SALEE: Study of Applied Linguistics and English Education
Vol. 5, No. 2, July 2024

SALEE
Study of Applied Linguistics and English Education
P-ISSN: 2715-9795 E-ISSN: 2716-1617

AI-Based English Learning Applications to Skyrocket Students' English Morphological Awareness

Suadi [1]
Sahyoni [2]
Ayu Meita Puteri Siregar [2]
Kiki Juli Anggoro [3]

[1] Corresponding author, STAIN Mandailing Natal, Indonesia; suadi@stain-madina.ac.id
[2] STAIN Mandailing Natal, Indonesia
[3] School of Education and Liberal Arts, Walailak University, Thailand

Received: 8 April 2024 *Accepted: 21 July 2024* *Published: 24 July 2024*

Abstract

This study examined how AI-based English learning applications contribute to English morphological awareness. This quantitative study involved 62 participants of university students. Furthermore, data collection was conducted by distributing questionnaires via Google Forms to participants. The participants completed three types of questionnaires; (1) students' habits in using AI-based English learning platforms, (2) students' morphological awareness, and (3) compositional test where participants were asked to make sentences based on provided words. The results showed that the majority of participants used AI-based English applications for learning English. Additionally, most of them expressed that they understood morphology when utilizing the English language. Likewise, the significance value for students' habit in using AI-based English learning applications and students' English morphological awareness is 0.000 and the Pearson correlation is 0.464. This means there is a moderate and positive correlation between students' morphological awareness and their usage of AI-based English learning platforms. Ultimately, the majority of students demonstrated a positive degree of morphological skill in English in their compositional test responses using the provided English vocabulary.

Keywords: Artificial intelligence, English learning applications, English morphological awareness

To cite this article: Suadi, Sahyoni, Siregar, A. M. P., & Anggoro, K. J. (2024). AI-based English learning applications to skyrocket students' English morphological awareness. *SALEE: Study of Applied Linguistics and English Education*, *5*(2), 465-478. https://doi.org/10.35961/salee.v5i2.1370

DOI: 10.35961/salee.v5i2.1370

1. Introduction

The development of artificial intelligence, commonly abbreviated as AI, elevates drastically. Its presence breaks down the barriers and at the same time offers changes and benefits including in the realm of education. The future of English language teaching and learning is unavoidably exposed and steered by AI. In English language learning, AI offers a vast number of benefits such as personalized instruction, enhanced language practice, immediate feedback, resources and materials, language support and translation, and data-driven insights (Mushthoza et al., 2023). Moreover, AI-based English learning applications, notably in personalized learning, effectively assist students' experiences in real-time and virtual language learning, and real-life language interaction. Moreover, they offer varied English learning styles, help students to identify and improve their weaknesses and strengths in English learning (Almahyra, 2023).

AI-based English learning applications are relevant to strengthen students' English morphological awareness. The reason is when students learn English, either speaking, writing, reading, or listening, they automatically optimize their ability to identify and understand every single word structure which plays the core to building a greater scope: sentence, paragraph, text, even a book with hundreds or thousands of pages in it. At this point, AI-based English learning platforms assist students through how they study, practice, and interact within the framework of English morphological awareness. English morphological awareness, as stated by Wardana (2023), means the students' ability to identify, understand, and construct a certain word or a comprehension of how a word is formed. How a certain word is formed depends on rules of word formation through derivation, inflection, affixation, conversion, reduplication, abbreviation, acronym, and onomatopoeia.

A curious question arises: how can a learner acquire such ability? AI-based English learning applications can be the most matching and applicable solution for this inquiry. AI-based English learning applications such as Duolingo, ChatGPT, ELSA, Grammarly, Google Translate, and Hello Talk are greatly worthwhile providing students to get them accustomed to using and practicing the English language. Duolingo for instance, is one of the artificial intelligences that provides the chance for users to drag them into an interactive learning and navigate them into an independent language task. ChatGPT provides a service of English paraphrasing. ELSA plays a role like Duolingo attracting them into real-time English learning

with vivid interaction. Grammarly supports users to check grammar, structures, and the like in the English language. Google Translate helps learners to translate a certain word or words from foreign language. Those AI-based English learning applications undeniably and positively develop students' speaking, listening, reading, and writing abilities in English.

In consequence, morphological awareness is considered much more advanced after the use of AI-based English learning applications dealing with the massive use, reachability, and other affordable accounts of those applications in recent times. Some relevant previous studies reaffirmed a similar notion. The first previous study by unveiled that a gamified morphology program is rated much more effective than the face-to-face program on students' cognitive, motivational, and affective outcomes. There were 82 students recruited to be participants where 33 students were in the intervention group (gamified morphological awareness program) and 49 were set in the control group (face-to-face program) (Qiao et al., 2022). The predecessor study has a different point from this current one in terms of object variable namely AI Based on English learning application, meanwhile, Qiao et al (2022)'s study promoted the harnessing of gamified learning to build English morphological awareness, particularly in alignment with the cognitive, motivation, and affective outcomes of students.

The previous studies demonstrated that AI-based platforms are considered to significantly improve English acquisition. AI-based platforms are also advantageously assumed effective in developing English communication skills, and useful in pedagogical integration (Rusmiyanto et al., 2023). The precursory study has differences from this current one on the variable of the object of the study. The precursory one focused on the English language in general, meanwhile, the current study takes an account English morphological awareness which deals with word formations. The last previous study was conducted by Enzeline et al (2023) which unmasked the positive perceptions of university lecturers and students on the existence of AI in teaching-learning activities, mainly in English learning. The previous study focused on exploring the perception of lecturers and students of English language background on the existence of AI-based applications, meanwhile, the current study focused on how far students use AI in learning English and disclosing the relationship between the AI-based applications with students' English morphological awareness.

This study, however, comes to offer a novelty for the gap between the three previous studies clearly explained above and this current one. The novelty proposed in this research is the AI-based English learning application and its relationship to English morphological awareness. Morphological awareness becomes the core point of this study as it sheds light on how far a learner can identify and detect the word structure, along with an ability to modify, reflect, and manipulate the word-formation of a certain morpheme. This study is urgently needed to carry out due to English morphological awareness critically contributes to a learner's English skills mastery (speaking, listening, reading, and writing), and,

indispensably, English morphological awareness is inseparable from the intervention of extensively used AI-based English learning applications.

1.1. Research question

From the aforementioned explanation, three research questions have been formulated as follows:

1. How do students use AI-based English learning applications?
2. Is there any correlation between students' habit of using AI-based English learning applications with English morphological awareness?
3. How good are students' English morphological skills?

1.2. Theoretical framework

1.2.1 AI-based English learning applications

AI has appeared as a tool for succeeding educational objectives, including language acquisition (Rusmiyanto et al., 2023). McCarty (2007) defined AI as the science and engineering of making intelligent machines, notably intelligent computer programs. Russel and Norvig (2010) defined AI as the core goal to build intelligent agents that are capable of achieving goals in the world (cited in Mushthoza (2023)). AI comprises all computational systems that can do human-like functions like learning, synthesizing, self-correcting, and using data for intricate processing tasks (Popenici & Kerr, 2017). AI, in recent times, is all tools and technologies from machines and automation that can do what human beings do; sophisticatedly it can imitate human intelligence through language processing and can complete tasks based on given information. AI-based English language learning is widely used such as Grammarly, Quilbott, Google Translate, ChatGPT, and the like (Enzelina et al., 2023).

Moreover, in terms of English language learning, AI with its huge number of applications (platforms) can serve like what human being do and can do all humans' roles. What AI serve, in many fields, is capable of providing experiences to users in much more engaging, accessible, effective, creative, and interactive ways for learners. AI does not only provide the service of teaching and learning the English language, but it also gives feedback, efficient assessment, correction, and constant practice (Almahyra, 2023). AI with its great potential can prospectively replace human position as a teacher. Nonetheless, AI is only outperformed by human beings in terms of giving empathy, sympathy, cultural context, and nuances of language that AI naturally and basically cannot replicate and replace.

In this study, AI-based English learning applications are limited in terms of educational utility namely: *Duolingo, ChatGPT, ELSA, Grammarly Google Translate, and HelloTalk*.

1.2.2. English morphological awareness

English morphological awareness is simply associated with an individual ability to identify and detect word structure (Wardana, 2023). English morphological awareness affects the transfer direction of morphological skill, at this point, the skill of identifying, modifying, altering, and forming the structure of a certain word or a certain morpheme (Zrig, 2024). Furthermore, morphological awareness is a conscious awareness of being capable of detecting, identifying, and transforming the structure of a word (Kirby et al., 2012). In short, morphological awareness is a human being's ability to detect, identify, categorize, and alter a certain word structure.

Morphological awareness is in line objective with the student's ability to acquire a foreign language. In addition, a morphological awareness skill leads to comprehend and modify affixation (adding or reducing a prefix, infix, or suffix), meaning alternation, word category change, the relationship between base morpheme and its affixation which generates different meanings, different word class, etc. Moreover, morphological awareness skill significantly contributes to students' academic achievement in English language (Apel, 2014).

Several indicators of English morphological proficiency can be observed through the completion of relevant tasks, including the following;

(1) segmenting task, it is identifying the number of parts in a certain word example: recyclable = re, cycle, able,

(2) definition task is meaning change based on alternation on base word, example: a person who plays football is …. answer: footballer,

(3) spoken relatives' task is to asses-based word and its change caused by inflection and derivation, example: my father is a … (garden, gardener, gardening = gardener),

(4) affix identification task is detecting add-ons or affixation on a base word, example: run, runs, running, ran, runner, runners,

(5) written relative task is assessing the relation between original base word and inflection/derivation, example: beauty - beautiful,

(6) spelling multi-morphemic task is to examine how spell a written affix, example: dresses,

(7) suffix choice task is to asses grammatical change and meaning alternation of a certain based word, example: Andrew is popular for being …. among society (friend, friendly, friendship, friendliness), and

(8) derivational spelling task is to examine how an affix can influence its spelling, example to determine what affix at the end of word lucky = y, ie, ey (Apel, 2014; Casalis et al., 2004; Nagy et al., 2003; Sangster & Deacon, 2011).

In this study, some foregoing indicators of English morphological awareness were applied in the questionnaires to examine the students' English morphological awareness.

2. Method

This study used a quantitative approach through collecting, analyzing, and interpreting the data in numerical form (Creswell & Creswell, 2017). The collection of the numerical data can be done by surveys, experiments, and other instruments via statistical techniques to picture an established generalization and relationship (Creswell, 2014). The quantitative approach in this study was applied to measure data statistically about the use of AI-based English learning applications, the ability of English morphological awareness and how good their English morphological awareness is. The questionnaire was the option to collect the data.

The source of data was obtained online by considering the low cost, accessibility, time efficiency, and reachable by a vast number of participants. The participants recruited in this study were 62 university students from four different major backgrounds, namely the Sharia economics study program, Arabic education study program, Mathematics education study program, and English education study program at STAIN Mandailing Natal, Sumatera Utara province. The reasons for selecting those participants are; (1) they had completed 2nd semester and completed courses in English 1 and English 2, (2) they are considered digital natives who are frequently and naturally exposed to online applications in everyday life, including AI-based English learning platforms, (3) they had learned basic grammar, not only at university level, but also since they were students at junior and senior high schools. The 62 university students are considered eligible to meet the criteria of being participants in this study.

In data collection, a questionnaire was distributed to all participants containing 19 questions. There were 7 questions about the use of AI-based English learning applications, 7 questions about students' English morphological awareness, and the rest, 5 questions in the form of essays to assess students' morphological skills.

In the first 7 questions, a *Likert scale* was employed. There were five indicators namely 1 = very frequently, 2 = frequently, 3 = moderate, 4 = seldom, 5 = never. Those five indicators show how frequently the students use AI-based English learning applications to solve their problems in English language learning, particularly dealing with Morphology and grammar. In the second 7 questions, a *Likert scale* was also used. There were five indicators where 1 = understand very well, 2 = understand, 3 = moderate, 4 = less understand, 5 = do not understand. Before being used, the questionnaire was evaluated, validated, and revised under the experts' guidance, along with a series of required modifications, alterations, and omissions.

The number of students who rated a specific indicator was calculated into a percentage. Ultimately, the dominant criterion uncovered shows students' habit of using AI-based English learning applications. In addition, the result of the questionnaire also presented how good students' morphological awareness is. The statistical data of students' habits in using AI-based English learning platforms and how good students' morphological awareness were computed via SPSS to unmask the relationship between both.

The last 5 questions were delivered in the form of an essay. For each certain given word, students were instructed to compose a sentence based on it. This assessment examined whether students could overcome English morphological awareness barriers or not. Their responses proved their English morphological skill.

3. Finding and Discussion

The findings and discussion of this study are yielded separately into four core themes to answer the research questions formulated in the previous chapter.

3.1. Students use the AI-based English learning applications

The findings in Table 1 summed up the responses of students' habits in using AI-based English learning applications while learning English.

Table 1. Students use AI-based English learning applications

No.	Item of question	Indicator				
		1	**2**	**3**	**4**	**5**
1	Using AI (artificial intelligence) like *Duolingo, ChatGPT, ELSA, Grammarly, Google translate, Hello Talk, etc* to improve English skill	11 (18%)	28 (45%)	15 (24%)	6 (10%)	2 (3%)
2	Using AI to search the root of English words, for example, *nationality*, generates from root: *nation*.	9 (14%)	23 (37%)	16 (26%)	10 (16%)	4 (7%)
3	Using AI (Google Translate) to find out the meaning of a certain English word	26 (42%)	19 (31%)	10 (16%)	6 (9%)	1 (2%)
4	Using AI (Grammarly) for writing English sentences	14 (23%)	27 (43%)	14 (23%)	4 (6%)	3 (5%)
5	Using AI (Hello Talk and ELSA) to add and broaden English vocabulary	12 (19%)	8 (13%)	16 (26%)	10 (16%)	16 (26%)
6	Using AI to practice English and improve speaking skill	16 (26%)	27 (43%)	16 (26%)	2 (3%)	1 (2%)
7	Using AI to check the pronunciation whether correct or not	19 (31%)	22 (34%)	16 (26%)	3 (5%)	2 (4%)

Based on the results in Table 1, students use AI-based English learning to improve their English skills. Among seven questions, indicators such as very frequently, frequently, and moderate are dominant. It implies that the use and utilization of AI-based English learning applications are high trendsetters among students. This has similar notions as Xiao and Yi (2021) and Bah (2020) emphasized that by mixing the artificial intelligence platforms,

pedagogy prospectively well improved. Moreover, it is also AI-based English learning platform that inescapably assists and eases lecturers and students at the university level to study English (Enzelina et al., 2023).

Positive propensity is not only displayed by how they use it to extend their English quality, but also to improve their English pronunciation, writing, uncovering the root of English words, and seeking the meaning of a certain English word. This is admittedly a positive atmosphere for everyone since utilizing AI-based English learning applications is affordable, accessible, timeless, placeless, and considerably friendly. This finding is in alignment with the predecessor study that AI-based platforms can help English language learning and teaching (Rusmiyanto et al., 2023). Moreover, AI can be optimized to elevate English ability (Dewi et al., 2020).

3.2. Students' English morphological awareness

The findings displayed in Table 2 recorded the responses of students' Morphological awareness.

Table 2. Students' morphological awareness

No.	Item of question	Indicator				
		1	**2**	**3**	**4**	**5**
1	I know and understand what nouns, verbs, adverbs, and adjectives are	22 (34%)	34 (55%)	6 (11%)	0 (0%)	0 (0%)
2	I know and understand how to change and modify a word based on grammar, for example from the verb 'speak' to the noun 'speaker'	12 (20%)	33 (53%)	13 (21%)	4 (6%)	h (0%)
3	I know and understand the root and affixation in English words. For example, 'mis' in *misunderstanding, misspelling, miscommunication*.	16 (26%)	23 (36%)	21 (32%)	1 (2%)	1 (2%)
4	I know and understand the root of English words and their affixes. For example, 'speak' becomes = *speaks, speaking, speaker, speech.*	22 (36%)	28 (44%)	11 (19%)	1 (1%)	0 (0%)
5	When I listen to someone speaking English, I can identify the roots of English words and affixation in them. For example, he says: nationality, I automatically can identify *nation, al, ity.*	10 (16%)	31 (50%)	20 (32%)	1 (2%)	0 (0%)
6	I understand and can predict the affixation in English words, example: My mother teaches at school. She is …… (teacher = teach + er)	19 (31%)	33 (54%)	9 (15%)	0 (0%)	1 (2%)
7	I can put a certain word based on its grammatical function. Example: My mother is …. (beauty, beautiful), the answer is *beautiful.*	19 (31%)	34 (55%)	9 (14%)	0 (0%)	0 (0%)

The findings explicitly informed that the students' morphological awareness is classified as good, even very good. Indicators 4 (less understand) and 5 (do not understand) are

displayed with low scores which means indicating students are good in English morphological awareness, where it is stated in the indicators of 1, 2, and 3. They are capable of detecting, identifying, and breaking down the structure of a certain English word. This morphological awareness, as stated by Tighe & Binder (2015) is an understanding of how to break down a word into smaller units of meaning such as roots, prefixes, and suffixes which leads an individual to a much better word reading and comprehension skill.

Furthermore, based on the data in Table 2, students have an adequate Morphological awareness sense. This is a key to the English learning atmosphere. This finding is suitable with Giyatmi (2017)'s notion which emphasized that English morphological awareness deals with the conscious knowledge and sensitivity of a person while learning English and in the process of the use and teaching of learning English.

This finding is relevant with the previous study conducted by Qiao et al (2022) in terms of students' ability to detect and identify a certain word structure under a morphological framework notably as an effect of the habit of using the AI-based English learning applications. The difference is that the finding in this study associated to English learning and students' English morphological awareness, meanwhile Qiao et al (2022)'s findings showed students' cognitive, motivational, and affective outcomes. In addition, this finding is also connected to the predecessor study (Enzelina et al., 2023) which disclosed a reality of positive perception from students and lecturers on AI-Based English learning application on learning atmosphere, this study particularly AI-Based English learning application and its impact on English morphological awareness.

3.3. Correlation between students' habit in using AI-based English learning applications with English morphological awareness

A correlation test was done to unmask the correlational level of two different variables. At this point, the variables are (1) students' habit in using AI-based English learning applications or abbreviated '**Std.hbt.Using.AI**', and (2) Students' English morphological awareness or abbreviated as '**Std.Morph.Awrnss**.'

If the significance value < 0,05, then it is correlated.

If the significance value > 0,05, then it is not correlated.

Correlations

[DataSet0]

Correlations

		Std.hbt.using AI	Std.Morph. Awrnss
Std.hbt.using AI	Pearson Correlation	1	.464**
	Sig. (2-tailed)		.000
	N	62	62
Std.Morph.Awrnss	Pearson Correlation	.464**	1
	Sig. (2-tailed)	.000	
	N	62	62

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 1. Result of Test Correlation through SPSS 23

Based on the test correlation above, the significance value for students' habits in using AI-based English learning applications is 0.000. While the significance value for Students' English morphological awareness is 0.000. It means that those two variables correlate. Moreover, the value of Pearson correlation for students' habit of using AI-based English learning applications is 0.464, and at the same time, for Students' English morphological awareness is also 0.464. The correlation is considered moderate and positive. Moderate here refers to the Pearson correlation value 0.464, where within the range of 0.41 to 0.60 is categorized as moderate. The positive correlation here means the higher the students' frequency of using AI-based English learning applications, the higher their English morphological awareness level, and vice versa.

This finding is in line with Almahyra (2023)'s ideas stating that AI provides a service with much more engaging, accessible, effective, creative, and interactive, especially for learning. The findings as shown in Figure 1 proved that English morphological awareness can be boosted by maximizing AI-Based English leaning application.

Previous study showed that AI-Based platforms are positively helping the communication skill and pedagogical integration (Rusmiyanto et al., 2023). It is in line with this study's result namely AI-Based English Learning applications, when used frequently, can skyrocket students' English skills, especially English morphological awareness skill.

3.4. Students' English morphological skill

The findings displayed in Table 3 are the results of students who made sentences by using given words. These findings accurately proved the students' skill in English morphology relatively very well.

Table 3. Students' morphological skill

No.	Given word	Number of students with Correct sentences	Number of students with Incorrect sentences
1	Player	57 (92%)	5 (8%)
2	Going	54 (88%)	8 (12%)
3	Carefully	55 (89%)	7 (11%)
4	Sad	59 (95%)	3 (5%)
5	Work	52 (84%)	10 (16%)

The dominant number of student (89.6%) showed their Morphological skills very well because they had successfully and correctly answered the question by constructing sentences from the provided words. Some correct sentences made by participants are as follows:

a. My brother is a football player
b. We are going on vacation next year
c. I drive carefully
d. I am very sad lately
e. I work at home

The samples of responses made by these participants are correct in terms of grammar, and the use of given words is appropriate and proportionally used.

While only 6.6% of total students responded incorrectly. Some incorrect sentences in the replies of participants such as:

a. I love to play
b. I going to school
c. I carefully your book
d. She so sad because I can't come
e. She is work in Jakarta

These sentences are made by participants by using provided English words. *I love to play* grammatically correct. Nonetheless, the given word is *player* not *play*. In the sentence *I going to school*, it is supposed to be *I am going to school*, it is supposed *to be* that makes the sentence grammatically incorrect. *I carefully your book*, and this sentence neither makes sense nor is grammatically correct. It needs a verb to fill out the gap in the use of adverbs *carefully*. Moreover, in the sentence *She so sad because I can't come*, it needs *is* to complete the present to be for the adjective *sad*. The last, sentence *She is work in Jakarta*, as *is* the present tense sentence, should be omitted, yet if the writer means present continuous tense, then he must add = *ing* in the verb, so it becomes *She is working in Jakarta*.

The findings proved that students have a good skill of English morphological awareness. Nevertheless, the habit of using AI-Based English learning applications sufficiently assists

them to acquire English language and at the same time swiftly fertilize their English morphological awareness skill.

Qiao et al (2022) had proved in their study that AI, in form of gamified morphology program, can elevate students' learning outcomes. Besides, another previous study conducted by Enzeline et al. (2023) proved that the existence of AI-Based application contributes to the positive progress of teaching-learning activities. The comparison is that the previous studies (Enzelina et al., 2023; Qiao et al., 2022) showed the use of AI-Based application to improve and intensify the quality of teaching-learning atmosphere, meanwhile the findings in this study showed the use of AI-Based English application not only to magnify the positive impact on English learning, but also to hone students' English morphological awareness.

4. Conclusion

Based on findings and data analysis, the results show that the majority of participants used AI-based English applications for learning English. Moreover, most students understand morphology when using English. Likewise, students' habits of using AI-Based English learning applications lead to increased awareness of students' English morphology. This is proven by the test results where students make sentences from the English vocabulary provided. As a result, most of students were able to make English sentences well and proved that their English morphological awareness was increasingly developed.

This study is far from an ideal work. Nevertheless, hopefully, it has met the topic to be covered, respondents' representation diversity, the range of the coverage of the topic, and the research procedures conducted. Moreover, this study is intended to portray a comprehensive and exhaustive picture of how AI-based English learning platforms are optimized to improve students' English morphological skills. The future study is expected to discover the same topic with a greater number of participants, larger location coverage, and more sophisticated procedures of research.

References

Almahyra, S. (2023). The Role of Artificial Intelligence in English Language Teaching: A New Paradigm. *Jurnal Pustaka Ilmu, 3*(5), 1–19. http://pustakailmu.id/index.php/pustakailmu/article/view/380/352

Apel, K. (2014). A comprehensive definition of morphological awareness: Implications for assessment. *Topics in Language Disorders, 34*(3), 197–209. https://doi.org/10.1097/TLD.0000000000000019

Bah, Y. (2020). Corona virus (Covid- 19) and Education for All Achievement: Artificial Intelligence and Special Education Needs- Achievements and Challenges. *COUNS-EDU Int. J. Couns. Educ, 5*(3). https://doi.org/10.23916/0020200528630

Casalis, S., Colé, P., & Sopo, D. (2004). Morphological awareness in developmental dyslexia. *Annals of Dyslexia, 54*(l), 114–138. https://doi.org/10.1007/s11881-004-0006-z

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative and Mixed-Method Approaches* (C. S. P. L. Thousand Oaks (ed.); 4th ed.).

Creswell, J. W., & Creswell, J. D. (2017). Research design: Qualitative, quantitative, and mixed methods approaches. In *Journal of Reproductive Health* (Vol. 2, Issue 3). Sage Publication,Inc.

Dewi, H. K., Rahim, N. A., Putri, R. E., Wardani, T. I., Rumambo, M. G., Airlangga, U., Glorino, M., Pandin, R., & Airlangga, U. (2020). *The Use of AI (Artificial Intelligence) In English Learning Among University Student: Case Study in English Department, Universitas Airlangga.*

Enzelina, Y. N., Santosa, M. H., & Paramartha, A. A. G. Y. (2023). Exploring English Language Education Major University Lecturers' and Students' Perceptions of AI-Based Applications in Post-Pandemic Learning. *SALEE: Study of Applied Linguistics and English Education, 4*(2), 487–502. https://doi.org/10.35961/salee.v4i2.843

Giyatmi Giyatmi. (2017). Morphology for English Language Teaching. *The 2nd International Conference on Language, Literature and Teaching*, 33–41.

Kirby, J. R., Deacon, S. H., Bowers, P. N., Izenberg, L., Wade-Woolley, L., & Parrila, R. (2012). Children's morphological awareness and reading ability. *Reading and Writing, 25*(2), 389–410. https://doi.org/10.1007/s11145-010-9276-5

Mushthoza, D. A., Syariatin, N., Tahalele, O., & Telussa, S. I. (2023). Analyzing The Impact of Artificial Intelligence (AI) on the Future of English Language Teaching and Learning. *Journal on Education, 06*(01), 1549–1557.

Nagy, W., Berninger, V., Abbott, R., Vaughan, K., & Vermeulen, K. (2003). Relationship of Morphology and Other Language Skills to Literacy Skills in At-Risk Second-Grade Readers and At-Risk Fourth-Grade Writers. *Journal of Educational Psychology, 95*(4), 730–742. https://doi.org/10.1037/0022-0663.95.4.730

Popenici, S. A., & Kerr, S. (2017). Exploring the Impact of Artificial Intelligence on Teaching and Learning in Higher Education. *Research and Practice in Technology Enhanced Learning, 12*(1). https://doi.org/https://doi.org/10.1186/s41039-017-0062-8

Qiao, S., Yeung, S. S.-S., Shen, X., & Chu, S. K. W. C. (2022). The effects of a gamified morphological awareness intervention on students' cognitive, motivational and affective outcomes. *BJET: British Journal of Educational Technology, 53*(4). https://doi.org/https://doi.org/10.1111/bjet.13178

Rusmiyanto, Huriati, N., Fitriani, N., Tyas, N. K., Rofii, A., & Sari, M. N. (2023). The Role of Artificial Intelligence (AI) in Developing English Language Learner's Communication Skills. *Journal on Education, 06*(01), 750–757. https://doi.org/10.1109/ICCCNT56998.2023.10307203

Sangster, L., & Deacon, S. (2011). Development in children's sensitivity to the role of derivations in spelling. *Canadian Journal of Experimental Psychology, 65*(2), 133–139. https://doi.org/10.1037/a0018569

Tighe, E. L., & Binder, K. S. (2015). An investigation of morphological awareness and processing in adults with low literacy. *Applied Psycholinguistics, 36*(2), 245–273. https://doi.org/10.1017/S0142716413000222

Wardana, I. K. (2023). The Impact of English Morphological Awareness on Vocabulary Enrichment: A Causal-Affect Relationship Research. *REiLA: Journal of Research and Innovation in Language, 5*(1), 1–16. https://doi.org/10.31849/reila.v5i1.11200

Xiao, M., & Yi, H. (2021). Building an efficient artificial intelligence model for personalized training in colleges and universities. *Comput. Appl. Eng. Educ., 29*(2), 350–358. https://doi.org/10.1002/cae.22235

Zrig, A. (2024). Morphological Awareness and Cross-Language Transfer. *International Journal of Linguistics and Translation Studies, 5*(2), 73–92. https://doi.org/10.36892/ijlts.v5i2.435