

Learning Style Preferences Among Indonesian EFL University Students: A Multidimensional Analysis Using the Learning Style Survey

Muthia Sandra Riphasa¹, Marnita², Afdhal Dzikri³, Agung Prasetya⁴, Nurul Hidayati⁵

^{1,2,3,4,5}Department of English Language and Arts, Riau University
email: muthiasandrar7@email.com

ARTICLE INFO	ABSTRACT
Received 05/06/26 Revised 17/07/26 Accepted 28/07/26	<i>This study investigated the multidimensional learning style preferences of Indonesian EFL university students using the Learning Style Survey (LSS). A quantitative descriptive survey design was employed involving 35 university students enrolled in English as a Foreign Language (EFL) courses and selected through convenience sampling. Data were collected using a questionnaire consisting of 46 items representing eleven learning style dimensions, namely Visual, Auditory, Kinesthetic, Extroverted, Introverted, Closure-Oriented, Open, Deductive, Inductive, Impulsive, and Reflective learning styles. Prior to data collection, the instrument was tested for validity and reliability, resulting in 37 valid items and high internal consistency (Cronbach's Alpha = 0.908). The collected data were analyzed using descriptive statistics to determine the mean scores and standard deviations of each learning style dimension. The findings revealed that Reflective learning style emerged as the most preferred dimension, followed by Closure-Oriented and Visual learning styles. In contrast, Open (Perceiving) learning style showed the lowest level of preference among the participants. These findings indicate that Indonesian EFL university students tend to prefer learning environments that encourage reflection, provide clear instructional structures, and incorporate visual support during the learning process. This study contributes to the existing literature by providing empirical evidence of multidimensional learning style preferences beyond the traditional visual, auditory, and kinesthetic framework. The findings suggest that English language teachers should design instructional activities that integrate reflective learning opportunities, structured classroom procedures, visual support, and balanced deductive and inductive teaching approaches to accommodate diverse learner preferences and enhance students' learning experiences.</i>
Keywords: Learning styles; Learning Style Survey; Multidimensional learning styles; Indonesian EFL university students; English language teaching.	
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I. INTRODUCTION

Learning styles have long been recognized as one of the factors influencing language learning success. In English as a Foreign Language (EFL) contexts, learners differ in the ways they perceive, process, and respond to information during the learning process. These

individual differences may influence students' engagement, participation, learning strategies, and academic achievement. Consequently, understanding learners' learning preferences has become an important concern for language educators seeking to create more effective and learner-centered instructional environments. According to Cohen et al. (2001), awareness of learners' preferences enables teachers to design learning activities that accommodate diverse learning needs and promote meaningful learning experiences. When instructional practices acknowledge learners' preferences, students are more likely to participate actively and remain engaged throughout the learning process.

Learning styles are generally defined as learners' preferred ways of receiving, processing, and retaining information. Reid (1987) described learning styles as individuals' habitual patterns of acquiring knowledge in educational settings. Similarly, Oxford (2003) explained that learning styles represent general approaches learners employ when processing new information and developing language skills, while Ehrman and Leaver (2003) emphasized that learning styles involve cognitive, affective, and personality-related characteristics that shape learners' responses to instructional activities. Together, these perspectives suggest that learning styles are multidimensional constructs extending beyond sensory preferences to include broader cognitive and behavioral tendencies.

However, recent educational research has questioned the assumption that matching instructional methods to students' preferred learning styles necessarily improves learning outcomes. Newton and Salvi (2020), through a systematic review of the learning styles literature, concluded that empirical evidence supporting the meshing hypothesis remains limited despite its widespread acceptance among educators. Rather than viewing learning styles as fixed learner categories that require matched instruction, recent discussions suggest that learning style instruments should be interpreted primarily as tools for identifying learners' preferences and promoting instructional diversity. This perspective does not diminish the value of learning style research; instead, it encourages researchers to investigate learning preferences as one aspect of learner diversity that can inform, rather than determine, instructional decision-making.

Previous studies have reported diverse learning style preferences among EFL learners. Manipuspika (2020) found that visual learning was the dominant learning style among Indonesian EFL students, suggesting that learners relied heavily on written texts, diagrams, and visual representations during language learning. Similarly, Norhasanah et al. (2022) reported that visual learning emerged as the most preferred perceptual learning style among Indonesian EFL learners, while Yulmiati (2024) likewise found that university students enrolled in a basic reading course preferred visual learning over auditory and kinesthetic learning styles. Collectively, these studies indicate that perceptual learning styles continue to receive considerable attention in Indonesian EFL research.

Recent studies have also explored the relationship between learning styles and broader educational variables. Alfian et al. (2023) reported that learning styles were associated with Indonesian EFL students' self-efficacy, suggesting that learning preferences may influence learners' confidence in language learning. Pranata et al. (2024) identified a positive relationship between learning styles and academic achievement, whereas Saputra and Dewi (2024) demonstrated that learning styles influenced students' use of digital learning resources and social media in EFL contexts. These findings indicate that learning style preferences remain relevant for understanding learner characteristics and classroom

practices. Nevertheless, recent discussions emphasize that learning preferences should be interpreted alongside other learner variables rather than as independent predictors of learning success (Newton & Salvi, 2020).

Despite the increasing number of studies on learning styles in Indonesian EFL contexts, several important gaps remain. First, most previous studies have focused primarily on perceptual learning styles, particularly visual, auditory, and kinesthetic preferences. While these studies provide valuable insights into how learners prefer to receive information, they offer limited understanding of broader learning style dimensions, including personality orientation, ambiguity tolerance, language rule preferences, and response-time tendencies. Second, recent international discussions have shifted from treating learning styles as deterministic learner categories toward understanding them as learning preferences that describe learners' tendencies without assuming that instructional matching necessarily improves achievement. However, this contemporary perspective has received limited attention in Indonesian EFL research. Consequently, a more comprehensive investigation employing a multidimensional learning style framework remains necessary.

To address these gaps, the present study employed the Learning Style Survey (LSS) developed by Cohen et al. (2001). Unlike traditional learning style frameworks that primarily emphasize sensory preferences, the LSS examines multiple dimensions of learner preferences, including physical sensory preferences, exposure to learning situations, ambiguity and deadline orientation, language rule preferences, and response-time tendencies. This multidimensional framework enables researchers to develop a more comprehensive understanding of learner diversity beyond the conventional visual, auditory, and kinesthetic classifications.

The novelty of this study lies in its application of the multidimensional Learning Style Survey framework to investigate Indonesian EFL university students' learning preferences. While previous Indonesian studies have predominantly examined perceptual learning styles, this study simultaneously explores eleven dimensions of learning preferences, including extroverted versus introverted orientation, closure-oriented versus open learning styles, deductive versus inductive preferences, and impulsive versus reflective tendencies. By adopting this broader framework, the study contributes to current discussions that conceptualize learning styles as learner preferences rather than fixed learner types and provides a more comprehensive description of learner diversity in Indonesian higher education EFL contexts.

Therefore, this study aimed to investigate the learning style preferences of Indonesian EFL university students using the Learning Style Survey framework. Specifically, the study sought to identify the dominant multidimensional learning style preferences among the participants and provide a comprehensive description of their learning characteristics. The findings are expected to contribute to the growing body of literature on learning preferences in EFL contexts by providing empirical evidence regarding multidimensional learner diversity among Indonesian university students. Furthermore, the results may offer practical insights for English language instructors in designing instructional practices that accommodate diverse learner preferences while recognizing that such preferences should inform, rather than determine, pedagogical decision-making.

II. METHODS

This study employed a quantitative descriptive survey design. Descriptive research is appropriate for describing and interpreting the characteristics of a particular phenomenon without manipulating variables (Creswell, 2014). The purpose of this study was to identify and describe the learning style preferences of Indonesian EFL university students based on their responses to the Learning Style Survey questionnaire. Through this design, the researcher sought to obtain a comprehensive overview of students' preferred learning styles in English language learning.

Participants

The participants of this study were 35 undergraduate students enrolled in English as a Foreign Language (EFL) courses at an Indonesian university. EFL university students were selected as the target population because they actively engage in formal English language learning that requires the use of diverse cognitive, perceptual, and behavioral learning approaches. Therefore, they were considered an appropriate population for investigating multidimensional learning style preferences in higher education EFL contexts.

The participants were selected using convenience sampling. This sampling technique was considered appropriate because the study employed a descriptive survey design that aimed to describe learning style preferences within a specific educational context rather than to generalize the findings to the broader population. According to Creswell (2014), convenience sampling is commonly used in descriptive research when participants meet the predetermined characteristics relevant to the research objectives and are readily available to participate. Likewise, Etikan et al. (2016) stated that convenience sampling is appropriate when researchers seek to obtain preliminary descriptive information from participants who satisfy the inclusion criteria.

The sample consisted of 35 students who voluntarily agreed to participate and met the inclusion criteria, namely being actively enrolled in EFL courses and having prior experience in formal English language learning. Given that the study focused on providing a descriptive profile of students' learning style preferences using descriptive statistics rather than testing hypotheses or making statistical generalizations, this sample size was considered adequate for achieving the objectives of the study within the selected context.

Research Instrument

The instrument used in this study was the Learning Style Survey (LSS) developed by Cohen et al. (2001). The questionnaire consisted of 46 items representing eleven learning style dimensions, namely visual, auditory, kinesthetic, extroverted, introverted, closure-oriented, open, deductive, inductive, impulsive, and reflective learning styles. The instrument was chosen because it provides a multidimensional perspective of learning styles and allows researchers to investigate learners' preferences beyond perceptual dimensions. Prior to data analysis, the validity and reliability of the questionnaire were examined. The validity test was conducted using Pearson Product-Moment Correlation, while the reliability test employed Cronbach's Alpha. The results indicated that 37 items were valid and the questionnaire demonstrated high reliability with a Cronbach's Alpha coefficient of 0.908.

Data Collection

The data were collected using the Learning Style Survey (LSS) questionnaire developed by Cohen et al. (2001). Prior to data collection, the participants were informed about the purpose of the study, the voluntary nature of their participation, and the confidentiality of their responses. Informed consent was obtained from all participants before they completed the questionnaire. The questionnaire was administered individually to ensure that participants could respond independently and minimize potential peer influence on their answers. This procedure was adopted because self-administered questionnaires enable respondents to report their learning style preferences consistently and reduce researcher bias during the data collection process. After all questionnaires had been completed, the responses were checked for completeness, coded, and organized before being entered into the statistical analysis program.

The questionnaire generated quantitative data in the form of Likert-scale **scores** representing students' preferences across the eleven learning style dimensions measured by the Learning Style Survey, namely Visual, Auditory, Kinesthetic, Extroverted, Introverted, Closure-Oriented, Open, Deductive, Inductive, Impulsive, and Reflective. These numerical data were subsequently analyzed to identify the dominant learning style preferences of the participants and to provide a comprehensive description of their learning style profiles.

Data Analysis

The collected data were analyzed using descriptive statistical analysis, as the primary objective of the study was to describe the learning style preferences of Indonesian EFL university students rather than to test hypotheses or examine relationships among variables (Creswell, 2014). The questionnaire generated quantitative data in the form of Likert-scale scores representing students' preferences across the eleven learning style dimensions measured by the Learning Style Survey (LSS).

Prior to the analysis, all questionnaire responses were checked for completeness, coded, and entered into a statistical analysis program. The responses were then grouped according to the eleven learning style dimensions of the LSS. Subsequently, the mean and standard deviation for each learning style dimension were calculated. Following Cohen et al. (2001), higher mean scores indicated stronger preferences for a particular learning style, while standard deviations were used to indicate the variability of participants' responses within each dimension.

To address the research objective of identifying students' dominant learning style preferences, the learning style dimensions were ranked from the highest to the lowest mean score. The findings were then interpreted descriptively to identify the most and least preferred learning styles among the participants and were subsequently discussed in relation to previous empirical studies and relevant theories of learning styles.

III. RESULT AND DISCUSSION

Result

To address the research objective of identifying the learning style preferences of Indonesian EFL university students, descriptive statistics were calculated for the eleven learning style dimensions measured by the Learning Style Survey (LSS). Table 1 presents the mean scores and standard deviations of each learning style dimension, providing an overall profile of students' learning style preferences.

Table 1. Descriptive Statistics of Learning Style Preferences

RANK	LEARNING STYLE DIMENSION	MEAN	SD
1	Reflective	3.10	0.61
2	Closure Oriented	3.06	0.54
3	Visual	3.05	0.49
4	Kinesthetic	3.02	0.57
5	Impulsive	2.87	0.61
6	Introverted	2.78	0.69
7	Auditory	2.66	0.66
8	Deductive	2.58	0.67
9	Inductive	2.55	0.54
10	Extroverted	2.46	0.82
11	Open (Perceiving)	2.39	0.84

Overall, the findings indicate that Reflective learning style obtained the highest mean score ($M = 3.10$, $SD = 0.61$), followed by Closure-Oriented ($M = 3.06$, $SD = 0.54$) and Visual ($M = 3.05$, $SD = 0.49$). Conversely, Open (Perceiving) learning style showed the lowest mean score ($M = 2.39$, $SD = 0.84$). These findings indicate that the participants generally preferred learning environments that encourage careful reflection, clear instructional structure, and visual support, thereby addressing the research objective of identifying the dominant learning style preferences among Indonesian EFL university students.

Within the Physical Sensory Preferences category, Visual learning style obtained the highest mean score ($M = 3.05$), followed closely by Kinesthetic ($M = 3.02$), whereas Auditory learning style recorded the lowest mean score ($M = 2.66$). These findings indicate that the participants preferred learning through visual materials and active learning experiences rather than relying primarily on listening-based instruction. This result is consistent with previous studies conducted by Manipuspika (2020), Norhasanah et al. (2022), and Yulmiati (2024), which also identified visual learning as the dominant perceptual learning style among Indonesian EFL learners.

For the Exposure to Learning Situations dimension, Introverted learning style ($M = 2.78$) was preferred over Extroverted learning style ($M = 2.46$). This finding suggests that the participants tended to prefer independent learning and individual reflection before engaging in collaborative learning activities. Similar findings were reported by Savitri (2021) and Erlina et al. (2023), who found that Indonesian EFL learners with introverted tendencies generally preferred individual preparation and self-directed learning before participating in classroom interaction.

Within the Ambiguity and Deadlines category, Closure-Oriented learning style recorded a considerably higher mean score ($M = 3.06$) than Open (Perceiving) learning style ($M = 2.39$). This finding indicates that the participants preferred structured learning environments characterized by clear instructions, explicit objectives, and predictable deadlines. The result supports the multidimensional learning style framework proposed by Cohen et al. (2001), which suggests that language learners differ in their tolerance for ambiguity and preference for structured learning conditions.

For the Language Rules dimension, Deductive ($M = 2.58$) and Inductive ($M = 2.55$) learning styles produced nearly identical mean scores. The minimal difference suggests that the participants demonstrated relatively balanced preferences for learning grammatical rules through

explicit explanation as well as through contextual discovery. This finding is comparable to Liu (2025), who reported that EFL learners tended to combine different learning approaches depending on learning tasks rather than relying exclusively on a single learning style.

Within the Response Time category, Reflective learning style achieved the highest mean score overall ($M = 3.10$), exceeding Impulsive learning style ($M = 2.87$). The finding indicates that participants generally preferred to think carefully before responding during English learning activities. Unlike previous Indonesian studies, which mainly identified visual learning as the dominant preference (Manipuspika, 2020; Yulmiati, 2024), the present study found that a cognitive dimension Reflective learning style was the most preferred. This difference may be attributed to the use of the Learning Style Survey (LSS), which examines multidimensional learning style preferences beyond perceptual categories.

Overall, the findings demonstrate that Indonesian EFL university students predominantly prefer reflective, structured, and visually supported learning environments. These results provide a comprehensive profile of students' learning style preferences and serve as the basis for the discussion presented in the following section.

Discussion

From a pedagogical perspective, the findings of this study provide several important implications for English language teaching. The multidimensional learning style profile identified in this study indicates that Indonesian EFL university students tend to prefer learning environments that encourage reflection, provide clear instructional structures, utilize visual support, and combine both individual and collaborative learning opportunities. As argued by Cohen et al. (2001), understanding learners' learning style preferences enables teachers to design instructional practices that better accommodate learner diversity and improve language learning experiences. Likewise, Oxford (2003) emphasized that learning styles influence the ways learners perceive, process, and respond to language learning tasks. Therefore, English language instruction should not rely on a single teaching method but should incorporate a variety of learning experiences that address students' diverse preferences.

Since Reflective learning style emerged as the highest-ranked learning style in the present study, English teachers are encouraged to provide opportunities for learners to think carefully before responding to classroom tasks. Rather than requiring immediate oral responses, teachers may incorporate activities such as Think–Pair–Share, reflective journals, learning logs, self-assessment checklists, minute papers, and exit tickets before students participate in speaking or writing activities. These activities allow learners to organize their thoughts, monitor their own understanding, and formulate more accurate language production. Such practices are consistent with the characteristics of reflective learners described by Cohen et al. (2001), who argued that reflective learners generally prefer to analyze information carefully before making decisions or expressing opinions.

The finding that Closure-Oriented learning style ranked second suggests that students generally prefer structured learning environments characterized by clear objectives, explicit instructions, and predictable learning procedures. According to Cohen et al. (2001), closure-oriented learners tend to feel more comfortable when learning tasks are organized systematically and expectations are clearly communicated. Therefore, English teachers are encouraged to begin each lesson by clearly communicating learning objectives, explaining assessment criteria, outlining lesson procedures, and providing step-by-step instructions before students begin classroom activities. For example, reading lessons may begin with pre-reading objectives and vocabulary preparation, followed by guided reading tasks, collaborative discussion, and structured post-reading reflection. Similarly, grammar instruction may follow a sequence

consisting of concept introduction, guided examples, controlled practice, independent practice, and teacher feedback. Such structured lesson organization may reduce students' uncertainty and improve classroom engagement.

The results also revealed that Visual learning style remained one of the dominant preferences among the participants. This finding is consistent with previous studies conducted by Norhasanah et al. (2022) and Yulmiati (2024), which reported that Indonesian EFL learners tend to rely heavily on visual information during language learning. Consequently, teachers are encouraged to integrate a variety of visual learning resources into classroom instruction rather than relying primarily on verbal explanations. Examples include mind maps, graphic organizers, vocabulary maps, picture sequencing activities, infographics, concept maps, color-coded grammar charts, flashcards, multimedia presentations, digital storytelling, and short instructional videos. These visual scaffolding techniques may facilitate vocabulary acquisition, reading comprehension, grammar learning, and information retention while reducing learners' cognitive load during language processing.

Another important implication concerns the relatively higher preference for Introverted learning style compared to Extroverted learning style. While communicative language teaching emphasizes interaction and collaboration, the findings suggest that many Indonesian EFL learners benefit from having sufficient time to process information individually before engaging in classroom communication. Therefore, teachers are encouraged to design lessons that combine individual learning activities with collaborative learning opportunities. For example, students may first complete individual brainstorming, note-taking, or short reflective writing before participating in pair discussions, information-gap activities, role plays, problem-solving tasks, or small-group presentations. Such sequencing enables reflective and introverted learners to prepare their ideas while simultaneously developing communicative competence through collaborative interaction.

Furthermore, the relatively balanced preferences between Deductive and Inductive learning styles indicate that Indonesian EFL university students are capable of learning language rules through both explicit explanation and guided discovery. This finding suggests that teachers should combine explicit instruction with discovery-based learning rather than relying exclusively on one instructional approach. For example, grammar lessons may begin with a concise explanation of grammatical rules, followed by contextual activities in which students identify language patterns from authentic reading texts or dialogues before applying those patterns in communicative speaking or writing tasks. Such an integrated approach allows learners to benefit from both structured guidance and active language exploration while accommodating different cognitive preferences.

Based on the multidimensional learning style profile identified in this study, English teachers may also adopt a lesson planning framework that systematically integrates these learning preferences into classroom practice. A lesson may begin with an Orientation Stage, during which teachers introduce learning objectives, activate prior knowledge, and present visual organizers such as pictures, mind maps, or infographics. This may be followed by an Explicit Instruction Stage, in which new language concepts are explained clearly using visual scaffolding and guided examples. During the Guided Practice Stage, students first complete individual reflection activities, such as note-taking or short written responses, before progressing to pair work, collaborative discussions, role plays, or information-gap activities. Finally, the lesson concludes with a Reflection and Evaluation Stage, where students complete reflective journals, self-assessment checklists, peer feedback, or exit tickets to evaluate their learning and identify areas for improvement. This lesson planning framework accommodates the dominant Reflective,

Closure-Oriented, Visual, and Introverted learning style preferences identified in this study while simultaneously supporting students with balanced Deductive and Inductive preferences.

Overall, these pedagogical recommendations demonstrate that learning style preferences should not be interpreted as rigid categories that determine how students learn. Rather, as suggested by Oxford (2003) and Cohen et al. (2001), learning style awareness should serve as a guide for designing flexible and inclusive instructional practices that provide multiple pathways for learning. By integrating reflective activities, structured lesson organization, visual scaffolding, balanced collaborative learning, and complementary deductive–inductive instruction, English language teachers can create learning environments that are more responsive to students' diverse learning preferences and ultimately enhance learners' engagement and language learning experiences.

IV. CONCLUSION AND SUGGESTION

This study investigated the learning style preferences of Indonesian EFL university students using the Learning Style Survey (LSS). The findings revealed that Reflective learning style was the most preferred dimension, followed by Closure-Oriented and Visual learning styles. In addition, Introverted learning style was more dominant than Extroverted learning style, while Deductive and Inductive learning styles showed relatively balanced preferences. These findings indicate that Indonesian EFL university students generally prefer learning environments that encourage reflection, provide clear instructional structures, and incorporate visual support.

This study contributes to the literature by applying the Learning Style Survey (LSS) to examine learning preferences across multiple dimensions beyond the traditional visual, auditory, and kinesthetic framework. The findings highlight that learning style preferences involve perceptual, cognitive, and personality-related dimensions, providing a more comprehensive understanding of learner diversity in Indonesian EFL higher education. Accordingly, English language instruction should adopt flexible and inclusive teaching practices that accommodate these multidimensional learning preferences.

Based on the findings, English language instructors are encouraged to design lessons that accommodate students' multidimensional learning style preferences. Teachers may incorporate reflective activities such as Think–Pair–Share, reflective journals, and exit tickets, provide clear learning objectives, explicit instructions, and structured classroom procedures, integrate visual supports such as mind maps, graphic organizers, and multimedia, and balance individual reflection with collaborative learning. Combining explicit instruction with guided discovery activities may also help address students' balanced deductive and inductive learning preferences.

This study was limited to 35 participants from a single university and relied on self-reported questionnaire data; therefore, the findings should be interpreted with caution. Future studies are recommended to involve larger and more diverse samples, employ mixed-method or qualitative approaches, and examine the relationship between multidimensional learning styles and variables such as language achievement, motivation, learning strategies, self-efficacy, and classroom engagement.

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