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RESEARCH ARTICLE

The effectiveness of artificial intelligence (AI) on daily educational activities of undergraduates in a modern and diversified university environment

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Abstract: This study assessed the effectiveness of AI and AI-related technologies in the daily educational activities of undergraduate students in a modern and diversified university environment. The participants were 13 undergraduate Indonesian students participating in a mobility program for two weeks in Malaysia. A survey questionnaire designed with the help of the existing literature and ChatGPT, which includes ten (10) structured items and seven (7) open-ended questions, was used to collect the data. The relevant SPSS tests were used to analyze the data. Based on the results, of all 13 participants, 12 (92.3%) of them already experienced AI in their daily educational activities, and there were strong positive correlations between the attitudes toward AI and AI experiences, and attitudes toward AI and the effects of AI on education attributes, with correlation scores of 0.663 and 0.833 respectively. Based on the participant's answers to the qualitative questions, most of them believed that AI and AI technologies, such as ChatGPT, are helpful in daily educational activities and help them gain information regardless of time and space limitations and do their university-related assignments quickly. Based on the results, AI and AI-related technologies could transform different aspects of modern education.

Keywords: artificial intelligence (AI), modern education, ChatGPT, AI and modern education

1 Introduction

Education, especially modern education, is an essential requirement of human life. People use different methods and instruments in their teaching-learning processes. Koufadi (2014) has argued that in modern societies, modern technologies and the Internet are essential for different aspects of human life, especially for educational activities. Nowadays, some modern technologies, such as artificial intelligence (AI), profoundly affect the existing methods and structures of education and enable individuals to learn autonomously. The fast growth of AI profoundly changed human life (Wang et al. (2022). Scholars define AI as a technology that enables machines to act intelligently (Tai, 2020), and the term 'artificial intelligence' was produced in 1956 at the Dartmouth Conference (Gunkel, 2012).

Moreover, AI and AI technologies could help students, researchers, and educators increase their teaching-learning and research activities. As stat stated, AI could be helpful in scientific activities, such as proofreading (Lund et al., 2023). Anders (2006) believes that imposing the need for 'AI literacy' may cause some curricular changes. Furthermore, AI-related technologies, especially ChatGPT, an AI-related chatbot, could effectively teach learning activities, especially in language learning (Karakose et al., 2023; Athanassopoulos et al., 2023). However, to understand AI well, more studies and publications are needed (Leavy et al., 2023). The current short work assessed the effectiveness of AI on daily educational activities among a group of Indonesian undergraduate students at a Malaysian public university to add to the research on the effectiveness of AI and AI technologies on modern education in different parts of the world to the literature,

2 Methodology

This short study assessed the effectiveness of artificial intelligence (AI) on the daily educational activities of a group of undergraduate students. A mixed research design through quantitative and qualitative methods was applied to conduct this study. According to Creswell

and Plano Clark (Creswell et al., 2007), researchers use quantitative and qualitative methods to answer their research questions. The participants were 13 bachelor Indonesian students who participated in a two-week mobility program at the University of Malaya (UM), Malaysia, aged 18-20. Of all participants, nine (69.2 %) were female and four (30.8%) were male. Based on the results, of all 13 participants, 12 had already experienced the use of AI, especially ChatGPT, in their daily educational activities. With the help of the existing literature, ChatGPT, a survey questionnaire was used to collect the quantitative and qualitative data. The instrument includes ten structured items and six (6) open-ended questions. The quantitative (structured) items were designed based on a Likert scale with five options per item, from strongly agree to disagree strongly. Likert (Likert, 1932) introduced a broadly applicable five-category scale to measure attitudes. Based on the literature, the quantitative items are grouped under three attributes: "Attitudes towards AI" with four items, "AI experience" with two items, and "Effects of AI on education" with four items. All 13 participants, besides completing the survey questionnaire, shared their written points of view regarding the mentioned issue.

The descriptive and One-sample t-test of SPSS was used to analyze the survey data, and the central and relevant parts of the written points of the respondents were directly quoted in the findings section. The Cronbach's Alpha for all ten survey instrument items was .704. Before the analysis, all ten items of the quantitative instruments were grouped under the three mentioned attributes using the SPSS Transform test. The bivariate correlation test was used to find probable correlations between the three attributes of the instrument.

Moreover, all methods were performed according to the relevant guidelines and regulations in the current study. A letter of informed consent was obtained from all subjects and their legal guardian(s). All research regulations of the university were considered and applied for the research design, data collection analysis, and data report.

3 Findings

Findings reported in the current short communication are from the quantitative data analysis and the participants' written and detailed points of view regarding the issue.

3.1 Quantitative findings

Based on the results, of all 13 participants, 12 (92.3%) of them had already experienced AI and AI technologies in their educational activities, and the overall Mean/standard deviation scores of all 13 participants for all 10 items were 24.7/ 4.2. Moreover, the descriptive test of SPSS was applied to find out the Mean/Standard deviation scores of all three attributes of the study; Table 1 below indicates the number of items of each attribute and the Mean/Standard deviation scores of all attributes.

Table 1 The number of items and Mean/ St. deviation score of each attribute

Attribute	No of Items	Mean Score	St. Deviation
Attitudes toward AI	4	9.4	2.4
AI Experience	2	6.5	1.3
Effects of AI on education	4	10.9	1.4

Moreover, the Bivariate correlations test of SPSS was applied to find the probable correlations between three study attributes, and Table 2 includes correlations between the attributes.

Table 2 Correlations between three attributes of the study

Attribute	AI Attitude	AI Experience
AI Attitude		
AI Experience	0.663	
Effects of AI on Education	0.833	0.692

3.2 Qualitative results

At the end of the survey questionnaire, through sharing seven open-ended items/ questions, the participants were asked to share their written points of view regarding the use of AI in their daily educational activities. All 13 participants, besides completing the survey questionnaire, shared their written points of view regarding the mentioned issue. The participants coded in the

relevant questionnaire as P1 for Participant 1, P2, participant 2, etc. In the qualitative findings below, the given number of each participant will be used instead of their details.

According to the participants' answers and points of view, they have already experienced the application of AI and AI-powered machines and chatbots, such as ChatGPT, in their daily educational activities. Based on their answers, AI-related technologies, especially ChatGPT, helped them gain more information and do their assignments quickly. For example, P1, a male student, said, "ChatGPT can help form a more coherent thought, and AI has the potential to lower the hurdle to access knowledge that might not be too easy to access". P2, a female student, pointed out, "AI helps students to be able to reach broader information in just one place, which is more accessible and effective". P3, another female student, said, "AI influenced me in so many ways; one of the positive changes is that AI helps me to find the right vocab/ words for my essay, for example". She also said, "So far, I only know ChatGPT, and it impacted me, especially in finding the right way to paraphrase my ideas".

As pointed out by P4, a male student, "AI helped me find study material better than a Google search and also helps with copywriting, and I see AI as a complementary tool to help and assist me in doing my assignments". P6, a female student, said, "AI influenced my ideas regarding various topics. Sometimes, we need some new information and ideas for our work, which is helpful to me as we can access new ideas. It brings positive changes like helping me to write a paper on new topics". At the same time, P12, a male student, said, "AI could help me to get more insights that I can dig deeper before I am studying of a topic". Moreover, P13, a female student, said, "I think the main area that the AI can influence is the level of getting information. AI tools, such as ChatGPT, enabled us to get more information, which is mostly reliable".

4 Discussion

Education is an essential and inevitable requirement of human life, and modern technologies, such as AI and AI-powered technologies, deeply influence modern teaching-learning processes. The current short work assessed the effectiveness of AI and AI technologies on daily educational activities among undergraduate students in a modern university environment. Participants in this study were 13 bachelor Indonesian students who participated in a mobility program for two weeks at the University of Malaya (UM) in Malaysia. At the mentioned university, A survey questionnaire designed with the help of the existing literature and ChatGPT, which includes ten structured items and seven (7) open-ended questions, was used to collect the data.

The relevant SPSS tests were used to analyze the data. The descriptive, reliability, and bivariate correlation tests of the 29th version of the IBM-SPSS software were used to analyze the quantitative data, and the central and relevant parts of the respondents' answers are directly quoted in the findings section. Based on the results, of all 13 participants, 12 (92.3%) of them already experienced AI in their daily educational activities, and there were strong positive correlations between the attitudes toward AI and AI experiences, and attitudes toward AI and the effects of AI on education attributes, with correlation scores of .663 and .833 respectively. It means that the level of use and effectiveness of AI and AI technologies depends on the personal attitudes of individuals regarding the mentioned modern technologies.

Based on the results, students widely use AI and AI technologies in their daily educational activities, and the mentioned technologies help them to get information without the consideration of time and space limitations, learn autonomously, and do their university-related tasks and assignments quickly. However, based on the results, the effectiveness of AI and AI technologies depends on students' attitudes regarding the mentioned technologies.

5 Conclusion

This current work assessed the effectiveness of AI and AI-related technologies in the daily educational activities of a group of students in a modern and international university environment. This study had 13 participants, who were 13 undergraduate Indonesian students participating in a mobility program for two weeks at the University of Malaya in Malaysia. Based on the results, of all 13 participants, 12 (92.3%) of them already experienced AI and AI-related technologies, especially ChatGPT, in their daily educational activities. According to the results, there were strong positive correlations between the attitudes toward AI and AI experiences and attitudes toward AI and the effects of AI on education attributes. Based on the participant's answers to the qualitative questions, most of them believed that AI and AI technologies, such as ChatGPT, are helpful in daily educational activities and help them gain information regardless of time and

space limitations and do their university-related assignments quickly (Karakose et al., 2023; Papadakis et al., 2023).

6 Limitations

Even though the current study has some new findings that could be helpful, there are some notable limitations related to this study. The first limitation is the limited number of participants, 13 Indonesian undergraduate students who came to Malaysia for short-term mobility. The second limitation is the similarity of the participants' age, educational level and cultural background, as they were Indonesian undergraduate students under the age category of 18-20. Thus, applying the same or similar studies among diversified people with more participants may bring more exciting findings.

Research ethics

For the research design, data collection procedures, data analysis, and data report, all research regulations of the university were considered and applied. A letter of informed consent was obtained from all subjects and their legal guardian(s) before the data collection procedure.

Conflict of interests

The authors of the current work declare no conflict of interest concerning the publication of this manuscript.

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