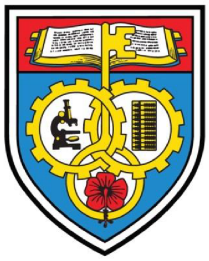

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THE STUDY OF ACCEPTANCE RATE AND UNDERSTANDING OF AI IN THE THE EDUCATION FIELD AMONG MALAYSIAN UNIVERSITY STUDENTS IN THE YEAR 2021

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Tutor's Name:	Dr. Ting Tin Tin

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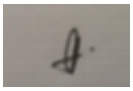
Signature: 
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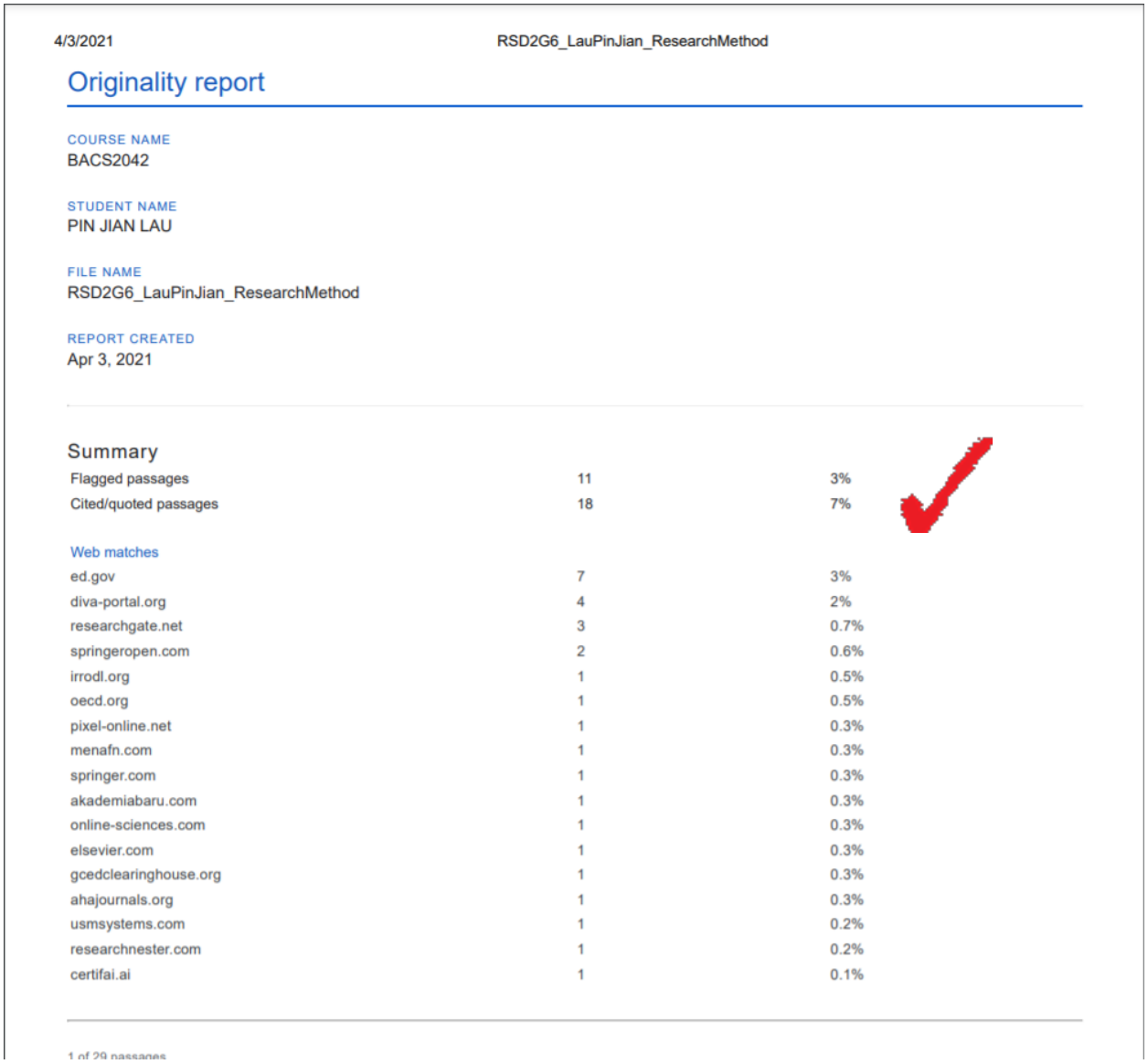

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THE STUDY OF ACCEPTANCE RATE AND UNDERSTANDING OF AI IN THE THE EDUCATION FIELD AMONG MALAYSIAN UNIVERSITY STUDENTS IN THE YEAR 2021

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Abstract

This research paper explores the emergence of the use of artificial intelligence in the education sector. It focuses on investigating the acceptance rate and understanding of Artificial Intelligence (AI) in the education field among Malaysian university students for the year 2021. As the students have different levels of education and each education level may affect and approach the students in different ways. This paper pays particular attention to this issue by highlighting the students' understanding of Artificial Intelligence (AI) in the education sector. An online questionnaire will be conducted to gather the opinion of students about their understanding of Artificial Intelligence (AI). On the other side, this research paper identifies how well the students understand Artificial Intelligence (AI) and do they accept Artificial Intelligence (AI) when it comes to their life.

briefly state the background of your research and the result of your research

Keywords

Artificial Intelligence (AI), Acceptance Rate and Understanding of Artificial Intelligence, Effects of Artificial Intelligence, Benefits of Artificial Intelligence, Limitations and Risks of Artificial Intelligence.

1.0 Introduction

The past decade has seen the world of tertiary education evolve with the rapid development in internet technologies, and revolution in computer software (Tayebinik & Puteh, 2013). This has revolutionised the way learning and teaching is enacted, particularly in distance education. Emerging concepts such as online learning or e-learning, which are largely used in the higher education arena, have led to a flurry of comparative studies done on e-learning and face-to-face learning environments (Nortvig et al., 2018), students' learning outcomes (González-Gómez et al., 2016), and e-learning's strengths and weaknesses (Wang, 2010).

Moreover, AI may seem like a futuristic concept, however, it is already heavily implemented in our lives. For example, AI tutoring has been provided by some of the universities to the student to have a comprehensive learning environment. Since, the AI tutoring is providing the additional support to students and giving them feedback in their studies (Graesser et al., 2001). Furthermore, some university students are able to accept the AI in the education field because using Augmented Reality technology in classrooms makes learning more interactive and engaging (Chen et al., 2019). It helps teachers get the attention of students and increase the engagement levels as well. Besides that, students would accept AI because it can make students become more likely and motivated to study (Goel & Joyne, 2017). For example, smart open content is helping the learners in getting paperless materials and more in-depth knowledge of the subject.

Other than that, several numbers of the university students are not able to accept the AI implemented in the education sector. Firstly, students are struggling to adapt to change from traditional classrooms to virtual classrooms (Sanchez-Gordon & Luján-Mora, 2014). Thus, students would prefer the traditional learning application more than AI application.Besides, some of the students lack the necessary facilities and amenities such as high-speed internet connections(Panyajamorn et al., 2018). Due to a little component of the university lacking computer literacy skills and motivation (Garrison, 2011). Therefore, that component would like to learn the course that does not need application support such as hotel management, architecture, accounting, finance and so on.

According to a recent study (Docebo, 2014), it appears that there is universal agreement that the worldwide e-learning market will show fast and significant growth over the next three years. Malaysia online education market is anticipated to have an annual growth rate of 16.4% over the forecast period. With the massive growth of the internet, from 2016 to 2023 owing to the strong government initiatives and rising modern application in the country. Hence, these technologies now augment the learning interactions of all students globally, enhancing possibilities opened for teaching and design of educational experiences (Popenici & Kerr, 2017). This research seeks to study the acceptance rate and understanding of AI in the education field among Malaysian university students in the year 2021.

1.1 Research Problem Statement

According to the research that has been conducted, there are more than 400 universities and college have been shut down due to the Covid-19 outbreak since 18 March 2020, the government has started to restrict people from travelling (Elengoe, 2020), all the face-to-face learning and teaching has been strictly stopped and therefore the online learning has been be major delivering knowledge method for most of all the closed down universities and colleges. On the international stage, the developing countries and newly industrialized countries have been relying to varying degrees on online learning environments to recuperate for the lack of physical facilities and resources (Kinasevych, 2010). Moreover, most educational institutions are able to accept the current changes in the world and started to implement online learning. AI will have the greatest effect on industries that are digitally adapted like the telecommunication industry and even in the educational industry (Ahmad and Wan Abdul Ghapar, 2019).

Due to the potential cultural gap, the design of the online learning environment should be carefully considered (Kinasevych, 2010). The implementation of AI in online education might bring negative impacts or it might appear unpredictable risks and challenges to the human being. For example, AI will bring structural changes to physical education, and the workforce (Popenici, Stefan and Kerr, Sharon., 2017). Students in the face-to-face environment have statistically significantly higher marks in exams and statistically significantly greater improvement on the post-examination instructor questions. (Arias, Swinton and Anderson, 2018). Moreover, human-being as intelligent life on Earth, Artificial intelligence will interact with and affect human emotional experience in a way that has not yet been fully recognized, where it might influence both positively and negatively to the human (Yang, 2020).

Therefore, we have started to conduct this research which aims to find out the acceptance rate and understanding of Artificial Intelligence among university students when it is implemented in online learning and what types of impacts and effects that may affect the students when AI is implemented from different perspectives.

1.2 Research Objectives

O1: To identify the acceptance rate and understanding of artificial intelligence amongst Malaysians university students. (LAU PIN JIAN)

O2: To determine the relationship between the level of education with acceptance rate and understanding of AI. (LAU PIN JIAN)

O3: To investigate the positive effects of artificial intelligence in the education sector is more than the negative effects. (LAU PIN JIAN)

O4: To evaluate the acceptance levels of online learning by university students. (WOON CUI YEN)

O5: To identify the benefit of using Artificial Intelligence in online learning. (WOON CUI YEN)

are you focusing in AI or online learning or AI in online learning? Please use consistent terms or your write up will confuse readers

O6: To investigate whether Artificial Intelligence in online learning can positively affect learning outcomes of university students compared to physical education. (WOON CUI YEN)

O7: To determine the risks could pose to university students when AI is implemented. (KONG RONG SHEN)

O8: To determine the other factors that would be a challenge for implementing AI in the education sector. (KONG RONG SHEN)

1.3 Research Questions

RQ1: Does the education level affect the effects of Artificial Intelligence in the education sector and the acceptance rate and understanding of Artificial Intelligence among university students? (LAU PIN JIAN)

RQ2: How can Artificial Intelligence (AI) help to improve the institution's online learning for university students and affect their learning curve? (WOON CUI YEN)

learning outcome or learning curve?

RQ3: What are the risks and challenges when implementing AI in the education sector? (KONG RONG SHEN)

1.4 Research Hypotheses

H1: 30% of university students in Malaysia have a basic understanding of AI. (LAU PIN JIAN)

H2: Majority of the university students accept the AI when it's generally come to their life. (LAU PIN JIAN)

H3: The levels of education will affect the acceptance rate and understanding of AI. (LAU PIN JIAN)

H4: AI does bring more positive impacts than negative impacts. (LAU PIN JIAN)

H5: There were approximately more than 70% university students who accepted and agreed with online learning in Malaysia. (WOON CUI YEN)

online learning or AI in online learning?

H6: Artificial Intelligence in online learning does bring various benefits to each level of study of university students. (WOON CUI YEN)

H7: Majority of the students believe that Artificial Intelligence (AI) in online learning will positively affect university students' learning outcomes compared to physical education. (WOON CUI YEN)

H8: There are at least three major challenges posed when implementing artificial intelligence in the education sector. (KONG RONG SHEN)

H9: Malaysian university students agree to at least three risks that are posed by artificial intelligence when implemented in the education sector. (KONG RONG SHEN)

1.5 Research Schedule

Task	Date
Define research title	18 Jan 2021 - 24 Jan 2021
Define research problem statements, research's objectives and research problems.	25 Jan 2021 - 31 Jan 2021
Define research hypothesis	01 Feb 2021 - 07 Feb 2021
Complete literature review	08 Feb 2021 - 11 Feb 2021
Select research methodology	15 Feb 2021 - 21- Feb 2021
Publish questionnaire to the public	22 Feb 2021 - 25 Feb 2021
Collect sample data from public	25 Feb 2021 - 14 March 2021
Analyze sample data	15 March 2021 - 19 March 2021
Discuss research results	22 March 2021 - 28 March 2021
Make conclusion	28 March 2021 - 3 April 2021
Submit research report	4 April 2021

Table 1. Research Scheduling

1.6 Assumption

We assumed the respondents for our research papers are Malaysian university students and pose at least a foundation certificate or higher education level such as A-level, diploma, and degree. The respondents basically are aged between 18 - 24. Besides that, we also presumed the students have basic understanding of Artificial Intelligence and have searched related keywords of Artificial Intelligence in their major of study. Moreover, the respondents who answered our questionnaire should have an internet connection in order to access the Google Form.

2.0 Literature Review

Today, Artificial Intelligence is commonly used and has rapidly become entangled with our life (Ergen M., 2019), but do humans really need AI in order to progress? It depends (Michael Cheng-Tek Tai, 2020). But the AI could benefit us a lot. While the technology is progressing significantly, Nils J. Nilsson (1998) believes that AI would become more complicated in terms of complexity and it would have more intelligence than humans have and be able to assist humans in unraveling the confronted problems. However, although users are getting used to the AI solutions such as Siri from iPhone, Alexa from Amazon, Google Assistant from Google, Cortana from Microsoft, and so forth; but according to the conference publications from the Conference of Artificial Intelligence (AAAI), the acceptance rate of AI around the world in the year 2020 has an only 20.6% from seven thousands of papers; the highest recorded was 36.2% in the year 1997 from three hundreds papers (Cantu-Ortiz F, 2014). Nonetheless, due to the ways of encounter on the AI is depending on the geographical setting and mainly on their local culture and social context are different (Hagerty A and Rubinov I, 2019); therefore the acceptance rate of AI would be severely affected. Next, education level also is an important factor that affects the understanding and acceptance rate of AI especially the universities students support the development of AI more than high school students (Zhang, Baobao and Dafoe, Allan., 2019). Yet, any of the tragic events that caused deaths may affect the acceptance rate of AI too due to the AI being poorly understood by the most of the people (Aaron Mannes, 2020). For example, the fatal death of a self-driving Tesla car (Neri, H. & Cozman, F., 2020).

Moreover, the booming of AI technology has positive and negative impacts. According to the prediction study from Gherheş V (2018) stated that the emergence and progessive development of Artificial Intelligence (AI) in the future will be negatively affected due to there will be fewer jobs, economic crisis; it will be used to make a weapon, to control humanity and even destroy mankind. Besides the overall negative effects, Ma and Keng (2018) also stated that the education sector will be affected in many ways and the two major areas are curricula and enrollment. For example, enrollment costs will increase heavily due to the implementation of Artificial Intelligence (AI) and students may too rely on the technology (Popenici, Stefan & Kerr, Sharon., 2017) and even forget about the soft skills like creativity, socializing, leadership and so forth.

On the other hand, Artificial Intelligence (AI) would bring positive effects to many industries and sectors such as customer services, logistics and transportation, healthcare and most importantly education (Ferreira, P. and Teixeira, J. G. and Luís, T., 2020). As the Artificial Intelligence of Education (AIED) has made significant developments in the recent years (Roll, I., Wylie, R, 2016) by having human-like intelligence characterized by cognitive abilities, learning, adaptability, and decision-making capabilities able to boost the instructors' administrators duties more effectively and efficiently (Chen, L., Chen, P., Lin, Z., 2020); with the help of AI, the AIED is able to consider the heterogeneous learners' learnability, capabilities and style of learning (Ghada Al-Hudhud, 2012). Furthermore, AI can also handle uncertainty and facilitate the development of a context that promotes effective learning and teaching (Colchester, K., Hagras, H., Alghazzawi, D., & Aldabbagh, G., 2017). Therefore, the integration of AI in education will open many opportunities to improve the quality of learning and teaching (Hwang, Gwo-Jen & Xie, Haoran & Wah, B. & Gasevic, D., 2020).

On top of that, The rapid advancement of the computing information has sped up the progress of Artificial Intelligence which stimulates human behaviours such as decision making (Hwang et al., 2020). For the last 25 years, Artificial Intelligence in Education (AIED) has been focusing to a large degree which has solved problems by having an effective system as human-one-on-one tutoring (Roll and Wylie, 2016). Even though AI can make the world a better place, AI still has its own issues (Ma and Siau, 2018). AI in recent times has proof and shows that they can do any equal or do better work than the humans do (Rainie and Anderson, 2017). AI has helped in improving the institution's online learning for higher education students in which the benefits that could help to increase the productivity in the education field such as having broad access to resources, engaging the students in active learning, personalized learning, able to improve learning and teaching experience while maximizing the time for students and educators (Bakia *et al*., 2012). One-to-one tutoring is better for personalized learning, in which tutors are able to provide guidance to students based on their specific needs and abilities and students can learn a topic by going through the learning materials online (Ahmad *et al.*, 2020). AI in online learning has great potential to promote 21st-century skills among learners by helping them develop growth-mindset (Pathan, 2021).

Nowadays, Artificial intelligence has promoted personalized learning outcomes, which explore how AI can favour access to higher education institutions. AI are opening for new possibilities to rethink the role of the teacher, or make steps towards the replacement of teachers with teacher-robots, virtual "teacherbots" (Popenici, Stefan & Kerr, Sharon., 2017). As the time passes, the use of AI allows the instructor to perform different administrative functions (Chen, L., Chen, P., Lin, Z., 2020). The advancement of AI to the point where electronic devices such as computers can serve as a personalized tutor or educator which is able to provide guidance and manage the student's learning and engagement (Popenici and Kerr, 2017). There are 91% of students who agreed that online learning is able to influence their learning and 9% do not agree. (Abdul Bujang *et al.*, 2020). Besides that, AI in Education (AIEd) has always been beneficial in improving and maximizing student learning outcomes and can help prepare students to contribute to the evolving knowledge in the society and the future of automation (Pathan, 2021). AI applications have brought lots of benefits to the students and teachers such as personal tutoring, intelligence support for collaborative learning and intelligence virtual reality, in which it provides a better learning environment and collaborative learning (Keerthiwansha, N.B.S., 2018). Using computer intelligence can help them to gain more educational experience. The teachers will be provided with information related to practice and scope of AI in practice that requires outstanding performance (Aldosari, 2020).

In the education sector, the greatest challenges they have ever faced is the COVID-19 breakout (Daniel, S.J,2020). The educational institutions have no choice but to switch their teaching method from offline to online (Liguori, E. and Winkler, C., 2020). However, not all students are prepared for this new teaching method and the students need to demonstrate certain characteristics, including time management, motivation, active participation, independent learning, technology efficacy, communication, and integrity (Taormino, 2010) in order to be successful in online learning (Chien et al., 2020). Besides that, the implementation of AI also poses many risks to the education sector. For example, some of the applications in online learning can cause many security risks, such as loss of confidentiality and availability, the exposure of critical data, and vandalism of public information services because of the security protection mechanisms (Chen & He, 2020). Furthermore, even if the basic program is accurate, training the program requires an adequate amount of correct and unbiased data, a requirement that in our

real world appears to be difficult to meet for the educators and students (Giuffrida, 2019). Lastly, AI can stimulate technology addiction. With tech implemented in every classroom, kids won't be able to imagine their lives without it. As the kids will face setbacks to their creativity, loss of self-confidence and lack of progress; thus, they will get demotivated easily when they get into something more difficult to deal with (du Boulay, B., [n.d.]). As a result, in the long-term, we'll get a bunch of socially-unadapted technology-addicted adults (Kharkovyna, 2018).

Moreover, there are several challenges that have been hindering the implementation of AI in education on a global scale. It found out that insufficient funding, ICT infrastructure and technology, internet connectivity, language use, human resources and culture are the obstacles of AI in education. (Dieu, 2020). Taking it into account, the development of intelligent tutoring systems and adaptive learning systems are not only required computer programming skills, but also are techniques to challenge human knowledge to develop a better AI education system (Hwang et al., 2020). On top of the human resources and knowledge, both the teachers' levels of technical knowledge and the quality of the technical school infrastructures are often not sufficient to allow for an educationally effective use of even basic information technology in the classroom (Pinkwart, N., 2016). Moreover, implementation of AI in education will make the course unable to deliver effectively as the students are unable to real-time interaction with the instructors or other learners (Raymond S. M., 2016). As the AI robots are not an example of life for students to learn (Barrios T., Hernando & Pérez, Vianney & Guerra Post Ph.D., Yolanda., 2019). Lastly, transparency, explainability and accountability of AI systems in education are important aspects of this challenge, especially given the critical role of education in people's subsequent employment and life opportunities (Vincent-Lancrin & Vlies, 2020).

3.0 Research Methodology

literature review is a part of your research steps

The questionnaire is chosen to be used for the research method. This questionnaire consisted of 26 questions. All the questions are used to gather secondary data for the respective research hypothesis and questions. This questionnaire was conducted by designing the questions in closed-ended question format. The respondents are given a few options to choose from for each question. This questionnaire won't be asking the respondents any personal information such as name, age, gender, and email address. However, our questionnaire will be gathering some personal information like which institution they are currently studying in and their current level of studies.

The aim was to conduct the survey with Malaysians university students in the acceptance rate and understanding of Artificial Intelligence (AI). For the easy analysis, we will be dividing the level of education into four groups such as Foundation, A-Level, Diploma and Bachelor Degree. The questionnaire is designed using a survey administration software which is the Google Form, this software is free to use which allows the user to create survey forms easily. The questionnaire will be distributed to the targeted respondents through the internet by sending the Google Form link to them respectively. Meanwhile, there will be at least 60 samples or responses to be collected from the questionnaire. There are a total of 51 students were Bachelor Degree studies, 19 of them were Diploma, 5 were Foundation and lastly 2 students were from A-Level studies. Once the students have answered, the Google form will automatically get the responses and analyze and summarize the results.

Before the actual and final design of the questionnaire to be distributed to the target respondents, preliminary testing was conducted with few randomly selected students. This preliminary testing is to find out whether the designed questionnaire is able to meet the basic aspects or elements, ensure the questions prepared are understandable by the target respondent. The pre-test will be able to allow us to increase the validity and reliability of the questionnaire conducted. Lastly, after collecting the responses from the respondents, we will be using the PSPP software to analyze the data collected.

4.0 Research Instrument/Data Collection

The final version of the questionnaire has been distributed to more than 70 respondents, of these 90 responses were returned. It took approximately 2 weeks for the questionnaire to be prepared, distributed and collected. The questionnaires were distributed online to the students from different educational institutions. The questionnaire will contain 3 sections for the respondents to answer the questions accordingly. Moreover, the very first question will be asking whether the students have heard about what is Artificial Intelligence (AI) or not, if the students answered "No" then they will proceed to submit the questionnaire. If the students have heard about AI, they will proceed to the next question. For the following sections, it will contain a list of questions which are used to obtain students' acceptance rate towards AI in education and what kind of positive and negative impact or risks to be faced by the students when AI implementation is applied to online education.

Furthermore, in case the respondents want to make changes to their answers on the previous section, they are able to go back to the previous section to change the answer. In the entire questionnaire, it has the combination of nominal scale and ordinal scale questions which it will be convenient for the respondents to answer the question. In the final section, all 6 questions are using 5-Point Likert Scale which allow the respondents to specify their level of agreement to the question. For example, (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree. Please kindly refer to the Appendices to view the full version of the questionnaire.

5.0 Validity and Reliability Consideration

Validity is the degree of accuracy with which a data collection method can be viewed, determining the extent to which the intended research aims were achieved, the robustness of any findings and, subsequently, any conclusions made on the basis of the findings (Saunders et al., 2009). Therefore, a pilot test will be conducted to ensure the validity of the questionnaire before releasing it to the public. We will invite about 10 students to participate in the pilot test and record their feedback on the questionnaire. Then, we revise some of the questions and the format of the questionnaire based on the participants' feedback. Based on the validity and reliability consideration, as this research was conducted online and the respondents were university students in Malaysia, it would not be appropriate to generalize the results as representative of the whole Malaysia.

Besides that, reliability is the degree of consistency to which the methodology can be relied upon to produce the same results as the conditions are the same (Saunders et al., 2009). In order to achieve reliability for the questionnaire, the Cronbach's Alpha Test will be conducted to measure the reliability of the questionnaire. The Cronbach's Alpha Test of the questionnaire must be more than 0.7. There are a total of 26 questions but only 24 questions will be used to measure the Cronbach's Alpha Test.

6.0 Sampling

The method of sampling for this research project will be using the Simple Random Sampling (SRS). The reason we selected this method is because we hope to find out the opinion of Artificial Intelligence (AI) in education among university students by not knowing the gender, email address, and name of the respondents. The questionnaire is randomly distributed to the university students. To avoid non-sampling errors like non-response errors, all the questions in this questionnaire are required to be answered.

7.0 Results and Discussions

Case Processing Summary

Cases	N	Percent
Valid	77	85.6%
Excluded	13	14.4%
Total	90	100.0%

Reliability Statistics

Cronbach's Alpha	N of Items
.73	44

Figure 1. The reliability analysis test.

From **Figure 1**., we can find out that the Cronbach's Alpha of 24 Questions is 0.73. Based on Cronbach's Alpha rule of thumb, 0.73 of Cronbach's Alpha is considered good and acceptable internal consistency. The result has stated that our questionnaire is slightly reliable after removing 2 questions.

Question that removed:-

1. What are the Negative Effects that first come to your mind in the education sector?
2. Why can't you accept the implementation of AI in the education field?

H1: 30% of university students in Malaysia have a basic understanding of AI. (LAU PIN JIAN)

How well they know about AI?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	4	4.4%	5.2%	5.2%
	Not very much	7	7.8%	9.1%	14.3%
	Neutral	42	46.7%	54.5%	68.8%
	A little bit	17	18.9%	22.1%	90.9%
	A lot	7	7.8%	9.1%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

Figure 2. The statistics for the question of "How well do you know about AI?".

Based on **Figure 2.**, we can conclude that more than 30% of the university students in Malaysia have a basic understanding of Artificial Intelligence because of the total valid percentage from two selections - "A little bit" and "A lot" is 31.2%. Therefore, the hypothesis is **accepted**.

>30%
based on statistic in website AAAI

H2: Majority of the university students accept the AI when it's generally come to their life. (LAU PIN JIAN)

Acceptance rate of AI

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly Unacceptable	1	1.1%	1.3%	1.3%
	Sightly Unacceptable	1	1.1%	1.3%	2.6%
	Neutral	29	32.2%	37.7%	40.3%
	Sightly Acceptable	32	35.6%	41.6%	81.8%
	Highly Acceptable	14	15.6%	18.2%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

Figure 3. The statistics for the question of "What is your acceptance rate towards AI?".

Based on **Figure 3.**, we can conclude that the majority of the university students in Malaysia will accept Artificial Intelligence because of the total valid percentage from two selections - "Slightly Acceptable" and "Highly Acceptable" is 59.8%. Therefore, the hypothesis is **accepted**.

H3: The levels of education will affect the acceptance rate and understanding of AI. (LAU PIN JIAN)

Descriptives

	Level of Study	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Acceptance rate of AI	Foundation	5	3.40	.55	.24	2.72	4.08	3.00	4.00
	A-level	2	4.50	.71	.50	-1.85	10.85	4.00	5.00
	Diploma	19	3.47	.96	.22	3.01	3.94	1.00	5.00
	Bachelor Degree	51	3.84	.76	.11	3.63	4.06	3.00	5.00
	Total	77	3.74	.82	.09	3.55	3.93	1.00	5.00

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Acceptance rate of AI	.79	3	73	.505

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Acceptance rate of AI	Between Groups	3.62	3	1.21	1.87	.142
	Within Groups	47.18	73	.65		
	Total	50.81	76			

Figure 4. The results of the relationship between the acceptance rate of AI with education level.

Figure 4., shows the analysis of variance (ANOVA) on the levels of education will affect the acceptance rate and understanding of AI is performed to find out if the experiment results are significant.

The one way ANOVA test, the mean square between the groups is larger than the mean square within the groups, which leads to a F ratio of 1.87, larger than 1 ($F > 1$). If $F > 1$, there is an experimental effect between the mean of levels of education and acceptance and understanding of AI. Next, the significance value is 0.142. The significance value larger than 0.05 indicates the results are not significant due to the results may be collected by chance. Therefore, the hypothesis is **rejected.**

H4: Majority students believe that AI does bring more positive impacts than negative impacts. (LAU PIN JIAN)

Positive effects more than Negative effects?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	10	11.1%	13.0%	13.0%
	Yes	67	74.4%	87.0%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

Figure 5. The statistics for the question of "Does AI bring more positive effects than negative effects in the education field?"

Positive Effect

Augmented Reality Education

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Preferred	43	47.8%	55.8%	55.8%
	Preferred	34	37.8%	44.2%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

Virtual Reality

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Preferred	30	33.3%	39.0%	39.0%
	Preferred	47	52.2%	61.0%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

AI Tutoring

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Preferred	41	45.6%	53.2%	53.2%
	Preferred	36	40.0%	46.8%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

Students are more likely and motivated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Preferred	42	46.7%	54.5%	54.5%
	Preferred	35	38.9%	45.5%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

Negative Effect

Students are not likely an motivated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Preferred	7	7.8%	70.0%	70.0%
	Preferred	3	3.3%	30.0%	100.0%
Missing	.	80	88.9%		
Total		90	100.0%		

Unemployment of educators

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Preferred	5	5.6%	50.0%	50.0%
	Preferred	5	5.6%	50.0%	100.0%
Missing	.	80	88.9%		
Total		90	100.0%		

Data management and privacy problem

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Preferred	7	7.8%	70.0%	70.0%
	Preferred	3	3.3%	30.0%	100.0%
Missing	.	80	88.9%		
Total		90	100.0%		

Decrease the thinking power of students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Preferred	8	8.9%	80.0%	80.0%
	Preferred	2	2.2%	20.0%	100.0%
Missing	.	80	88.9%		
Total		90	100.0%		

Table 2. The table showed the results of selected checkbox answers of positive effects and negative effects.

Since, in **Figure 5**., the percentage of students answered "Yes" was the majority because the total valid percentage of answering "Yes" is 87%. Therefore, the hypothesis is **accepted**.

H5: There were approximately more than 70% university students who accepted and agreed with online learning in Malaysia. (WOON CUI YEN)

Acceptance rate of implementing AI in education field

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	3	3.3%	3.9%	3.9%
	Yes	74	82.2%	96.1%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

Figure 6. The statistics for the question of "Do you accept the AI implemented in the education field?"

Based on **Figure 6.** shown above, there's 14.4% of missing value shown in the statistic, therefore it will convert into a valid percentage. The valid percentage of university students selecting "Yes" is 96.1%. This means there are more than 70% of university students who are able to accept the implementation of AI in the education field. Therefore, the hypothesis is **accepted**.

H6: Artificial Intelligence in online learning does bring various benefits to each level of study of university students. (WOON CUI YEN)

Descriptives

	Level of Study	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Does AI brings benefit?	Foundation	5	3.60	.89	.40	2.49	4.71	3.00	5.00
	A-level	2	3.00	.00	.00	3.00	3.00	3.00	3.00
	Diploma	18	3.44	.92	.22	2.99	3.90	2.00	5.00
	Bachelor Degree	50	3.66	1.02	.14	3.37	3.95	1.00	5.00
	Total	75	3.59	.97	.11	3.36	3.81	1.00	5.00

Test of Homogeneity of Variances

	Levene Statistic	df1	df2	Sig.
Does AI brings benefit?	1.55	3	71	.209

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Does AI brings benefit?	Between Groups	1.32	3	.44	.45	.715
	Within Groups	68.86	71	.97		
	Total	70.19	74			

Figure 7. The results of the relationship between benefits of Artificial Intelligence (AI) with education levels.

Based on **Figure 7.** above, it shows the analysis of variance (ANOVA) on Artificial Intelligence in online learning does not bring various benefits to each level of study of university students if the experiment results are not significant.

The One Way ANOVA test, the mean square between groups is smaller than the mean square within groups, which leads to the F ratio of 0.45, the ratio is smaller than 1 ($F < 1$). When the F value is less than 1 ($F < 1$), the experiment will not be accepted. Besides, the significance value is 0.715 which is larger than 0.05, this means that the results are not significant. Therefore, the hypothesis is **rejected**.

H7: Artificial Intelligence in online learning will positively affect university students' learning outcomes compared to physical education. (WOON CUI YEN)

Does AI increase learning outcomes compared to physical educations?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	5	5.6%	6.6%	6.6%
	Yes	71	78.9%	93.4%	100.0%
Missing	.	14	15.6%		
Total		90	100.0%		

not all questions are used in analysis

Figure 8. The statistics for the question of "Do you think that AI can improve and increase your learning outcomes compared to having physical education in university?"

Based on **Figure 8.** as shown above, the percentage of university students selecting "Yes" is 93.4%. This means that different university students agreed that Artificial Intelligence (AI) in online learning does positively affect the university students' learning outcomes compared to physical education. Therefore, the hypothesis is **accepted**.

H8: Malaysia university students have agreed that at least 3 risks are posed by artificial intelligence when implemented in the education sector. (KONG RONG SHEN)

AI will alter and delete the data?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	5.6%	6.5%	6.5%
	Disagree	10	11.1%	13.0%	19.5%
	Neutral	34	37.8%	44.2%	63.6%
	Agree	22	24.4%	28.6%	92.2%
	Strongly Agree	6	6.7%	7.8%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

AI will make biased decision-making for educators?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	5.6%	6.5%	6.5%
	Disagree	9	10.0%	11.7%	18.2%
	Neutral	42	46.7%	54.5%	72.7%
	Agree	20	22.2%	26.0%	98.7%
	Strongly Agree	1	1.1%	1.3%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

Most of the educators will be unemployed?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	3	3.3%	3.9%	3.9%
	Disagree	8	8.9%	10.4%	14.3%
	Neutral	22	24.4%	28.6%	42.9%
	Agree	31	34.4%	40.3%	83.1%
	Strongly Agree	13	14.4%	16.9%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

this is 48.8%, not >50%

Educators and students will have less social interaction?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	2.2%	2.6%	2.6%
	Disagree	2	2.2%	2.6%	5.2%
	Neutral	22	24.4%	28.6%	33.8%
	Agree	30	33.3%	39.0%	72.7%
	Strongly Disagree	21	23.3%	27.3%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

Do you agree that the students are too dependent on the online classes and resulting in decreasing of attention span?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	2.2%	2.6%	2.6%
	Disagree	3	3.3%	3.9%	6.5%
	Neutral	30	33.3%	39.0%	45.5%
	Agree	29	32.2%	37.7%	83.1%
	Strongly Agree	13	14.4%	16.9%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

Table 3. The statistics for the section of risk posed by the Artificial Intelligence (AI).

Malaysia university students have agreed that at least 3 risks are posed by artificial intelligence when implemented in the education sector. From the statistics shown in Table 3. of the section of risk posed by the Artificial Intelligence(AI), the total valid percentage of the questions that are higher than 50% are "Most of the educators will be unemployed?" - 57.2%, "Educators and students will have less social interaction?" - 66.3% and "Do you agree that the students are too dependent on the online classes and resulting in a decreasing attention span?" - 54.5%. Therefore, the hypothesis is **accepted** due to the majority of the university students agreeing that at least 3 risks are posed by the AI.

should reject H8

H9: There are at least three major challenges posed when implementing artificial intelligence in the education sector. (KONG RONG SHEN)

High cost implementing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Preferred	32	35.6%	41.6%	41.6%
	Preferred	45	50.0%	58.4%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

Technology issues

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Preferred	47	52.2%	61.0%	61.0%
	Preferred	30	33.3%	39.0%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

Difficulties with software development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Preferred	49	54.4%	63.6%	63.6%
	Preferred	28	31.1%	36.4%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

Lack of accreditation and understanding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Preferred	48	53.3%	62.3%	62.3%
	Preferred	29	32.2%	37.7%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

People don't trust AI

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Preferred	52	57.8%	67.5%	67.5%
	Preferred	25	27.8%	32.5%	100.0%
Missing	.	13	14.4%		
Total		90	100.0%		

please use consistent Likert scale

Table 4. The table showed the statistics of each answer of the question - "What are the factors that you think might cause AI applications to be postponed in the education field?"

Based on statistics shown in Table 4., of the questions - “What are the factors you think might cause AI applications to be postponed in the education field?”, and there is only one answer that has a total valid percentage of 58.4% that is “High Cost Implementing”, but other answers do not exceed the 50% marks. Therefore, the hypothesis is **rejected**.

8.0 Conclusions

After analyzing the results collected from the questionnaire, we can conclude that Malaysia university students have a basic understanding of Artificial Intelligence (AI) and will accept and be able to approach Artificial Intelligence (AI) when implemented in their life. We can also conclude that the majority of the students do believe that Artificial Intelligence (AI) brings more positive effects than negative effects. One’s personal education level does not affect the understanding and acceptance rate of Artificial Intelligence (AI). Based on all the research results, some of the higher education institutions can give it a try to implement Artificial Intelligence into their online education system which will help to improve the learning and teaching effectiveness for both students and educators.

Furthermore, in this research we have found out that most of the university student’s agreed that AI in education or online learning is able to positively affect their learning outcomes as there are various advantages for both students and educators in online learning. With the rapid advancement of technology nowadays, some higher education is recommended to implement Artificial Intelligence in online learning to create a better learning environment for the students in the future.

9.0 Recommendations for further research work

Advice and suggestions for the further researcher, the recommendations is you should gather more demographic information like major courses and ages in order to make further research. The demographic information we gathered in this research paper is not more than enough. Furthermore, when doing further research work to avoid digression and divergence of topic, the research questions, objectives and hypotheses should be kept in mind due to they are tremendously related to each other.

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BACS2042: Research Methods

Assignment (Part 1): Assessment Rubric

Item	Criterion	Missing or unacceptable (0 – 2.9 marks)	Poor (3.0 – 5.9 marks)	Good (6.0 – 7.9 marks)	Excellent (8.0 – 10 marks)
1	Title and Abstract	Title or abstract were omitted or inappropriate given the problem, research questions, and method.	Title and abstract are irrelevant or fails to offer appropriate details about the educational issue, variables, context, or methods of the proposed study.	Title and abstract are relevant, offering details about the proposed research study.	Title and abstract are informative, succinct, and offer sufficiently specific details about the educational issue, variables, context, and proposed methods of the study.
2	Research problem / statement & research objective	Statement of the problem, significance, and purpose were omitted or inappropriate. It is hard to justify how the research problem relates to the major of the studies.	Although a research issue is identified, the statement is too broad or the description fails to establish the importance of the problem area. Connections to the literature are unclear, debatable, or insignificant.	Clear and concise problems background identify a relevant research issue, related to the major of studies. Connections established with the literature.	Articulates a specific, significant problem by connecting that problem to the literature. Statements of purpose/objective flows logically from the introduction. The research problem and the statement of significance clearly establish relevance to the major of studies.

3	Research question & research hypothesis	Research questions, definitions, assumptions and limitations were omitted or inappropriate.	The research purpose, questions, hypotheses, or definitions of constructs and variables are poorly formed, ambiguous, or not logically connected to the description of the problem. Connections to the literature are unclear or debatable.	Research questions are succinctly stated, connected to the research issue, and supported by the literature. Constructs and variables have been identified and described in the hypothesis. Connections are established with the literature.	Articulates clear, reasonable research questions given the purpose, design, and methods of the proposed study. All constructs and variables have been appropriately defined. Propositions are clearly supported from the research and theoretical literature. All elements are mutually supportive.

4	Literature review	The review of literature was missing or consisted of non research-based articles. Propositions were irrelevant, inaccurate, or inappropriate.	A key construct or variable was not connected to the research literature. Selected literature was from unreliable sources. Literary supports were vague or ambiguous.	Key constructs and variables were connected to relevant, reliable theoretical and research literature.	Narrative integrates critical and logical details from the reviewed literature. Each key construct and variable are grounded to the literature. Attention is given to different perspectives, conditions, threats to validity, and opinion vs. evidence.

5	Research design, methods & organization	The research design is inappropriate or has not been identified. Limitations and assumptions are omitted. The constructed structure of the paper was incomprehensible, irrelevant, or confusing.	The research design is confusing or incomplete, or it is not logically connected to the research objectives. Important limitations and assumptions have not been identified. The constructed structure of the paper was weak.	The research design has been identified and described in sufficiently detailed terms. Some limitations and assumptions have been identified. The constructed structure of the paper was good.	The purpose, questions, and design are mutually supportive and coherent. Attention has been given to eliminating alternative explanations and controlling extraneous variables (nuisance factor). Appropriate and important limitations and assumptions have been clearly stated. The constructed structure of the paper was excellent.
6	Results: data analysis	Analytical methods and results were not properly explained. The explanations were not aligned with the research questions and research design.	Analytical methods and results were explained. However, the explanations were confusing, incomplete or lacked relevance to the research questions and research design.	Analytical methods and results were explained. The explanations were appropriate and related to the research question and design.	Analytical methods and results were explained well. The explanations were clear, structured and appropriate based on the research questions and research design.

7	Discussion and Conclusion	Discussions or answers to the research questions and hypotheses were omitted or confusing. No or very little conclusion could be yielded.	Little discussions were presented. Answers to the research questions and hypotheses were unclear or confusing.	Discussions of the results were presented. The research questions and research hypotheses were answered.	The significance of the results of the work was discussed, sufficiently inclusive of the information that concluded and answered the research question and hypotheses. Limitations and future improvements of the studies were identified.

8	Reference and citation	Failure to apply standard referencing rules for paper presentation	Weak, incomplete, ambiguous, or inconsistent application of Harvard Referencing. Regular use of unreliable source of data. Majority of the references are out of date.	Paper conformed to most standards of Harvard Referencing guidelines. Quality of the references was acceptable, and they were up to-date.	Consistently applied Harvard Referencing format. Quality of the references was good and up-to date.

9	Lifelong learning	Able to look for information but limited to a few sources and some information is irrelevant. Unable to receive newly learned ideas or concepts.	Able to look for information from many sources but some of them are irrelevant. Able to receive new ideas or concepts which have been taught in certain situations and can only use them with assistance.	Able to look for relevant information from many sources but information is not used wisely. Able to receive new ideas or concepts which have been taught in most situations and able to use them with little assistance.	Able to look for relevant information from many sources within the duration of time given and also able to utilize it. Able to consider the newly received ideas and able to apply it for autonomous learning.
10	Presentation skills	- Communication and content delivery are unclear. - Little understanding on the research area. - Presentation is not organized and poorly use of visual aids.	- Simple and fairly clear communication and content delivery. - Some understanding on the research area. - Presentation is not well organized and insufficient use of visual aids.	- Adequately clear communication and content delivery. - Good understanding on the research area. - Presentation is well organized with appropriate use of visual aids but is not outstanding.	- Strongly clear communication and content delivery. - Excellent understanding on the research area. - Presentation is well organized and outstanding with good use of visual aids.

BACS2042 Research Methods - Assignment Evaluation Form

Research Title:	**Programme**	**Tutorial Group**
	RSD2	6

Tutor's Name: Dr. Ting Tin Tin
Group members' Name:
1) LAU PIN JIAN
2) WOON CUI YEN
3) KONG RONG SHEN

Summary of assignment evaluation:

	Raw marks	**Raw percentage**	**Actual percentage**
Part 1	100	90	90/100 * 60 = 54%
Part 2	100	10	10/100 * 60 = 6%
Total	**200**	**100**	**60%**

PART 1: Group assessment

Item	Assessment Criteria	Marks
1	Title and Abstract (10 marks)	7
2	Research problem statement & research objective (10 marks)	9
3	Research question & research hypothesis (10 marks)	8
4	Literature review (10 marks)	9
5	Research design, methods & organization (10 marks)	8
6	Results - data analysis (10 marks)	9
7	Discussion and Conclusion (10 marks)	6
8	Reference and citation (10 marks)	3.5
9	Lifelong learning (10 marks)	7
	Total (90 marks)	66.5

PART 1: Individual assessment

		LAU PIN JIAN	WOON CUI YEN	KONG RONG SHEN
1	Presentation skills (10 marks)	8	7	8
	Total marks for Part 1: Group assessment + individual assessment	74.5	73.5	74.5

PART 2: Individual assessment

	LAU PIN JIAN	WOON CUI YEN	KONG RONG SHEN
Autonomy and responsibility in solving problems (full mark is 100 marks).			
Total marks for Part 2 (Individual assessment only)	100	100	100

11.0 Appendices

Questionnaire

https://docs.google.com/forms/d/e/1FAIpQLSfW02-0cDiv0WIc__lj-5mnK9Yxw-nm8SO5Vvg3hT_2gQfMyg/viewform?usp=sf_link

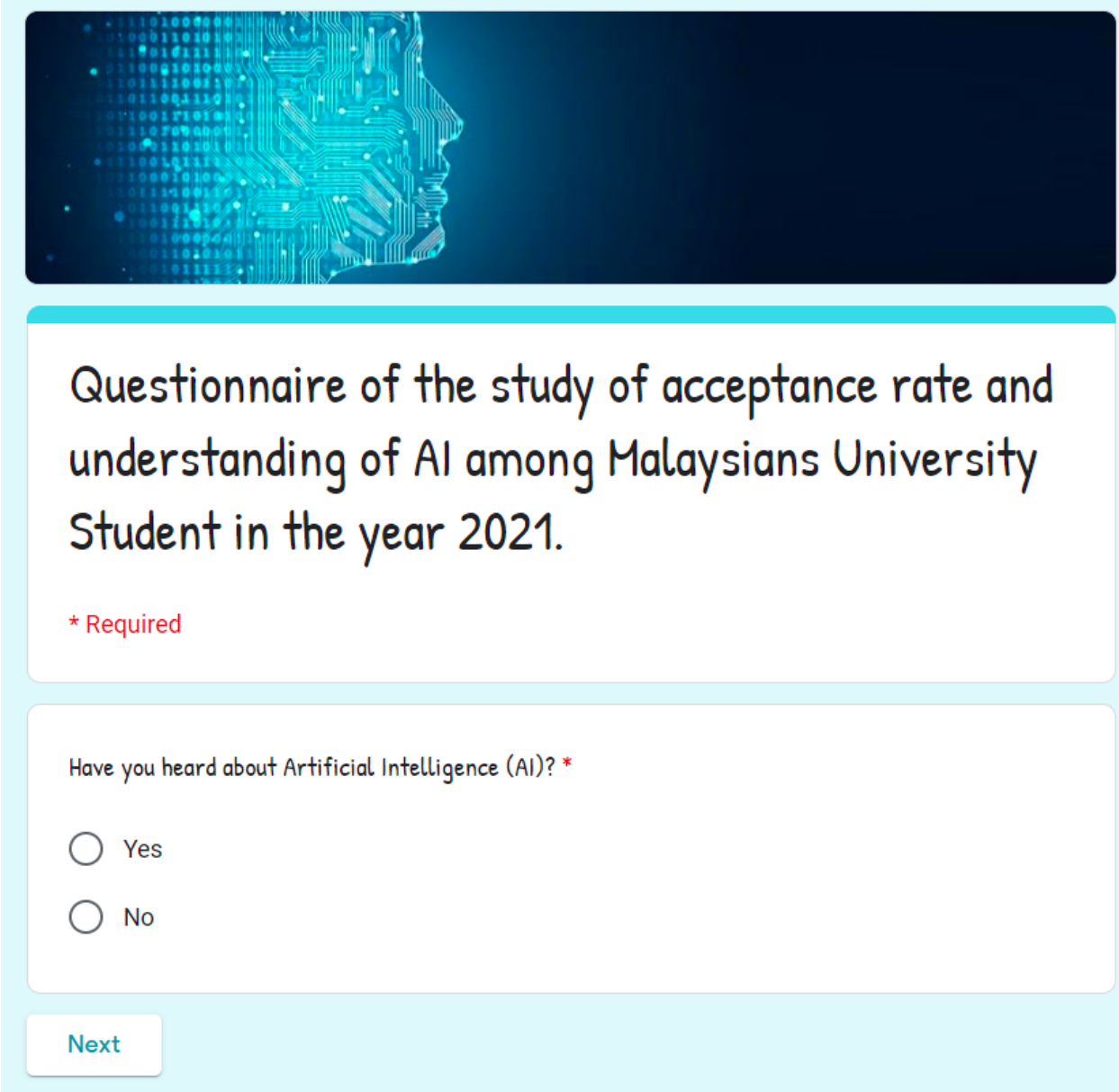

Figure 11. Section (1) of questionnaire.

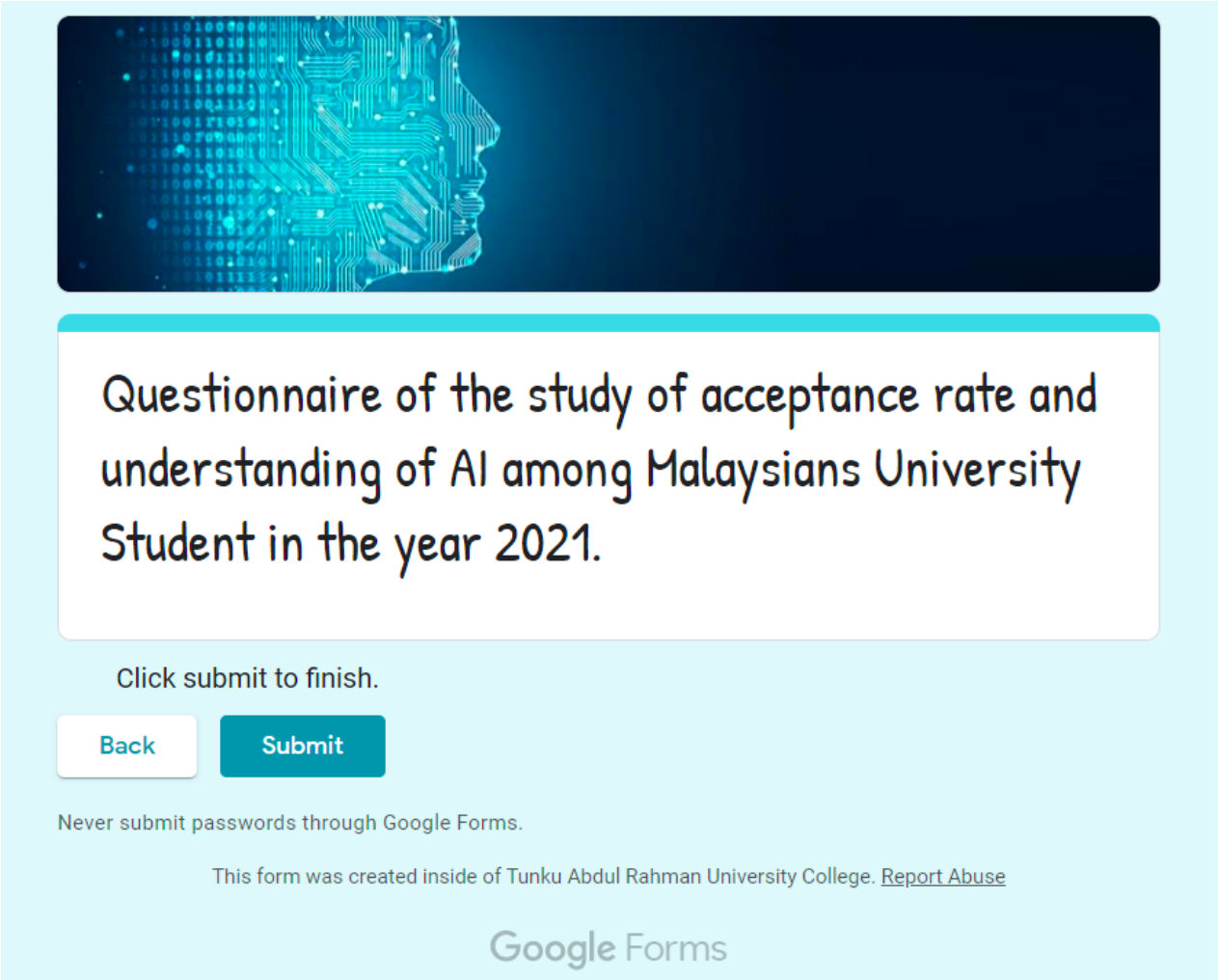

Figure 12. Section (1) of questionnaire.

Submission of questionnaire when student chooses "No" for the first question.

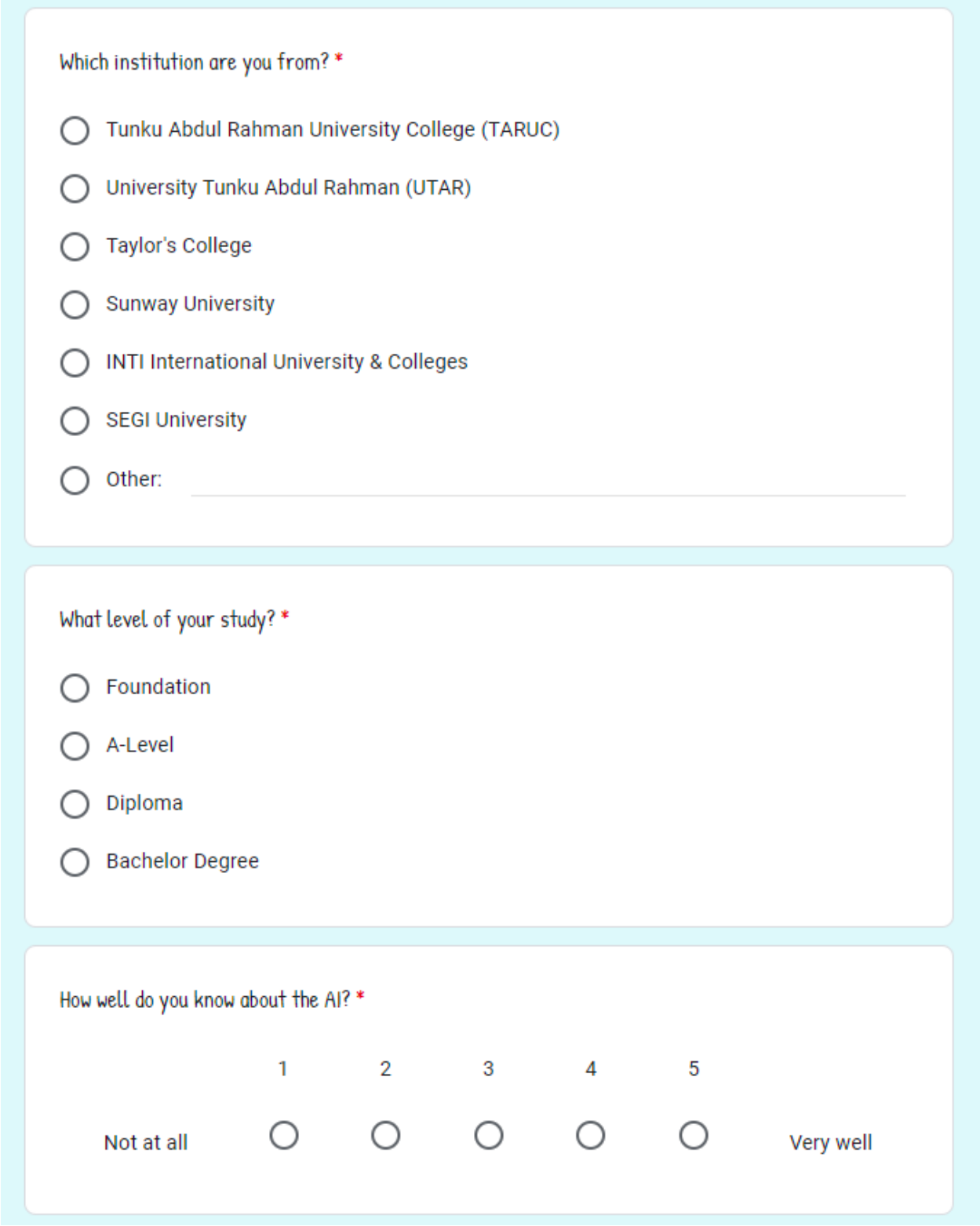

Figure 13. Section (1) of questionnaire. (cont.)

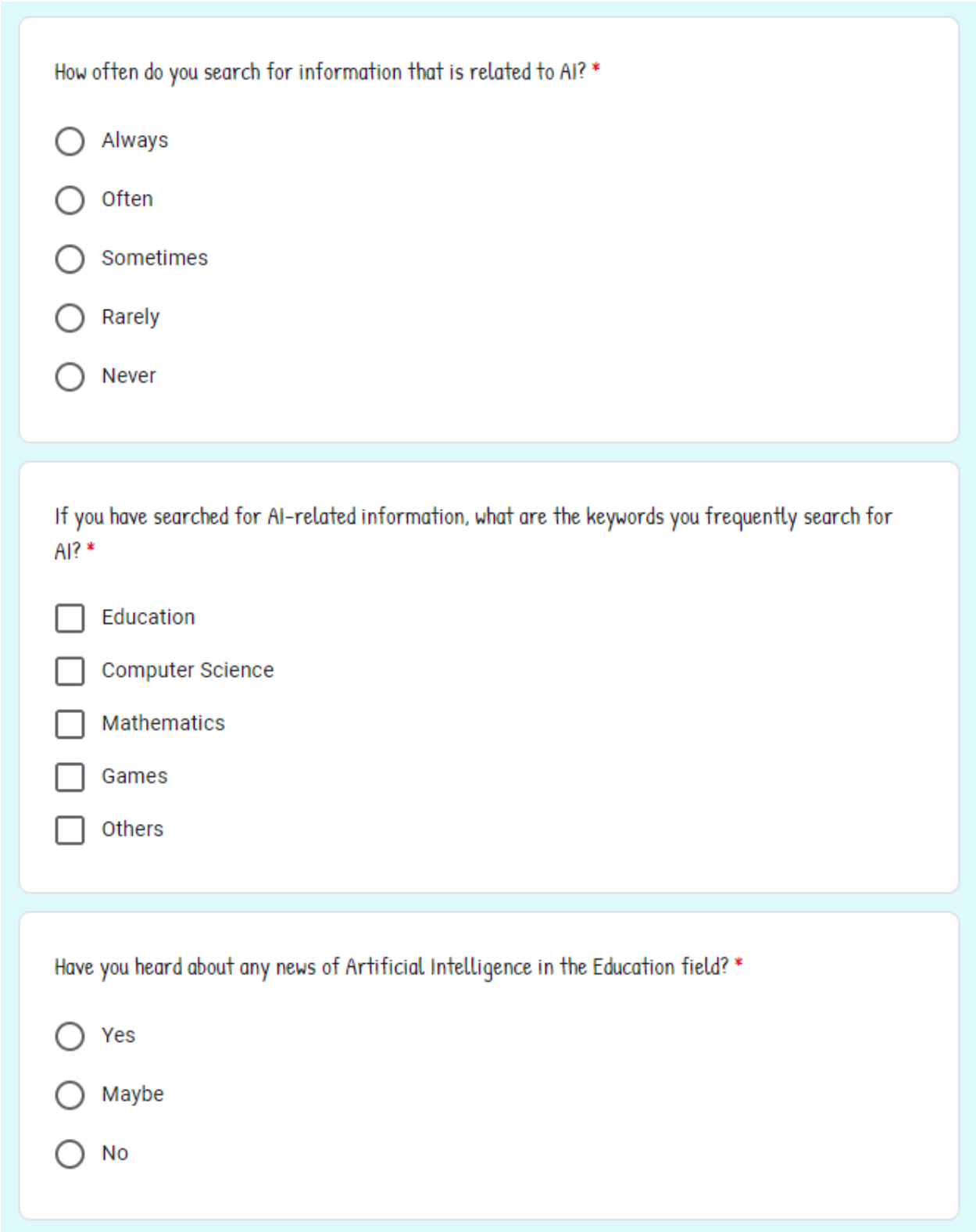

Figure 14. Section (1) of questionnaire. (cont.)

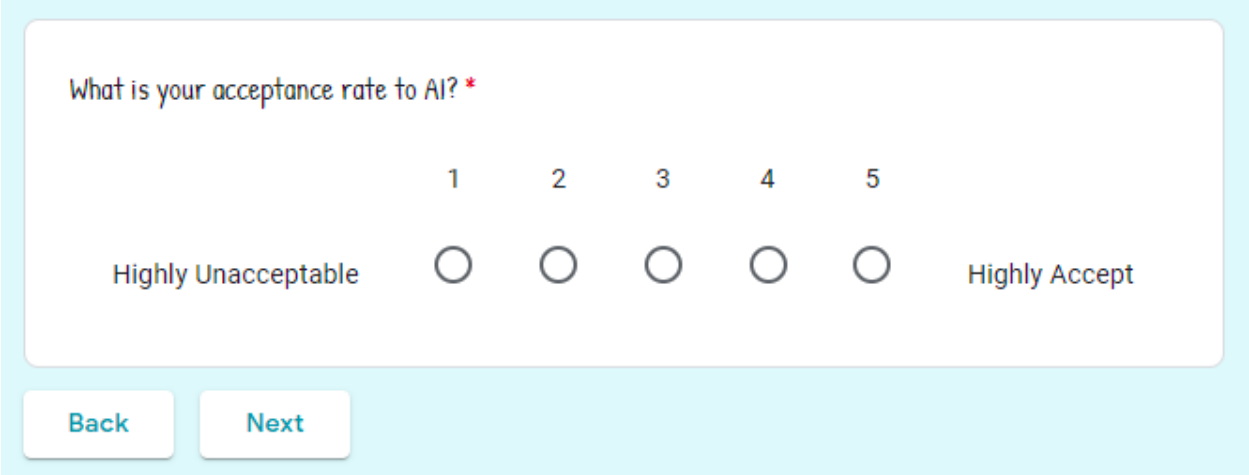

Figure 15. Section (1) of questionnaire. (cont.)

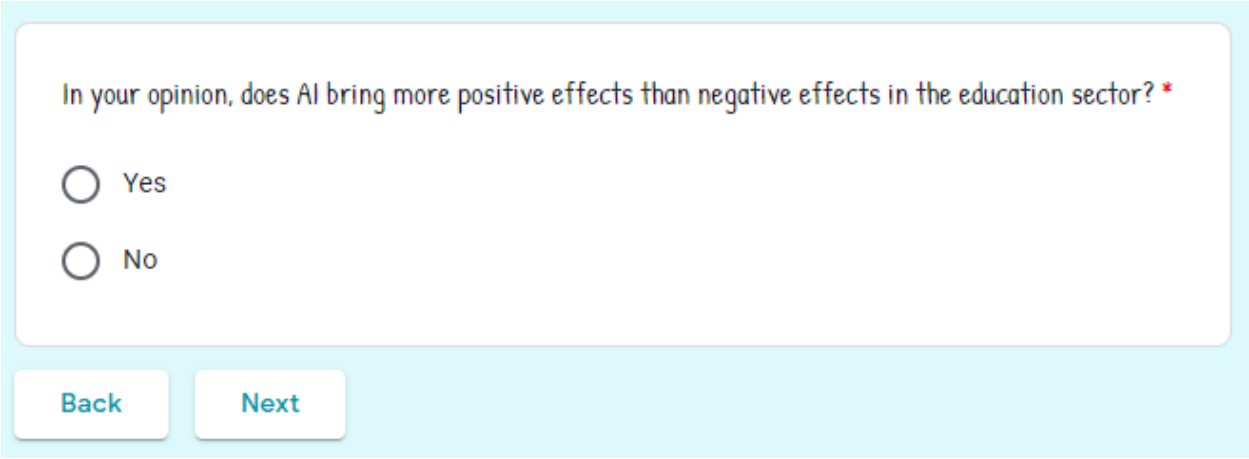

Figure 16. Section (1) of questionnaire. (cont.)

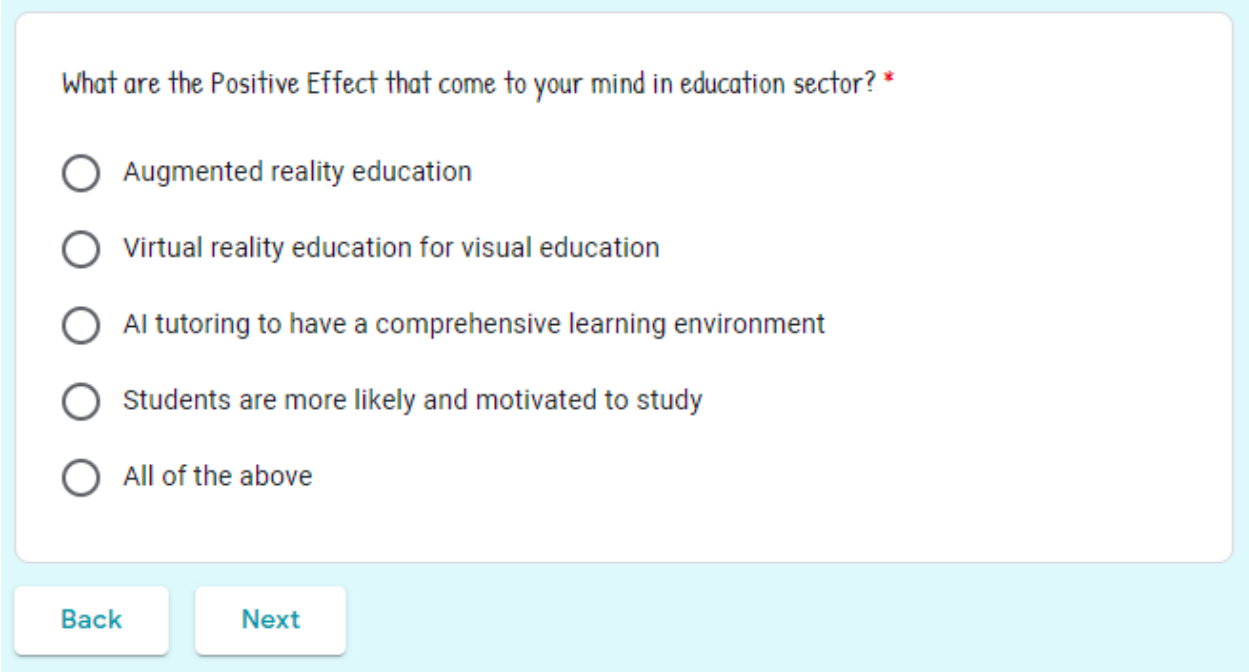

Figure 17. Section (1) of questionnaire. (cont.)

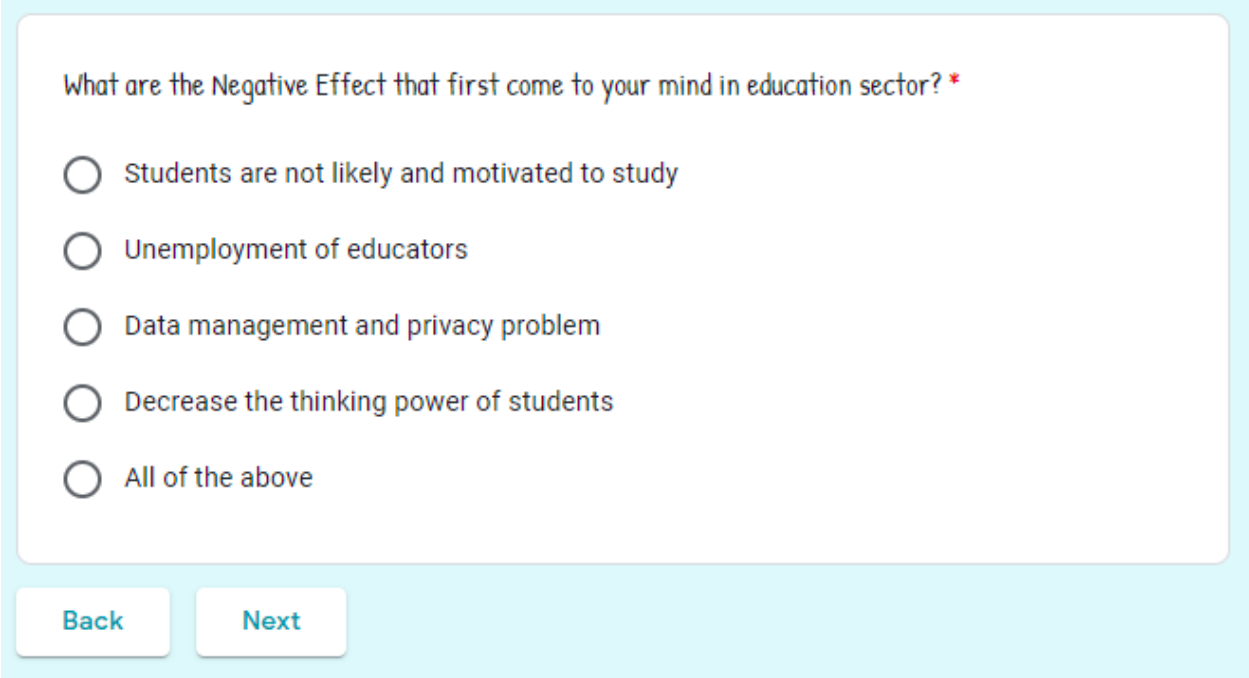

Figure 18. Section (1) of questionnaire. (cont.)

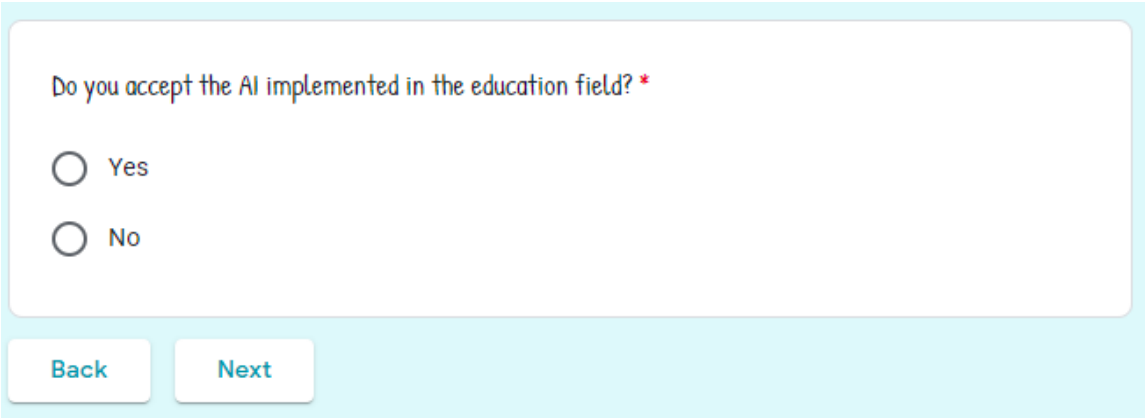

Figure 19. Section (2) of questionnaire.

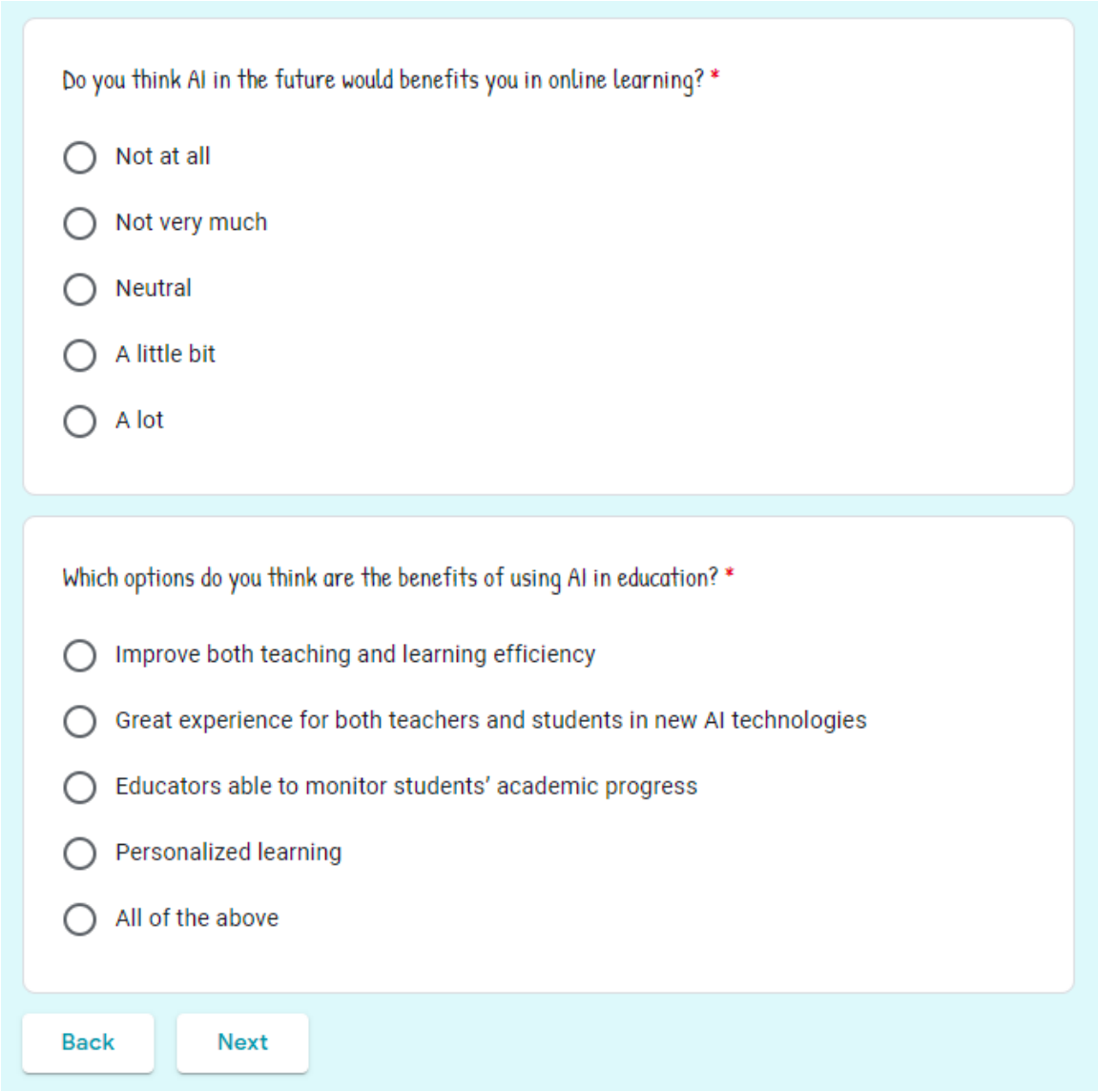

Figure 20. Section (2) of questionnaire. (cont.)

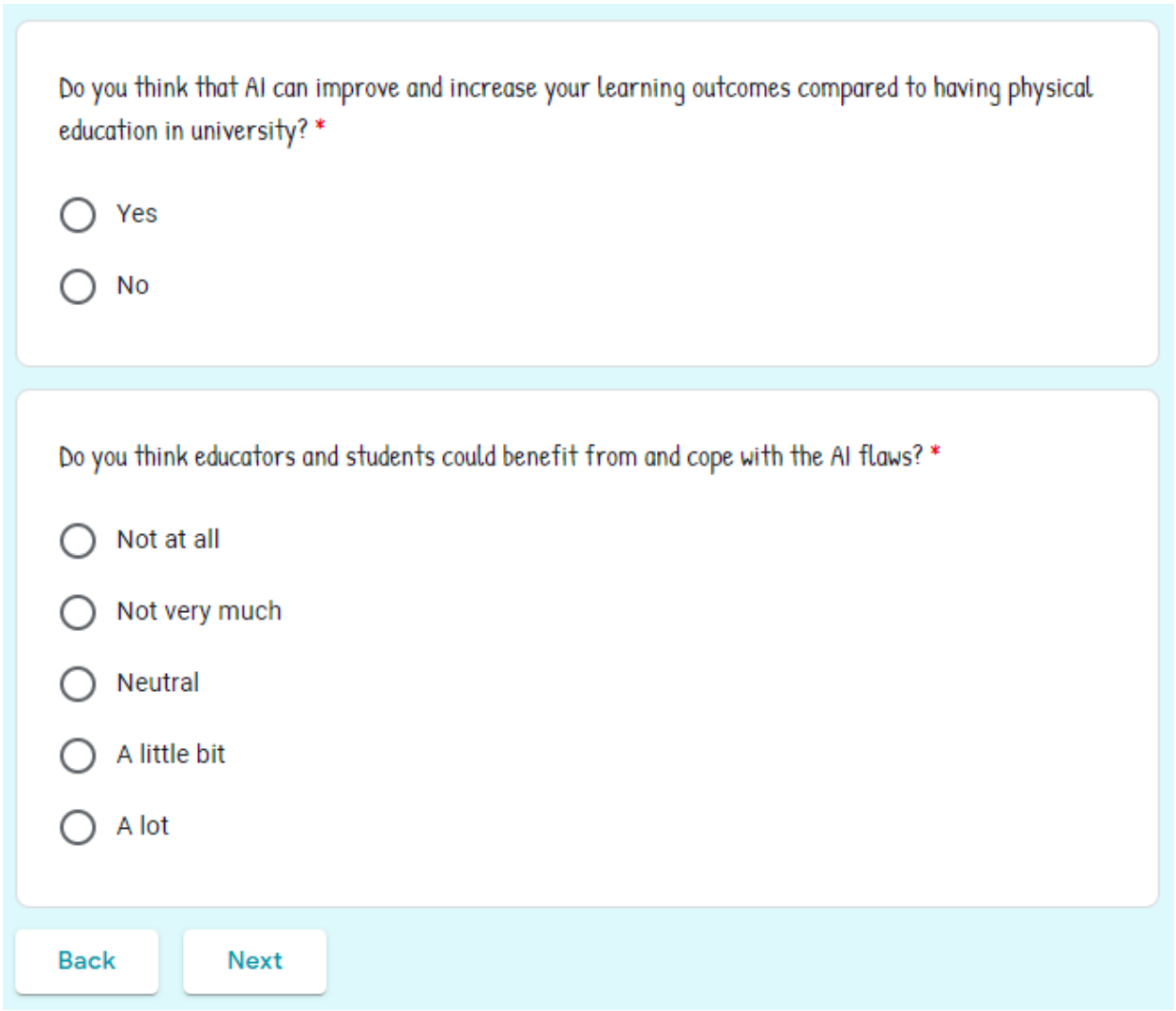

Figure 21. Section (2) of questionnaire. (cont.)

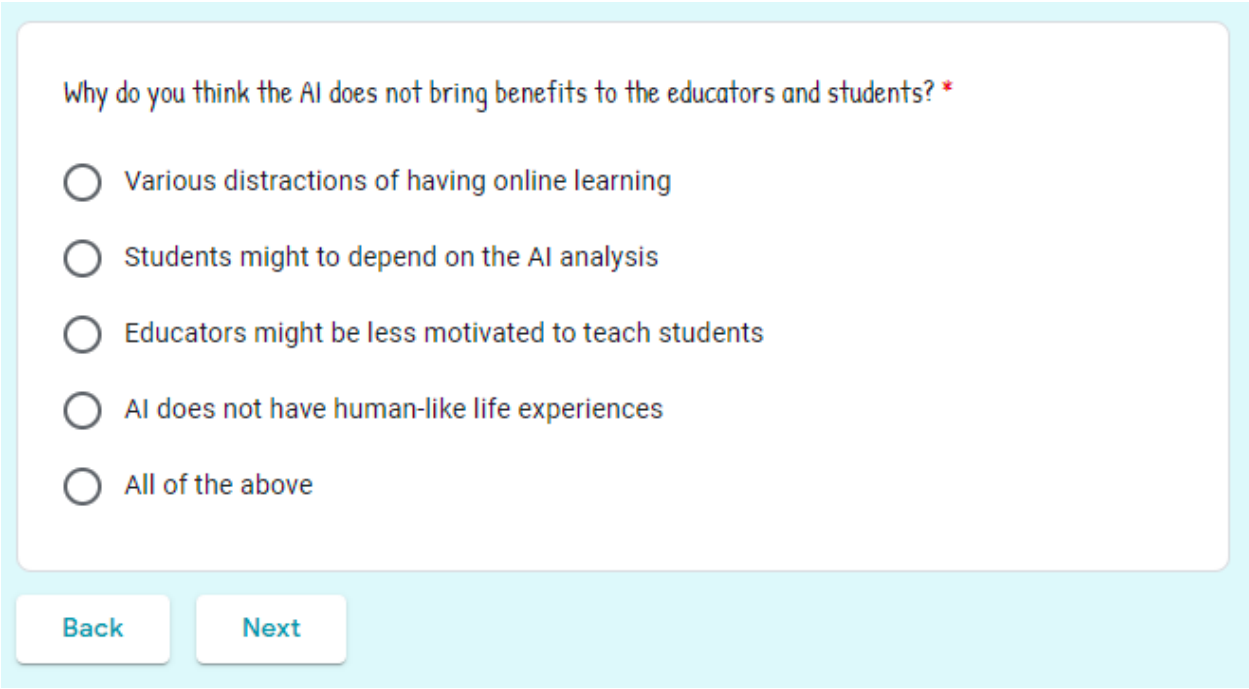

Figure 22. Section (2) of questionnaire. (cont.)

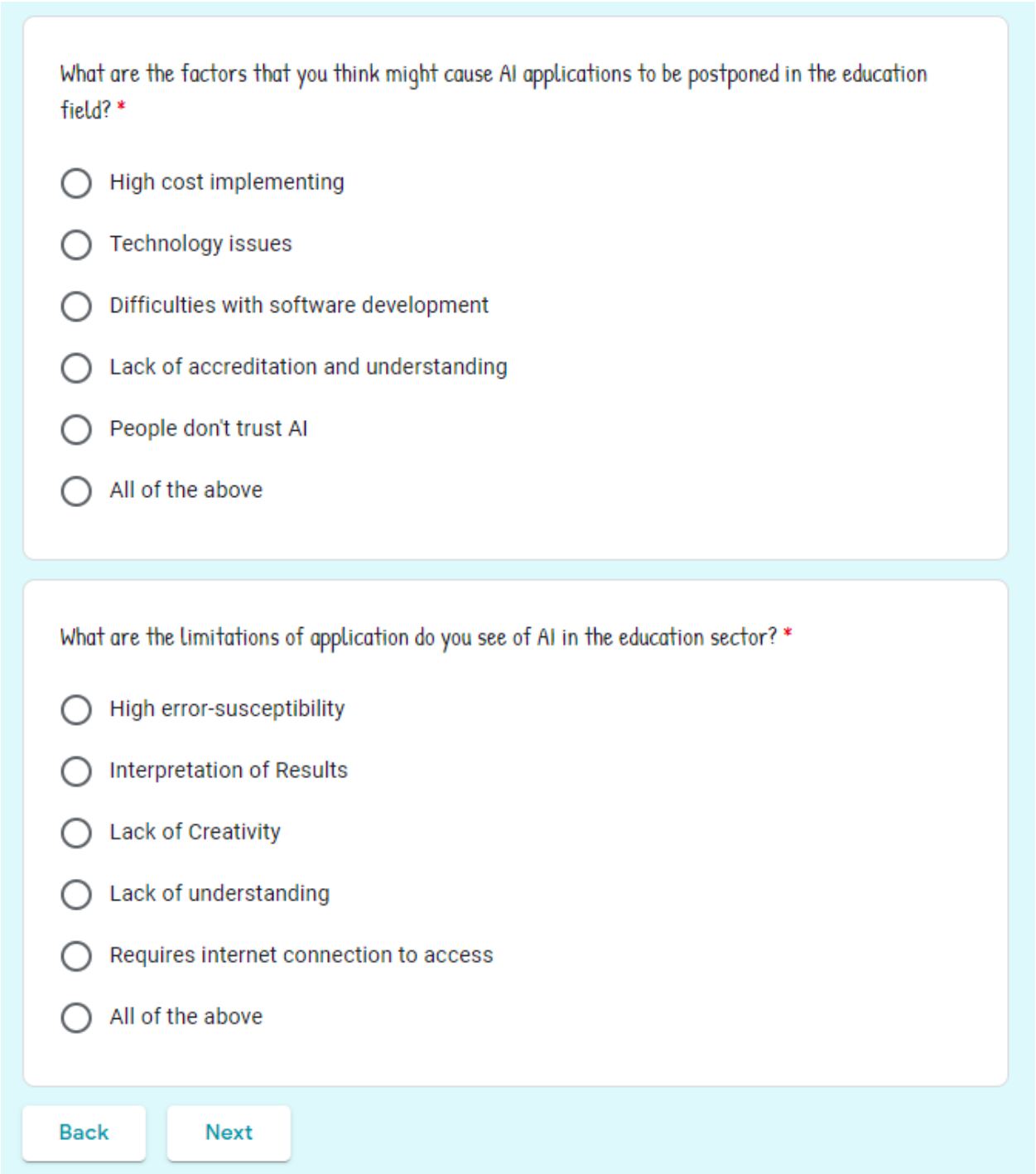

Figure 23. Section (3) of questionnaire.

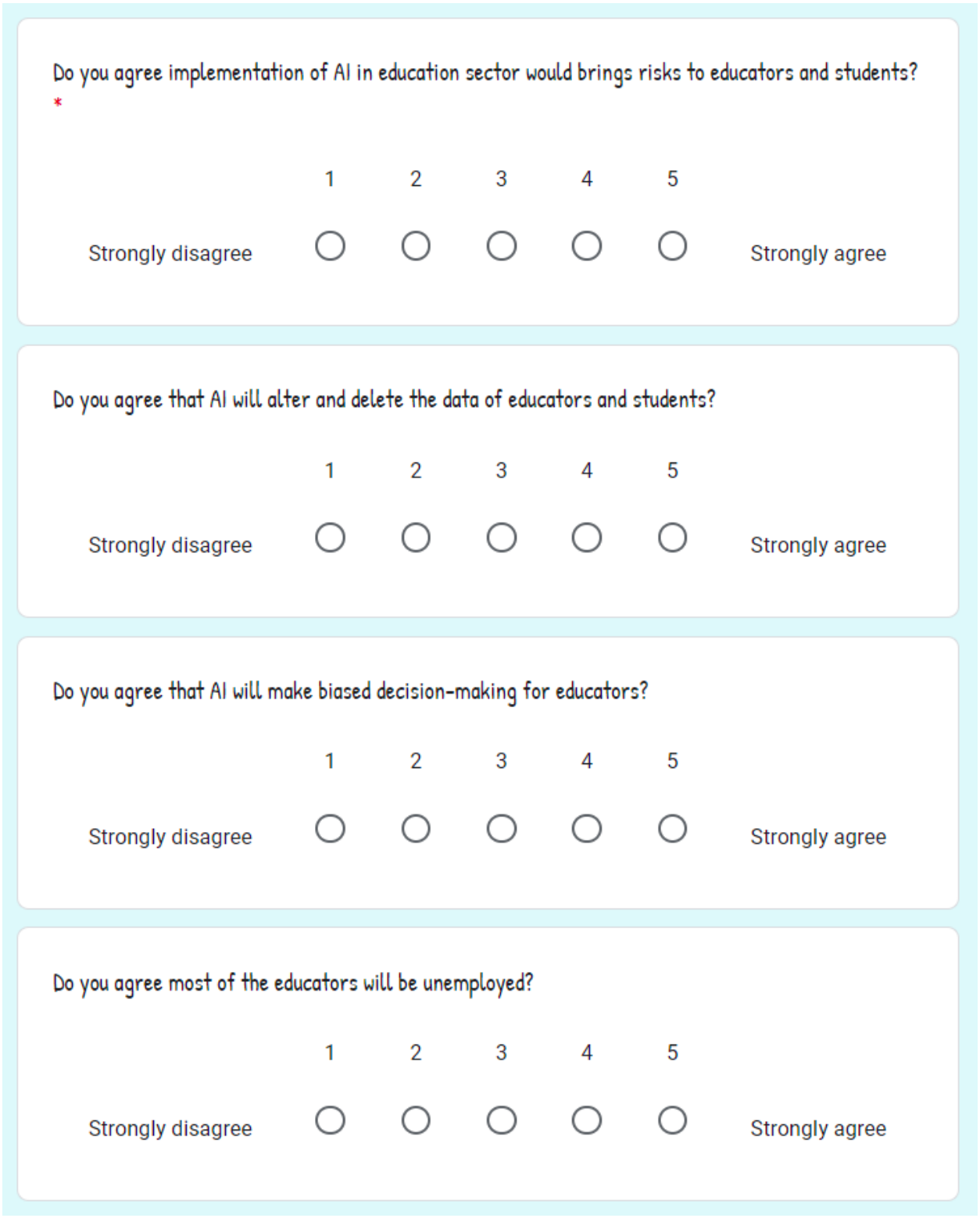

Figure 24. Section (3) of questionnaire. (cont.)

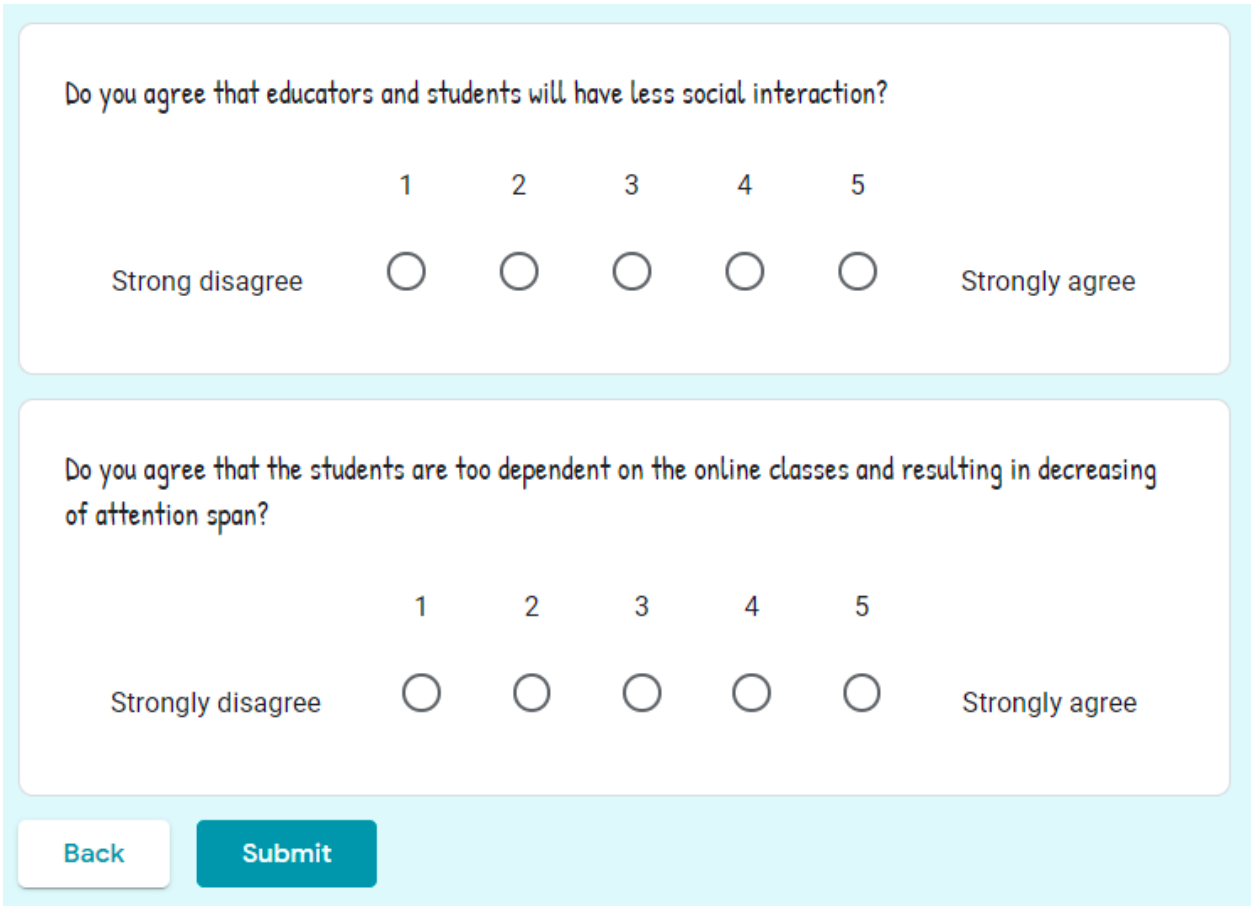

Figure 25. Section (3) of questionnaire. (cont.)