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Integrating Artificial Intelligence in a Morphology Course - An Analytical Study from University Students' Perspectives

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Abstract

This paper attempts to scrutinize the attitudes and opinions of English as a Foreign Language (EFL) learners on the integration of artificial intelligence (AI) in a morphology course in higher education in Lebanon as a pedagogical tool in classroom contexts in providing learners with personalized learning paths centered on their needs and strengths, offering automated feedback on activities and assignments, supplying study resources and extra material, furnishing adaptive assessments, and most importantly, identifying common errors in students' responses that allow instructors to acknowledge the learning gaps and tailor their teaching strategies accordingly. It also aims to determine the students' perspectives on AI's

potent role in learning. In this exploratory study, a mixed-method design and a convenient sampling of participants were utilized. A total of 62 EFL students at the public university in Lebanon participated in the study. To describe and quantify their perceptions on integrating AI in a morphology course, an online survey including closed-ended and open-ended questions, and two focus group discussions were administered. The overall qualitative and quantitative analyses of the data indicated that Lebanese EFL students have positive attitudes towards integrating AI in a morphology course as a pedagogical tool and as a fundamental part of the teaching strategies in EFL higher education classes since it provides a good source of information and aids in the teaching and learning process; however, the findings also revealed the need to train teachers and students to use AI technologies keeping in mind the potent role of the instructor in class.

Keywords: Artificial Intelligence, Morphology, EFL, morphemes, word formation processes

Introduction

Morphology, derived from the Greek word *morphos* meaning "form" examines the internal make-up and structure of words as well as the patterns and principles underlying their composition (Schmid, 2015). Morphology that was titled for the first time in 1859 as a sub-discipline of linguistics by the German linguist August Schleicher (Aronoff, 2011), looks at both sides of linguistic signs, the form and the meaning, combining the two perspectives in order to examine and describe the component parts of words as well as the principles underlying the composition of words (Schmid, 2015). Morphology analyzes words in terms of morphemes, i.e. the smallest units or the components of words that carry meaning (Schmid, 2015) as well as the processes by which words are formed (Zapata, 2007).

Morphemes are grouped into two major types: free morphemes and bound morphemes (Yule, 2010).

Free morphemes can stand alone, have meaning, and fulfil a grammatical function. Free morphemes can be divided into two types: The first type is called lexical morphemes such as nouns, verbs, and adjectives that have a semantic content or meaning and that form the open class of words in a language. The other type is called functional morphemes, those that do not have meaning on their own, but they show grammatical relationships in and between sentences and are considered closed-class morphemes. These morphemes are depicted in the form of prepositions, articles, conjunctions, pronouns, auxiliary verbs, and demonstratives (Zapata, 2007).

Bound morphemes are divided into two types: The first type is called derivational morphemes which are used to make new words of a different grammatical category from the stem. Derivational morphemes in English can be prefixes and suffixes (Booij, 2007). The second type of bound morphemes is called inflectional morphemes that deal with the markers of grammatical categories such as number, case, aspect, and tense (Schmid, 2015). According to Zapata (2007), these inflectional morphemes that serve a purely grammatical function include the comparative and superlative markers of adjectives (er/ est), the third person singular marker of verbs in present tense (s/es), regular plural marker (s), possessive marker (’s), regular past tense marker (ed), past participle marker (en), and present participle marker (ing).

Yule (2010) demonstrates that word formation involves the study of compounding (joining two separate words to produce a single form), borrowing (taking over of words from other languages), coinage (invention of new terms), blending (taking the beginning of one word and adding it to the end of another word), clipping (reducing a word of more than one syllable to a shorter form), backformation (reducing a word of one type to a word of another type), conversion (changing the function of a word without any reduction), and acronymy (forming words from the initial letters of a set of other words).

Morphology interacts with syntax, the study of sentence (Booij, 2007), which explores how morphological structures contribute to the overall grammatical structure of sentences.

Morphology is significant in linguistic studies. In addition to providing insights into the internal structure of words and contributing to a comprehensible understanding of how languages are organized, it contributes to literacy outcomes, such as word reading, vocabulary and reading comprehension (Chen & Schwartz, 2018), and it plays a crucial role in linguistics, in the acquisition of new languages, and in using language to produce new words as and when required (Naser & Gandhi, 2022). Besides, morphological analysis plays a major role in Natural Language Processing, NLP (Altan, 2022) a field of artificial intelligence that relies on enabling machines to understand and process human language through the applications that depend on morphological rules for tasks such as language translation and text analysis.

The software development company Serokell (2020) defines AI as the development of intelligent programmes and machines capable of creative problem-solving, a capability previously regarded as uniquely human.

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Alan Turing was the initiator of artificial intelligence in 1950 (Copeland, 2023), and he introduced the Turing Test to find out whether a computer can show the same intelligence as humans (Vargas et al., 2023). Serokell (2020), the software development company, defines AI as the development of intelligent machines and programs that are able to provide solutions for problems, a characteristic which was previously restricted to humans.

The integration of artificial intelligence (AI) in education is gaining importance due to its perceived promising potentials in providing customized learning, preparing students for a rapidly evolving technological landscape, enhancing the learning experience, offering dynamic assessments, facilitating meaningful interactions (Zhang & Aslan, 2021) in addition to nurturing a more adaptive and engaging educational environment (Holmes et al., 2019).

This adaptability and engagement is particularly vital in the context of morphology courses, where students may have varying levels of proficiency and familiarity with the concepts. Thus, the integration of AI in morphology courses is considerable since AI platforms according to Baker (2016) provide real time feedback, identify learning gaps, and provide interactive learning materials that serve students' different learning styles. However, there are potential challenges of integrating AI in morphology courses, such as ensuring that AI tools align with the educational goals, providing teacher training and robust infrastructure, and securing data privacy and ethical considerations (Buckingham, 2019). Thus, it is essential to balance the benefits and challenges to utilize the full potential of AI in morphology education.

The purpose of the present research paper is to assess students' awareness and understanding of artificial intelligence, to evaluate the current status of integrating AI in morphology courses, to identify the recognized benefits and challenges accompanying with AI integration in a morphology course, and to collect data for effective integration of AI in morphology education. It is hoped that this study would give insights to educators and curriculum developers to integrate AI in morphology courses.

Statement of the Problem

Many students at the Lebanese University (LU), 5th Branch in the southern campus are able to understand morphology concepts, but most of them face problems in effectively communicating these ideas on paper. Many of these Morphology, L 3200 students at LU Saida campus do not comprehend important details or even cannot go beyond what is discussed in class. The only resource that they have is the instructor's notes that are shared with them in class. The absence of the Internet or any technological

devices, such as an LCD make it difficult for the instructor to share digital platforms and visual aids or even PowerPoint presentations. Furthermore, a significant lack of insight regarding students' awareness, perceptions, and experiences regarding the inclusion of AI in the morphology course is evident. This encompasses the perceived benefits and challenges that students associate with the integration of AI into the course. Besides, the specific recommendations customized to the demands of morphology courses are absent, which could be an obstacle for the development of AI's potential in improving learning outcomes. For this reason, the present study aims to address these gaps by determining students' awareness and understanding of AI, by assessing the current status of integrating AI in morphology courses, by identifying the perceived benefits and challenges of integrating AI into morphology courses, and by collecting students' insights and recommendations to enhance AI integration in morphology courses and consequently upgrade their learning experience.

Literature Review

Artificial intelligence and the plethora of devices accompanying it are gaining ground in education, and they are recommended to be used in schools to assist teachers and students in the teaching learning process and to support in administrative tasks (European Commission, 2022). AI tailors educational content to the individual needs and learning styles of students and allows admission to all levels and types of education (Alam & Raza, 2022).

AI provides support and guidance to the learners depending on their needs, and it automatically adapts the level of difficulty after tracing their knowledge (Holmes et al., 2021). It can read students' facial expressions, identify their gestures and moods during the lecture, and present recommendations to ease the lessons for them (Kengam, 2020). Moreover, AI provides teachers with a variety of digital platforms and visual aids that assist them in teaching, and it reduces their workload and saves their time through providing automatic assessment, detecting plagiarism and giving feedback (Holmes et al., 2021) and evaluating the progress of each student over a period of time through the assessment system that collects and processes information (Kengam, 2020).

Physically challenged learners including those suffering from impaired vision and hearing or people with locomotor disability also benefit from the assisting services artificial intelligence provides (Kengam, 2020).

Numerous studies have demonstrated the benefits of integrating AI in education and especially in teaching languages. A study was administered by Kolhar and Alameen (2021) where 25 university students in a translation class in Saudi Arabia participated in the study. A translation system

connected to a video camera, digital podium, and a projector was installed in every classroom for the translation of difficult words and phrases and for helping them in their assignments. The researchers found that what helped the students understand the concepts better and encouraged them to participate in the lectures was the translation of the context in their language.

Alhalangy and AbdAlgane (2023) conducted a research to determine the possibility of using **artificial intelligence** in English for speakers of other **languages** (ESOL) courses in Saudi Arabia universities through natural **language** processing, intelligent **teaching** systems, immersive virtual environment, self-regulated learning, and virtual reality. The study concluded that **artificial intelligence** (AI) has a great influence on the field of English **language teaching** and learning, but it needs to be better integrated into educational settings as well as introducing it to both teachers and students.

Although AI has made significant advancements in linguistics, mainly in phonetics and phonology (the branches of linguistics engaged in the physical aspects of sounds and their functional aspects in particular languages), it has made less significant inroads into the field of morphology, which this study cares about.

In a study administered by Dabbagh, Fake and Zhang (2019) in a large public university in the U.S., it was found out that students valued the effectiveness of using technological digital tools in supporting learning, mainly in fostering discussion, collaboration, and interaction. As a result, this could lead to experiential learning and a personalized learning experience. However, future research should find out how to optimize the use of collaborative technology, how to organize an effective learning experience, and how to determine the effectiveness of the tools necessary for learning.

Artificial intelligence which emerged as a powerful technology that could have the potential to transform education is viewed differently by students who believe that integrating AI in education has a lot of benefits and drawbacks (Idroes et al., 2023). Although AI acts as a virtual assistant for both teachers and students and gives universal access and immediate feedback, it may lessen the interactive relationship between teachers and students and lead to the loss of information in case of system failure. Added to that, the content generated from AI might be inaccurate, and this necessitates human intervention and oversight to evaluate content validity (Byles et al., 2023). Besides, when it comes to AI grading, it is feared that it might not be able to provide the same personalized and detailed feedback as that done by a human instructor. With respect to that, the present study raises the following research questions:

1. To what extent are students aware of artificial intelligence?
2. To what extent is AI integrated in morphology courses?

3. What are the advantages and challenges associated with AI integration in a morphology course?
4. What are the recommendations for effective AI integration in morphology education?

Research Methodology

According to Halcomb (2018) and Creswell, Plano and Clark (2011), mixed-method research allows researchers to deploy creativity in integrating quantitative and qualitative elements to have better answers to the research questions. In this study, a mixed method research design was adapted. That is, both qualitative and quantitative data were assembled and analyzed separately, but the findings were conjointly interpreted. The data for this study were collected from a student online survey and two focus group discussions.

Sample Selection

The work group of the present research was selected by using a convenient sampling technique based on the willingness to participate. A total of 62 English as a foreign language (EFL) students out of 228 majoring in English Language and Literature at the Lebanese University, 5th branch, Faculty of Letters and Human Sciences and who are taking a morphology course enthusiastically participated in the study and filled in an online questionnaire of closed and open-ended questions. Also, willingly, 16 out of the 62 students who responded to the online questionnaire joined two focus groups, 8 students in each, with a duration of 45 minutes each which took place on December 15 and December 22, 2023. All the participants have registered in the morphology course for the academic year 2023-2024, third semester – second year.

Instruments

A comprehensive online questionnaire was designed to elicit the attitudes and opinions of the second year students at the Lebanese University, 5th branch, who are majoring in English Language and Literature and who are taking a morphology course, on the integration of AI in their morphology course. The questionnaire which was utilized as a quantitative method in the study included a demographic profile part, a part about students' awareness of artificial intelligence, a part about students' attitudes and opinions regarding the integration of AI in a morphology course, a part about students' preferences and expectations, and a part about their further comments and recommendations.

The survey questionnaire data were supported with 2 focus groups of students, 8 members each. The focus group is utilized as a qualitative method

in this study. Focus groups are considered an effective method in data collection due to the fact that they create open discussions that address the research topic (Bloomberg & Volpe, 2019). Two focus groups of eight (8) students each were invited to an informal set-up meeting at the university with a duration of 45 minutes. The discussions led to great insights on students' awareness of AI and its integration in morphology, the current status of AI integration in morphology courses, the perceived advantages and challenges associated with AI integration, and the students' recommendations for effective AI integration in morphology education. Statements were collected from the questions asked to the sixteen members of the two focus groups and were interpreted accordingly. The responses were combined in outcomes. The participants were both females and males but with the majority (12/16 or 75 %) of females.

Data Analysis

For investigating university students' beliefs and experiences of integrating AI in a morphology course, data generated from the qualitative and quantitative methods were tallied, encoded, tabulated and conjointly interpreted using descriptive statistics/statistical analysis.

After conducting the questionnaire data collection phase, statistical analysis has been employed based on the analytical description that appears in the form of charts that Google forms instantaneously create according to the respondents' input on each item.

Additionally, the qualitative data obtained from the focus group discussions were transcribed and analyzed. This methodology was quite appropriate since it provided an in-depth description and deeper understanding of university students' beliefs about the integration of AI in morphology courses. Further, a conversation analytic approach was used for analysis.

Results and Findings

1. Students' Survey Analysis

Section 1: Demographic Information

The students' respondents are 83.87 % females and 16.13 % males. The age of the students falls into the range of 18 and 40: 71% are between 18 and 25; 22.6% are between 26 and 30; 6.4% are between 31 and 40. Furthermore, the results show that all the students are majoring in English Language and Literature, and 95.2% are second year students while 4.8% are in their third year and are repeating the course. The figures below depict the results.

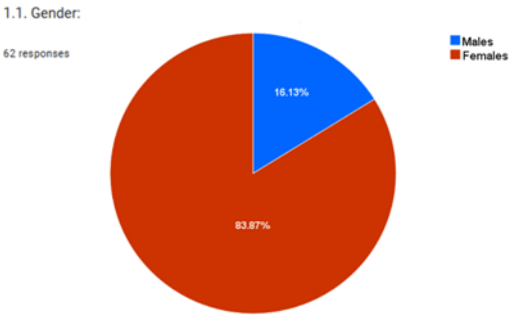

Figure 1: Gender

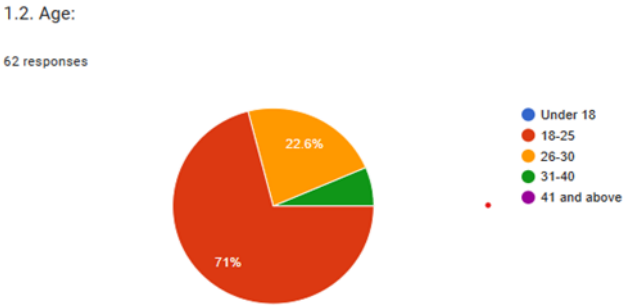

Figure 2: Age

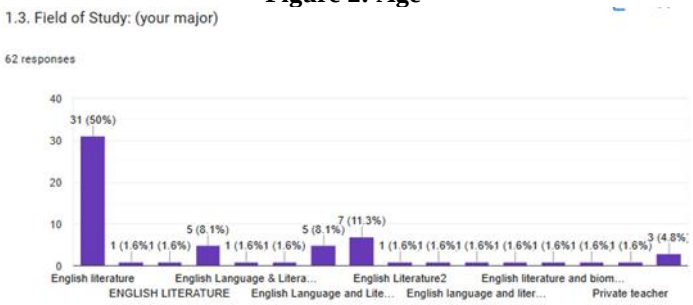

Figure 3: Field of Study

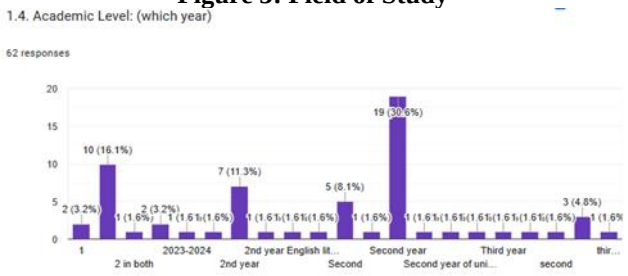

Figure 4: Academic Level

Section 2: Awareness of Artificial Intelligence

When the students were asked to rate their present awareness of artificial intelligence, 16.1% stated that they are well aware, 40.3% believed that they are somewhat aware, 35.5% gave a neutral answer, and 8.1% considered that they are not very well aware of AI. The figure below depicts the results.

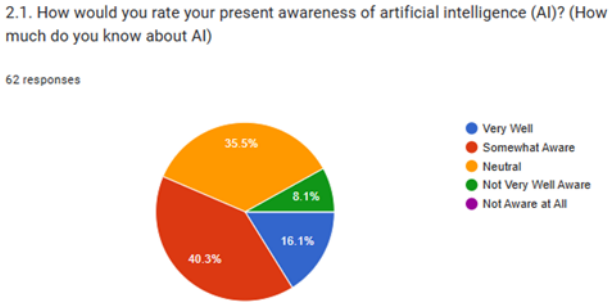

Figure 5: Awareness of AI

Next, when the respondents were asked whether they had encountered the use of AI technologies in their academic experience at the university, 50% answered negatively, 32.3 confirmed, and 17.7% said that they are not sure.

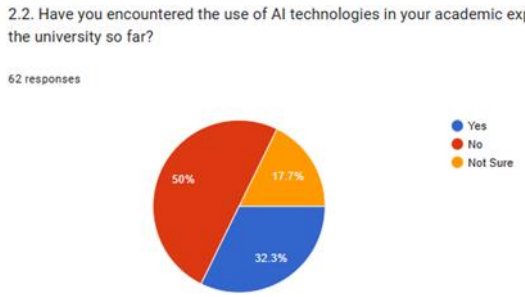

Figure 6: Encountering AI Use at the University

Section 3: AI Integration in a Morphology Course

The respondents were asked whether they are familiar with the integration of AI in a morphology course. 30.6% are familiar with this integration, 38.7% are not familiar, and 30.6% are not sure.

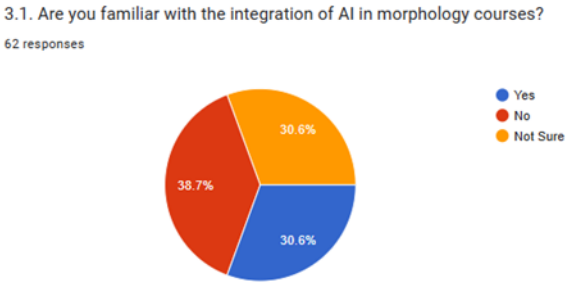

Figure 7: Familiarity with AI in Morphology Courses

Then when the students were asked whether they encourage integrating AI in morphology courses, 27.4% strongly agreed, 41.9% agreed, 24.2% were neutral, 3.25% disagreed, and 3.25% strongly disagreed. The figure below illustrates the answers.

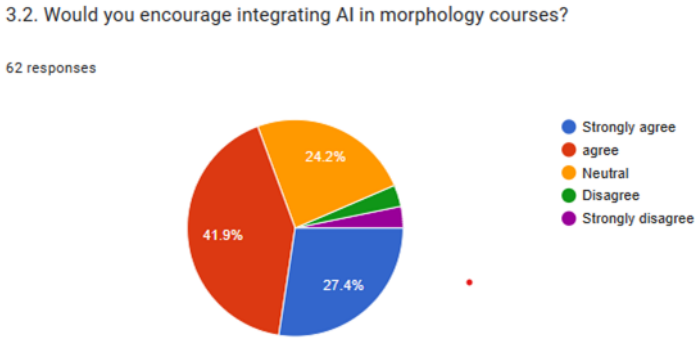

Figure 8: Encouragement of the use of AI in Morphology Courses

When the students who do not support the integration of AI in morphology courses were asked to explain the reason, they showed that they prefer the conventional way which allows more creativity, thinking, and communication with the instructor (See Appendix A).

Section 4: Preferences and Expectations

When the respondents were asked about the specific aspects of morphology courses where AI could be advantageous and beneficial, 43.5% believed that it could provide them with automated feedback on activities and assignments; that is providing them with immediate feedback upon completing a task, 64.5% considered that it could provide them with personalized learning paths centered on students' needs, strengths and what they would like to learn, 71% assured that it could provide them with study resources and extra material and references, and 48% admitted that it could provide them with adaptive assessments; that is tests adapted to every learner's abilities.

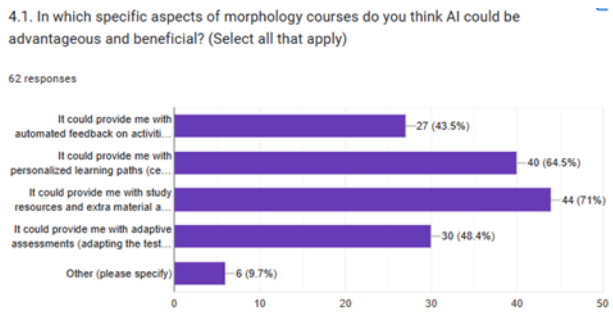

Figure 9: Aspects of Morphology Courses where AI could be Beneficial

The students were then asked to specify how they prefer AI to be integrated in their morphology courses. 50% required supplementary AI Resources in and out class, 27.4% requested integrating AI into the curriculum with explanation and activities, 17.7% were not sure how, and 4.1% considered that they prefer no integration of artificial intelligence.

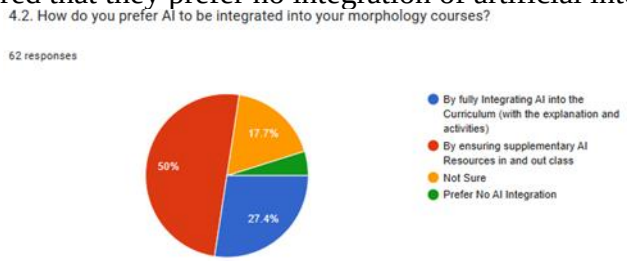

Figure 10: Methods of Preference of Integration of AI into Morphology Courses

When the respondents were asked about the types of AI technologies that they think would be most effective or beneficial in enhancing morphology education, 30.6% believed that Intelligent Tutoring Systems that offer tailored instruction and guidance according to learners' needs without the need for a human teacher would be the most effective. 37.1% chose chatbots or Virtual Assistants that simulate or look like human conversations, and they understand human capabilities. They also interpret students' intent, process their requests, and give them prompt relevant answers. 46.8% selected Automated Grading Systems that automatically grade or score assignments, tests, or exams, such as multiple-choice questions, short answers, essays, and other types of assignments, 56.5% preferred Language Processing Technologies that allow computers to process and respond to students' written and spoken language in a way that mirrors abilities, and 58.1% considered that the best type would be Pattern Recognition that recognizes patterns in students' responses and identifies common errors or misconceptions. This allows educators to pinpoint areas where a student may be struggling and tailor their teaching strategies accordingly.

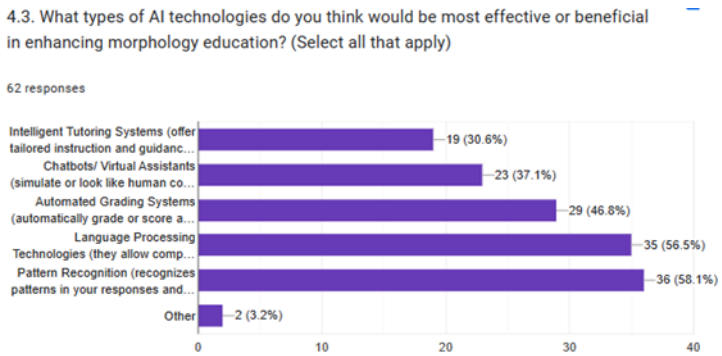

Figure 11: Most Effective Types of AI Technologies in Enhancing Morphology Education

Section 5: Open Comments

When the students were asked whether they had any additional comments or suggestions regarding the integration of AI in morphology courses, their answers varied, but they mostly agreed that AI must be used thoughtfully and be restricted to a limited extent, and it has to be handled with care and precision until people are fully aware of its potential. Students' creativity and critical thinking are highly appreciated in spite of the benefit AI would offer, such as saving the instructors' and the students' time and facilitating their missions, being a good source of information, and aiding in the teaching and learning process. However, firstly and most importantly, it must never replace the instructor (see Appendix B).

2. Students' Focus Group Discussion Analysis

The results from the data analysis of the students' focus groups yielded a number of outcomes. This section highlighted the seven outcomes that were referenced. These seven main outcomes included the students' experience with AI in morphology courses, their awareness and perceptions, AI pedagogical impact on morphology course, AI impact on student engagement and interaction, the students' preferences in the customization of AI, their challenges and concerns, and their future expectations and recommendations. All the students' responses were audio-recorded and transcribed (Check Appendix C).

Outcome 1. To assess students' experience with AI in morphology courses

Question 1.1: Could you describe any specific instances or experiences where you have encountered or interacted with AI technologies before? in your morphology courses?

Most of the participants (12/16 or 75 %) reported that they had the chance to interact with or use AI in their work or research, but only (2/16 or

12.5%) reported that they resorted to AI in morphology, and it was really helpful. One of the participants said:

Yes, AI helped me in building up or preparing a lesson plan for KG3 about sight words, and it was really a good helper, but I have not tried it in morphology courses.

Another student stated:

There was an interaction with AI in specific situations and morphology courses, and this interaction was great for me because AI was successful in giving me the solutions.

Question 1.2: How did you find the experience of using AI in the context of morphology education? Did you face any challenges? Mention them.

Since most of the participants had not had the chance to experience the integration of AI in morphology courses, they either did not provide answers or they talked about their experience with AI in general. Only one participant commented and said:

AI is the simulation of human intelligence process by machines especially computer system. In order to integrate it in a morphology course, expert systems, natural language recognition, speech recognition, and machine vision must be provided.

Outcome 2. To assess students' awareness and perception of integrating AI in morphology courses

Question 2.1: How would you describe your current awareness of AI and its applications in the field of linguistics, particularly in morphology?

Almost (5/16 or 31.25 %) stated that they have enough awareness of AI; (6/16 or 37.5 %) stated that they are totally unaware of AI and its applications while the rest (5/16 or 31.25%) confessed the importance of AI without clearly stating whether they are aware of it or not. One student said:

I am aware, and I use it, and it helps me in my morphology course. Maybe it simplifies it and improves the course more. AI may be integrated in the course to make the course easily understood by the students.

Question 2.2: Please describe your attitudes towards the integration of AI in a morphology course. Are you generally positive, negative, or neutral? Why?

Most of the respondents have a positive attitude towards the integration of AI in a morphology course (9/16 or 56.25%) while (5/16 or 31.25%) are neutral. One student did not give an answer while (2/6 or 12.5%) showed a

negative attitude towards this integration fearing that this application might replace their instructors. One of them said:

My attitude is negative because it prevents the teacher from being creative. Also, AI may replace teachers by depending on manufacturing robots. I think AI could be best used in industries including health care and finance.

Outcome 3. To determine the pedagogical impact of integrating AI in morphology courses

Question 3: In your opinion, how could AI positively impact the teaching and learning of morphology?

Almost all the students realize the benefit AI could have on the teaching and learning of morphology (15/16 or 93.75%). Although only one student did not respond, the students considered the beneficial effects of AI in providing information for both students and teachers. They believe that AI could provide them with correct answers, games, and videos that could help them understand better. Most importantly, it makes learning fun and easy to understand. One student stated:

Learners should be guided on how to use AI effectively, and so it will have a positive impact, since AI can easily create figures, and it can illustrate the material clearly.

Another student said:

According to me, it is helpful because it gives a lot of examples and details with colorful background. I mean it highlights important ideas, and it saves time for instructors and students.

Outcome 4. To find out whether the integration of AI could lead to students' interaction and engagement

Question 4: Do you think the integration of AI in morphology will lead the students to interact more in the course?

Most of the respondents clearly stated that the integration of AI could lead to students' interaction with the instructor in the class (14/16 or 87.5%). One student stated:

Students will be more motivated, and it will improve their performance in the course.

Another said:

I think that the integration of AI will lead the students to interact with the instructor since AI gives them the positive way of thinking and getting correct and suitable answers.

Outcome 5. To explore the students' preferences in the customization of AI

Question 5: How can the integration of AI in a morphology course be customized to suit the individual needs of students?

Almost all the students (15/16 or 93.75%) support the customization of AI in teaching morphology. They believe that lectures with voice-overs, videos, games, pictures, and collaboration with experts from diverse background could foster understanding and provide a rich learning environment. One student said:

There are many ways to customize the integration of AI; for example, using sounds and voices when we need to learn the utterance of sounds, pictures, and videos.

Outcome 6. To explore the challenges and students' concerns when integrating AI in morphology

Question 6: What are the challenges you might face when integrating AI in morphology?

The challenges the respondents were worried about varied from one to another. Some were worried about losing the student-teacher relationship; others were anxious about the unstable electricity and Internet in Lebanon; some were worried about losing their creativity and were skeptic about the accuracy of the information provided; and others were worried about their inability of using technology properly which could hinder their communication with AI. One student said:

Students have to dive deep into specific areas and acquire a broad understanding of AI concepts, and this might be a hard and complex process. Students may have to learn the basics of using technology and may have to learn on their own by referring to many online resources.

Outcome 7. To find out about students' future expectations and recommendations

Question 7.1: What improvements or changes would you like to see in the integration of AI in a morphology course?

Most of the students (13/16 or 81.25%) mentioned the improvements they wish to see in the integration of AI in a morphology course. They would like this course to be given with more fun and with more visual aids and activities instead of lecturing. They want varied methods of teaching since there are different types of learners. Most importantly, they would like AI to be integrated in all the courses at the university without threatening the instructors' knowledge and positions. One student stated:

In my opinion, the course will be given in a very beautiful way; everything will be clear and easily understood.

Question 7.2: Do you have any specific recommendations for your educators or your institution to enhance the integration of AI in morphology education?

Only (7/16 or 43.75) responded and recommended using AI in their institutions for the purpose of making students feel that they are part of their community. They seriously encourage their educators to start using AI in teaching for the diverse ideas it provides. Also, they would like their university to support their classes with technological tools that facilitate learning. One student said:

Universities must offer a computer science course to allow students to take courses in AI. Instructors must be trained to use AI, and universities have to start using AI tools.

It was concluded that almost all the students are well aware of the benefit AI could bring to learning in a morphology course.

Discussion and Conclusion

After collecting the data from the questionnaire, statistical analysis was employed based on the analytical description that appears in the form of charts on Google forms and depending on the respondents' input on each item. The purpose was to assess students' awareness and understanding of AI and its integration in morphology, evaluate the current status of AI integration in a morphology course, identify the perceived the advantages and challenges associated with AI integration in a morphology course, and gather recommendations for effective AI integration in morphology education. Additionally, the qualitative data obtained from the two focus group discussions were transcribed and analyzed in order to obtain an in-depth description and understanding of university students' beliefs about the integration of AI in morphology courses.

At first, the data that were gathered and analyzed quantitatively from the students' questionnaire showed that most students support using AI in a morphology course due to the many benefits it provides (27.4% strongly agreed, 41.9% agreed).

Concerning the respondents' answers in the focus groups, it was concluded that almost all the students realize the benefit AI could have on the teaching and learning of morphology (15/16 or 93.75%), and they believe that it leads to more interaction in class (14/16 or 87.5%) and creates an environment conducive for learning through the facilities AI could provide.

Therefore, it can be concluded that integrating AI in a morphology course is a milestone in education, particularly in a morphology course for the many benefits it could offer and in spite of the challenges associated with this integration. Eventually, the obtained results are consistent with previous researches that have asserted the positive impact of innovative and

pedagogical technologies which are the main support for improving the quality of education (Jamoliddinovich, 2022).

Artificial Intelligence allows students to learn more about morphology concepts. AI discussed in this paper shows how it can achieve the desired learning objectives in a morphology course.

To recommend, the institutions of higher education are encouraged to provide AI tools in classes and focus on the development of students' and teachers' digital competence in order to improve the quality of education. Moreover, instructors are motivated to resort to activities, videos, pictures, and other visuals that AI could offer for the purpose of achieving successful explanation of lessons and creating a more interesting learning environment. Most importantly, instructors of morphology courses are recommended to adopt AI tools in their lectures due to the numerous benefits it offers.

The author hopes that the integration of artificial intelligence in a morphology course discussed in the article will encourage instructors to implement AI not only in their morphology courses but also in other courses in a way to promote learning and comprehension.

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