through reading texts (Mbato, 2019). From reading, the argument goes, students are able to reflect their understanding by writing their own key ideas

Table 2
CTELS analysis (find & generate – determined).

	Clarity	Relevance	Depth	Coherence
Find and generate *(determined)*	Year 10 only	Years 10, 11 & 12	Years 10, 11 & 12	Year 10 only

Table 3
CTELS Analysis (embark & clarify – curious).

	Clarity	Relevance	Depth	Coherence
Embark and clarify *(curious)*	Years 10, 11 & 12	Year 10 only	Years 10 & 11	Year 10 only

(Tusino et al., 2020). This is aligned with one of the objectives in the Indonesian 2013 Curriculum, stating that CT integrated with reading and writing plays a crucial role in language learning for academic success in order to maximise student language acquisition and learning outcomes (Mbato, 2019; The Indonesian Education Ministry, 2022; Tusino et al., 2020).

However, the inattention and lack of exposure to listening and speaking tasks in EAL have compromised the learning of English and the teaching of CT. In terms of learning, some have found that a two-channel approach to English learning-reading-and-writing has minimised the number of Indonesian students who can fully communicate in English when compared to a full-bodied exposure that includes facilitated listening and speaking (Fernandes et al., 2024; Zein et al., 2020). Consequently, by over-emphasising reading and writing, and under-emphasising listening and speaking in learning and assessment tasks, EAL policy and teaching in Indonesia have compromised secondary student English language acquisition, their development of CT and the types of research that can realistically be conducted into CT.

Nevertheless, the Indonesian Ministry has more recently required students to improve listening and speaking skills in order to communicate using language inputs and develop comprehension and active participation in whole-class discussions (Schieble et al., 2021; The Indonesian Education Ministry, 2022). However, the inattention to listening and speaking in EAL learning, despite the recent policy expectations, presents a crucial gap in knowledge about listening and speaking for CT development in Indonesian EAL contexts. This present study, therefore, investigates Indonesian teachers' context-specific practices to develop CT in EAL listening and speaking (Havwini, 2019). Addressing this gap is important, as there is some evidence that students may benefit from listening and speaking for language acquisition and CT development although they struggle with reading and writing in English (Akatsuka, 2019; Erkek & Batur, 2020).

Requirements for listening and speaking in EAL are evident in a variety of other non-Anglophone countries, as these modes of engagement are seen to be a prime way to nurture student CT. In the few studies that focus on listening and speaking in EAL, their value for developing CT is evident. For instance, in Hong Kong secondary EAL programmes, listening and speaking are embedded into debating, which is a compulsory component for students to refute and defend claims in order to develop CT (Lam, 2020). In Iranian secondary programmes, CT in EAL listening and speaking is primarily designed to develop active communication using a flipped learning approach (Etemadfar et al., 2020). In this context, students are required to watch videos from teachers outside of classes and discuss the contents with their peers in the classroom (Etemadfar et al., 2020). Students are then encouraged to participate in the group discussions and conversations in order to communicate the given information and/or by asking questions orally (Etemadfar et al., 2020). In both the Hong Kong and Iranian secondary contexts, CT in EAL listening and speaking fosters interactive dialogues that encourage students to express their ideas among their peers, aiming to provide effective foundations for increasing CT in listening and speaking (Paulsen & Kolstø, 2022). Moreover, active listening during conversations is crucial for students to comprehend multiple pieces of information, revoicing what they have understood and evaluating information credibility (Bourdeaud'hui et al., 2021; Schieble et al., 2021; Yu et al., 2021). In this sense, while students listen, they raise questions or make comments on their peers' key ideas orally (Yu et al., 2021). Listening coupled with speaking is, arguably, more powerful than reading and writing, because the process constructs an integration between the direct improvement of students' oral communication and their cognitive skills in comprehension (Arono, 2015; Yu et al., 2021). CT in EAL listening and speaking can therefore be defined as a communicative process that reconceptualises information through deep understanding and also fosters the synthesis of concepts to reason with evidence, solve problems and make decisions. Overall, the notion of CT development in EAL is, or should be, multi-faceted, involving listening, speaking, reading and writing.

1.4. Research gaps

As most studies of CT in Indonesian EAL secondary contexts have prioritised data that are based on reading and writing only (Aunurrahman et al., 2017; Emilia, 2005; Muthmainnah, 2019; Siregar et al., 2024) and of pre-determined measures (e.g. test and exam results) (Hasnah et al., 2023; The Indonesian Education Ministry, 2022), the richness of CT facilitation in EAL listening and speaking by teachers and its manifestation by students may be being missed. Consequently, the preponderances of CT in EAL studies are conducted using quantitative measures such as standardised tests or questionnaires, with few capturing rich details of student classroom experience in EAL listening and speaking (Bakhshayesh et al., 2023; Fernandes et al., 2024; Yu et al., 2021). In addition to the resulting paucity of investigations into listening and speaking in EAL, the focus on readily accessible quantitative data that are

Table 4
CTELS analysis (organise & manage – harmonising).

	Clarity	Relevance	Depth	Coherence
Organise and manage *(harmonising)*	Years 10, 11 & 12	Years 10, 11 & 12	Years 10, 11 & 12	Year 10 only

Table 5
CTELS analysis (analyse & synthesis – creative).

	Clarity	Relevance	Depth	Coherence
Analyse and synthesise *(creative)*	Years 10, 11 & 12	Years 10, 11 & 12	Year 10 only	Year 10 only

generated by pre-determined and rigid criteria means that the actual characteristics of CT that emerge listening and speaking in EAL in the classroom may not be captured (Fernandes et al., 2024). If the characteristics of CT are not fully known, it is impossible to determine how prevalent CT is in the EAL classroom.

While listening and speaking-oriented data is harder to generate and more labour-intensive to analyse, this present study promises to reveal much about the characteristics of student CT that are not evident in the literature and give a more realistic sense of the prevalence of CT than, for example, easily reported yet potentially biased self-reported survey data. Nevertheless, it was beyond the scope of this present study to simultaneously address reading and writing-oriented data. Moreover, it was crucial to develop a rigorous process for capturing listening and speaking data with rich observations, that would be, in subsequent research, triangulated with reading and writing data protocols to ultimately formulate a holistic approach to studying CT in EAL classes. Therefore, to address these gaps, this present study focused on listening and speaking in EAL classes and generated rich observation data of teacher and student interactions as well as teacher documentation data.

1.5. Research question

This present study unpacks the characteristics of student CT in terms of the conceptual framework *(see Section 1.6 and* Appendix A*)* of Critical Thinking in English Listening and Speaking (CTELS) (Fernandes et al., 2024) across Years 10, 11 and 12 and provides measures of prevalence of these CT characteristics. This present study also captures the nature of teacher CT facilitation with epitomising examples, demonstrating how CT in EAL listening and speaking was nurtured, or not, in order to enable students to think critically. Therefore, the research question that guided this present study is *"what are the CTELS characteristics and prevalence of student CT evidenced in the classroom when students listen to and speak English as an additional language?"*.

1.6. The conceptual framework of critical thinking in English listening and speaking (CTELS)

The CTELS conceptual framework that underpinned this present study comprises twenty cells that comprehensively capture the intricacies of CT evidenced in student listening and speaking *(see* Appendix A*)*. The vertical axis of CTELS is five facets of CT comprising verb couplets and an affective adjective that capture CT processes, and the horizontal axis consists of four conditions for CT. For instance, one of the facets is *find & generate (determined)* and one of the conditions for CT is *clarity* that students bring to the process. In the cell that results from the intersection of this facet and condition, students *find* and *generate* key ideas from given information/sources using given methodologies by clearly communicating and asserting the main purpose. When using the conceptual framework of CTELS for the analysis of data, observation evidence that fits at least one of the cells is required in order for the observation to qualify as CT. In this way, the study's research question may be addressed with a reference to the CTELS conceptual framework.

A companion paper (*see Fernandes* et al. *(2024)*) introduced CTELS conceptual framework and demonstrated its viability to analyse observation data in an EAL listening and speaking context. The paper presented deep insights into a best-case scenario of the characteristics of teacher-facilitated student CT. However, the paper provides no sense of prevalence, of how common or rare the experiences depicted are. The paper stated that future research is needed to illuminate and demonstrate characteristics and prevalence of teacher facilitated CT when students listen to and speak English (Fernandes et al., 2024). Following this section, the present study's methodology, results, discussion and conclusion follow.

2. Methodology

2.1. Context of the study

The study's context was a private high school in one city in Indonesia, in which EAL was a compulsory subject. Each of the three classes observed were the top EAL class in each year level, where students had the best English language skills and were more confident in speaking English than students in other classes. These classes also had teachers who had sufficient confidence to be observed over two terms. Data were generated with top classes and willing teachers to skew the present study towards a best-case scenario for English learning and CT development. This is a point that is crucial in the present study on the characteristics and prevalence of CT.

To answer the research question, sustained longitudinal observations of teacher CT facilitation in EAL listening and speaking and student engagement in learning were conducted in weekly visits to the three classes across two school terms, from January to May 2023.

2.2. Research design

As noted earlier, studies of students' CT development tend to rely on direct assessment that uses tests, teacher judgments and reporting and student self-rating (Lamb et al., 2017). However, studies that develop rich and in-depth classroom perspectives, such as classroom observations of CT, are rare (Arifin et al., 2023). In this sense, qualitative studies provide a valuable perspective by ascertaining teachers' actual practices based on researcher first-hand perceptions and experiences in classrooms (Darwin et al., 2023). For instance, a qualitative study conducted a two-month classroom observation in order to investigate student CT development through teachers' practices in the forms of questioning (Song, 2019). This qualitative study found that teachers' high-level questioning types nurtured student CT (Song, 2019). Therefore, relying on in-class perspectives, this present study investigated CT in EAL listening and speaking through rich and extended classroom observations in Years 10, 11 and 12 of an Indonesian high school.

This present study employed a qualitative case study to provide deep insights into the phenomena (Creswell, 2013; Yin, 2018) and comprised data from classroom observations of student-teacher interactions (Fernandes et al., 2024). The epistemological view was a subjective orientation because the authors had to interpret teachers' classroom realities subjectively, as teacher knowledge base and understanding evolved during the investigation (Rashid et al., 2019).

2.3. Research site and participants

Prior to commencing data collection, ethical approval from the authors' university was obtained. As the study aimed to develop in-depth understanding towards the phenomena, purposive sampling was conducted to select the target high school and teachers that could specifically yield their CT characteristics and prevalence in EAL listening and speaking (Campbell et al., 2020). Six school sites were initially approached to participate in this present study, as each school taught EAL as a compulsory subject. The schools were approached because they provided a potentially good opportunity to investigate facilitated CT in EAL. Three schools were government schools, and the other three were private schools.

The criteria to determine the participating school for this present study were exacting. To be included in this present study, a school needed to have agreement from the school principal and consent in writing from teachers, students and their parents in a consecutive consenting process. Consent that included agreement to sustained observation of a student across multiple lessons were provided. This involvement criteria meant that most schools that were approached were not able to participate, and only one private high school was willing to participate and fulfill these requirements.

For the participating school, the first author received an invitation to visit and went on site to explain and discuss the research project with the school principal. The participating teachers attended a meeting with the school principal and first author to discuss the research project in detail. Each teacher taught one year level with three classes, and all three teachers decided to be observed in their top classes that populated with students who were more confident in speaking English than in other classes. Inclusion criteria at the class level was that the teachers volunteered to be involved and stated that they employed pedagogical practices to develop CT in EAL listening and speaking tasks. The research on each of the three cases that were studied aimed to understand teachers' CT pedagogical strategies, characteristics and prevalence of student CT when students were listening to and speaking English. Moreover, the aim of the data generation for this case study was not to determine statistical inferences for a population (Creswell, 2013), but rather detailed descriptions within a naturalistic setting that reflected on a teaching environment with minimal external imposition (Campbell et al., 2020). However, there are limitations of this present study that was situated in a single institution with three in-service teachers and classes, as the results are specific to the contexts and may differ from those in other contexts (Trowler, 2012).

The teachers were assigned pseudonyms, Elisa, Hasan and Mo. The teachers were recruited to participate because they were willing to be observed over an extended period of time to investigate their CT facilitation in EAL listening and speaking. Elisa, a Year 10 EAL teacher, worked at the target high school for seven years holding a bachelor's degree in English teacher training education from a local university in Indonesia. Hasan, a Year 11 EAL teacher, worked for the target high school for thirteen years, holding a bachelor's degree in computer science from a public university in Australia. Mo was an EAL teacher for Year 12 for five years, holding a bachelor's degree in English teacher training education from a local university in Indonesia. Students in each class were invited to take part in the present study and provided with participant information sheets and consent forms. In Elisa's class of twenty-seven Year 10 students, nineteen students returned the consent forms signed by themselves and their parents. In Hasan's class of twenty-seven Year 11 students, ten students returned signed forms and in Mo's class of twenty-six Year 12 students, thirteen students returned signed forms.

2.4. Data collection

Classroom observations were conducted from January to May 2023. In Elisa's Year 10 class, student observations were made for two school terms from 17 January 2023 to 19 May 2023, with a total of twelve lessons observed. In Hasan's Year 11 class, student observations were conducted for two school terms from 20 January 2023 to 19 May 2023, with a total of eleven lessons observed. Student observations in Mo's class were conducted for only one term because students were preparing for their final exams, and so the seven lessons observed in Year 12 ran from 18 January 2023 to 1 March 2023. The classroom observations for Years 10 and 11 equated to four months each, while Years 12 had a six-week classroom observation period.

These EAL classes were timetabled to run for eighty minutes, and each occurred after the school's recess. There were two EAL lessons each week, but the teachers allowed the first author to observe the lessons only once a week. However, during mid-term exams and any other school events, observations were postponed. Three teachers thus permitted the first author to observe subsequent lessons twice in a week.

Field notes were taken according to a pre-determined structure (*see* Appendix B) and written during student observations with particular attention paid to dialogues between the teachers and students, physical settings of the classroom and learning activities (Creswell, 2013; Yin, 2018). Dialogues between the teachers and students were fully in English and audio recorded. However, during peer discussions, students spoke in Indonesian, and the data were not recorded as non-English language was outside of the scope of the research. The recorded accounts did not contain any subjective or personal opinions from the authors (Yin, 2011), but were an attempt to re-create the conversations based on the recording, transcription and observations. Field notes were transcribed from classroom observations and verified by skimming, reading and interpreting (Yin, 2018) into excerpts. One excerpt is included in the data from the Year 10 class that was previously published in the companion article of Fernandes et al. (2024). This is in part because the excerpt was the only data that fully exemplified all cells of the CTELS. Other Year 10 data, including prevalence of CT, are included below.

2.5. Data analysis

Analysis addressed the research question about the characteristics and prevalence of CT in the classrooms. Analysis of the CT-rich observation data from all lessons used the CTELS conceptual framework to identify CT that was evidenced in listening and speaking tasks. This process yielded counts and timings of CT that were evident in each class to address the aspect of the research question about prevalence of CT. This analytical process also identified one excerpt from each class observation data set that exemplified teacher facilitation and student demonstration of CT in EAL listening and speaking. Analysis of the chosen excerpts employed pattern-matching (Yin, 2018) with the cell descriptions of the CTELS conceptual framework (Fernandes et al., 2024) to identify the CT characteristics of the excerpts. The second and third authors engaged with the first author in the analysis of the data, endorsing and challenging the fit of evidence within each cell of the CTELS.

3. Results and analysis

3.1. CT characteristics and prevalence facilitated by teachers and evidenced by students

The excerpts selected from student classroom observations to evidence student CT characteristics are not typical or representative of any other lessons, but rather exemplify student CT when they were engaged in English listening and speaking tasks. Student CT that was evidenced in reading and writing was not a feature of data selection or analysis in this present study.

As noted, these excerpts provide evidence of CT for students who were primarily high achieving in EAL, and only portray those who had confidence to speak English to the whole class, with a researcher being present. In all three classes, the teachers used Personal Computers that were connected to projectors and speakers in order to facilitate CT in EAL listening and speaking. The teachers' desks were front and centre of the classroom, and all student desks faced towards the front.

The total number of lessons and class time that were observed in Year 10 were 12 lessons and 960 min, respectively for Year 11, total number of lessons and class time that were observed were 11 lessons and 880 min, while Year 12′s total number of lessons and class time that were observed were 7 lessons and 560 min. The excepts are of less than five-minute duration and are a small fraction of the class-time that was observed. The excerpts are exemplary instances, therefore, not epitomising ones. The prevalence data shows how commonly CT was manifested across those timeframes.

3.1.1. Teacher facilitating CT in EAL listening and speaking (Year 12)

The first lesson observed in Year 12, out of seven lessons observed, evidenced student CT in listening and speaking tasks. In this lesson, students were listening to a video about 'advertisement' that was narrated in English. Students responded orally to teacher questions in English, aiming to sharpen and enrich thinking and speaking skills (Paulsen & Kolstø, 2022). In this context, the teacher allowed students to use mobile phones to translate words into English or Indonesian and find further information. According to the teacher, this strategy enabled students to voice their key ideas in English. Moreover, the evidence for student listening was shown by responses to teacher questions, verbal recounts and re-interpretations of statements made by the video's narrator. Students also understood the content through visual and text components in the video, and the video became the primary input for the conversation. In the second and third lessons observed, the teacher asked students to read and comprehend reading texts from their prescribed textbooks. Then, students answered the given questions orally to the whole class. There were no follow-up responses from the teacher and the other students. In the fourth and fifth lessons observed, students reviewed their lessons to prepare their English paper-based exams which consisted of reading and writing. The teacher also explained to his students that the oral exams were conducted into individual speaking test, in which students had to deliver individual speeches about any topics that might interest them for two to three minutes. The speaking exam was conducted in the sixth and seventh lessons.

This 5-minute excerpt of the 80-minute classroom observation comprises the CT evidence for this activity below. However, in the rest of the lesson that the excerpt was taken from and for the other six lessons observed, there was no further evidence of student CT when listening to and speaking in English. Therefore, out of 560 min of Year 12 class observations, 5 min (0.89 %) of the time, students demonstrated CT through listening and speaking in English:

> Mo (Teacher): "We're going to learn about advertisement, and I'm going to play a video for you to watch. After watching, I'd like you all to answer these questions. First, what is advertisement and its function. Second, what's the role of AI or Artificial Intelligence in advertisement."
>
> Mo played the two minutes video. While watching, students wrote down their answers from the questions given.

Mo (Teacher): "Now, Edbert, I'd like you to share your answers, please."

Edbert (Student 1): "I think that advertisement is the form of promoting products with image or video, so consumers can be persuaded to buy. But I think that the use of AI can be quite tricky because my personal data may be used by others to make fake ads."

Mo (Teacher): "Yes, that makes sense, Edbert. What about Lawrentius?"

Lawrentius (Student 2): "I think that advertisement is a method of promotion in the form of image or video to tell consumers about our products or services. In my opinion, AI can help create target consumers and analyse the demographics, interests and behaviour."

Mo (Teacher): "Such a nice idea, Lawrent. What about Pannamitto?"

Pannamitto (Student 3): "I think advertisement is a tool for promotion of our products."

Mo (Teacher): "And what's the role of AI in advertisement?"

No answers from Pannamitto. Melisa then responded to the question spontaneously.

Melisa (Student 4): "I think AI can help us make copyrights for our products." (Shouted spontaneously)

Mo (Teacher): "Well, basically, only works created by humans can be protected by copyrights. In this case, AI in ads can help you know the markets, competitors and how the promotion system can be made."

3.1.2. Teacher facilitating CT in EAL listening and speaking (Year 11)

CT in Year 11 was evident in the third lesson of the eleven lessons observed. The lesson shows Hasan's modus operandi for CT facilitation in listening and speaking through writing explanation text with credible sources and interactively communicating the process of writing the content. In the excerpt below, students presented their text about mitigating a flood. The evidence for student listening was significant in the authentic conversation-like interactions. Student listening was evidenced by appropriate response to teacher and student questions. There were visual and text components on the projection for the teacher and students to read and understand the explanation text. As a component of this strategy, the teacher allowed students to use their mobiles to translate words into English or Indonesian. This encouraged students to be involved in the discussion actively to communicate their key ideas in English. However, this practice was not prevalent, as the other ten lessons observed tended to focus on students completing grammar-based tests in silence or talking to each other in Indonesian as the assessment tasks. There was no evidence of CT when students were listening to and speaking in English in those lessons observed.

This 5-minute excerpt of the 80 min classroom observation comprises the CT evidence for this activity below. However, in the rest of the lesson, the excerpt was taken from and for the other ten lessons observed, there was no further evidence of student CT when listening to and speaking in English. So, out of 880 min of Year 11 class observations, 5 min (0.57 %) of the time, students were demonstrating CT when listening to and speaking in English:

Hasan (Teacher): "We're going to listen to Michael and Reyhan's presentation. Also, pay attention on their explanation text and give questions after the presentation is done. Michael and Reyhan, please present your text."

Michael (Student 1): "Well, the title of our text is flood. We wrote about the cycle of flood that consists of preparation, response and mitigation. Before we wrote the text, we understood the phenomena first."

Reyhan (Student 2): "We also tried to make the readers believe in our writing by using credible sources such as 'Liputan 6′, which is one of the TV news programmes in our country. We also wrote about the process of rain. We think it's enough to make you all believe in our text."

Michael (Student 1): "You guys can read the text first, then you can ask if you have any questions."

While the other students focused on reading the text on the projector silently, Hasan then asked a question to his students spontaneously.

Hasan (Teacher): "In the last paragraph, what does 'prevention activities follow a cycle' mean?"

Michael (Student 1): "This means that the life cycle of flood consists of preparation, response and mitigation."

Reyhan (Student 2): "And from this, we can also prepare ourselves to prevent the flood."

Nicholas (Student 3): "I'm wondering why our government doesn't do any quick actions to prevent flood happening in Indonesia?" (Shouted spontaneously)

Michael (Student 1): "Well, like one of the articles we read. For example, flood in Yang Tze River in China. The government thought it was easy to overcome, but the flood was hard to handle."

3.1.3. Teacher facilitating CT in EAL listening and speaking (Year 10)

In the third lesson observed, recorded in Fernandes et al. (2024), the teacher played a video about moving the capital city of Indonesia to BorneoIsland. The teacher orally prompted the students with questions and required students to share their responses orally while their peers listened actively, resulting in idea-exchange and authentic conversation-like interactions. Student listening was evidenced by appropriate responses to other student statements, to teacher questions and by their verbal recounts and re-interpretations of statements made by the video's narrator. This 5-minute excerpt of the 80 min classroom observation comprises the CT evidence for this activity below:

> Elisa (Teacher): "Now, let's discuss what happens when the capital city of Indonesia is moved. Hansen, please share your thoughts."
>
> Hansen (Student 1): "Moving the capital city will solve Jakarta's problems because Jakarta needs better irrigation system to process clean water. Jakarta also needs to store rainwater. People can use filter to make the rainwater clean."
>
> Felicia (Student 2): "What if there is no rain in dry season?" (Shouted spontaneously)
>
> Hansen (Student 1): "We can store the rainwater in a storage place to keep the water in dry season. As a preventive act, if we want to use rainwater, we need to use filter."
>
> Vincent (Student 3): "I don't think rainwater is good enough to be consumed because of the industrialisation and acid rain." (Shouted spontaneously)
>
> Elisa (Teacher): "Well, when you consider storing the water, think about mosquito larvae that can infect the water."
>
> Hansen (Student 1): "Yes, that's right, Ms. So, we need to use filter to make the rainwater clean." (Shouted spontaneously)
>
> Elisa (Teacher): "Yes, that might work. Noreen, please share your ideas to your friends."
>
> Noreen (Student 4): "I believe that one of the reasons to move the capital city of Indonesia is economic equality. As the president said that it shows how much the stable capital city is needed to have equal economy."
>
> Elisa (Teacher): "Do you guys agree with Noreen? How can this be called economic equality?"
>
> Victoria (Student 5): "I think new capital city will offer jobs for the locals." (Shouted spontaneously)
>
> Jorgen (Student 6): "Yes. And if we move the capital city sooner, the problem of sinking in Jakarta can also be avoided." (Shouted spontaneously)
>
> Nixsen (Student 7): "Objection, but it takes a lot of years to move the capital city. Think about the forests in Borneo." (Shouted spontaneously)
>
> (The excerpt above was taken from Fernandes et al. (2024) on page 5–6)

The seventh lesson observed also provided an opportunity for more conversation-like engagement by students with students. The teacher played a TED Talk video about parenting with a stated purpose for students to focus on the grammatical structure of *'present perfect tense'*. In this context, students listened to the audio that was associated with the video to obtain the information and answer teacher questions orally. However, the questions that were posed elicited student CT about the content, and students did not necessarily consider *'present perfect tense'*. The teacher managed this process by targeting students to answer questions about the given stimulus from the video. Then, the teacher strategically *'withdrew temporarily'* from the conversation, only speaking occasionally, as she otherwise allowed students to respond to other students. Despite the stated intention, the primary purpose of the lesson observed was that students could orally construct ideas using the grammatical focus while speaking in English. This 5-minute excerpt of the 80-minute classroom observation comprises the CT evidence for this activity below:

> Elisa (Teacher): "Okay, so, today's lesson is for you to use 'present perfect tense' in your speaking. First, you need to listen and watch this TED talk video about parenting. You can also take a note some information while watching."
>
> Elisa played the video. While watching, students wrote down some information before presenting.
>
> Elisa (Teacher): "Well, Jorgen, do you know what has happened to teens recently?"
>
> Jorgen (Student 6): "They have been crazy about their phones, Ms."
>
> Marinito (Student 11): "Yes, social media has also affected many students nowadays, Ms." (Shouted spontaneously)
>
> Elisa (Teacher): "Yes, I agree. It's also about parenting styles and how they affect teens like you all. Do you guys agree?"
>
> Noreen (Student 4): "Yes, Ms. Having supportive environment from our parents is also important for us." (Shouted spontaneously)
>
> Cindy (Student 9): "But, we all know that Asian parents are strict and tend to compare their kids' achievements with others'. (Shouted spontaneously)

Cynthia (Student 10): "I disagree. Not all Asian parents are like that. My parents have never compared myself to anyone else." (Shouted spontaneously)

Noreen (Student 4): "How do you guys think about failure in our Asian community?" (Shouted spontaneously)

Victoria (Student 5): "Well, I believe that all of us here are special, and everyone has their own uniqueness." (Shouted spontaneously)

Elisa (Teacher): "Yes, everyone has their uniqueness, and that means all of you are special." (Shouted spontaneously)

In the ninth lesson observed, the teacher provided a video about the Krakatoa eruption, and students answered the teacher's question orally. The stated focus was on using *'conditional sentences'*. However, the teacher's question, like the third lesson, was video-content that focused and prompted a broader ranging discussion that did not necessarily prompt students to use conditional sentences, yet still evidenced CT. The teacher provided personal injections of ideas and opinions about students' answers and stimulated students to respond to their peers' key ideas. In this context, the teacher attempted to facilitate CT through listening and speaking, yet grammatical features became the pre-determined requirement for students to communicate their key ideas. This is partly because the standardised written test in English is for students to comprehend precise grammatical features (Ilyas, 2017; Mbato, 2019). This 5-minute excerpt of the 80-minute classroom observation comprises the CT evidence for this activity below:

Elisa (Teacher): "So, you're going to watch a video about 'Krakatoa history'. You should share your ideas using 'conditional grammatical rules'. You can open your textbooks page 135 to see the sentence structures.

Elisa played the video. While watching, students wrote down some information before presenting.

Elisa (Teacher): "Jorgen, what would you do if you went back time into Krakatoa era?"

Jorgen (Student 6): "If I could go back to the era, I wouldn't tell anyone about Krakatoa."

Cindy (Student 9): "I would surely run away." (Shouted spontaneously)

Elisa (Teacher): "Well, at least you both could make an early warning to avoid the effects of eruption."

Noreen (Student 4): "Ms, for me, I would tell people whom I loved as if it had been my last day." (Shouted spontaneously)

Elisa (Teacher): "Yes, like the story of Pompei. When the eruption occurred, all citizens across the area hugged each other."

Felicia (Student 2): "In this situation, I think we could cooperate with volcanologists to check the condition of the mountains." (Shouted spontaneously)

Nixsen (Student 7): "Yes, at least, we would need more powerful people to back us up." (Shouted spontaneously)

Vincent (Student 3): "Or we could make bunkers to avoid massive eruption." (Shouted spontaneously)

However, the excerpts that were selected from the third (Fernandes et al., 2024), seventh and ninth lessons were not typical in terms of the CT teaching and learning; the rest of the lessons observed, students focused on their prescribed textbooks to prepare their written and oral exams. Similar to Year 12, the oral exams were conducted as individual speaking tests. Students were committed to memorising their pre-prepared speeches about any topics and orally presenting in front of the classroom for two to three minutes. Additionally, written exams consisted of reading, writing, grammatical features and vocabulary. Therefore, out of 960 min of Year 10 class observations, fifteen minutes (1.6 %) of that time was taken up by students who were demonstrating CT when listening to and speaking in English.

3.1.4. Evidence for minimised CT

In Year 10, evidence for CT with respect to the CTELS conceptual framework was not prevalent in listening and speaking tasks, and this was also the case for Years 11 and 12. Activities that did not elicit CT were prevalent of the time in each lesson observed. An excerpt from the Year 12 class that epitomises listening and speaking interactions that provided no evidence for CT is as follows:

Mo (Teacher): "Today, we're going to prepare for the upcoming test. You can open your textbooks page 27 section 2.a. You have to memorise these vocabularies for your test. So, I'm going to ask you the definitions of these vocabularies, and you just tell me the answers directly. So, Edbert, what does 'take out a loan' mean?

Edbert (Student 1): "It's taking a huge pile of money. Borrowing some money."

Mo (Teacher): "Yes, that's correct. Lawrent, what does 'economy' mean?"

Lawrentius (Student 2): "It's a system of trade and industry, by which its wealth is created and used."

Mo (Teacher): "Yes, true. Next, Pannamitto, what does 'interest rate' mean?"

Pannamitto (Student 3): "It's a percentage that a bank gets from you when borrowing money."

Mo (Teacher): "Yes, that's correct. Celine, what does 'inflation' mean?"

Celine (Student 6): "Inflation is like things are getting more expensive."

Mo (Teacher): "Yes, that's partially correct. Inflation also means that the value of money is falling. Ria, what's the meaning of 'to earn money'?"

Ria (Student 7): "Making money for living."

Mo (Teacher): "Yes, that's correct."

The excerpt above shows evidence that Year 12 teacher orchestrated student spoken responses, but these are governed by tight prescription for test preparation. Listening and speaking in this activity were designed by the teacher to recall things that had been read and memorised. All listening and speaking tasks observed, other than those in the excerpts, were of this rote-learning style. Reading was a major section in the standardised test in Indonesian EAL high school contexts (Zein et al., 2020), and students were required to master vocabulary from reading texts in order to pass the written test. The percentage of reading comprehension in English tests was 70 %, followed by listening 10 %, speaking 10 % and writing 10 % (Mayasari & Susanti, 2021). In writing tasks, students need to compose a short essay by answering an open-ended question from a reading text (Siregar et al., 2024). Although there were listening and speaking parts in the standardised test, students were only required to listen for recall and orally repeat the same dialogues in order to receive feedback on linguistic errors such as vocabulary, pronunciation and grammar (Irfani & O'Boyle, 2024), neglecting comprehension and evaluative thinking.

There were no conversation-like-exchanges in the excerpt above, as the prime goal was merely for students to memorise selected vocabulary. The teacher ensured that students would be able to answer their subsequent written vocabulary test correctly. In this context, the teacher nominated the selected vocabulary, and students had to find the definitions from reading texts in their prescribed textbooks. The teacher then asked students to share the definitions to the whole class, so their peers could listen. When finding the definitions, students worked individually and were allowed to use 'Google Translator' to assist them to understand words they did not know. Although the activity was designated to improve student listening and speaking, for this typical activity, the elements of CTELS (Fernandes et al., 2024) were not evident because of the focus on knowledge recall. Overall, in each class observed, there were rich instances of facilitated student CT enabled through listening and speaking, but these were rare in over 30 h of class time that was observed.

3.2. CTELS analysis of the excerpts

The excerpts above reveal the teachers and students listening and speaking in EAL contexts. In the Year 12 excerpt, students engaged in a dialogue that was orchestrated by the teacher who triggered the conversation by questioning students. He then instructed students to write down their answers before communicating their key ideas orally. This practice of students answering teacher's questions was prevalent in other Year 12 lessons, yet there were no conversation-like student-to-student interactions among students in any other lessons observed. In the Year 11 excerpt, students engaged in a conversation that was increasingly spontaneous and decreasingly arranged by the teacher. Different from Year 12, the Year 11 teacher intentionally *'withdrew'* from the student presentation only speaking subsequently in the transcript when asking a single question. The teacher also allowed students to respond to other student questions. In the Year 10 excerpts, initiating student active listening and speaking occurred in teacher facilitated CT, specifically in the third, seventh and ninth lessons observed. In the excerpt from the third lesson, the teacher managed this process by targeting one student to answer questions about the given stimulus, such as videos. Then, the teacher strategically *'withdrew temporarily'* from every conversation with the class, only speaking occasionally, as she otherwise allowed students to respond to other students. This specific teaching characteristic of the Year 10 teacher engaged a substantial proportion of students to converse in English during the whole-of-class teaching and learning process (Fernandes et al., 2024). Students engaged in on-topic conversations that were more spontaneous than orchestrated.

Using the CT through EAL listening and speaking, twenty cells of CTELS conceptual framework (Fernandes et al., 2024) were used to analyse teacher CT characteristics and prevalence evidenced in student listening and speaking across Years 10 to 12. The excerpts above were identified as evidencing CT in each Year level so that each cell of CTELS may be represented. In Tables below, any cell without a year level signifies that there was no evidence for that cell in the excerpts for the class observed.

3.2.1. Evaluate & Determine (Discerning)

From across all excerpts, evidence for *Evaluate and Determine* was present or absent as shown in the table below (Table 1):

For the facet of *evaluate and determine, 'clarity'* was not evident in Years 12 and 11 excerpts. In Year 12 excerpt, students merely stated the definitions of advertisement, which were referred to promoting products. There was no awareness in students' answers to evaluate and assert deeply the reasons of why AI was crucial in advertisement and how AI could be helpful for their daily lives. Similarly, in Year 11 excerpt, only claims were presented based on the presented writing. The main purpose of the given information was made implicit, and so evaluating the deep consequences of learning how to prevent and mitigate *flood* through explanation text was not highlighted. *'Clarity'* was only evident in Year 10 excerpt when Hansen stated that moving the capital city was in order to solve Jakarta's problems. Hansen's statement became the entire teacher purpose of the lesson that students needed to evaluate the effects of moving Jakarta and determine that all problems would be solved (Fernandes et al., 2024). In this sense, *'clarity'* when *evaluating and determining* in student listening and speaking is the core of CT to drive deeper levels of understanding.

'Relevance' of *'evaluate and determine'* was evident in each Year, as students' claims were immediate, pertinent and evaluative. In Year 12 excerpt, Lawrentius' statement regarding the primary role of AI in advertisement *"…AI can help create target consumers and analyse the demographics, interests and behaviour"* was closely aligned with the given question. Similarly, in Year 11 excerpt, Reyhan's

answer *"…we can also prepare ourselves to prevent the flood."* that addressed Hasan's question "*…what does 'prevention activities follow a cycle' mean?"* was relevant. In Year 10 excerpt, *'relevance'* was evident in Felicia's direct and evaluative challenge to Hansen, asking a conditional question about the scarcity of rain in dry season (Fernandes et al., 2024).

While *'depth'* was epitomised in Year 12 and 11 excerpts, *'coherence'* was not evident in both Years. In Year 12 excerpt, Edbert's explanation *"…the use of AI can be quite tricky because my personal data may be used by others to make fake ads."* drew on multiple evidence that the side effect of AI in advertisement could be detrimental towards the misconduct of personal information. In Year 11 excerpt, *'depth'* was epitomised by Michael's detailed response *"…For example, flood in Yang Tze River in China. The government thought it was easy to overcome, but the flood was hard to handle."* when responding Nicholas' question *"…why our government doesn't do any quick actions to prevent flood happening in Indonesia?"*. Different from both Year 12 and 11 excerpts, both *'depth'* and *'coherence'* were showed in the third lesson in Year 10 excerpt. *'Depth'* was epitomised by Hansen's detailed explanation based on the video that he saw as convincing, and *'coherence'* is demonstrated by Vincent's evaluative challenge which was listened to and followed on carefully from Hansen's claims (Fernandes et al., 2024). Vincent was able to evaluate and determine the information from Hansen about filtering water. Vincent evaluatively challenged Hansen's claim by emphasising that rainwater was not consumable, which was listened to and followed carefully from Hansen's claim. Here, the logical and causal relationships were identified.

3.2.2. Find & Generate (Determined)

Evidence for *Find and Generate* was present or absent as shown in the table below (Table 2):

In Year 12 excerpt, students *find* information audibly when watching the video and *generate* answers based on the audio information. However, *'clarity'* was not entirely illustrated by Year 12 students. Even though Edbert and Lawrentius epitomised the main function of the advertisement, which was to promote products and services, the entire purpose of the lesson about AI in the advertisement from student responses was not clearly defined and stated. Similarly, in Year 11 excerpt, Michael and Reyhan solely presented their explanation text to explain about preparing, responding and mitigating the cycle of flood. Michael and Reyhan used that concept as an overarching presentation without clearly defining and asserting the main purpose of the lesson. At this point, *'clarity'* was epitomised in Year 10 excerpt only when Hansen found one solution that had been specified in the video (Fernandes et al., 2024).

On the contrary, *'relevance'* was evident in Year 12 excerpt when Lawrentius shared his opinion about the role of AI in advertisement that had been specified in the video *"…AI can help create target consumers and analyse the demographics, interests and behaviour."*. Similarly, in Year 11 excerpt, *'relevance'* was evident when Michael and Reyhan addressed Hasan's question *"…what does 'prevention activities follow a cycle' mean?"* by explicitly linking to the main purpose of the text, which was to prepare, respond and mitigate flood. Also, in Year 10 excerpt, *'relevance'* was evident when Victoria addressed Elisa's question by explicitly linking the evidence of beneficial impact in moving the capital city with the audio information from the video (Fernandes et al., 2024).

'Depth' was epitomised in Year 12 excerpt when Edbert claimed "*…the use of AI can be quite tricky because my personal data may be used by others to make fake ads."*. His concern, from the audio information, was that there might be a specific drawback towards the use of AI in the advertisement, which was misusing users' personal data to create another fake advertisement. Similarly, in Year 11 excerpt, *'depth'* was epitomised when Michael responded Nicholas' question. Michael's concern, from the article he read, was that flood should be handled seriously by the government, as it could become a specific drawback to the environment. *'Depth'* was also showed in Year 10 excerpt in Nixsen's concern about a specific drawback to Borneo's ecosystem when moving the capital city. Nixsen recalled audio information that there would be a time lag due to the development of the area that may make the project unfeasible (Fernandes et al., 2024).

However, *'coherence'* of information was only evident in Year 10 excerpt through Noreen's claim that moving the capital city of Indonesia would equally boost the economic development, referring to the source of her found information from the given video (Fernandes et al., 2024).

3.2.3. Embark & Clarify (Curious)

Evidence for *Embark and Clarify* was present or absent as shown in the table below (Table 3):

In Year 12 excerpt, the teacher *'embarked'* the purpose of the conversation with a prompt *"…I'd like you to share your answers."* Students needed to both process the video that was watched and relate to teacher's intentionally general prompt to *clarify* their answers. The teacher made the pedagogical decision to initially choose Edbert to determine that purpose, and out of all possible components in the video, Edbert talked about the drawback of the use of AI in advertisement. *'Clarity'* was also evident in Year 11 excerpt when teacher made the pedagogical decision to choose Michael and Reyhan to present their explanation text. This was the direction of half of the transcript, and the direction only changed when Hasan and Nicholas asked questions "*what does 'prevention activities follow a cycle' mean?" "I'm wondering why our government doesn't do any quick actions to prevent flood happening in Indonesia."* In Year 10 excerpt, the teacher launched the purpose of the conversation with her prompt *"let's discuss what happens when the capital city of Indonesia is moved."* which needed student clarification of purpose (Fernandes et al., 2024).

However, *'relevance', 'depth'* and *'coherence'* were not evident in Year 12 excerpt, as the teacher concluded the most important information *"…AI in ads can help you know the markets, competitors and how the promotion system can be made."*. Similarly, *'relevance'* was not epitomised in Year 11 excerpt, yet it was shown by Year 10 student comments and questions that were closely adhering to the theme at hand, following both Hansen then Noreen's clarification of purpose (Fernandes et al., 2024). In Year 11 excerpt, *'depth'* was illustrated in Michael's main points when he responded to Nicholas' question about the local government not being able to handle flood and teacher's question regarding the specific phrase in their explanation text. Nevertheless, *'coherence'* was not evident in Year 11 excerpt. *'Coherence'* was epitomised in Victoria's main point that new capital city would offer jobs for the locals, as she responded to Noreen's economic idea equity. Evidence for *'depth'* was evident in Nixsen's response to Noreen's, when he challenged equity with the

complexities of what would happen economically when the capital city was moved (Fernandes et al., 2024).

3.2.4. Organise & Manage (Harmonising)

Evidence for *Organise and Manage* was present or absent as shown in the table below (Table 4):

In Year 12 excerpt, because the teacher's teaching structure was prevalent to his students in the other lessons observed, the evidence of *'clarity'* was showed when students *organised* and *managed* responses from questions given. In the Indonesian classroom context, challenging others tends to be inappropriate or rude (Munandar & Newton, 2021), and so the classroom culture provides evidence of a harmonious approach to conversation management. In Year 11 excerpt, *'clarity'* was evident when one student was speaking at a time. Giving the responses, there were at least three other students including teacher in the classroom were listening. No hands were raised, but rather students were *self-managing* their speaking in a conversation-like manner without any interruption of the speaker. As the teacher's teaching structure was familiar to his students, this is evidence of student *'clarity'* about how to *'organise and manage'* conversations in EAL that are far more than superficial agreements. Similarly, in Year 10 excerpt, *'clarity'* was about how to organise and manage conversations in EAL that are far more than superficial recounts or agreements (Fernandes et al., 2024).

In this case, only *'relevance'* and *'depth'* were epitomised in Year 12 excerpt, that were closely adhering to Lawrentius' response about the purpose of AI in advertisement *"I think that…AI can help create target consumers and analyse the demographics, interests and behaviour."* Yet, *'coherence'* was not evident in the other appropriate responses. Similarly, in Year 11 excerpt, *'relevance'* and *'depth'* were evident in Michael's and Reyhan's responses from Hasan's and Nicholas' questions. Both students managed to have a *'depth'* of conversation by responding questions: *"This means that the life cycle of flood consists of preparation, response and mitigation.", "For example, flood in Yang Tze River in China. The government thought it was easy to overcome, but the flood was hard to handle."*. However, *'coherence'* was not evident in the other appropriate responses. Unlike Year 10 excerpt, there are strategies by students to manage a *'depth'* of conversation that was exemplified by the three student challenges to other student statements. *'Relevance'* was also evident in the on-topic nature of responses, whether on the topic of water or economy. The evidence for the conversation's managed *'coherence'* was further evident in the appropriate responses to the shift to the economic topic about offering new jobs for the locals and long duration to build the new capital city (Fernandes et al., 2024).

3.2.5. Analyse & Synthesise (Creative)

Evidence for *Analyse and Synthesise* was present or absent as shown in the table below (Table 5):

In Year 12 excerpt, the conversation centred around the two questions given by the teacher, probing the *'clarity'* and *'relevance'* from students to clearly communicate their key ideas and examples. These were evident in the responses from Edbert and Lawrentius, as they *analysed* and *synthesised* the aim of the advertisement and the role of AI. However, *'depth'* and *'coherence'* were not epitomised in the conversation. Similarly, in Year 11 excerpt, *'clarity'* was epitomised in Michael's response towards Hasan's question. Michael *analysed and synthesised* the aim of the text by stating *"…the life cycle of flood consists of preparation, response and mitigation."*. The *'relevance'* of the conversation was centred around Michael's and Reyhan's synthesis of understanding in their explanation text. The teaching and learning processes were directed to be more of asking questions and responding the features of the text, yet *'depth'* and *'coherence'* were not epitomised during the conversation. However, in Year 10 excerpt, *'clarity'* was evident in Hansen's response. Hansen *analysed* and *synthesised* the aim of moving the capital city of Indonesia by communicating his own example although the synthesised idea was not completely correct. This synthesised error in Hansen's statement harks back to *'evaluate and determine'* and is one reason why these skills are a centrepiece of multi-faceted thinking that is truly critical (Fernandes et al., 2024). Also, the conversation probed the *'relevance', 'depth'* and *'coherence'* flowing from one to the next. This started with Noreen's idea about economic equality, and teacher prompted to see whether others agreed. Victoria and Jorgen respectively amplified with the ideas of *"jobs for the locals"* and *"move the capital city sooner"*. Additionally, Jorgen's analysis was challenged by Nixsen's analysis about the longer duration for rebuilding the new capital city.

3.3. Summary of the results

The CT evidenced in students' listening and speaking in EAL was rich in these five-minute excerpts above. The level of engagement in the excerpts shows students conversing in English as their additional language, and doing so in a *constructive* way that leads to deeper understanding of the lessons and probably deeper CT development (Starichkova et al., 2022). The Year 10 excerpt evidenced the fullness of multi-faceted CT, but Year 11 and 12 excerpts did not represent all twenty cells of CTELS. In Year 12, CT characteristics were evident when students listened to the teacher's questions as well as responded with explanations orally, initiating a dialogic space to contribute in the conversation (Yu et al., 2021). Teacher intervention also seemed to be particularly vital in order to help students understand the learning topic, so they could think more broadly and critically. The intervention was conducted in a very sensitive manner that did not weaken student confidence to speak (Willison, 2020), nurturing student determination to participate actively during the teaching and learning processes. Moreover, based on the string of student-teacher conversation, students communicated their key ideas, initiating the *harmonising* disposition and the respectful conversation in the classroom with teacher. However, the Year 12 excerpt does not provide evidence for all twenty cells of the CTELS framework. The dimension of *'coherence'* in each facet was not evident in students' learning. This is followed by the dimensions of *'clarity', 'relevance'* and *'depth'*, which were not evident in all the twenty cells. This is in part because Year 12 students, in the lesson observed, solely mentioned the definitions of advertisement. There was no specific awareness as to how students evaluated and asserted deeply the reasons of why AI was required in advertisement. Moreover, students did not evaluatively challenge each other's claims, which were listened to. So, the logical coherence and causal relationship were not evident in Year 12 lesson observed.

Similar to Year 12, Year 11 CT was not evidenced in four of the CTELS twenty cells, that align with the dimension of *'coherence'*. In the lesson observed, such a dimension was not evident because the teaching and learning characteristics only prevailed students' claims to communicate main points that were written in their explanation text. This is also followed by *'clarity', 'relevance'* and *'depth'*, which were not evident in all the twenty cells. Although teacher occasional intervention seemed to be particularly pertinent, the main purpose of such lesson was made implicit. Also, the evaluation to be aware of *'flood prevention'* was not highlighted. The listening and speaking in Year 11 may promote group-thinking to identify key ideas in the explanation text, and yet without challenges to drive students to deeper levels of understanding, students may not build the logical sense of meaning prescribed in the lesson. Different from both Years 12 and 11, all twenty cells of the CTELS conceptual framework were evident in Year 10. Characteristics of CT in EAL listening and speaking in Year 10 tended to focus on students listening to their peers' main points and responding/challenging with detailed explanations. The disposition of *harmonising* and respectful conversation-like nature in the classroom was the prevalent feature in Year 10 (Fernandes et al., 2024). Students often used *creative* challenges that were a complex synthesis of information from the video, listening to other students and imagined possibilities (Fernandes et al., 2024). In this present study, although students' CT in EAL listening and speaking did not show the scripted planning of teachers in finding and selecting an appropriate stimulus, in relation to twenty cells of CTELS, Year 10 student observation data exemplified CT developed at a high level. In this sense, the virtuous circle of CT development requires teacherly agilities and associated dispositions, so students can be increasingly discerning, determined, curious, creative, harmonious and constructive during teaching and learning process (Fernandes et al., 2024).

4. Discussion

4.1. Characteristics of CT in EAL listening and speaking

Classroom observations in this present study provided evidence of Years 10 to 12 teachers' facilitation of student CT in listening and speaking activities. For instance, CT characteristics in Year 12 were prompted by asking questions from a given video in a very simple conversation structure (Etemadfar et al., 2020) that aimed to increase student simultaneous engagement and pedagogical reflection (Gambrill, 2019). Nurturing engagement was evident when the teacher endorsed Edbert's and Lawrentius' key ideas about the benefits and drawbacks of AI in the advertisement, possibly in part, to value their contributions in the lesson observed. Meanwhile, CT characteristics in Year 11 were focused on analysing the content of the explanation text and communicating the process of writing the text in collaborative oral presentation (Cottrell, 2017; Liang & Fung, 2021). In Year 10, the teacher prompted student CT and withdrew, only to re-appear at key moments in a very simple conversation structure, in which students asserted, challenged, asked and answered other students. The teaching and learning process in Year 10 aimed to allow students to participate collaboratively and delve deeply into constraints of moving the capital city of Indonesia to BorneoIsland (Fernandes et al., 2024). Here, the results show authentic use and development of CT in EAL listening and speaking through an evolving conversation between teacher and students (Luk & Lin, 2015; Yu et al., 2021), despite any challenges from reduced time for preparation and government-supplied resources (Ilyas, 2017; Muniroh, 2021).

On a positive note, the richness of student CT when listening to and speaking English spontaneously in this present study shows the potential for conversation-oriented learning (Starichkova et al., 2022; Yu et al., 2021). For instance, the Year 10 teacher provided more rooms for student-to-student and whole-class conversations in English. In this context, the Year 10 teacher *'withdrew'* occasionally from such conversations, so *'student-to-student and whole-class English conversation'* is potentially a critical piece of evidence in this present study.

Although students had positive and negative pressures to listen and speak in English, in this context, when students spoke in small groups, rather than to the whole class, they almost always used their mother tongue, which was *Bahasa Indonesia* (Indonesian language). Here, negative pressure co-exists because some students, even when targeted by the teacher, did not speak in English to the whole class due to a lack of confidence, willingness or ability (Paulsen & Kolstø, 2022). Nevertheless, the whole-class environment in this present study provides a positive pressure to speak in English, and the students who were confident, willing and able to do so at times provide evidence of CT, especially when students responded to other students spontaneously.

4.2. Prevalence of CT in the case studies

Evidence of student CT while listening and speaking was relatively rare during the teaching and learning process, especially in both Years 12 and 11. The scarcity of CT in Years 12 and 11 occurred because the dimension of *'coherence'* in each facet was not evident in students' learning, followed by the dimensions of *'clarity', 'relevance'* and *'depth'*. This is in part because there was no student engagement to evaluatively challenge each other's spoken claims. There were no challenges to drive students to deeper levels of understandings and build the logical sense of meaning in the lessons observed. In this context, the summative assessments may not correspond with rich facilitation and formative assessment of listening and speaking tasks that could encompass all the twenty cells of CTELS conceptual framework. In this sense, the present study implies that the target high school provided limited opportunities for student classroom observations and teacher actual practices to develop CT in EAL listening and speaking. Consequently, the teachers struggled to design CT listening and speaking learning activities for students, as they would need to overcome curriculum and assessment constraints that prioritised reading and writing (Siregar et al., 2024). The constraints imply that students may underachieve in listening and speaking tasks as well as CT learning objectives (Schieble et al., 2021). Therefore, the teachers may require sufficient guidance to expand their professional competence in order to enhance CT pedagogical practice improvement and fulfil the EAL listening and speaking policy mandates (Gandana et al., 2021; Liang & Fung, 2021).

In these case studies, CT facilitation when students listened to and spoke in English was rare in any Year. In terms of the CTELS characterisation, CT in EAL listening and speaking was multi-faceted and holistic in only one five-minute interlude Year 10, and a slimmed-down version of CT was evident in Years 11 and 12. One indication in this present study is that when there were opportunities for students to engage in *student-to-student* English conversations or in *student-to-teacher* unscripted conversations, CT in terms of CTELS was evident. In terms of student learning autonomy, when students were given prescribed tasks, with teachers modelling and directing the process, student *emulation* (Willison, 2020) of teachers modelling in prescribed tasks was prevalent across the lessons and years observed. Such a prescriptive structure could have set students up for scaffolded tasks, where they were given more scope and, in terms of their autonomy, could *improvise* (Willison, 2020) around the content and listening and speaking skills. Evidence of scaffolded tasks with student improvisation was rare, but when this occurred, CT was evident. For instance, Year 10 teacher, Elisa, prompted her students with questions and required them to share their responses to the whole class while their peers listened. Elisa then withdrew temporarily from the conversations in classroom to allow students respond to other students. In this context, CT was evidenced in student listening, responses to other student statements, teacher questions and verbal recounts and re-interpretations of statements made by the videos' narrators (Schieble et al., 2021; Yu et al., 2021). As a result, CT was evident when students exchanged ideas in authentic conversation-like interactions (Bakhshayesh et al., 2023).

However, when students engaged in listening and speaking tasks that were heavily scripted and demonstrated minimal *student-to-student* interaction and were commonly aimed towards test or exam preparation, evidence of CT was absent. The scarcity of *student-to-student* and whole-class conversation in English in the observed classes illuminates an effect of exam-oriented policy and indicates a practice gap for the development of both CT and English language listening and speaking in the classroom. This is in part because exam-based learning neglected student comprehension and evaluative thinking (Liang & Fung, 2021; Paulsen & Kolstø, 2022), as the main purpose was for students to memorise selected materials for the success of standardised tests. Even though the teaching and learning activities were to develop student listening and speaking in English, CT was not evident in the typical focus on knowledge recall (Wang & Wu, 2023). Therefore, there was no evidence of CT when students were committed to teaching and learning activities that neglected comprehension and evaluative thinking.

4.3. Tensions between policy, teaching and student learning

The tensions between CT policy, teaching and student learning can be drawn from teacher CT dispositional and epistemological practices in EAL listening and speaking. This present study speaks to the tensions that the teachers encountered when intending to implement policy on CT facilitation in listening and speaking in EAL. As shown in the results, the realities of test and exam preparation pulled teachers and students in opposite directions, and so reproductive modes were the priorities of both teaching and learning (Ilyas, 2017; Jenkins & Leung, 2018; Setyono & Widodo, 2019). In this context, the tension caused by tests and exams pulled teachers and students alike away from opportunities to think critically while listening to and speaking in English (Fernandes et al., 2024). This is a ubiquitous tension around the world and few education systems have resolved it (Jenkins & Leung, 2018; Muniroh, 2021). Therefore, if the development of secondary student CT in EAL listening and speaking is genuinely desired by the education system, weight needs to be given to class time that is not dominated by preparation for high-stakes tests and exams.

Moreover, underlying the pedagogical challenges of CT and language teaching, which were explicit in the results, concrete forms of teacher professional learning (e.g. classroom observations and teaching) need to be emphasised in the teaching profession in order to make a meaningful relationship between CT and language learning (Zhang et al., 2020). Possibly in part, the CTELS conceptual framework could provide teachers, policymakers and researchers a systematic understanding of CT in EAL listening and speaking (Bakhshayesh et al., 2023). The data and analysis in this present study suggest that assessing CT in EAL listening and speaking should be conducted through corresponding listening and speaking tasks (Schieble et al., 2021; Yu et al., 2021). This is in large part due to the lack of CT congruence between teaching and learning of listening and speaking in EAL and its formative and summative assessment, and so these gaps warrant further investigation.

Policy mandates for CT in listening and speaking in EAL in Indonesian Secondary Education also seem to be overwhelmed by other policies on the delivery and reading-and-writing assessment as well as a lack of resourcing (Fernandes et al., 2024). This is borne out by the data in this present study and the wider literature; thus it is crucial to further investigate how Indonesian EAL teachers could improve secondary student CT in EAL listening and speaking while dealing with different challenges that might arise. In this sense, the CTELS conceptual framework could be used to promote teacher professional learning in order to solve teacher constraints when facilitating CT in EAL listening and speaking. Therefore, further case studies are required to extend this present study to probe the viability of the CTELS framework in its conceptual role in order to illuminate CT in listening and speaking tasks in EAL classes.

4.4. Implications

One possible assertion from this present study is that facilitating a higher level of student autonomy in the listening and speaking tasks may promote student CT. This may be true for those students who are comfortable with speaking out loud in English to a whole class, as many of the students who consented to be involved in this present study were. However, it may not be true for most students who are less confident and/or capable of speaking in English. It should be noted that students were observed to speak only in Indonesian when working in small groups in the EAL classes, and there may be CT happening in those discussions, but missed by this research, the teachers and the assessment regimes.

It may also be a false hope for CT to be facilitated in EAL for the majority of students, as many of them are still learning the basics of English language, specifically in grammar and vocabulary. This is partly because accuracy and fluency on linguistic patterns in four

EAL skills such as listening, speaking, reading and writing remain a significant gap between the CT policy and real practices in each Year observed (Defianty & Wilson, 2022; Ilyas, 2017; Suarcaya, 2023). Consequently, the cognitive load to think critically while listening to and speaking in English may be too high (Ahmed & Ibrahim, 2023; Ilyas, 2017), and so the idea of CT itself in order to promote English language learning for Indonesian students may be unrealistic and currently lack evidence. Therefore, this present study highlights implications for policy and teaching secondary student CT, including professional development to enable pre-service and in-service teachers' own CT rather than pre-determining their teaching.

4.5. Limitations

This present study was only based in a single Indonesian high school with three in-service teachers and three classes. The results may have been different if the research had been conducted in different institutions with additional teachers and classes. Moreover, this study did not interview students, where their perspectives could provide broad and different perceptions of CT in their learning experiences in class. Additionally, the results of this present study are not generalisable, yet they provide a rich microcosm of the effects of policy about CT that may be implemented in very similar contexts (similar school learning area departments that share resources and ideas within EAL subject teaching) in order to reveal vastly different teaching facilitation and student CT outcomes.

4.6. Future direction

Given that many non-Anglophone countries are adopting similar policies as Indonesia for developing Secondary Student CT in EAL classes, this present study points to directions for future investigations of CT in EAL listening and speaking pedagogy and assessment. The CTELS conceptual framework shows potentials for informing how effectively CT is facilitated in EAL classrooms, especially when being compared to standardised tests or surveys about CT in EAL, which have multiple in-built limitations. Therefore, an emerging question from this present study relates to how effectively CTELS, used as a conceptual framework, can be used to inform teacher pedagogy about CT in EAL listening and speaking.

For future studies, it is crucial to widen the samples and conduct further classroom observations and student interviews in order to explore student voices and learning experiences, aiming to inform teacher CT practices and curriculum development in EAL listening and speaking. Future studies should also investigate CT from broader perspectives and intensively explore student voices and learning experiences through student interviews that are triangulated with classroom observations and learning documents. Moreover, studies of the tensions between exam-and-test emphases in the classroom and the development of student CT are needed. Additionally, subsequent research may adopt other strategies informed by the CTELS conceptual framework, including quantitative studies.

5. Conclusion

This present study investigated student CT characteristics and prevalence that were evidenced when they listened to and spoke in English as an additional language. The data across Years 10, 11 and 12 were analysed with the CTELS framework to show student CT characteristics and prevalence across the lessons observed. This study also captured the scarce CT facilitation from each Year with excerpts, showing examples of how CT in EAL listening and speaking enabled students to think critically. The subsequent students' voices and behaviour in this present study were evident in order to contribute to CT knowledge and development, culminating in student cognitive engagement and connecting teacher practices that are underpinned and integrated with subject teaching.

The use of the CTELS conceptual framework unearthed some of the realities of CT in the three Indonesian EAL classes studies. A major finding was that the tensions between exam-and-test emphases in the classroom and the development of student CT were almost impossible for these teachers to reconcile in the realities of classroom practice. The pressures of exam-and-test assessment seemed to be a major driver for the prevalence of reproductive modes of learning even though the teachers were aware of the requirements to facilitate student CT in EAL classes. Each of the three teachers provided activities whereby students needed to improvise when listening to and speaking English to the classroom, and so these activities evidenced partial or multi-faceted CT. In this present study, the teachers demonstrated a rarely-used capacity to facilitate CT with some students who had the confidence to speak English to the class. A consequence was powerful examples of full-bodied CT that was evidenced in student listening and speaking, and yet such examples were uncommon. Using the CTELS conceptual framework, this study provides deep insights into the characteristics and scarcity of secondary student CT when the teachers facilitated listening and speaking tasks in English in Indonesian secondary school classes.

Disclosure statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. The research was conducted after the research ethics approval was issued by the University of Adelaide (H-2021-007). Classroom observations were conducted after teachers and students provided their consent forms. The data that support the findings are available from the corresponding author, upon reasonable request.

CRediT authorship contribution statement

Ricky Fernandes: Writing – original draft, Visualization, Validation, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **John Willison:** Writing – review & editing, Validation, Supervision,

Conceptualization. **Christopher Boyle:** Writing – review & editing, Supervision.

Data availability

Data will be made available on request.

Acknowledgments

Special gratitude is expressed for the target high school in Indonesia, teachers and all students from Year 10, 11 and 12 EAL classes for having provided the access of high levels of collaboration to successfully support this research project. The research is a part of doctoral degree programme supported by the University of Adelaide, Australia.

Appendix A. Framework of CTELS taken from Fernandes et al. (2024)

Dimensions of CTELS

Facets of MELT

Students develop critical thinking in English listening and speaking when they ...	**Clarity** *Students communicate key ideas in a precise manner*	**Relevance** *Students communicate key ideas that are related to the given information/topics*	**Depth** *Students communicate detailed explanations of key ideas to develop thorough arguments*	**Coherence** *Students communicate arguments of key ideas in a logical sense to build the overall intended meaning*
a. Evaluate & Determine *What will we trust?* *Students evaluate and determine the credibility of given information/sources by communicating their key ideas.* — Discerning	Students evaluate and determine the credibility of given information/sources by communicating their key ideas precisely, clearly asserting the main purpose of the given information/source. Evidence is presented in the context, and direct links between evidence and claims are made explicit.	Students evaluate and determine the credibility of given information/sources by communicating their key ideas that are closely aligned with the most important information and support the topics.	Students evaluate and determine the credibility of given information/sources by communicating detailed explanations to develop their key ideas.	Students evaluate and determine the credibility of given information/sources by communicating their key ideas with logical and coherent structures. Logical and causal relationships are identified.
b. Find & Generate *What will we use?* *Students find and generate their key ideas from given information/sources by using given methodologies.* — Determined	Students find and generate key ideas from given information/sources by using given methodologies. Students communicate their key ideas by clearly asserting the main purpose of the given information/source. Points at issues are clearly defined and stated.	Students find and generate key ideas from given information/sources by using given methodologies. Students orally discuss their key ideas that are related to the given topics. Direct links between evidence and claims **are** made explicit.	Students find and generate key ideas from given information/sources by using given methodologies. Students also consider alternative perspectives in relation to the given information/topics by communicating with breadth to ensure that they do not ignore any important components.	Students find and generate key ideas from given information/sources by using given methodologies. Students communicate their most important key ideas related to the significance of given information/sources. Claims for logical coherence are examined through evidence and methodology.
c. Embark & Clarify *What is our purpose?* *Students orally respond to given questions/tasks and clarify their key ideas while considering ethical, cultural, social and team (ESCT) issues.* — Curious	Students orally respond to given questions/tasks and discuss key ideas by clearly asserting the main purpose of the given information/source. Students orally clarify questions, terms, requirements, expectations and ethical, cultural, social and team issues.	Students orally respond to given questions/tasks and discuss the most important information related to the given topics. Students orally clarify questions, terms, requirements, expectations and ethical, cultural, social and team issues. Given information that is significant and relevant is highlighted.	Students orally respond their key ideas to given questions/tasks and discuss the complexities of the given information/sources. Students orally clarify questions, terms, requirements, expectations and ethical, cultural, social and team issues.	Students orally respond to given questions/tasks and discuss the premises of given information/sources that support conclusions. Students orally clarify questions, terms, requirements, expectations and ethical, cultural, social and team issues.
d. Organise & Manage *How do we arrange?* *Students organise given information/sources to reveal their key ideas while managing the processes through spoken conventions.* — Harmonising	Students organise and manage given information/sources to reveal their key ideas that are aligned with the given information/source. Students clearly assert the main purpose of the given information/source by communicating their key ideas.	Students organise and manage given information/sources to reveal their key ideas that are aligned with the topics by communicating the causal relationships.	Students organise and manage their key ideas by communicating detailed and thorough explanations and/or arguments.	Students organise and manage given information/sources to reveal their key ideas by communicating detailed explanations and/or arguments, intended to build the logical sense of meaning.
e. Analyse & Synthesise *What does it mean?* *Students analyse and synthesise given information/sources to produce their key ideas and coherent understandings.* — Creative	Students analyse and synthesise given information/sources to produce key ideas and coherent understandings by clearly asserting the main purpose of the given information/source. Students communicate their own examples, and the structures are clear, unambiguous and easy to understand.	Students analyse and synthesise given information/sources by communicating their key ideas and coherent understandings that are aligned with the given information/topics.	Students analyse and synthesise given information/sources to produce key ideas and coherent understandings by communicating detailed explanations and/or arguments. Students communicate their key ideas by considering alternative perspectives and justifying arguments.	Students analyse and synthesise given information/sources to produce key ideas and coherent understandings by communicating the arguments intended to build the logical sense of meaning. Students communicate by developing key ideas and using transition phrases to identify logical and coherent progression.

Appendix B. Classroom observation (Field Note Form) taken from Fernandes et al. (2024)

An investigation of facilitating critical thinking in an English language class when listening and speaking are practised in an Indonesian high school
School
Participant
Age range
Qualification
Years of teaching experience
Years at the school
Date and Time
Classroom Observation
Portraits of participants
(The characteristics of individuals, including their dresses, gestures and non-verbal behaviour)
Reconstructions of dialogue
(The interactions between or among people)
Descriptions of physical setting
(The "actions" taking place)
Classroom activities
(The physical surroundings)
Researcher's personal note (ideas, impressions, problems, feelings and speculation)

Appendix C. Teacher documents

Year 10 (Available in the Appendix D from Fernandes et al. (2024))
Year 11
Scoring rubric criteria for assessment tasks

Explanation text – oral presentation	
Criteria	**Mark**
Layout	5 %
Ways of presentation	35 %
Pronunciation	25 %
Clarity	10 %
Questions answered	25 %
Total mark	**100 %**

Year 12
Scoring rubric criteria for assessment tasks

Idea	**50:** If students can mention 3 pros and 3 cons (6 ideas)
	45: If students can mention 3 pros and 2 cons or vice versa (5 ideas)
	40: If students can mention 4 ideas
	35: If students can mention 3 ideas
Organization	**48–50:** If students can give reasons, facts and illustrations clearly
	40–47: If students can give reasons, facts and illustrations, but not really clear
	30–39: If students can give only reasons or facts or illustrations, but not really clear

Appendix D. Lesson materials

Year 10	**Year 11**	**Year 12**
Lesson 1: Students learned about start-ups in Indonesia, watched the video about Indonesian start-ups and answered teacher questions orally.	**Lesson 1:** Teacher explained about the procedures of oral presentations, and students prepared their explanation texts.	**Lesson 1:** Students learned about advertising, watched the video about advertisement and answered teacher questions orally.
Lesson 2: Students learned about the possibilities of moving the capital city of Indonesia to BorneoIsland, watched the video about it and orally discussed with teacher and peers.	**Lesson 2:** Students presented their oral presentations, which is their explanation texts.	**Lesson 2:** Students continued learning about advertisement and answered teacher questions.
Lesson 3: Students continued learning about the possibilities of moving the capital city of Indonesia to BorneoIsland and orally discussed with teacher and peers.	**Lesson 3:** Students continued presenting their oral presentations.	**Lesson 3:** Students read reading texts from their prescribed textbooks about the story of the age wars. Students answered the questions from the texts orally.
Lesson 4: Students interpreted song lyrics and individually presented in front of the class.	**Lesson 4:** Students learned the grammar 'conditional sentences' and did the assignments in the classroom.	**Lesson 4:** Students prepared their exam tests.
Lesson 5: Students interpreted song lyrics and individually presented in front of the class.	**Lesson 5:** Students continued learning the grammar 'conditional sentences', write sentences	**Lesson 5:** Students prepared their exam tests.

(*continued on next page*)

(*continued*)

	and orally present their own sentences in front of the class.	
Lesson 6: Students worked in groups to understand the grammar 'present perfect tense' and orally answered the questions using the grammar focus.	**Lesson 6:** Students made cover songs with their own lyrics in groups.	**Lesson 6:** Students prepared their exam tests.
Lesson 7: Students watched a TED talk video about parenting and discuss the topics with peers orally.	**Lesson 7:** Students performed their own songs.	**Lesson 7:** Students presented their prepared speeches as the oral exams.
Lesson 8: Students continued discussing about the TED talk video with peers orally.	**Lesson 8:** Students performed their own songs.	
Lesson 9: Students watched a video about Krakatoa eruption and discuss the effects of mountain eruptions with peers orally.	**Lesson 9:** Students performed their own songs.	
Lesson 10: Students continued discussing the effects of mountain eruptions with peers orally.	**Lesson 10:** Students learned the grammar 'future continuous and future perfect' and did the assignments in the classroom.	
Lesson 11: Students did their prepared speeches as their oral exams.	**Lesson 11:** Students continued learning the grammar 'future continuous and future perfect' and did the assignments in the classroom.	
Lesson 12: Students did their prepared speeches as their oral exams.		

References

Abkary, N. S., & Purnawarman, P. (2020). Indonesian EFL teachers' challenges in assessing students' higher-order thinking skills (HOTS). In *International Conference on Language, Literature, Culture and Education (ICOLLITE)*.

Ahmed, S. A. E., & Ibrahim, M. E. E. (2023). The impact of critical thinking in improving students' learning: A case study of students in the English Department, College of Science and Arts, Tanumah, King Khalid University. *European Journal of English Language and Literature Studies, 11*(1), 10–16. https://doi.org/10.37745/ejells.2013/vol11n11016

Akatsuka, Y. (2019). Awareness of critical thinking attitudes and English language skills: The effects of questions involving higher-order thinking. *Journal of Pan-Pacific Association of Applied Linguistics, 23*(1), 59–84. https://doi.org/10.25256/paal.23.2.4

Anggraeny, E., & Khongput, S. (2022). Teachers' perceptions and practices of critical thinking instruction in Indonesian senior high schools: A case study. *TEFLIN Journal: A publication on the teaching and learning of English, 33*(1). https://doi.org/10.15639/teflinjournal.v33i1/1-26

Arifin, M. B., Kuncara, S. D., Asanti, C., Saud, S., Dollah, S., & Saleh, N. (2023). The feasibility of critical literacy practices in an EFL reading class. *Theory and Practice in Language Studies, 13*(9), 2356–2364. https://doi.org/10.17507/tpls.1309.23

Arono, A. (2015). The relationship between listening strategy performance and critical listening ability of Indonesian students. *Al-Ta lim Journal, 22*(1), 81–87. https://doi.org/10.15548/jt.v22i1.117

Aunurrahman, Hamied, F. A., & Emilia, E (2017). A joint construction practice in academic writing course in Indonesian university context. *A Journal of Culture, English Language, Teaching & Literature, 17*(26–44).

Bakhshayesh, M., Jafarpour, A., & Hashemian, M. (2023). Relationship among critical thinking, multiple intelligence, and Iranian EFL learners' speaking skill. *Language Teaching Research*, 26. https://doi.org/10.1177/13621688221144718. *0*(0).

Bourdeaud'hui, H., Aesaert, K., & van Braak, J. (2021). Exploring the relationship between metacognitive awareness, motivation and L1 students' critical listening skills. *The Journal of Educational Research, 114*(1), 40–51. https://doi.org/10.1080/00220671.2021.1872474

Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., Bywaters, D., & Walker, K. (2020). Purposive sampling: Complex or simple? Research case examples. *Journal of Research in Nursing, 25*(8), 652–661. https://doi.org/10.1177/1744987120927206

Cottrell, S. (2017). *Critical thinking skills: Effective analysis, argument and reflection*. Palgrave Macmillan Education.

Creswell, J. D. (2013). *Qualitative inquiry and research design: Choosing among five approaches*. SAGE Publications.

Darwin, Rusdin, D., Mukminatien, N., Suryati, N., Laksmi, E. D., & Marzuki. (2023). Critical thinking in the AI era: An exploration of EFL students' perceptions, benefits, and limitations. *Cogent Education, 11*(1). https://doi.org/10.1080/2331186x.2023.2290342

Davies, W. M., & Barnett, R. (2015). *The palgrave handbook of critical thinking in higher education*. Palgrave Macmillan.

Defianty, M., & Wilson, K. (2022). Critical thinking in ELT: Indonesian teachers' understanding and practice ten years down the track. *IJEE (Indonesian Journal of English Education), 9*(1), 120–139. https://doi.org/10.15408/ijee.v9i1.26673

Dewey, J. (1910). *How we think*. D.C. Health & Co.

Elaish, M. M., Hussein, M. H., & Hwang, G. J. (2023). Critical research trends of mobile technology-supported English language learning: A review of the top 100 highly cited articles. *Educ Inf Technol (Dordr), 28*(5), 4849–4874. https://doi.org/10.1007/s10639-022-11352-6

Ellerton, P. (2022). On critical thinking and content knowledge: A critique of the assumptions of cognitive load theory. *Thinking Skills and Creativity, 43*. https://doi.org/10.1016/j.tsc.2021.100975

Emilia, E. (2005). *A critical genre-based approach to teaching academic writing in a tertiary EFL context in Indonesia* [Dissertation, The University of Melbourne].

Ennis, R.H. (1985). A logical basis for measuring critical thinking skills. In (pp. 45-48). EBSCO.

Erkek, G., & Batur, Z. (2020). A comparative study on critical thinking in education: From critical reading attainments to critical listening attainments. *International Journal of Education and Literacy Studies, 8*(1). https://doi.org/10.7575/aiac.ijels.v.8n.1p.142

Etemadfar, P., Soozandehfar, S. M. A., Namaziandost, E., & Li, S. (2020). An account of EFL learners' listening comprehension and critical thinking in the flipped classroom model. *Cogent Education, 7*(1). https://doi.org/10.1080/2331186x.2020.1835150

Fernandes, R., Willison, J., & Boyle, C. (2024). Characteristics of facilitated critical thinking when students listen to and speak English as an additional language in Indonesia. *Thinking Skills and Creativity*. https://doi.org/10.1016/j.tsc.2024.101513

Gambrill, E. (2019). *Critical thinking and the process of evidence-based practice*. Oxford University Press.

Gandana, I. S. S., Nafisah, N., & Imperiani, E. D. A. (2021). Critical thinking, literature and teachers' instructional activities: An Indonesian case of community service program for English teachers. *English Language Teaching Educational Journal, 4*(2), 138–147. https://doi.org/10.12928/eltej.v4i2.4279

Ghanizadeh, A., Al-Hoorie, A. H., & Jahedizadeh, S. (2020). *Higher order thinking skills in the language classroom: A concise guide*. Springer.

Glaser, E. M. (1941). *An experiment in the development of critical thinking*. AMS Press.

Hasnah, Y., Ginting, P., Supiatman, L., Kharisma, A. J., & Siahaan, H. S. (2023). How do locally produced EFL textbooks endorse critical thinking skills in Indonesia? A content analysis. *Journal of Language Teaching and Research, 15*(1), 190–200. https://doi.org/10.17507/jltr.1501.21

Havwini, T. (2019). Indonesian EFL students' willingness to communicate in the 2013 curriculum implementation: A case study. *TEFLIN Journal - A publication on the teaching and learning of English, 30*(1). https://doi.org/10.15639/teflinjournal.v30i1/105-120

Hol, D. (2023). Standardised testing in Turkey: EFL teachers' perceptions and experiences on Cambridge Young Learner Exams (YLE). *International Journal of Curriculum and Instructions, 15*(2), 984–1007.

Ilyas, H.P. (2015). *Critical Thinking: Its representation in Indonesian ELT textbooks and education* [Dissertation, University of York].

Ilyas, H. P. (2017). Historical perspective: The development of critical thinking in Indonesian ELT. *Journal of ELT Research, 2*(2). https://doi.org/10.22236/JER_Vol2Issue2

Irfani, B., & O'Boyle, A (2024). Teacher practices and student preferences of oral corrective feedback in Indonesian EFL classrooms: A Vygotskian perspective. *Training, Language and Culture, 8*(1), 101–114. https://doi.org/10.22363/2521-442x-2024-8-1-101-114

Jenkins, J., & Leung, C. (2018). From mythical 'standard' to standard reality: The need for alternatives to standardized English language tests. *Language Teaching, 52*(1), 86–110. https://doi.org/10.1017/s0261444818000307

Johnston, S. K., McGrane, J. A., Vendrell-Morancho, M., & Hopfenbeck, T. N. (2023). A multi-country comparison of lower secondary students' critical thinking under the International Baccalaureate and national curricula. *Review of Education, 11*(3). https://doi.org/10.1002/rev3.3442

Khoiriyah, U., Roberts, C., Jorm, C., & Van der Vleuten, C. P. (2015). Enhancing students' learning in problem based learning: Validation of a self-assessment scale for active learning and critical thinking. *BMC Medical Education, 15*, 140. https://doi.org/10.1186/s12909-015-0422-2

Kouzov, O. (2019). The new paradigm in education and support of critical thinking with Artificial Intelligence (AI) tools. *Serdica Journal of Computing, 1*(2), 27–40.

Lam, C.-M. (2020). Development of thinking and language skills through philosophy: A case study in Hong Kong. *Cambridge Journal of Education, 51*(1), 127–142. https://doi.org/10.1080/0305764x.2020.1789065

Lamb, S., Maire, Q., & Doecke, E. (2017). *Key skills for the 21st century: An evidence-based review* [Analytical Report].

Lau, J. Y. F. (2024). Revisiting the origin of critical thinking. *Educational Philosophy and Theory*, 1–10. https://doi.org/10.1080/00131857.2024.2320199

Liang, W., & Fung, D. (2021). Fostering critical thinking in English-as-a-second-language classrooms: Challenges and opportunities. *Thinking Skills and Creativity, 39*. https://doi.org/10.1016/j.tsc.2020.100769

Lin, Y. (2018). *Developing critical thinking in efl classes*. Springer.

Low, E. L., Hui, C., & Cai, L. (2017). Developing student teachers' critical thinking and professional values: A case study of a teacher educator in Singapore. *Asia Pacific Journal of Education, 37*(4), 535–551. https://doi.org/10.1080/02188791.2017.1386093

Luk, J., & Lin, A. (2015). Voices without words: Doing critical literate talk in English as a second language. *TESOL Quarterly, 49*(1), 67–91.

Mayasari, A. P., & Susanti, A. (2021). Techniques in conducting English reading skills test performed by Indonesian teachers on assessment of local education standard 2021. *Journal of English Education and Applied Linguistics, 10*(2), 298–316.

Mbato, C. L. (2019). Indonesian EFL learners' critical thinking in reading: Bridging the gap between declarative, procedural and conditional knowledge. *Jurnal Humaniora, 31*(1). https://doi.org/10.22146/jh.v31i1.37295

Munandar, M. I., & Newton, J. (2021). Indonesian EFL teachers' pedagogic beliefs and classroom practices regarding culture and interculturality. *Language and Intercultural Communication, 21*(2), 158–173. https://doi.org/10.1080/14708477.2020.1867155

Muniroh, S. (2021). The changing face of ELT. In N. Hayati, Suharyadi, S. Andreani, & U.P. Astuti (Eds.), Critical thinking in the policies for EFL teacher education in Indonesia (pp. 25-42).

Muthmainnah, N. (2019). Optimising critical thinking skill through peer editing technique in teaching writing. *ELTIN Journal, 7*(1), 1–7.

Pate, L. P. (2016). Technology implementation: Impact on students' perception and mindset. *The International Journal of Information and Learning Technology, 33*(2), 91–98. https://doi.org/10.1108/ijilt-10-2015-0033

Paulsen, V. H., & Kolstø, S. D. (2022). Students' reasoning when faced with test items of challenging aspects of critical thinking. *Thinking Skills and Creativity, 43*. https://doi.org/10.1016/j.tsc.2021.100969

Purnamaningwulan, R. A. (2022). Listening journals to promote students' critical thinking skills in an integrated listening-speaking course. *Studies in English Language and Education, 9*(2), 744–760. https://doi.org/10.24815/siele.v9i2.23387

RaduloviÄ, L., & StanÄ iÄ, M (2017). What is needed to develop critical thinking in schools. *Center for Educational Policy Studies Journal, 7*(3), 9–25.

Rainbolt, G.W., & Dwyer, S.L. (2012). *Critical thinking: The art of argument* (C. Baxter, Ed.). Wadsworth Cengage Learning.

Rashid, Y., Rashid, A., Warraich, M. A., Sabir, S. S., & Waseem, A. (2019). Case study method: A step-by-step guide for business researchers. *International Journal of Qualitative Methods, 18*. https://doi.org/10.1177/1609406919862424

Ro, J. (2023). Critical Thinking in the national curriculum and teacher education in South Korea: A missing link. *Teachers and Teaching, 29*(6), 553–570. https://doi.org/10.1080/13540602.2023.2172393

Schieble, M., Vetter, A., & Martin, K. M. (2021). Critical listening for critical conversations. *National Council of Teachers of English, 111*(2), 71–77.

Setyono, B., & Widodo, H. P. (2019). The representation of multicultural values in the Indonesian Ministry of Education and Culture-Endorsed EFL textbook: A critical discourse analysis. *Intercultural Education, 30*(4), 383–397. https://doi.org/10.1080/14675986.2019.1548102

Siregar, R. A., Sukyadi, D., & Yusuf, F. N. (2024). A critical content analysis of writing materials covered in Indonesian high school English textbooks. *Studies in English Language and Education, 11*(1), 205–227. https://doi.org/10.24815/siele.v11i1.30169

Song, W. (2019). A study on the influence of teachers' questioning in high school English reading class on students' critical thinking. *Theory and Practice in Language Studies, 9*(4). https://doi.org/10.17507/tpls.0904.09

Starichkova, V., Moskovskaya, N., & Kalinovskaya, E. (2022). *Development of students' critical thinking skills via teaching English* VII International Forum on Teacher Education.

Suarcaya, P. (2023). EFL pre-service teacher constructs and practicesof critical thinking. *Journal of English Education and Teaching (JEET), 7*(1), 1–17.

Tan, C. (2017). The enactment of the policy initiative for critical thinking in Singapore schools. *Journal of Education Policy, 32*(5), 588–603. https://doi.org/10.1080/02680939.2017.1305452

The Indonesian Education Ministry, N. (2022). *Improving the quality of education in Indonesia that is equitable with the independent curriculum*. Retrieved 20 May 2022 from https://www.kemdikbud.go.id/.

Thomson, V., & Yedidi, M. R. (2020). A practical approach to critical thinking among EFL learners. *International Journal of Technology Transfer and Commercialisation, 17*(1), 43–55.

Trowler, P. (2012). Disciplines and interdisciplinary: Conceptual groundwork. *Tribes and territories in the 21st century* (pp. 5–29). Routledge.

Tusino, Faridi, A., Saleh, M., & Fitriati, S. W (2020). The effect of hybrid task-based language teaching and critical thinking on writing performance in Indonesia. *The New Educational Review, 61*, 109–118. https://doi.org/10.15804/tner.2020.61.3.09

Walter, Y. (2024). Embracing the future of Artificial Intelligence in the classroom: The relevance of AI literacy, prompt engineering, and critical thinking in modern education. *International Journal of Educational Technology in Higher Education, 21*(1). https://doi.org/10.1186/s41239-024-00448-3

Wang, Y., & Wu, Z. (2023). Adapting or adopting? Critical thinking education in the East Asian cultural sphere: A systematic integrative review. *Thinking Skills and Creativity, 49*. https://doi.org/10.1016/j.tsc.2023.101330

Willison, J. (2020). *The models of engaged learning and teaching: Connecting sophisticated thinking from early childhood to phd*. Springer.

Yin, R. K. (2011). *Qualitative research from start to finish*. The Guildford Press.

Yin, R. K. (2018). *Case study research and applications: Design and methods*. SAGE.

Yook, C., & Lee, Y.-h. (2016). Korean EFL teachers' perceptions of the impact of EFL teacher education upon their classroom teaching practices. *Asia-Pacific Journal of Teacher Education, 44*(5), 522–536. https://doi.org/10.1080/1359866x.2016.1144171

Yu, M. H., Reynolds, B. L., & Ding, C. (2021). Listening and speaking for real-world communication: What teachers do and what students learn from classroom assessments. *SAGE Open, 11*(2). https://doi.org/10.1177/21582440211009163

Zein, S., Sukyadi, D., Hamied, F. A., & Lengkanawati, N. S. (2020). English language education in Indonesia: A review of research (2011–2019). *Language Teaching, 53* (4), 491–523. https://doi.org/10.1017/s0261444820000208

Zhang, H., Yuan, R., & He, X. (2020). Investigating university EFL teachers' perceptions of critical thinking and its teaching: Voices from China. *The Asia-Pacific Education Researcher, 29*(5), 483–493. https://doi.org/10.1007/s40299-020-00500-6