

CHAPTER 2

LITERATURE REVIEW

This chapter reviews the relevant literature related to the variables investigated in this study. It provides an overview of learners' interest, learners' enjoyment, perceived cognitive development, and AI-assisted English learning. In addition, this chapter discusses previous studies relevant to the topic, presents the theoretical framework, and formulates the research hypotheses that guide the study.

A. Theoretical Review

The present study is based on an affective–cognitive perspective that defines learning as a process in which not only instructional input but also learners' emotional experiences are crucial. Previous research in educational psychology has shown that affective factors especially interest and enjoyment are crucial in determining learners' engagement, persistence and depth of information processing (Dewaele & MacIntyre, 2014; Hidi & Renninger, 2006). This perspective is applied in the current study to an AI-based English learning context, where technology serves as a learning environment rather than the major analytical emphasis.

The theoretical framework is concerned with what learners are doing inside themselves during AI-supported learning activities, not with technology acceptance or system design. Interest is conceptualized not as a form of general motivation but as a distinct psychological state of engaging, or the predisposition to reengage, with a particular content over time — a state that combines focused attention, curiosity, and positive affect toward the learning material itself (Hidi & Renninger, 2006). Renninger and Hidi (2022) further suggest that this state can develop from a brief, situational reaction to a more persistent, self-sustaining disposition through repeated meaningful involvement. Conversely, enjoyment is seen as a positive affective experience that enhances learners' involvement in the learning process (Dewaele &

MacIntyre, 2014). It is argued that these two affective-cognitive variables together affect the extent of cognitive effort learners invest in AI-based English learning activities.

The framework suggests that learners' interest is initially sparked as an initial engagement with the learning content, that learners' enjoyment is then experienced as a positive emotional reaction that sustains this engagement, and that perceived cognitive development results from ongoing and meaningful involvement in the learning activity. The latter association between positive emotional engagement and perceived cognitive development is consistent with Pekrun (2006), who argues that positive activating emotions such as enjoyment, enhance learners' attention, deepen their cognitive processing and increase the effort put into learning tasks, resulting in better learning outcomes. Interest, not as a type of motivation but as the starting point of engagement (Hidi & Renninger, 2006), is the condition that attracts learners to the content in the first place and maintains the emotional engagement that follows. This provides a channel through which affective experiences are transduced into perceived cognitive development in AI-based English learning contexts.

1. Learners' Interest in AI-supported English Learning Settings

Interest is a psychological state generated by the interaction between the person and certain contents or activities, which is characterized by enhanced attention, concentration and positive affect towards the object (Hidi & Renninger, 2006). Interest, unlike general motivation, is content-specific. It is not just a desire to learn but a continuous engagement with a particular subject or issue (Renninger & Hidi, 2022). In foreign language learning, interest refers to the learners' intrinsic motivation to engage in English learning activities, which is based on personal relevance, curiosity, and the value that learners attach to the learning experience (Harackiewicz et al., 2018).

Hidi and Renninger (2006) proposed the Four-Phase Model of Interest Development, which conceptualizes interest as a dynamic construct that develops over four sequential phases, namely, triggered situational interest, maintained situational interest, emerging individual interest, and well-developed individual interest. The first phase is induced situational interest, which is a temporary affective state that is elicited by some environmental stimuli, such as interesting tasks, innovative materials or interactive learning aids. This phase is mostly pushed from outside and can be short if not maintained. The second phase, sustained situational interest, is when the initial interest is extended by meaningful engagement, personal relevance or involvement; learners begin to discover value in the activity beyond its novelty. The third phase, the emerging individual interest, is a transition from the interest generated by the situation to the interest driven by the individual, when learners are beginning to look for opportunities to connect with the information on their own. Finally, well-developed individual interest is a stable, self-sustaining orientation in which learners continuously engage with the topic, ask their own questions, and persist in the face of difficulties (Hidi & Renninger, 2006; Renninger & Hidi, 2022).

This paradigm is particularly applicable for EFL environments, because learners typically start with externally motivated interest, e.g., through the use of technology or AI-based tools, which can grow into a more profound, personalized involvement in English learning if adequately nurtured.

Learners' interest in the present study is based on the Four-Phase Model of Interest Development (Hidi & Renninger, 2006) and subsequent empirical elaborations (Renninger & Hidi, 2022), and is measured with the following indicators: (1) attention, i.e., the extent to which learners focus on English learning activities, (2) relevance, i.e., the degree to which learners find English learning personally meaningful and related to their goals, (3) positive affect, i.e., the enjoyment and enthusiasm learners feel during

engagement, (4) persistence, i.e., the willingness of learners to persist in engaging with English even when they face difficulties, and (5) value, i.e., the belief of learners in the importance and usefulness of English learning for their future.

2. Learners' Enjoyment in AI-Supported English Learning Settings

Students' engagement and learning are significantly impacted by learners' enjoyment, a crucial positive affect. Enjoyment is a pleasant emotional state in which learners perceive learning activities as interesting, relevant and gratifying (Pekrun, 2006). According to Dewaele and MacIntyre (2014), language learners are also experiencing achievement, confidence and engagement in learning activities when they like the process. Having fun is a motivation for learners to get involved, take part and keep their excitement while they are studying (Guo, 2021).

More generally, enjoyment is related to the larger class of positive success emotions as described by Pekrun (2006). Positive emotions such as enjoyment can enhance learners' attention, cognitive processing and effort in learning tasks. When students like studying, they are less worried, more persistent and more interested in educational resources (Dewaele & MacIntyre, 2014; Pekrun, 2006). These emotional experiences may help both learning in the affective and cognitive dimensions.

When learning a foreign language, enjoyment has been demonstrated to be a significant predictor of learner involvement and achievement. Dewaele and MacIntyre (2014) found that the more students are involved in classroom interaction and have good attitudes towards learning, the more they like language learning. Guo (2021) also found the same results and concluded that enjoyment in language learning has a favorable association with learners' involvement and success in EFL learning. These results suggest that enjoyment is not only an affective state

but also a catalyst for sustained cognitive involvement in the language acquisition process.

Enjoyment is a very relevant feature when considering AI-assisted English learning environment. Artificial intelligence (AI) solutions often provide dynamic, flexible and customizable educational experiences that can enhance learners' enjoyment (Zawacki-Richter et al., 2019). Features such as rapid feedback, adaptive explanations, and conversational participation can provide a more engaging learning environment and relieve the boredom sometimes seen in traditional learning exercises (Lin & Chen, 2024). The usage of AI-enabled tools for learning English might thus help the learners feel more comfortable, motivated and emotionally involved.

The present study conceptualizes learners' delight as the positive emotional experience learners feel throughout their participation in AI-assisted English learning activity. It mirrors the feelings of joy, comfort and contentment over the process of learning and is thought to make a positive influence to the perceived cognitive development of learners.

3. Perceived Cognitive Development in AI-Supported English Learning Settings

Perceived cognitive development is the development of learners' cognitive abilities as perceived by themselves due to learning events. The perception of cognitive development in educational environments includes the processes by which learners acquire, organize, use and assess knowledge to support learning and problem-solving activities (Anderson et al., 2001). The perceived cognitive development can be seen in the learners' ability to receive, perceive and organize information as the foundation for learning, which includes grasping concepts, processing knowledge efficiently and applying the learned information in meaningful contexts (Cherukunnath et al., 2022). These cognitive processes are significant because they have

implications for how learners construct information and achieve learning objectives.

From a constructivist perspective, perceived cognitive development occurs through an active interaction with information and the integration of new knowledge with existing knowledge. Learning is not a passive process of taking in information, but an active process of meaning creation where learners inspect, interpret and evaluate information to construct knowledge (Cherukunnath et al., 2022). The Revised Taxonomy of Bloom provides a helpful heuristic for understanding levels of perceived cognitive development that learners may experience as they actively construct meaning. Cognition is understood to progress from lower-order processes of remembering and understanding, to higher-order processes of applying, analyzing and evaluating (Anderson et al., 2001). Hence, perceived cognitive development can be reflected as the increased ability of learners to understand concepts, solve problems, associate ideas and reflect on their learning experience.

The perceived cognitive development within the framework of language learning is associated with the learners' ability to process linguistic information, analyze learning materials and employ language knowledge in communicative situations. Research in second and foreign language acquisition has shown that involving students in language learning activities could foster learners' cognitive processes, including as metalinguistic awareness, critical thinking and higher-order cognitive skills (Shu et al., 2024). Learners with a greater level of perceived cognitive development are frequently more able to understand complicated ideas, to analyze material critically, and to utilize the language more efficiently to communicate ideas and to solve challenges. These cognitive benefits not only lead to better academic success but also to the development of higher order thinking skills (Anderson et al., 2001).

The notion of perceived cognitive development is especially relevant when discussing AI-supported English language learning environments. Artificial intelligence (AI) technology can help in perceived cognitive development by giving immediate feedback, personalized explanations and interactive learning experiences for learners (Lin & Chen, 2024). The constant contact with AI-assisted tools allows learners to access materials quickly, to get support when they confront challenges, and to engage in reflective learning processes (Zawacki-Richter et al., 2019). AI-assisted language learning methodologies, including individualized feedback and adaptive learning, were found to considerably reduce cognitive load and boost the learning outcomes of EFL students (Feng, 2025). This may imply that the AI-supported environments can induce a deeper perceived cognitive development of language learning activities.

Because this study is about learners' opinions of their learning experiences, the dependent variable is treated as perceived cognitive development, rather than as objectively measurable cognitive accomplishment. Perceived cognitive development is therefore defined in this study as the students' self-perceived improvement of cognitive processes such as remembering, understanding, applying, analyzing, and evaluating English language knowledge during the AI-assisted learning activities as conceptualized in Bloom's Revised Taxonomy (Anderson et al., 2001). Learners' reported perceived cognitive development is higher when they think that AI-supported learning experiences positively impact their perceived cognitive development and learning effectiveness.

The dependent variable is considered to be perceived cognitive development and not objectively evaluated cognitive achievement because the concern of this study is the learners' perceptions of their learning experiences. Therefore, the term "perceived cognitive development" in this study refers to students' self-perceived improvement across cognitive processes such as remembering, understanding, applying, analyzing, and

evaluating English language knowledge during AI-assisted learning activities, as conceptualized in Bloom's Revised Taxonomy. Learners who report higher levels of perceived cognitive development are more likely to think that their learning experiences supplemented by AI have positively impacted their perceived cognitive development and learning effectiveness.

4. The Relationship between Learners' Interest, Learners' Enjoyment, and Perceived Cognitive Development in AI-supported Learning Settings

Learners' interest and learners' enjoyment are interconnected affective factors in AI-supported English learning settings that contribute to learners' perceived cognitive development. For the learner to grasp how these three variables interact, it is necessary to analyze the direct effect of each emotional feature, as well as how they operate together to influence learners' cognitive involvement in learning activities.

The Four-Phase Model of Interest Development put forward by Renninger and Hidi provides the theoretical basis for the relationship between learners' interest and learners' enjoyment. As learners' interest in English learning activities improves, they are more likely to pay more attention and make more efforts and so are more likely to get positive emotional responses like enjoyment while they are learning. Interest is a starting point for motivation, according to Harackiewicz et al. (2018), which lays the groundwork for a positive emotional learning experience. When learners encounter the learning environment and discover AI-supported learning activities that are engaging and personally relevant, their interest may naturally develop into enjoyment.

Pekrun (2006) states that positive accomplishment emotions such as enjoyment can improve learners' cognitive flexibility and the depth of knowledge processing. When learners are enjoying the learning, they are

more likely to invest cognitive resources into understanding and applying new knowledge and performing higher-order cognitive processes such as analyzing and evaluating information (Anderson et al., 2001). This enjoyment is closely associated with learners' interest, as continued engagement with relevant content tends to consolidate both affective states concurrently (Hidi & Renninger, 2006). Guo (2021) empirically found that the learning enjoyment of a foreign language was positively correlated with the learners' interest and EFL competency, indicating that the positive learning experience contributed to greater perceived cognitive development of language learners.

Similarly, research findings support the association between learners' interest and perceived cognitive development in that interested learners tend to process information more deeply, persist longer on learning tasks and engage more actively with learning materials (Harackiewicz et al., 2018; Renninger & Hidi, 2022). According to the study conducted by Sugianto et al. (2023), the interest of learners was a crucial aspect to improve the results of English learning, and students with higher interest were more motivated to participate difficult cognitive exercises. When learners are curious and personally engaged with AI-supported English learning activities, they are more likely to move beyond superficial memorization to understand, apply, and analyze English language knowledge processes which are central to perceived cognitive development as conceptualized in Bloom's Revised Taxonomy (Anderson et al., 2001).

Moreover, the adaptive and personalization characteristics of artificial intelligence (AI) technology may also promote interest, enjoyment, and perceived cognitive development in cases when AI is employed to facilitate learning. Lin and Chen (2024) indicated that learners of AI learning showed positive views towards school and had deeper thinking. This means AI tools could nurture both emotional and mental engagement at the same time. When learners are interested in and enjoy AI-assisted

English learning, they will be more persistent in their learning tasks, invest greater cognitive effort at the multiple cognitive levels (remembering, understanding, applying, analyzing, evaluating), and finally perceive more improvement in their cognitive abilities (Anderson et al., 2001). Based on this theoretical rationale, the present study hypothesizes that learners' interest and learners' enjoyment are strong indicators of perceived cognitive development in AI-supported English learning environments.

B. Study of Relevant Research

The role of learners' affective aspects and technology use in language learning, especially in English as a Foreign Language (EFL) contexts, has been investigated in several previous research. The studies give significant theoretical and empirical evidence for the factors analyzed in this research.

Guo (2021) The study employed a sequential mixed methods approach to examine the association between foreign language enjoyment and learner interest in relation to EFL achievement among 249 university students majoring in non-English subjects in China. The Foreign Language Enjoyment Scale was used to measure levels of enjoyment and regression analysis to establish predictive correlations. The results indicated that foreign language enjoyment was a positive predictor of learners' EFL accomplishment whereas engagement was not a significant independent predictor of learning outcomes. This study emphasizes the significance of enjoyment as an emotive predictor of cognitive results in language acquisition. However, the study was conducted in a regular classroom setting, and did not explore AI-assisted learning environments, leaving open the topic of how enjoyment operates in technology-enhanced contexts.

Luo and Wang (2023) looked into how learners' enjoyment, motivation are tied together when they use tech to assist their language learning online. Their results indicated that the learners who reported higher enjoyment were more engaged in learning activities and got better results in their learning. The

study highlighted that enjoyment is a key factor in sustaining learners' attention and efforts, especially in the setting of digital learning. However, the study focused mostly on the direct correlations between enjoyment and learning accomplishment and did not deeply examine the results of perceived cognitive development or the role of interest as a contributing variable.

Zhang et al. (2024) took a look at 118 empirical studies on foreign language enjoyment that came out between 2014 and 2023, and they reported that enjoyment was a pretty steady affective driver of learner engagement as well as language learning results across many different EFL contexts. In their overview, enjoyment seems tied quite directly to learners being more involved, experiencing lower anxiety, and maintaining motivation for longer—so learning becomes more pleasant, in a sense. That said, the same paper also suggests that more work is needed on how enjoyment connects with perceived cognitive development, in particular within AI assisted learning environments where things can feel more complex.

Sugianto et al. (2023) did a mixed methods approach, kind of. It was aimed at looking into how English learning interest mattered for junior high school students in Indonesia. Basically, the findings indicated that learners' interest is a really important part for better English learning results, with the students who had higher interest also showing a stronger willingness to take part in tasks that are cognitively demanding, and they also put in effort that felt steadier during learning. In the study, it seemed clear that interest isn't merely an emotional response, but more like an active motivational force which supports deeper perceived cognitive development. Still, the research took place in a normal classroom atmosphere, so it didn't really touch on AI-assisted learning settings, or examine the combined predicting impact of interest and enjoyment, on perceived cognitive development.

Wei (2023) employed an experimental design to investigate the impact of AI-mediated language instruction on English learning achievement,

motivation and self-regulated learning among 60 EFL university students through a mixed methods study. The experimental group was taught with AI while the control group was taught with traditional methods. The tests were conducted before and after the course on grammar, vocabulary, reading comprehension and writing skills. The results showed that AI supported language learning really helped, learners' English ability grew a lot across multiple areas and, also, it seemed to make motivation and self-regulated learning feel more natural. This study gives pretty strong evidence that AI based learning setups can lead to big cognitive plus motivational outcomes for EFL learners. Still, this research didn't look that much at how feeling related factors, like interest and enjoyment, might work as predictors for perceived cognitive development in these AI assisted learning environments.

Lin and Chen (2024) investigated the implementation of educational applications integrated with AI in higher education and its association with academic emotions and cognitive engagement of students. So, the study was done with college students, and it used surveys sort of, to gather impressions and stances toward AI based learning supports, in general. The results pointed that AI integrated apps would make students show more positive academic emotions, like enjoyment and interest, and because of that they ended up more engaged, more motivated during learning times. Students also said that AI parts, for example personalized feedback, and adaptive learning, made the whole process feel more enjoyable. In addition, it seemed to nudge them toward thinking in a deeper way, not just memorizing. However, the study was primarily concerned with emotional responses and involvement without detailed analysis of perceived cognitive development using a structured framework like Bloom's Revised Taxonomy.

The studies described above have offered useful insights into the roles of enjoyment, interest and AI-assisted learning in EFL environments, but numerous gaps remain. First, most research have looked at learners' enjoyment or learners' interest as independent factors and have not studied their combined

predictive implications on cognitive results. Second, the majority of prior research has focused on general learning outcomes, engagement, or motivation rather than directly targeting learners' perceived cognitive development as an independent variable. Third, the research on the combined functions of affective variables in AI-assisted English learning is still restricted, especially in the EFL setting of Indonesian undergraduate students. Based on these gaps, the present study investigates the extent to which learners' interest and learners' enjoyment jointly predict perceived cognitive development in AI-assisted English learning.

C. Research Hypotheses

Based on the problems and aims of the study, the researcher proposes the following hypotheses:

1. H₁: Learners' interest significantly predicts perceived cognitive development in AI-assisted English learning.
2. H₂: Learners' enjoyment significantly predicts perceived cognitive development in AI-assisted English learning.

Table 1.

Operational Definition of Variables

Variable	Operational Definition	Indicators
Learners' Interest	Learners' attention, curiosity, and personal relevance toward AI-assisted English learning activities.	Attention; Curiosity; Personal relevance
Learners' Enjoyment	Learners' positive emotional experiences of pleasure, comfort, and satisfaction during AI-assisted English learning activities.	Pleasure; Comfort; Satisfaction

Variable	Operational Definition	Indicators
Perceived Cognitive Development	Learners' self-perceived development in cognitive processes including remembering, understanding, applying, analyzing, and evaluating English language knowledge during AI- assisted learning activities.	Remembering; Understanding; Applying; Analyzing; Evaluating