

CHAPTER I

INTRODUCTION

1.1 Background of The Research

The global commitment to Sustainable Development Goal 4 (SDG 4) which aims to ensure inclusive and equitable quality education for all human beings has become a pivotal pillar in national educational agendas worldwide, particularly among countries striving to improve learning outcomes in the 21st century (UNESCO, 2017). In Indonesia, this objective resonates with various national education policies focused on enhancing curriculum relevance, advancing teacher professionalism, and integrating digital technologies into teaching and learning. However, despite the alignment between international frameworks and the national policy, significant challenges remain in fully realizing the vision of SDG 4. Persistent disparities in access, quality, and educational outcomes particularly between urban and rural regions underscore the widening gap between global aspirations and localized implementation realities (OECD, 2024; Shadiev et al., 2024).

While the national standards have provided framework for educational quality, their implementation has been hindered by insufficient changes in curriculum reform.

In the last two decades, a total of 11 national curriculum changes has been experienced in Indonesia. The curriculum changes in Indonesia have implemented by the government as part of its efforts to improve the quality of education in the country. As stated by Ellen & Sudimantara (2023) these changes are necessary to ensure that education remains relevant to the ever-evolving challenges in modern times. In addition, the aim of these changes conducted by the Indonesian government is to adapt to the needs of society and global challenges (Ni'am, 2025). However, a study conducted by Nasution & Indrasari (2024) stated that the changes which are excessively often is politically motivated in educational policy that has contributed to a sense of instability and professional frustration among

educators, thereby hindering their ability to meaningfully engage with and implement successive curricular innovations. Moreover, it is also impacting both the teachers and students. Once the introduction of these curricular reforms, Indonesian teachers frequently encountered significant challenges in adapting to the new pedagogical practices and expectations (Fifani et al., 2023).

As evidence that Indonesia is facing this issue, the low score of PISA (Programme of International Students Assessment) in 2022 as well as the consistent performance in the low proficiency level of English in Indonesia as shown by EPI (English Proficiency Index) from 2017 until 2024. The low score of PISA and low proficiency level of English in Indonesia as framed in the table below reflect the unreadiness of the academic stakeholders in facing the instability of curriculum changes. It leads to inadequate preparation for teachers and demotivation for students. Then even worse, Indonesia's performance in international assessments has consistently fallen below the global average, indicating a persistent misalignment between policy-driven reforms and actual educational outcomes (OECD, 2024). This discrepancy underscores a significant divergence between the aspirations of national education policies and the realities of classroom practice.

Table 1. 1 Global Education Standards in Southeast Asia 2022 Based on PISA Scores from 81 Countries in 2022

| Year | Country | ASEAN Rank | OECD Average Score | PISA Score |
|-------------|-------------------|-------------------|---------------------------|-------------------|
| 2022 | Singapore | 1 | 500 | 560 |
| | Vietnam | 34 | 500 | 468 |
| | Brunei Darussalam | 42 | 500 | 439 |
| | Malaysia | 55 | 500 | 404 |

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|--|------------------|-----------|------------|------------|
| | Thailand | 63 | 500 | 394 |
| | Indonesia | 69 | 500 | 369 |
| | Philippines | 77 | 500 | 353 |
| | Cambodia | 81 | 500 | 337 |

Source: Programme for International Student Assessment (PISA) 2022.

Table 1. 2 Indonesian English Proficiency Index (EPI) by English First (EF) from 2011 to 2024

| Year | Global Rank | Global Average Score | Score | Proficiency Level |
|-------------|--------------------|-----------------------------|--------------|--------------------------|
| 2011 | 34 out of 44 | 448 | 447 | Very Low Proficiency |
| 2012 | 27 out of 54 | 494 | 498 | Low Proficiency |
| 2013 | 25 out of 60 | 497 | 513 | Moderate Proficiency |
| 2014 | 28 out of 63 | 493 | 506 | Moderate Proficiency |
| 2015 | 32 out of 70 | 500 | 503 | Moderate Proficiency |
| 2016 | 32 out of 72 | 505 | 503 | Moderate Proficiency |
| 2017 | 39 out of 80 | 505 | 495 | Low Proficiency |
| 2018 | 51 out of 88 | 506 | 490 | Low Proficiency |
| 2019 | 61 out of 100 | 503 | 476 | Low Proficiency |
| 2020 | 74 out of 100 | 500 | 453 | Low Proficiency |
| 2021 | 80 out of 112 | 503 | 466 | Low Proficiency |
| 2022 | 81 out of 111 | 502 | 469 | Low Proficiency |
| 2023 | 79 out of 113 | 493 | 473 | Low Proficiency |

| | | | | |
|-------------|---------------|-----|-----|-----------------|
| 2024 | 80 out of 116 | 477 | 468 | Low Proficiency |
|-------------|---------------|-----|-----|-----------------|

Source: English Proficiency Index by Education First (EF EPI).

The curriculum shift is particularly significant in a context where conventional, teacher-centered instructional methods remain prevalent, often limiting opportunities for students to develop higher-order cognitive skills essential for success in the 21st century. Central to the reform is the prioritization of foundational competencies such as literacy and numeracy, alongside increased autonomy and flexibility for both schools and educators. Additionally, the initiative seeks to foster a positive and engaging school climate that nurtures student agency and involves the broader school community, reflecting Indonesia's deeply rooted cultural values of collective responsibility and communal support.

However, in fact, there is still a gap between the national policy and the implementation in reality. As defined in a study conducted by Nasution & Indrasari (2024), despite the curriculum reforms emphasizing student-centered learning, a significant number of students remain exposed to conventional, examination-driven instruction, largely due to gaps in teacher readiness and inadequate institutional backing for the effective adoption of innovative teaching practices. The gap highlights a misalignment between the overarching of the national policy goals and classroom realities.

The teaching and learning of languages have traditionally been guided by linguistic paradigms in which the primary reference is the descriptive frameworks developed by linguists (Lian, 2000, p. 5). However, language learners, particularly those who attain proficiency, tend to function through the active manipulation of symbolic systems that often diverge from the formal linguistic descriptions.

The old pedagogy of language learning focused on the linguistics as the surface – aspects will not lead the learning and teaching environment to be more effective and still focus on the teacher-centered. Nevertheless, in the context of the 21st century, the learning approach used must be transformed to the learner-centered pedagogical approach.

To connect with the learning concept in the 21st century, educators should prioritize learning environments designed to promote deep and meaningful learning through emotionally engaging pedagogical strategies. As several scholars and neuroscientists (Jaak Panksepp., 1998, 2012; Antonio Damasio., 1994, 1999; Mark Solms., 2013, 2021) cited in Sudimantara, et al., (2025, p. 20) argued that humans’ emotions play a pivotal role in how learners process and interpret their experiences in the learning activity. Furthermore, the determination of what learners pay attention to in the learning activity is also through the primary emotional systems such as seeking and fear. In the language learning context, it is crucial for the educators to provide learners with texts that evoke empathy and reflection so that they can engage with emotionally resonant content which is fundamental to achieve effective learning.

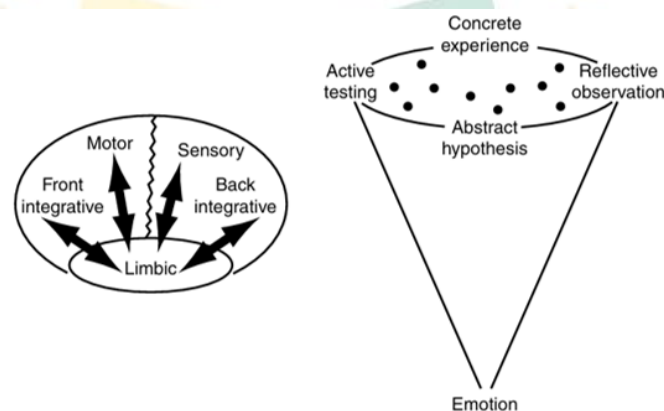


Figure 1.1 Emotion and the Brain Cycle of Learning

Source: The Art of Changing the Brain (James E. Zull, 2002).

Supported by Zull (2002) in the figure above that emotions have a role as a center which are placed in the limbic system of humans’ brain. Meaning that emotions influence all parts of the learning activities as illustrated in the right diagram, in which the four elements of the learning cycle are all supported by a “cone” of emotion.

Although, in Indonesia, learning is often considered as simply the activity of transferring knowledge from the teachers to the students. Especially in the

writing activity. While writing becomes the primary competence for lifelong study as stated by UNESCO (2017), several previous studies cited in (Utami et al., 2023) proven that many students in the evolved countries still have poor writing skills, such as in the Australia (Australian Curriculum and Assessment Reporting Authority [ACARA] and USA (National Centre for Educational Statistics, 2012).

The problem also happened in Indonesia, where this issue has to be concerned because the Indonesian students lack in several aspects in writing skill such as contents, outline ideas or organization, and writing mechanism (Inayah & Putri Nanda, 2016). Lack of several aspects in mastering writing will affect the students' achievement and motivation to write. This issue may stem from the inappropriate pedagogical practices implemented in Indonesia, which fail to foster the development of critical engagement with academic texts and scholarly ideas in general, as noted by Jubhari (p. 126), cited in (Bumela, 2021).

Moreover, recently in Indonesia a literacy pedagogy named Genre-Based Approach (GBA) settled in the Systemic Functional Linguistics (SFL) developed by Halliday in 1985. This approach is considered as a solution to solve the problem related to writing. Nevertheless, this approach has not been successfully applied in Indonesia because of several aspects, such as: the lack of socialization among educators and it seems too difficult and unrealistic for Indonesian children in learning English as described in (Bumela, 2021).

Genre-Based Approach (GBA) applied in Indonesia seems as an instructional practice which is only tend to emphasize surface-level aspects of the text such as the textual features while largely overlooking the affective dimensions of learning, including the values, experiences, and identities that learners draw upon in making meaning. As stated in a study obtained by Sudimantara et al (2025) that this pattern reflects a more traditional, linguistic-based paradigm, and rule-based approach to academic writing that prioritizes adherence to formal structure and linguistic conventions, often at the expense of emotional expression, creative exploration, and student agency.

Dissimilar from the traditional writing approaches that not align with the principles of deep learning, several innovative approaches in the learning and

teaching language introduced here are emphasize the deeper aspects and shifting the learning approach from memorization into exploration.

Multisensory Computer-Assisted Language Learning (CALL) as defined in Sudimantara et al (2025, p. 19) is a learning framework which harnesses several elements that can activate all parts of humans' body to enhance learning outcomes. This concept resonates with the explanation made by the neuroscientists (Immordino- Yang & Damasio, 2007) that the human brain does not perceive reality directly; rather, individuals interpret what they hear or see only after the brain has processed sensory information through a complex network of multisensory connections and cognitive frameworks.

Furthermore, Multisensory CALL incorporates the two brain – learning – informed tools which tend to stimulate the right hemisphere of humans' brain through the emotion and physical movement. Aims to develop the students' creativity while fostering a deeper connection with the language through meaningful and affective engagement that enable the students to connect with it on both cognitive and emotional levels.

Reading for Emotion (RfE) as proposed by A.-B. Lian (2017) as the first incorporated tool introduced a significant shift in how the students interact with textual material, moving beyond cognitive processing to include affective engagement. Reading for Emotion is a developed learning tool helps to shift from the several stages of the text based on Systemic Functional Linguistics into six novel generic sequences of the text, which are: (1) Focus, (2) Disturbance, (3) Dialogue, (4) Development, (5) Resolution, and (6) Moral. By encouraging learners to connect with texts emotionally, this approach facilitated deeper personal investment and interpretive depth. This not only improved comprehension and critical analysis but also nurtured empathy and a heightened awareness of language's role in expressing and shaping human experience (Sudimantara et al., 2025).

Within the Multisensory Computer-Assisted Language Learning (CALL) approach, **aesthetics** serves as a key component, offering students a visual framework through which they can critically analyze their own writing and

develop a deeper awareness of intonational patterns. This visual analytical process not only enhances their sensitivity to linguistic form and style but also enables them to refine their written expression, leading to more nuanced, coherent, and impactful communication (Sudimantara et al., 2025).

In line closely with the goals of transformative pedagogy to create the learning processes to be more learner-centered, personalized and dynamic, the use of technology in language learning can be utilized by both the educators and learners. Supported by researcher A.-P. Lian (2011), as a transformative enabler in contemporary education, technology facilitates access to diverse and high-quality learning resources and empowers the students to learn how to use interrelated sources (*rhizomatic learning*). Learners are no longer confined to institutional materials such as traditional textbooks that offer no adaptability because they present the learning contents in a fixed format that either suits the reader or does not.

A study conducted by Lian (2025) defines that the incorporation of digital technology such as Artificial Intelligence (AI) and dynamic books into education leads to intellectual transformation. It is important that examining the relationship between education and AI can deepen our understanding of AI's transformative potential in shaping and supporting human intellectual development. Nevertheless, AI in education is frequently used as a shortcut rather than utilized to become the substantial resources that support and provide more individualized teaching and learning. Additionally, if the schools or universities stakeholders fail to adapt to the use of AI in the classroom, there will be a wider gap between human intellectual capacity and technological power (A.-P. Lian, 2025).

Therefore, the current study stresses on how the pedagogy transformation enables to encourage the digital education ecosystems that focus on the collaboration between human competences, connectivity, hardware and two types of software: digital tools and digital resources for teaching and learning activities in the classroom (OECD, 2023). Similarly, this transformation stands to achieve the concept of *alternative intelligence*, where humans and digital technologies work together appropriately. To accomplish this purpose, especially in

pedagogical transformation, the suitable learning frameworks are obviously required. It helps the teachers and students hinder the bias in AI also as the learning tools that can create more innovative learning spaces for learners to analyse, interpret, and generate the visualization of the texts.

To conclude, the pedagogy transformation described here is embodied by the nature of humans' learning on the utilization of two brain-informed learning frameworks, which are Reading for Emotion and Aesthetic Principles, as well as the novel pedagogical concept, namely AI-Driven pedagogy. Aligns with the notion in this study where the researcher harnessed the advancement of AI by working hybrid and collaboratively between human and machine systems as defined by OECD (2023) about AI Pedagogy.

1.2 The Limitations and Focus of the Study

This study primarily focuses on the content analysis of mini-thesis abstracts written by several undergraduate students majoring English Language Teaching Department in one of the Islamic universities in Cirebon, Indonesia. By focusing on the deeper-level aspects of the text, this research will utilize the novel brain-based frameworks to analyze the emotional shift and aesthetic principles appeal in the analyzed texts.

The frameworks used for analysis are Reading for Emotion model as proposed by a researcher A.- B Lian (2017) that focused on the six stages of the text. The stages in this framework no longer rely on the old structure that commonly presents a text in "beginning, middle, and end" structures. Reading for Emotion (RfE) model associated with the brain-based learning concept which shifts the memorization of grammatical structure to the exploration of emotional shift of the text.

Moreover, in doing analysis, the researcher also uses the second framework namely The Neurological Aesthetics of Principles as proposed by the neuroscientists Ramachandra and Hirstein in (1999) that stated about how the brain engages with meaning and beauty in a text through the eight laws or principles. While Ramachandran and Hirstein (1999) proposed eight

neuroaesthetic principles, this study will focus exclusively on the four principles, which are **Peak Shift**, **Contrast**, **Perceptual Problem Solving**, and **Symmetry & Order**. This delimitation is motivated by the relevance of these principles to textual engagement and cognitive processing in educational reading materials. Specifically: (1) **Peak Shift** helps explain how exaggerated or intensified textual features (e.g., vivid imagery, emotional tone, or dramatic plot elements) may enhance reader attention and retention., (2) **Contrast** relates to how juxtaposition of ideas, styles, or perspectives in a text can sharpen comprehension and highlight key messages., (3) **Perceptual Problem Solving** aligns with the reader's active construction of meaning – particularly relevant in PISA-style assessments that require inference and interpretation., (4) **Symmetry & Order** addresses the cognitive preference for coherence, structure, and logical flow, which are essential for readability and assessment fairness in educational texts.

Consequently, the analysis was limited to the perspective of brain-based learning, with a specific emphasis on affective and aesthetic dimensions in students' writing. Other potential areas of analysis, such as linguistic structures or syntactic complexity, were not included in the scope of the study.

The researcher only conducted the text analysis in academic writing text, highly different with the other genre of the texts. In addition, the researcher did not conduct the text analysis for another content in the mini-thesis of undergraduate students such as introduction or even the literature review section, yet only the mini-thesis abstract. The text analysis was conducted on the work of several students enrolled in the English Language Teaching Department at an Islamic university in Cirebon, carried out under the supervision of different advisors during the completion of their mini-thesis. Content selection is based on the reason of because the abstract serves as a condensed representation of an entire academic paper, summarizing its core components: the research problem, methodology, key findings, and conclusions. As such, it represents an ideal text type for examining how students navigate the interplay between clarity, conciseness, and emotional engagement within a highly constrained format.

1.3 Research Questions

1. How does the quality of the undergraduate students' academic writing texts (i.e., thesis abstracts) resonate with the narrative structure within the Reading for Emotion model and Neurological Aesthetics Principles as the brain-informed learning frameworks?
2. How does the REA (Reading for Emotion and Aesthetics) integration interact to shape readers' engagement through the academic texts?

1.4 Research Objectives

- 1) **To assess the quality of undergraduate students' academic abstracts resonant to the narrative structure within the Reading for Emotion (RfE) and Aesthetics Principles frameworks.**

This study employs a qualitative content analysis approach. Abstracts from several undergraduate students are analyzed to determine how effectively students incorporate emotional shifts in RfE stages such as Focus, Disturbance, Dialogue, Development, Resolution, and Moral as outlined in the RfE framework. Additionally, the study evaluates the extent to which students utilize aesthetic principles like contrast, peak shift, symmetry & order, and perceptual problem-solving to enhance the appeal and engagement of their writing. By applying these brain-grounded frameworks, the research aims to uncover patterns in emotional engagement and aesthetic qualities across different stages of academic progression.

- 2) **To analyze how the integration between Reading for Emotion and Aesthetics (REA) interact to shape readers' engagement through the academic texts (i.e., thesis abstracts).**

This study aims to analyze how the integration of Reading for Emotion and Aesthetics (REA) interacts to shape readers' engagement in academic texts, particularly thesis abstracts. It examines how emotional progression and aesthetic organization work together to structure informational flow, sustain attention, and enhance the overall coherence and impact of the abstracts.

1.5 Significances of the study

Theoretically, this study makes a meaningful contribution to the field of English education by offering a novel perspective on the analysis of undergraduate students' mini-thesis abstracts through a neuroscience-informed framework. By focusing on the interplay between cognitive processing and textual production, the research sheds light on how students engage with academic writing at both emotional and aesthetic levels. The findings provide valuable insights into the depth of students' understanding and application of key writing principles, particularly in relation to expressive clarity, rhetorical appeal, and stylistic awareness.

Furthermore, the study highlights the potential of integrating neurocognitive perspectives into writing pedagogy to better support learners in developing complex academic literacies. Ultimately, these insights enhance our understanding of students' textual competence and inform more effective, brain-aligned instructional strategies in higher education contexts.

Moreover, in practice, this study strengthens the field of English education by introducing a neuroscience-based approach to the analysis of undergraduate students' mini-thesis abstracts. It offers valuable insights into how Brain-Informed pedagogical strategies – specifically *Reading for Emotion* and *Aesthetics Principles* can enhance students' engagement with academic writing. The findings highlight the effectiveness of integrating these cognitive-affective approaches with ethically applied AI tools, supporting a more personalized, responsive, and emotionally resonant learning experience.

By aligning pedagogy with how the brain naturally processes language and meaning, the study promotes a transformative approach to teaching that goes beyond surface-level comprehension. This method fosters deeper critical thinking, creativity, and metacognitive awareness. Ultimately, the research advocates for a regenerative model of education – one that not only nurtures intellectual growth but also sustains and renews learners' intrinsic motivation and emotional connection to learning.

1.6 Theoretical Foundation

1.6.1 Indonesian Education by the UNESCO

The Indonesian government has prioritized education as a central component of its development agenda, allocating significant resources to improve access, equity, and quality. This point is also highlighted in one of the documents published by the UNESCO (United Nations of Educational, Scientific, and Cultural Organization) namely Indonesia UNESCO Country Strategy in 2018 - 2021. Indonesia's commitment to education can be seen in its budget allocation which increased from 7.2% of public expenditure in 2006 to 20.2% in 2011 (*Indonesia: UNESCO Country Strategy, 2018-2021; 2018*). It proves that the government recognizes education as a driver of sustainable development or Education for Sustainability Development (ESD).

Education for Sustainable Development (ESD) along with inclusive education and vocational education, is the national priority of education in Indonesia with the related SDGs (Sustainable Development Goals) point number four (4), i.e., quality education. These three national priorities are expected to empower learners to be creative and responsible global citizens and access to equitable and quality curriculum, teaching and learning assessments. To achieve those points, innovative teaching methods such as promoting digital literacy and ensuring equitable access to education must be the main focus of Indonesia government. However, Indonesian education has excessively undergone a lack of the pedagogy implemented. Stuck on the traditional methodology in the teaching and learning that resist the old pedagogical interventions, which leads to the improvement of the risk of negative life impact. In contrast, Crespo (n.d.) highlighted that pedagogical aspect is considered as one important thing that determines students' academic achievement. Additionally, insufficient curriculum changes in Indonesia in the last two decades are also affecting the students' development in learning.

1.6.2 Curriculum Changes in Indonesia

The eleven significant adjustments of Indonesian national curriculum as defined by Soleman (2020) are outlined as follows:

a) Kurikulum Rencana Pelajaran

The 1947 curriculum marked the first national curriculum introduced following Indonesia's post-independence era, grounded in the principles of Pancasila. This curriculum consisted of two primary components: a structured list of subjects accompanied by allocated teaching hours, and general teaching outlines (*Garis-Garis Besar Pelajaran*, or GBP).

b) Rencana Pelajaran Terurai 1952

During this period, the focus of lesson planning began to emphasize cognitive development, marking a shift toward more holistic educational goals. The *Pancawardhana Development* approach was introduced, which aimed to nurture multiple dimensions of student growth, including creativity, aesthetic sensitivity, initiative, work ethic, and moral values. Kurikulum 1964 (*Rencana Pendidikan 1964*)

c) Kurikulum 1968

The 1968 curriculum was formally introduced following a significant meeting of educational experts and thinkers held from 28 - 30 April 1969 in Cipayung. A key innovation introduced in this curriculum was the *Pancasila Spirit Development* concept, which integrated foundational knowledge with the development of specialized skills aimed at fostering national identity and civic responsibility.

d) Kurikulum 1975

The 1975 curriculum was introduced in accordance with the MPR Decree No. II/MPR/1973 and served as a replacement for the 1968 curriculum. Unlike its forerunner, this curriculum was centrally determined by the government, significantly reducing the

need for teachers to engage in curriculum design or conceptualization.

e) Curriculum 1984 (Improved 1975 Curriculum)

This curriculum is also commonly referred to as the *Curriculum Based on Student Activity* (CBSA), emphasizing student-centered and participatory learning methods. However, its implementation faced significant challenges, as many schools struggled to adopt the CBSA approach effectively. The classroom environment often became noisy due to increased student discussions, while the absence of traditional lecture-based instruction and limited access to diverse learning resources further hindered its successful execution.

f) Curriculum 1994 and Suplemen Kurikulum 1999

The 1994 curriculum represents a synthesis of earlier educational frameworks, particularly the curricula of 1975 and 1984. It further develops the *Curriculum Based on Student Activity* (CBSA) concept by encouraging teachers to employ instructional strategies that actively engage students in both cognitively and physically while emphasizing mastery learning as a key pedagogical goal.

g) Curriculum 2004 (Competency – Based Curriculum)

The 2004 Curriculum, commonly referred to as the Competency-Based Curriculum (Kurikulum Berbasis Kompetensi, KBK), was introduced. This curriculum prioritizes the development of student competencies, with clearly defined, outcomes-oriented learning objectives. It also continued the trend toward decentralized education, granting schools and local authorities' greater autonomy in curriculum implementation while maintaining national standards.

h) Curriculum 2006 KTSP (Education Unit Level Curriculum)

The 2006 curriculum, known as the *Kurikulum Tingkat Satuan Pendidikan* (KTSP), was introduced as a refinement and complement to the 2004 Competency-Based Curriculum (KBK). Under KTSP, the central government established national Standards of Competency and Basic Competencies, while granting schools and teachers the responsibility to develop these into detailed syllabi and assessments tailored to local conditions.

i) Curriculum 2013

The transition from a centralized to a decentralized approach in the competency-based curriculum was not universally embraced, and debates surrounding this shift resurfaced during the reformulation of the 2006 Curriculum (KTSP) into the 2013 Curriculum. Rooted in the ideals of Indonesian education, the 2013 Curriculum aims to cultivate a generation of learners who are productive, creative, and innovative. Furthermore, the curriculum emphasizes the development of higher-order thinking skills, particularly analysis, evaluation, and creativity, to better equip students for the challenges of the 21st century.

j) Kurikulum Merdeka (Currently implemented)

The emancipated curriculum or “Kurikulum Merdeka” launched in Indonesia aims to achieve the national goals by designing the educational system that are able to cultivate competent and resilient lifelong learners which is grounded in strong character values derived from Pancasila as Indonesia’s national ideological foundation. As stated by Syahril (2023) that a vision of the implementation of emancipated learning is to meet the transformative and innovative teaching and learning strategies.

k) Emancipated Curriculum (Kurikulum Merdeka)

The concept of Emancipated curriculum

The Emancipated Curriculum tends to be a novel approach to address the recent learning crisis in Indonesia. In addition, it is

considered as a new discovery in Indonesian education to create transformative learning by focusing on the new concepts as well as leaving the traditional learning as stated by Ellen & Sudimantara (2023). Align with what have said by the researcher A.- B. Lian et al (2017) that the curriculum is structured to foster key competencies and attitudes that empower students to engage thoughtfully, ethically, and critically with both global and local issues, thereby promoting innovative engagement and a nuanced understanding of diverse contexts.

The emancipated curriculum also applies the concept of learning approaches that are holistic and exploratory. A holistic approach not only focused on the academics like experiences and programs inside the classroom, but also the foundational skills which are very important for the students' life. Moreover, an exploratory approach also lets the students explore and learn something and build the experiences within themselves. These approaches applied in the emancipated curriculum aim to reduce students cognitive load, empower teachers and promote student-centred learning (Ellen & Sudimantara, 2023; Helyanti, 2022).

The implementation of Emancipated Curriculum

The frequent curriculum changes in Indonesian education over two past decades reveal a system striving for improvement but often undermined by instability. These changes are excessively introduced as the innovation in the Indonesian educational field such as aligning with the global standards, fostering critical thinking or addressing socio-economic needs. However, instead of generating innovation, these changes have created an instability in the educational landscape where teachers and students are left struggling with shifting priorities and inconsistent practices. For instance, the transformation from the old curriculum that is rigid

and grammar-focused teaching to a more progressive approach named Kurikulum Merdeka (Emancipated Curriculum) reflects a hope to foster creativity, critical thinking and emotional engagement.

In the implementation of the emancipated curriculum, or “Kurikulum Merdeka”, a comprehensive approach named *Deep Learning* or “Pembelajaran Mendalam” also introduced and it is expected to be an approach that is possible to bridge a gap in the learning and teaching activity in Indonesia. Deep learning tends to change the learning principles to be more inclusive and create a comfortable learning environment so that the students can actively participate and have a high quality of learning (Utama, 2025). To ensure that the learning process runs effectively, the deep learning approach has three main principles in its application, which are mindfulness, meaningfulness, and joyful processes of learning.

The three learning principles outlined above are enacted through mental, emotional, sensory, and physical engagement. According to Ki Hajar Dewantara, these four dimensions are essential components of holistic education, working together to nurture the full development of the individual. A book which explains about the Deep Learning framework by Utama (2025) also stated that in the implementation of this framework necessities the integration of emotional, cognitive, and physical processes, because learning activity that excludes the emotional engagement and non-verbal experiences nurture to result in surface learning rather than deep learning. Additionally, these four elements in deep learning concept refer to the concept of learning is not a separated activity that only involves an intellectual one, yet learning can be stated as an entire body activity (A.-P. Lian, 2011, p. 5).

Nevertheless, the implementation of emancipated curriculum and deep learning in Indonesia still experienced many

obstacles. These could happen because the inappropriate changes of Indonesian curriculum have not allowed sufficient time for more meaningful implementation and evaluation.

In this case, pedagogy plays a more integral role. No matter how well-crafted a curriculum may be, its success ultimately depends on how effectively it is enacted through teaching methods. Pedagogy serves as the bridge between theoretical goals and practical outcomes, shaping how students experience and internalize learning. For instance, frameworks like Reading for Emotion (RfE) and Neurological Principles of Aesthetics highlight the importance of integrating emotional and aesthetic dimensions into academic writing - a skill that remains neglected in traditional, rote-based approaches. By grounding curriculum development in robust pedagogical principles, educators can create dynamic, inclusive learning environments that nurture both intellectual and emotional growth. Moreover, approaches like Deep Learning (Pembelajaran Mendalam) with its emphasis on mindfulness, meaningfulness, and joyfulness offer a promising path toward holistic education, aligning with Ki Hajar Dewantara's vision of nurturing mental, emotional, sensory, and physical engagement. In the context of Indonesian education, stabilizing curricular reforms and investing in teacher training are essential steps toward fostering sustainable improvements.

1.6.3 Writing

As a core literacy practice, writing serves not only to reinforce language competence but also to structure thought processes and deepen cognitive engagement. It is an essential tool for promoting clarity of expression, logical reasoning, and higher-order thinking, making it indispensable in both academic and professional contexts (Sudimantara et al., 2025).

However, in education, especially in language learning, writing is not only an underemphasized skill but is also frequently taught without the necessary professional expertise. Despite being regarded as the most sophisticated of language competencies, writing instruction remains critically neglected in many educational settings. In the Indonesian context, both the students in the schools and universities are often taught by instructors who lack both the practical skills and the pedagogical knowledge required to teach writing effectively. As a result, many educators enter the classroom without a deep understanding of writing processes, genre conventions, or evidence-based instructional strategies, which limits their ability to support students in developing this essential academic and life skill (Bumela, 2021).

1.6.3.1 Types of Writing

a) Creative Writing

Creative writing is a valuable educational activity that offers a range of cognitive, emotional, and social benefits. According to Gunawan & Aziz (2018), engaging in creative writing enables students to develop essential skills and dispositions, including self-expression, pride in one's work, personal fulfilment, and enhanced self-esteem. Additionally, it fosters greater awareness and sensitivity to one's surroundings, ultimately contributing to the development of more reflective, engaged, and proactive individuals. The art of creative writing is compelling due to its emphasis on originality and innovative expression, as stated by Zulaeha (2011) cited in (Fitria, 2024). To craft a piece that resonates with readers, creative writing requires not only imagination but also the skilful articulation of ideas to convey a clear and meaningful message. This form of writing involves translating creative thoughts and concepts into language and narrative, allowing writers to

communicate their visions in a distinctive and impactful way.

b) Scientific Writing

Scientific writing refers to a formal and systematic mode of communication that emphasizes factual accuracy, objectivity, and verifiability. It encompasses various forms of academic output, including research journals, scholarly articles, thesis, and technical reports. Unlike creative or personal writing, scientific writing adheres to established conventions and follows a standardized structure to ensure clarity, precision, and logical coherence. It is guided by principles of evidence-based reasoning and is typically grounded in empirical research, allowing findings to be communicated in a manner that is replicable, credible, and accessible to the scientific community and broader academic audience.

While creative and scientific writing differ in form and function, what obviously shapes the reader's experience of them is *how they read* not just what they read. It means, there are two different lenses of the readers when they are seeing the text.

Firstly, Text as an Emotional Construction Activity and the second is Text as a Grammatical Construct. The first lens, text as an emotional construct according to Anne Freedman (1994) refers to the perspective that reading and writing activities not merely as encoding and decoding information, but as deeply human, affective, and interactive processes. In this lens, each movement in the text is considered not just a linguistic unit but emotional cue, a strategic gesture intended to provoke a response, clarify ambiguity, or resolve tension.

In contrast, the second lens which is grammatical lens sees text primarily as a structured system of rules, forms, and conventions. This approach is foundational in formal linguistics, language teaching, and

traditional literacy instruction, where correctness, clarity, and logical progression are prioritized which is well-aligned with what have explained by the linguists (Halliday, M. A. K., & Hasan, R. (1976).

1.6.4 Brain – Grounded Learning

As stated above, language learning is not merely a separated activity, yet a whole-body activity which includes humans' intellectual, mental, emotions, sensory, and physical movement. It is also crucial to be comprehended that language learning is grounded in humans' brain, where each human has two hemispheres of the brain. In addition, it is important to understand that humans' brain interpretations of sensory information shape an active process and form as a perception (Lotto, B., 2017). Moreover, he argues that every learning process starts with perception, and the central idea is that what we see, perceive and learn is influenced by context, expectations, and prior experiences.

a) Right and Left Hemispheres of the Brain

The two hemispheres of the human brain reflect the two different ways humans engage the world. In addition, as explained in a work by McGilchrist (2009) who is a psychiatrist, neurologist, and philosopher argue that the two distinct hemispheres in the brain do not show the different functions of each hemisphere, yet merely how they attend to the world. The distinction of humans' hemisphere has implications for learning, meaning – making process, and human development. Generally, the right hemisphere of humans' brain sees the world as whole, living, changing, and meaningful. In contrast with the right hemisphere, the left hemisphere gives the lens of the world that is surface, fragmented, fixed, and mechanical.

In a book written by I. McGilchrist (2021) also stated that the right hemisphere plays a primary role in providing a lived, embodied, and meaningful experience of the world. It is the first to engage with a new concept, emotion, person, or idea. Following this initial perception, the left hemisphere takes over by analyzing, categorizing, and organizing the information, building upon the right hemisphere's intuitive grasp to produce structured, logical interpretations. In conclusion, the two hemispheres of human brain also serve as two distinct modes of attention.

Implication in the learning processes as explained by McGilchrist shows that humans can influence which hemisphere is dominant in our attention and thinking through the habits, environment, and practices. In the educational context, the right hemisphere dominance can be activated by implementing the innovative pedagogy which leads the students to explore their own needs in learning and achieve deeper aspects that they not only understand, but they are also able to reflect. Aligns with the learning concept in the 21st century that emphasizes social, emotional, cognitive, and digital intelligence.

However, pedagogy implemented currently in Indonesia often only focused on the left hemisphere dominance. In other words, the learning activity is still rigid, standardized, memorization and repetition – based assessment and goal – oriented tasks.

b) Perception, Emotion, and Learning

The left hemisphere of the brain gives a signal that our perception – how we see the world – is subjectively real. However, the sensory process in the right hemisphere that makes perception possible actually separates us from ever accessing that reality directly (Lotto, B., 2017). Perception plays a crucial role in learning, also it is an active process of meaning – making. In a

work by Lotto. B (2017) also explained that perception matters because it underpins everything we think, know, interpret, and believe and it shapes what and how we learn. Perception is shaped by several factors, such as attention, emotion, and the context.

As a key factor in shaping perception, emotions serve as fundamental organizing forces within the brain. As Jakk Panksepp (1998, 2012) highlights, emotions play a central role in structuring our engagement with the world by influencing what we attend to and how we interpret and make sense of our experiences. It is also supported by Zull (2002) related to the role of emotion in humans' learning activity in the brain. Emotion plays a role as a glue or the centre from the four cycles of learning happening in the brain, which are: concrete experience, reflective observation, abstract hypothesis, and active testing. In other words, emotions exist in the center of the brain system called limbic. It is also supported by another neuroscientist namely Antonio Damasio (1999) that described how emotions play a central role in organizing cognition and decision-making by linking bodily states with mental representations, essentially structuring how we process and prioritize experiences.

Complementing this perspective, Immordino-Yang (2015) underscores the importance of emotionally supportive learning environments in effective pedagogy. She argues that such environments must not only ensure psychological safety but also foster learner autonomy and the personal relevance of academic content – factors that are essential for deep cognitive engagement and meaningful, lasting learning.

Thus, learning is not merely the passive acquisition of information, but a deeply embodied, emotional, and conscious process. As stated by Seth., A (2021) that conscious experience can be understood as a form of predictive brain activity and often

conceptualized as “controlled hallucination” that is fundamentally shaped by, and inseparable from the embodied nature of human existence. These constructed perceptions emerge through the dynamic integration of sensory input, prior knowledge, and the ongoing physiological state of the body.

Moreover, learning is shaped by the dynamic interplay between the brain’s hemispheres, each contributing uniquely to perception, interpretation, and meaning-making. Effective learning environments must therefore engage both hemispheres by cultivating open perception, emotional resonance, and opportunities for creative exploration. Such an integrative approach supports not only cognitive development but also holistic understanding, enabling learners to connect knowledge with experience in meaningful and transformative ways.

Aligns with the concept of neuroscience, in order to achieve the goals of learning in the 21st century, exploratory learning with brain – based frameworks must be adapted along with the deep learning concept. Letting the students to learn and explore from interrelated and more dynamic sources that appropriate with their own needs as defined by A.-P Lian (2023) as a rhizomatic learning, it will lead to the precision in learning especially in the language learning (Lian, A. P., & Sangarun, 2017). Furthermore, this will create the concept of “do it yourself” in learning where students can explore, create and generate their own learning style which promotes the self – regulation also students’ agency in learning (A.-P. Lian., 2017).

It also resonates with the needs of innovation in the educational system in the current era. Lotto, B (2017) suggests that deviation is required to foster innovation and deep learning. When individuals consistently adhere to established rules, remain within familiar boundaries, and avoid error, the learning process stagnates.

True cognitive growth emerges through acts of deviation – whether by questioning prevailing norms, experimenting with novel approaches, or redefining failure as a pathway to discovery. Such departures from the conventional open space for exploration, critical thinking, and the generation of new insights.

1.6.5 Transformative Pedagogy

Transformative pedagogy refers to a novel pedagogical approach that focuses on the students' behavior and motivating them to develop a sense of responsibility. Moreover, this kind of pedagogy allows students to construct learning environments and processes that expose learners to transformative learning experiences. It enables students to examine their assumptions critically, tackle social issues, and get involved in social actions (Taimur & Onuki, 2022). Additionally, because education plays a foundational role in the transformation of the relation between humans with the world and to each other, transformative pedagogy is highly required to shape peaceful and sustainable futures to support Sustainability Education (SE) as proposed by UNESCO (2021). It is also known as Education for Sustainable Development (ESD), which means that education is a main power to strengthen students to make informed decisions and responsible actions to ensure economic feasibility, environmental integrity, and a just society while respecting cultural diversity – for the present and future generations (UNESCO, 2017). The shift from transmissive to transformative pedagogy serves as a change in the educational culture by shifting the ways of thinking and learning to be more connective, systemic, holistic and ecological, as stated by Taimur & Onuki (2022). In other words, this shift also requires moving from a teacher-centred transmissive approach to a learner-centered approach.

In the transformative pedagogy, teachers act as facilitators, assisting learners in interacting with their peers. These are non-threatening environments where the students learn collaboratively with the participation of each of them. Collaborative and participatory learning

fosters the growth of students' critical thinking abilities and helps them develop favorable attitudes towards themselves, others, and the world.

In contrast with transformative pedagogy that focused on the active, reflective, and holistic teaching and learning method, A.-B. Lian et al. (2023), in a talk, stated that several schools and universities around the world are still applying the old pedagogy namely the informational learning concept that emphasize the passive atmosphere in the learning activity. The students are served the rigid instructions to be followed without considering their critical engagement. This process will lead to the teacher-centered process and rote memorization, and need the shift to transformative pedagogy. Align with three key characteristics of the minimalistic learning principles as defined by Lian & Sussex (2018) cited in Bumela (2020) that the learning process must respect learners' individual meaning-making mechanisms, emphasizing awareness-raising activities in synchrony with one another, and support for personalization.

Transformative pedagogy is possible to lead the students to reach their well-being in learning. With the non-threatening environment, they easily to experience meaningful relationships, personal growth, emotional resilience and navigate the challenges and maintain a balanced life. In cultivating well-being, education plays a pivotal role. As emphasized by the UNESCO in 2022, it is very important to create educational systems which support mental and physical well-being and strengthen inclusive, safe learning environments devoid of stigma, bullying, discrimination, and violence.

Well-being is influenced by the way we learn and process information at a cognitive level. A study conducted by Lian (2017) explains that when we learn, our brain categorizes information, making it meaningful to us and playing an important role in shaping our understanding and how we process new experiences. It underlines that learning is not only about obtaining the facts but seems more to organize knowledge in ways that help us make sense of the world.

Moreover, a study conducted by Sudimantara (2023) highlights that learning is a process in which the brain organizes information into meaningful categories, influencing our ability significantly to understand experiences and contributing to overall mental well-being. When the knowledge is structured effectively, the improvement does not only happen in the cognitive process but also is beneficial in reducing mental overload and leading to greater emotional stability. The relationship between mental well-being and learning fosters the idea that cognitive development and education play a pivotal role in shaping a person's overall quality of life.

Transformative pedagogy plays a crucial role in changing and reimagining education for humans and their societies. It consists of the pedagogy that fosters students' intellectual, social, and moral capacities to work cooperatively and collaboratively, and transform the world with empathy and affection. Teaching activity should be more professionalized by placing the teachers as knowledge producers and key figures in educational and social transformation. In this teaching strategy, reflection, research, the generation of new knowledge and the development of innovative teaching practices should become integral. Furthermore, in the transformative pedagogy, the support from the schools' stakeholders is obviously required, including the way they ensure that students have inclusive, safe, and equitable learning environments to learn. Digital technologies also need to be utilized wisely, not for replacing the schools or teachers, but to support the transformation of the world through an educational system that is more equitable and sustainable. Transformative pedagogy enables learners to have meaningful and quality educational opportunities; learners can enjoy the educational experiences that take place throughout life and in the distinct culture and social spaces (UNESCO, 2021).

a) Rebuild the Curriculum and Assessment

Transformative pedagogy includes the shift of curriculum and assessment. Both the curriculum and assessment serve as the key important elements that guide teaching and learning activity in the classroom (OECD, 2024). A well-structured curriculum defines the intended learning outcomes, encompassing the core knowledge, competencies, and values that shape the educational journey of students and teachers alike. The curriculum that supports transformative pedagogy should emphasize an ecological comprehension of humanity, balancing the way humans relate to Earth as a living planet and their singular home (OECD, 2021). Integral to this process are assessments, which function not only to evaluate student performance but also to provide actionable insights that support targeted instructional adjustments and foster continuous learning and development. Assessment functions as a core element of effective pedagogy, deeply embedded in both the teaching and learning experience. To achieve the meaningful growth and learning of the students, the assessment implemented should reflect several pedagogical goals stated above. Curriculum and assessment have a high connection in developing students' achievement. Not only does it act as guidance and a form to assess students' learning, but it also aims to seek the students' progress in learning, to give them feedback related to their attitudes and behavior in the learning, and to be evaluated in order to adjust with their needs.

Nevertheless, in the Indonesian context, the transformation of curriculum and assessment is still far from straightforward. As discussed in the curriculum changes section above, the changes in curriculum that are excessively often are impacting the overloading of the changes and resulting in unnecessary stress for both students and teachers (OECD, 2020). Furthermore, there is also a gap in the assessment implementation, as stated in a study by Shadri et al.

(2023) that Indonesian teachers currently see the assessments in learning only as a tool to measure the students' learning progress by using book reports containing numbers. It means the test given as an assessment is still standardized or uniformed. However, a researcher, A.-P. Lian (2025), in his paper highlights the importance of a paradigm shift in the educational system. The need to transform from standardized to personalized learning to strengthen intellectual development.

b) Multisensory Approach

The traditional concept of multisensory approach focused on the learning strategies that can help students to engage with the learning and teaching activity from various form of sources, such as written text, visual elements, gestures, videos, and images.

Furthermore, the notion of the present Multisensory approach in learning resonates with the three principles and four dimensions of deep learning, also what have stated by A.- P Lian (2011) that learning is not only involving a part of humans' body, but also integrating all parts such as mental, emotional, sensory, and physical engagement. Multisensory approach appropriates to be applied in the learning activity as a transformation in pedagogy especially in language learning. Unlike the traditional approaches required learners to memorize many formulas and information that will lead to the students' cognitive load, this approach more emphasizes on the importance of students' mental well-being, emotional engagement, and perception. Supported by a study obtained by Pengelley et al (2025) learning environment that still focus on the memorization especially in paper-based learning, requires students to have process and remembering a lot of information that affecting their mental well-being and the cognitive load.

The innovative approach as introduced by Sudimantara et al (2025) called Multisensory Computer-Assisted Language Learning (M-CALL) combined the notion of biological learning with the appropriate utilization of digital technology. It is potential to be implemented in Indonesia to create the learning atmosphere which fosters the students to have the ability of reflect, think critically and to prioritize and achieve the students' agency. Move beyond rather than only focus on the traditional approaches that emphasize more on rote memorization or repetitive instructional practices centered on grammatical accuracy and linguistic form, which may limit opportunities for authentic language use and higher-order thinking.

M-CALL approach serves as an innovative learning notion that ground in the humans' brain. In addition, the implementation of digital technology into its concept will empower the students' learning development, whether in their cognitive and digital intelligence. M-CALL framework leads the students to have the rhizome work as stated by A.-P. Lian (2011) and to take their agency in learning through enabling them find their learning resources based on their needs to solve the problems. In the language learning, specifically in academic writing course, this approach will shift the way students read and write the text driven by machines through the humanistic principles (A.-B Lian, 2025).

c) M-CALL in Academic Writing

Since the innovative approach in language learning is required, multisensory approach in academic writing is considered as an approach possible to cultivate students' creativity, capacity, and independence in knowledge acquisition (Sudimantara et al., 2025). To develop further, the incorporation of technology in the multisensory approach can be called as Multisensory – Computer Assisted Language Learning (M-CALL) as developed by Sudimantara et al (2025). This approach prioritizes creating learning

atmosphere that is meaningful through engages students emotionally. Additionally, it shapes learning to be more personalize and dynamic through harnessing digital technology as their learning resources to seek what they actually need in learning (A.-P. Lian, 2025). Supported by Lian (2023) that emphasizing emotional engagement in students' learning contributes to the development of neural networks that are crucial for students' ability in meaning-making and abstract thinking.

Unlike the traditional approaches used in the academic writing course such as Genre-Based Approach (GBA) in Indonesia also National Assessment Program – Literacy and Numeracy (NAPLAN) in Australia which both are still focused on the surface level of the text as defined by Malpique., D. A., et al (2023) and a study by Baihaqi., L., et al (2025) that Genre-Based instruction is usually led to the non-interactive learning activity and limiting the students' creativity also adaptability to create their own space in learning, Multisensory Computer Assisted Language Learning (M-CALL) approach grounded in neurocognitive principles of learning also stressed that writing activity must assist the students' meaning-making process, not only giving information and instruction. This notion resonates with the humans' perception concept by Lotto. B (2017). In his book, it is stated that perception shapes how human making sense of their live rather than only sensing the things.

In writing, perception forms the way students comprehend the text, choose the words used, and structure the opinions. Thus, the instruction must move beyond the linguistics aspects to the instruction that can help students become more aware on how they build meaning of the text, including their emotional engagement and the aspects shape the students' perception such as cultural and personal experiences. The learning frameworks incorporated with M-CALL are *Reading for Emotion* and the *Aesthetics Principles*.

These approaches grounded in the humans' brain to engage multiple sensory and enhance students' comprehension.

1.6.6 Innovative – Brain – Grounded Learning Approaches

These approaches positions emotion and humans' perception as a central analytical tool in the interpretation of texts, prioritizing the way students develop their meaning-making in the learning. As explained by Solms., M (2021) that emotions drive humans' engagement with the world and serve as a framework through which experiences are interpreted.

a) Reading for Emotion

Reading for Emotion (RfE) model as proposed by A.-B Lian (2017) shift the principle for learners to explore the text not only in the surface aspects but deeper into their affective element. In addition, the shifting also existed in the text's general structure. Commonly, texts are being presented in the structure of "beginning, middle, and end". However, Reading for Emotion model links emotions with the six stages of generic structure, which are: (1) Focus, (2) Disturbance, (3) Dialogue, (4) Development, (5) Resolution, and (6) Moral.

Reading for Emotion (RfE) framework is a biological brain mechanism rather than only a pedagogical framework. It reflects the natural process of humans in assessing and or integrating information, regulating emotions, and making sense of the world. Additionally, the RfE model sees a text as a narrative problem-solving that aligns directly with the concept of Story Thinking as argued by Fletcher, A. (2023). This concept moves beyond the rule-based reasoning of the students to the exploration of multiple possibilities through "what if" scenarios. The Story Science concept also resonates with the deviate concept in learning as

stated by Lotto, B. (2017) that embracing uncertainty, emotion, and complexity is important in learning to navigate the complexities of life, where the old and rigid ones do not. Fletcher, A. (2023) highlights that stories must be so pivotal to learners because the humans' brain is actually thinking in stories.



Figure 1. 2 A Generic sequence of RfE (Lian, 2017; 2024)

The following is the overview of the six stages in RfE model as explained in talks by A.-B. Lian. (2023) linking to the story science concept as proposed by Fletcher, A. (2023):

1. Focus

The humans' brain is constantly predicting what comes next, and relies on this initial phase to construct a mental model of the situation to introduce characters, situation, and context. By situating the audience within a relatable scenario, the focus phase primes personal engagement, prompting implicit questions such as "Could this happen to me?" and thereby transforming passive reception into immersive simulation.

2. Disturbance

The humans' brain will immediately respond when a problem or disruption occurs. It is a neurological alarm system rather than only about humans' interest. A system in humans' brain named "Amygdala" as the core of emotions and conflict detection lights up. Thus, the disturbance forces humans' attention and alarming that something important is happening.

3. Dialogue

The brain stimulates humans' thoughts and feelings when the characters speak or interact. This activates the theory of mind network which allows us to understand others' perspectives. In this stage, the reader not just simply reads the dialogue, yet rehearses it mentally, imagining tone and feeling tension. This construct of empathy which plays a role as a key part of emotional and social intelligence.

4. Development

As the story unfolds, the brain runs "what if" scenarios or the core of story thinking as identified by Fletcher, A. (2023). Unlike logical reasoning, which seeks one correct answer, story thinking explores multiple paths and outcomes. The brain uses this phase to simulate decisions, weigh consequences, and test values. This is where creativity and critical thinking merge.

5. Resolution

The brain craves coherence. When a story resolves, the narrative network and reward system (including dopamine release) help restore psychological balance. This provides emotional regulation - a sense of relief, satisfaction, or insight. Without resolution, the brain remains in a state of tension, which is why unresolved stories feel unsettling.

6. Moral

Finally, the "moral" isn't just a lesson, yet it's where personal meaning is integrated. The brain connects the story to one's own

values, beliefs, and experiences. This involves the self-referential network and supports long-term memory formation. As Fletcher notes, stories don't just inform but they transform. They help us ask: "*What does this mean for how I should live?*".

By integrating these six elements, writing becomes more than just a conveyance of information, it becomes the multisensory process that involves the emotional experience that resonates deeply with readers, fostering empathy, reflection, and connection.

Lian (2017) took an important step in bridging neuroscience and language learning by adapting the neurological theory of aesthetic experience first introduced by Ramachandran and Hirstein (1999). Rather than simply describing how the brain responds to visual beauty, she reimagined these insights in the context of language – specifically how we read and feel the rhythm of written texts. Lian saw that the same principles that explain our emotional responses to art could also help students understand how sentence structure shapes tone, emotion, and meaning in writing. By applying this neuroaesthetic lens to language, she opened a new lens for learners to not only read more deeply, but also *feel* more fully what a text is trying to convey.

b) Neurological of Aesthetics Principles

There are eight principles as proposed by Ramachandran and Hirstein (1999) that adapted by A.-B Lian (2017), which are:

1. Peak Shift

This principle suggests that when a particular element stands out significantly from its context, it captures attention more powerfully. In writing, this might occur when a sentence breaks the expected pattern, drawing the reader's focus and intensifying emotional impact. By exaggerating certain features – such as tone, repetition, or contrast – writers can create a stronger impression, making ideas or emotions more vivid and memorable.

2. Contrast

The brain naturally filters out what it considers unnecessary, focusing instead on differences and similarities. In reading, contrast helps readers distinguish between key ideas, emotions, or narrative shifts. For example, a sudden change in tone or theme can signal a turning point in a story, guiding readers through emotional highs and lows and helping them make sense of complex narratives.

3. Perceptual Problem-Solving

People are often more engaged when they are invited to “solve” something – to interpret meaning that isn’t immediately obvious. When a text challenges the reader just enough to spark curiosity without overwhelming them, it deepens engagement. This principle underlines the value of ambiguity, metaphor, and layered meaning in writing that invites reflection and emotional connection.

4. Symmetry and Order

Humans are naturally drawn to balance and proportion – whether in visual art or written structure. In texts, symmetry can be reflected in the organization of ideas, the pacing of sentences, or the mirroring of themes. This sense of balance not only enhances aesthetic appeal but also supports clarity, making the core message more accessible and emotionally resonant.

5. Perceptual Grouping

This principle explains how the brain seeks patterns and connections between elements to create a unified whole (Ramachandran & Hirstein., 1999, p. 21). In writing, perceptual grouping can be seen in the use of repetition, parallel structures, or recurring motifs that help readers form a coherent understanding. These linguistic tools allow writers to guide the reader’s interpretation and reinforce emotional or thematic unity.

6. Generic Viewpoint

Our brains prefer familiar structures and perspectives because they require less cognitive effort to process. In reading, this means that texts which build on known conventions or cultural references are often easier to understand and more emotionally accessible. Writers can use this principle to create a sense of comfort or familiarity, allowing readers to focus on deeper meanings rather than struggling with form.

7. Metaphor

The brain has a remarkable ability to find connections between seemingly unrelated things – a process central to metaphor. In writing, metaphors allow readers to grasp abstract or complex emotions by linking them to more concrete or familiar experiences. This principle highlights how figurative language can deepen emotional resonance and enhance the richness of textual meaning.

8. Isolation

Sometimes, less truly is more. The principle of isolation refers to the brain's ability to focus on what matters most when distractions are removed. In writing, this might mean simplifying sentence structure, eliminating redundant information, or emphasizing a key emotional moment. By isolating key elements, writers can direct the reader's attention and intensify the emotional or cognitive impact of the text.

1.6.7 AI-Assisted Language Learning through Digital Humanity Concept

Digital technology such as Generative Artificial Intelligence (GenAI) tools in educational field influence fundamental skills such as critical thinking and creativity and impacts all human activity. In addition, the rapid advancement of AI, whether in the educational system or in general, must be balanced with the humans' responsibility to use it ethically. A framework called BIMA (Bridging Intelligence, Mindfulness,

and Awareness) as proposed by Wirawan (2025), one of the professors at the University of Adelaide, Australia, offered a framework that highlights education as a spiral and living also flowing aspects, not a one-time intervention. Correlates with the adaptation of digital technology such as AI in education, BIMA framework emphasizes the importance of balancy between humans living and technology also syncing it with the complexity of the real world. In addition, humans need to be wise in using AI and need to have some idea of how it works and what AI does (Karsenti., 2021; Khosravi., H., 2024).

In the education system, specifically in language learning, AI can be harnessed to foster humans' development. Moreover, to fully utilize the potential of AI in education, the use of AI must be thoughtfully integrated into pedagogical practices in ways that enhance rather than replace the human-centeredness of learning (Banihashem et al., 2025). As an example, in the academic writing course, utilizing AI to create human-centered feedback can foster the students' agency. It impacts on the students' learning, motivation, engagement, collaboration, and also self-regulation (Banihashem et al., 2022; Shute, 2008). Another activity in learning with the AI-Assistance become most promising technological advancements in education (Dewanti et al., 2025).

A study conducted by Lian (2025) encourages the necessity to move forward from the old mindset of the use of traditional AI (Artificial Intelligence) to the new form of AI as *Alternative Intelligence*. The concept that emphasizes a paradigm shift in how we comprehend and apply intelligence in machines. In the development of cognitive models, *Alternative Intelligence* will be totally different from the old AI that often repeats past patterns also bound by the biases or constraints deep-rooted in human cognition. Fortunately, because of the concept of *Alternative Intelligence* focuses on concentrating, anticipating, adapting, evolving, and constructing the future, so that it will be a really forward-looking concept that may lead to overcome for the present AI difficulties.

Additionally, Lian (2025) also emphasizes that AI can be empowered to foster the shift from traditional books into dynamic books which are more adaptable and become interactive learning tools tailored to individual needs. The dynamic book exemplifies the shift toward learner-centered learning and enabling personalized education. This novel concept is possible to overcome the issue where education currently still predominantly evaluates students on uniform metrics like standardized tests, which prioritize rote memorization. Moreover, the advancement of AI would revolutionize the education sector, especially outperforming teachers and learners in language learning areas (Wogu., I. A. P. et al., 2018).

Nevertheless, the use of AI without any frameworks as the guidelines will lead to several risks. For the teachers, the existence of AI will affect the way they teach their students. They are indirectly required to immediately adapt AI in the classroom, but without any professional training and deep understanding about AI, it only leads to something worse. Similarly for the students, before they use AI in their learning activity, they must have a foundational knowledge related to the way to use AI ethically. The UNESCO has already launched the AI Competency Frameworks both for the teachers and students as a guidance in the educational system utilization (UNESCO., *AI Competency Framework for Students*, 2024; *AI Competency Framework for Teachers*, 2024).

The AI tools such as ChatGPT and Qwen can be harnessed as one of the examples of the dynamic book. It provides personalized learning resources (Bodily & Verbert, 2017), real-time feedback on students' work, and can be adaptive educational systems rather than a threat (Darvishi et al., 2024). The use of AI tools ethically can offer the concept of AI as a cognitive amplifier and strengthen the innovation in educational systems to create more inclusive and learner-centered environments. In contrast with its strengths, GAI in education also risk diminishing the essential mental

effort required for meaningful learning and can lead to metacognitive laziness as stated by Khosravi et al (2025).

Educational systems must evolve at the same pace as our rapidly changing world. Failure to do so risks falling behind – a disruption that could have lasting consequences for learners, educators, and societies at large. One of the most pressing challenges ahead is the growing divide between human intellectual capacity and the accelerating power of technology. While technological advancement is inevitable, education must not only keep up but actively engage with these changes. In today's AI-Driven era, institutions of learning are called to view artificial intelligence not as a threat to traditional pedagogy, but as a powerful ally in reshaping, redefining, and reinvigorating education also to bridge the gap exist between human intellect and machine (Pozdniakov, S. et al., 2025). By fostering meaningful collaboration between human intellect and machine intelligence, schools and universities can cultivate a new generation of thinkers – ones who are not only technologically literate but also ethically grounded, creatively empowered, and deeply human (A.-P. Lian, 2025).

As *UNESCO* (2023, p. 33) emphasizes, our growing understanding of the brain is fueled by advances in neurotechnology which calls for a parallel evolution in educational practices. This perspective resonates deeply with the central argument of the present study: language learning and writing instruction must move beyond rote memorization and mechanical drills, shifting instead toward pedagogies that are grounded in how the brain naturally learns through emotion, curiosity, and meaningful human connection.

Traditional approaches often overlook the affective and cognitive dimensions of learning, limiting their effectiveness in fostering deep, lasting understanding. By integrating insights from affective and cognitive neuroscience, and by thoughtfully incorporating digital tools such as Generative AI to support personalized, reflective, and emotionally

resonant writing experiences, educators can transition toward a transformative, learner-centered paradigm (Riemer, K. et al., 2019). This new approach not only aligns with our evolving scientific understanding of the mind but also reflects a profound ethical commitment to nurturing the full potential of every learner.

1.7 Previous Studies

Several previous studies that are closely connected with the current study were identify and discuss by the researcher in this section.

The first previous study is obtained by Shilvani et al (2023) which examined the undergraduate thesis abstracts through the linguistic accuracy lens. This study analysed 20 English abstracts written by several university students in Indonesia. By using qualitative descriptive analysis, the study only focuses on identifying grammatical and surface-level error taxonomy theory by Corder (1974) that classify mistakes into omission, addition, misinformation, and misordering. As their results, over 75% of the abstracts consisted grammatical errors with the largest number of inaccuracies are on the omission of articles and prepositions which attributed to L1 interference and incomplete grammatical competence. Even though it is useful pedagogically, this grammatical error-focused lens reduces and neglects the expressive dimensions of student writing.

The second previous studies were focus on structural or rhetorical moves frameworks developed by Swales (2004) and Hyland (2000, 2005) in analysing the undergraduate and postgraduate thesis abstracts. The study conducted by Arono (2019) analysed 30 abstracts across literature, linguistics, and language teaching in Indonesia and found that while move 2 (purpose), move 3 (methodology), and move 4 (results) were nearly universal (obligatory), move 1 (introduction/background) and move 5 (conclusion/implication) were often ignored especially in literature abstracts. Similarly, a study obtained by Suwarni (2021) examined 45 abstracts written by the undergraduate students from Indonesian ELT context and it found that students often overlooked contextual

framing or research importance in favour of goals, methods, and outcomes, which led to descriptive abstracts that lacked coherence or persuasiveness.

Thirdly, a study conducted by Aunurrahman et al. (2016). A significant contribution to the field of academic writing pedagogy which investigates how university students perceive their academic writing instruction, particularly when delivered through a genre-based approach rooted in Systemic Functional Linguistics (SFL). The researchers implemented a structured pedagogical model namely Genre-Based Approach (GBA) model that included four key stages: building knowledge of the field, modeling of texts, joint construction, and independent construction. These stages, supported by explicit instruction and collaborative group work, were designed to scaffold students' understanding of academic discourse and genre conventions. The findings revealed that this approach not only improved students' writing proficiency but also fostered the development of critical thinking and character-building skills such as responsibility, integrity, and self-regulation through guided reflection and peer interaction.

However, the study also uncovered persistent challenges that resonate with broader concerns in writing education. Many students struggled with the ethical dimensions of academic writing, particularly in understanding and applying proper citation practices and avoiding plagiarism. Additionally, the transition from informal, conversational language to formal academic discourse proved difficult for many learners, highlighting a common gap between students' linguistic repertoires and the expectations of academic writing. These findings reflect a recurring issue in writing instruction: the overemphasis on grammatical accuracy and surface-level features, often at the expense of deeper cognitive and affective engagement. Aunurrahman et al. suggest that while genre-based pedagogy provides a strong structural foundation, it may not fully address the emotional, contextual, and stylistic dimensions of writing that are essential for meaningful academic communication.

This aligns closely with the central focus in this current research, which seeks to explore how academic writing instruction can be enriched through the

integration of affective and neuroaesthetic frameworks. Like Aunurrahman et al., the researcher in this current study recognizes the value of scaffolding and explicit instruction, but also argue that writing pedagogy must evolve to include elements that engage students emotionally and aesthetically. By examining writing not only as a cognitive task but also as an affective and creative process, this current research contributes to the ongoing conversation about how to make academic writing more engaging, meaningful, and reflective of the ways in which the brain naturally processes language and meaning

Fourthly, a study that informs this research is obtained by Bumela (2021) who explores a transformative approach to academic writing in the Indonesian context. Moving beyond conventional, grammar-centered methods, He critiques the dominant genre-based and monolithic approaches in English language teaching (ELT), which often prioritize structural conformity over student agency, creativity, and deeper cognitive engagement. The study reveals how these traditional pedagogies tend to limit students' expressive potential, reducing writing to a mechanical exercise rather than a meaningful, intellectual, and emotional act. In response, He proposes a novel pedagogical model that integrates rhythm, intonation, movement, emotion, and aesthetics into writing instruction – an approach grounded in insights from neuroscience and designed to engage students holistically in the writing process.

Central to this study's framework is the integration of multisensory learning tools, such as the Verbotonal Approach, *Reading for Emotion (RfE)*, and the *Neurological Principles of Aesthetics*. These approaches are based on the understanding that the brain does not process language in isolation but through a dynamic interplay of sensory, emotional, and cognitive systems. By incorporating elements such as tonal variation, emotional engagement, and aesthetic awareness, the pedagogy encourages students to write not only with clarity and coherence but also with voice, depth, and stylistic richness. The findings suggest that when students are guided to explore the affective and rhythmic dimensions of language, they are better able to produce academic texts that are both intellectually rigorous and emotionally resonant.

Relevant to this current research, it seeks to challenge the overemphasis on surface-level linguistic features such as grammar, syntax, and punctuation in academic writing instruction. Writing should not be reduced to a set of rules or formal structures, but understood as a deeply human and cognitive act that involves emotion, creativity, and personal meaning-making.

The fifth study came from Alwasilah (2024) that implemented a Genre-based Approach (GBA) rooted in Systemic Functional Linguistics (SFL) in a private vocational school in Indonesia. The researcher stated that GBA as a writing instruction provides four learning cycles that make the instructor feel easier in giving the writing instruction to the students. The findings revealed that most students perceived the instructional stages and guidance provided by the teacher as clear and effective. Additionally, students demonstrated improvement in their writing from the first to the second draft, particularly in terms of text structure and linguistic elements. However, not all students showed the same level of progress, indicating the need for further refinement in instructional design and classroom activities to ensure broader effectiveness across diverse learners.

The study employed a qualitative approach, incorporating teaching phases, interviews, and textual analysis to gather in-depth insights into students' writing development. The four stages of the GBA were systematically applied to guide students from a dependent to an independent writing stage. The analysis of students' written texts showed that they were generally able to follow the structure of a recount text, including orientation, a series of events, and reorientation. While some students omitted the reorientation stage, the overall coherence and organization of their texts improved, especially after exposure to modeling and collaborative writing activities.

Moreover, the language features of the students' texts reflected a growing awareness of the grammatical and lexical demands of recount writing. Most students successfully employed past tense, time conjunctions, and appropriate vocabulary, which are essential features of recount texts. The use of complex sentences and varied moods (declarative, imperative, and exclamatory) also indicated a deeper engagement with the genre. These findings support the idea

that GBA not only enhances structural understanding but also promotes linguistic accuracy and expressive richness in writing.

The last previous study is conducted by Bahroun et al (2023) that implements qualitative content analysis to examine studies on Generative Artificial Intelligence (GAI) in education, investigating dominant themes such as ethical concerns, disciplinary applications, and assessment innovation. This prior work illustrates how this qualitative research design – content analysis is able to synthesize complex heterogeneous textual corpora to reveal trends and research gaps scholarly. Nevertheless, their focus was not on student-generated academic writing or the aesthetics and affective dimensions rooted within it, but it was on published and macro-level educational themes academic literature. In contrast, the current study utilizes qualitative content analysis to a different subject matter which is undergraduate students' mini-thesis abstracts in English Language Teaching and implements it through two brain-grounded frameworks namely Reading for Emotion (RfE) and Neurological Aesthetics Principles. The adaptation of the methodology allows the novel explorations of emotional shift or emotional engagement and the aesthetics patterns that the prior study have not fielded.

It differs from some previous studies on text analysis that are grounded in the Systemic Linguistics Functions (SFL), the current text analysis study will deviate from the tools used previously into human's brain-informed analytical frameworks. By integrating these innovative analytical frameworks; Reading for Emotion (RfE) and Aesthetics Principles, this study implements the innovative way of seeing the texts as an active construction of the meaning-making process of the authors instead of as a passive construction of information. Rather analysing the texts affectively, cognitively, and aesthetically than only analysing the textual features inside it.

1.8 Frame of Thought

The frame of thought in this study is generated by the researcher manually. The researcher put several keywords related to the current issues in the writing

pedagogy as the background of this study, introducing the innovative brain - informed frameworks, the concept of AI Pedagogy proposed by OECD and the implications of this study practically and theoretically.

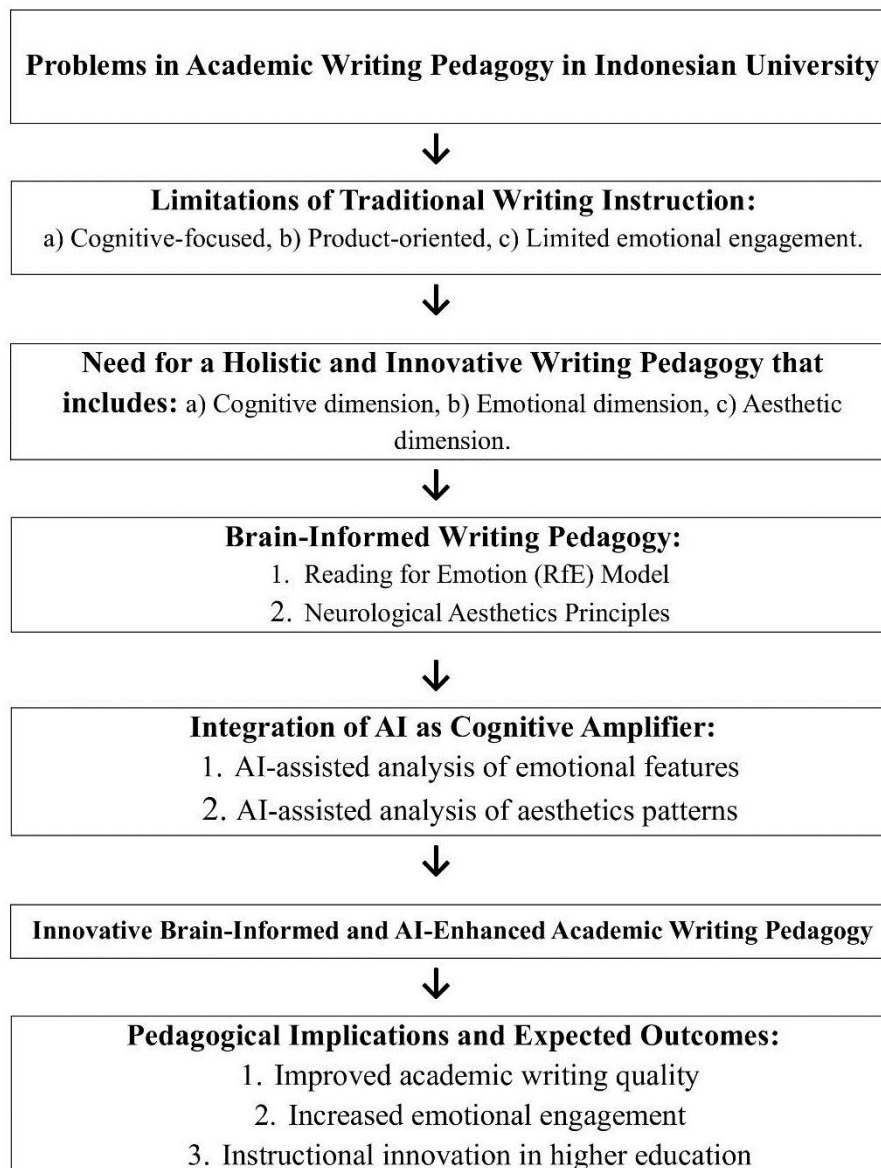


Figure 1. 3 Frame of Thought

1.9 Research Method

1.9.1 Research Design and Steps of the Research

This study harnesses the qualitative research approach with the content analysis design. In qualitative approach, there are five steps in obtaining the research according to Creswell, J. W. (2018) they are: identifying research problems, reviewing the literature, specifying research questions and purposes, collecting data, then analyzing and interpreting data. In conducting research through a qualitative approach, the center of the process is the data analysis and interpretation stage, which takes a crucial role in arranging unstructured data into more nuanced and comprehended. Aligns with the researcher's objectives that to analyze one section in academic writing text which is abstract related to the emotional progression appear and aesthetics principles appeal in the text by using the brain – informed analytical frameworks.

Specifically, Content Analysis design is a way to understand the content of messages which are often unstructured, such as texts, symbols, images, or sound from the data. This design enables the researcher to analyze and fully comprehend the information related to the whole data obtained. Thus, it allows the researcher to make valid inferences about the meaning of texts in relation to their contexts of use (Krippendorff, 2018). Moreover, content analysis is a methodological approach used to examine communication content with aims of uncovering its underlying messages, themes, and patterns (Sirilakshmi, Y., et al., 2024). In this study, the researcher employed a qualitative content analysis design to examine the thesis abstracts' quality emotionally and aesthetically regarding the stages and principles completeness on the Reading for Emotion model and Neurological Aesthetics Principles Framework.

By using the qualitative content analysis design, the study goes beyond mere counting toward interpreting the nuances, context, and underlying meanings in the content (i.e., texts).

In a book entitled *Content Analysis: An Introduction to Its Methodology* by Krippendorff, K. (2018) stated that there are six steps in

obtaining research with qualitative content analysis design. However, the researcher only employed four steps of content analysis in this study, they are as follows:

Table 1. 3 Steps of Content Analysis Design

| No. | Steps of the Content Analysis design |
|-----|---|
| 1. | Collecting the data, including: a) Unitizing, and b) Sampling content chosen c) Creating categories used in analysis d) Coding the text e) Reducing the data |
| 2. | Analyzing the collected data to find the patterns and themes. |
| 3. | Displaying the collected data into themes by using table, chart, and line graph visualization. |
| 4. | Interpreting the data to derive the conclusion. |

The first step of content analysis design is collecting the data. According to Krippendorff (2018) that this step involves five components which constitute the collected data from raw or unedited texts. The four components are as follows: 1) Unitizing the textual content (i.e., texts) to be analyzed. 2) Sampling the texts, namely 15 thesis abstracts section written by undergraduate students majoring English Language Teaching Department (ELTD) in 2025 class year. The 15 authors are supervised under three different supervisors while writing the thesis. For each supervisor, five abstracts were selected. Thus, the selected abstracts are those written in English. 3) Creating categories for each analytical frameworks which are six stages of Reading for Emotion (RfE); Focus, Disturbance, Dialogue, Development, Resolution, and Moral and four Aesthetics Principles; Peak Shift, Contrast, Perceptual Problem Solving, and Symmetry & Balance. 4) Coding the texts based on the categories. Then, last is 5) Reducing the data. Sentences from the abstracts that do not include within the category criteria are referred to as unencoded sentences and will be reduced.

The second step of content analysis design is data analysis to find the patterns and themes. In this step, the researcher plays a role as a first analyzer, then utilizes AI tool (i.e., QwenAI) as a *cognitive amplifier* to amplify the analysis result including the emotional shift, emotional and aesthetics engagement of the texts. Qwen2.5-Max and Qwen3-Max models are considered as the appropriate analytical tool for analyzing academic texts based on the data shows in a study conducted by (Aydin et al., 2025). He argued that from the benchmark comparison across leading models such as Qwen2.5-Max, DeepSeek-V3, Llama-3.1-405B-Inst, and other models, the consistent leadership highlights Qwen's balanced strength across reasoning, coding, and general knowledge tasks.

Furthermore, to ensure the validity of content analyzed by the combination work between researcher and AI tool, the next step taken is expert validation. An expert takes a role in confirming that the data collected and analyzed is relevant to the research objectives.

The third step is data presentation or data display. Key findings in this research were visualized using tables, charts, and line graph visualization. While tables and chart were used to visualize RfE stage distribution, stage-based of emotional engagement and principle-based of aesthetics engagement. The line graph visualization is only utilized to create the visual form of emotional progression in each abstract. All of the visualization in data presentation are made by the AI tool (i.e., GeminiAI) and Graphmaker.org. Additionally, the data display is also completed with the descriptive annotations of visual forms.

The last step is data interpretation. After all of the data are processed and displayed into the visual and writing form, interpreting data is crucial to be conducted to find for a deeper meaning of the texts and to correlate it with the others context. Specifically, in the cognitive and affective contexts that surround it. Moreover, interpreting the data also benefits to obtain the inference and derive the conclusions which can be assessed anymore and relevant to the existed context.

1.9.2 Sources and Types of Data

In qualitative research, the selection of appropriate data sources is essential for ensuring the validity, credibility, and depth of the analysis. Data sources refer to the individuals, documents, or materials that provide the information necessary for inquiry. These are typically categorized into two types: primary and secondary sources. Primary data sources include direct forms of data collection such as interviews, observations, documents, focus group discussions, surveys, and field notes (Bernardo-Lazaro et al., 2024).

The type of data used in this study is primary data (i.e., document), specifically the texts. The texts chosen are 15 thesis abstracts written by undergraduate students majoring English Language Teaching Department (ELTD) in 2025 class year in one of the Islamic universities in Cirebon, Indonesia. The 15 authors are supervised under three different supervisors while writing the thesis. For each supervisor, five abstracts were selected. Thus, the selected abstracts are those written in English. The sources of data in this study are gathered from thesis abstracts analysis by using two brain-informed frameworks which are Reading for Emotion (RfE) and Aesthetics Principles with aims to understand the quality of academic abstract from the cognitive and affective lenses.

1.9.3 Data Collection Techniques and Instruments

In qualitative research, the data collection types could be obtained through the several data collection techniques, such as: Observations, Interviews, Documents Analysis, and Audiovisual digital materials as stated by (Creswell., 2018). In this study, the researcher chose the documentation and documents analysis as the technique to collect the data.

a) Data Collection Techniques

i. Documentation

Documentation is a data collecting technique which obtains the information from several sources or document of something (Sugiyono, 2015). Documents are records of different collections of information about events that occurred. There are two types of documents according to (Creswell., 2018), which are: Public documents (e.g., notes from meetings or the newspaper) and the Private documents (journals, diaries, or letters).

To collect the data needed in this research, the researcher utilizes one of the public documents namely thesis abstract. The thesis abstracts were gathered by the researcher from university's library which then continue by selecting the sample based on the selective supervisors while the authors completing the thesis. The selected abstracts were scanned from printed thesis into the text form in Microsoft Word. Then, for each abstract is organized by the researcher in the Google Drive application.

ii. Documents Analysis

After collecting and organizing the data (i.e., thesis abstract texts), the researcher analyzes each text by using two brain-informed frameworks in several analytical flows, as follows: Analysis by using Reading for Emotion (RfE) model, analysis by using Aesthetics Principles framework, and Integrated analysis by using both frameworks namely REA (Reading for Emotion and Aesthetics) as a triangulation research analysis methodology.

1.9.4 Data Analysis Techniques

The data analysis techniques in this study uses six steps of content analysis method as defined by (Cresswell., 2014). However, in this research, the researcher adapted the steps to be seven steps of data analysis techniques, as follows: (1) Collecting and Organizing the data, (2) Familiarizing the data, (3) Coding the data, (4) Refining and Selecting Codes, (5) Analyzing the depth of the coded Texts, (6) Analyzing Themes and Patterns, and (7) Interpreting Findings.

- 1) Collecting and Organizing the Data

As the first step in the data analysis technique, data collection refers to the process of how the researcher selects the data to be analyzed, also ensures that the data is relevant to the goals of the study. Then, the collected data were organized and structured to make it easily accessible for analysis.

2) Familiarizing the Data

In this step, the researcher observes the textual data with aims to get familiar with the information, patterns, and the contexts. Additionally, the researcher also builds the initial themes while reading through the data.

3) Coding the Data

After familiarizing the data, the researcher begins to categorize the data by using basic rules grounded in two brain-informed frameworks, which are Reading for Emotion which has six stages (Focus, Disturbance, Dialogue, Development, Resolution, and Moral) and four principles (i.e., Peak Shift, Contrast, Perceptual Problem-Solving, and Symmetry & Order) in Aesthetics Principles framework. In this step, the researcher codes per each abstract to categorizes the sentences involved in the RfE stages or Aesthetics Principles. This step is considered as an initial coding step.

4) Refining and Selecting Codes

The initial coded data that only classify into the six stages of RfE model and four aesthetics principles were continued to refine and pick into more selective categories that reflect the purpose of the data. In this research, from 15 analyzed abstracts, the researcher refines the initial coded data into the analysis tables which examine two crucial categories that aims as foundation to the following analysis, namely RfE stage distribution and Aesthetics Principles Appearance. This step serves as the basic for the researcher to analyze and identify the key themes that arise.

5) Analyzing the depth of the coded Texts

After getting the coded data for each abstracts sentence by sentence, the researcher does a deeper analysis to obtain the data in-depth

related to the emotional progression, emotional and aesthetics engagement of the text. In this step, the researcher utilizes AI tool (i.e., QwenAI) to enhance the analysis result. QwenAI plays a role as a cognitive amplifier and tuner to seek the emotional shift, emotional engagement and aesthetics engagement that undetected by the researcher. As explained in a presentation by the A.-B, Lian (2025) that AI tools are able to attempt complex textual analysis when lead by an analytic and coherent theory of the text. Moreover, the researcher always expanding the question to AI's responses or doing prompt engineering to ensure getting the valuable outputs. This collaboration of work refers to the novel concept in using digital technology in learning, namely *Alternative Intelligence* as stated by A.-P, Lian (2025). The detailed analysis flows of Reading for Emotion, Aesthetics Principles, and the integration both of the frameworks (i.e., REA) are explained as follows:

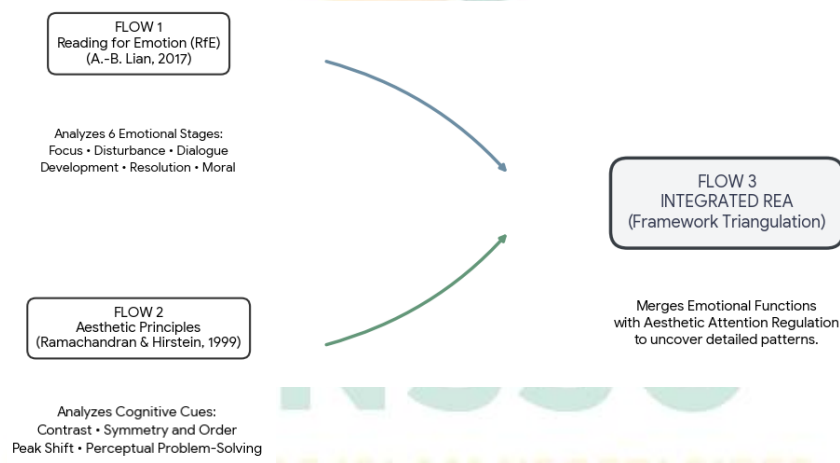


Figure 1. 4 Analytical flows of the study

The first flow is text analysis by using Reading for Emotion (RfE) model as proposed by A.-B, Lian (2017). The Reading for Emotion analysis focused on identifying the presence and function of emotional stages (Focus, Disturbance, Dialogueue, Development, Resolution, and Moral) within each abstract. Rather than treating stages as rigid sequences,

the analysis examined how each stage contributed to the overall emotional progression and reader orientation.

The second flow, texts are analyzed by using four principles in aesthetics framework as proposed by Ramachandran and Hirstein (1999). The aesthetic analysis examined the occurrence of selected aesthetics principles, which are contrast, symmetry and order, peak shift, and perceptual problem-solving based on their functional role in shaping attention and salience. The principles were analyzed as cognitive cues rather than stylistic features.

The last analytical flow is analyzing the texts with two integrated frameworks. This flow aimed to triangulate the research analysis technique to gather deeper understanding of the data in a more meaningful way. Supported in a study by Sudimantara., et al (2025) that it is essential to integrate the innovative tools in an ever-evolving landscape of education to courage deeper understanding and critical thinking.

In integrating Reading for Emotion and neuroaesthetic principles, the analysis focused on dominant emotional functions rather than complete emotional sequences. Aesthetic principles were examined based on their regulatory role in shaping reader attention and engagement. Cross-case patterns were established only when similar configurations recurred across multiple abstracts, while detailed abstract-level analyses were documented in the appendices.

6) Analyzing Themes and Patterns

In this step, the researcher observes the emerging themes and patterns regarding the selected categories previously. The themes arise from the analysis results will represent the analysis key's messages and point of view. Moreover, the patterns are identified based on the linkages between categories and topics to provide more information on the interrelationship of the ideas in this research data.

7) Interpreting Findings

The last step in data analyzing techniques is interpreting and reporting the findings. This step also includes three important points, as follows: extracting meaning from coded data, contextualizing themes, and communicating the findings effectively. The coded and analyzed data are examined for the relevance. The researcher investigates how individual and categories contribute to the overall picture. Then, the themes arise are contextualized and connected into the existing literature and other relevant contexts in language learning. Moreover, all of the findings communicate effectively by the researcher to explain the crucial ideas in the descriptive and narrative form.

1.10. Research Timeline

Table 1. 4 Research Timeline

| No | Activities | Time Allocations | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|--------------------------|------------------|---|---|---|---------|---|---|---|----------|---|---|---|----------|---|---|---|---------|---|---|---|----------|---|---|---|-------|---|
| | | September | | | | October | | | | November | | | | December | | | | January | | | | February | | | | March | |
| | | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 |
| 1 | Applying Proposal | █ | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | Proposal Seminar | | █ | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Conducting Research | | | █ | █ | █ | | | | | | | | | | | | | | | | | | | | | |
| 4 | Collecting Data | | | | | █ | █ | █ | █ | █ | █ | █ | █ | | | | | | | | | | | | | | |
| 5 | Analyzing Data | | | | | | | | | | | | | █ | █ | █ | █ | | | | | | | | | | |
| 6 | Finishing Thesis Writing | | | | | | | | | | | | | | | | | █ | █ | █ | █ | █ | █ | █ | █ | | |