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# Artificial Intelligence as a Factor Revolutionizing Higher Education

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The use of artificial intelligence and various chatbots based on it is becoming part of

The survey was conducted between January and April 2024. The total number of respondents from 57 countries was 788, of whom 363 were students and 425 were

university faculty. The probability sampling method was applied. Respondents were

Scientific Research Institute KRPOCH using Google Forms, as well as on social networks Facebook, LinkedIn, etc. for potential participants. In addition, a selective

individual online interview was conducted with respondents. Cronbach's alpha

The role of artificial intelligence-based chatbots in higher education practice wa

considered. The use of chathots among higher education stakeholders (students and faculty) was studied. A model of stakeholder behaviour was developed. This model

describes two ways of solving problems: with and without the use of artificial

students were 26.9% more likely than faculty to use artificial intelligence-based

intelligence. Trends in the use of chathots in higher education were identified

chathots to prepare for classes or complete assignments at their college/university

almost all students (68.0% of 68.3% who use chatbots) edited the results returned i

generative chathots at their request: students were 30.1% more likely than faculty to

have revolutionised the industry of higher education. A new "Human-AI" system has

The study emphasizes that higher education stakeholders using chatbots should do so

education, artificial intelligence, chatbots, Human-Al system, interaction

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college/university are shown in Figures 1-3.

orrectly, consider the possibilities and limitations of using this toolkit, and recognize

nerged that is fundamentally changing the rules for training young pro

their recognitility for the outcomes and consequences of their use

The authors declare that there is no conflict of interests

ch Institute KRPOCH, Kharkiv, Ukrain

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responsibility, stakeholder

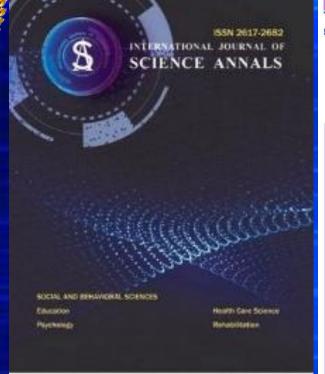
red online. The questionnaire is available on the official website of the

everyday higher education practice. The aim of the study: to explore practices and

identify trends in the use of artificial intelligence-based chatbots by higher education

Kharkiv Regional Public Organization "Culture of Health", Ukraine

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### Authors' Contribution A - Study design;

B - Data collection:

- Statistical analysis

E – Manuscript preparation

D – Data interpretation

Funds collection

### Artificial Intelligence as a Factor Revolutionizing Higher Education

Scientific Research Institute KRPOCH, Ukraine





ole to potential participants on such as Facebook, LinkedIn, etc.

ised online interview was also

ev participants, when it was

ir answers and/or determine the



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Al chathots e performed using SPSS 28.0.1 atistics using frequencies, means s were used to analyze the data lpha was used to assess internal 's alpha was 0.837. This meets uirements (α>0.7).

### 52.7 loped consisted of six questions formation about the possibilities



llowing general questions apply: university use hybrid learning complete assignments at your

the choice of one of the answer e study on the use of artificial

vrized in Tables 1 3

al	
	%
	100.0
	48.2
	51.8
	100.0
	46.6
	53.4
	100.0
	47.3
	52.7

is observed among faculty. Only and 22.4% (95 people) females, use artificial







ive Chathot at the Request of High



ople) of students, including 38.8% and 47.9% (174 people) females, cople) of faculty, including 41.9% and 41.2% (175 people) females, use /distance) learning in their only 13.2% (48 people) of students, ople) were male and 3.9% (14 and 16.9% (72 people) of faculty eople) were male and 12.2% (52 do not use hybrid learning.

including 19.1% (81 people) male complete assignments at their college/university.



live, as well as education, health, the economy and other areas of society, we limited our study to the higher education sector. However, this restriction is

Therefore, one of our research questions is to investigate how the use of hybrid learning (face-to-face/distance learning) in higher education has influenced the use of AI tools among stakeholders.

It should be noted that at the current stage of social and

A. I., Alghamdi, S. S., bin Saleh, K., Alowais, S. A. Alshaya O. A. Rahman, I. Al Yami, M. S. & Albekairy, A. M. (2023). The emergent role of artificial intelligence, natural learning processing



pple were male and 36,2% or 154

characteristics of the respondent

takeholders), grouped by country, are

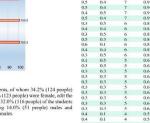
e) do not edit.





Returned by Generative Chathots

ise of artificial intelligence-based of whom 33.3% (121 people) we 27 people) were female, use of AIequently, 31.7% (115 people) of including 14,9% (54 people) males



the field of Al. the widespread erms at universities urses and training nce technologies are dy online (Dieguez on industry. The new

for the active ... higher education some extent for idea produce high-quality lict with the ethical n addition, such text

generated by AI chatbots (which is often limited to



23), psychological al., 2024; Melnyk, aner et al., 2022; on and partnership in esearch into the n of higher education ing and teaching in owing question: Is

an have a positive likely that the new change the rules of be a reliable tool in (Melnyk & Pypenko t there is as yet no AI technologies and your their learning

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Conflict of interests:

Peer review:





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## **Research Methods**

The survey was conducted between January and April 2024.

The total number of respondents from 57 countries was 788, of whom

363 were students and 425 were university faculty.

The probability sampling method was applied.

Respondents were interviewed online.

The questionnaire is available on the official website of the Scientific

Research Institute KRPOCH using Google Forms, as well as on social

networks Facebook, LinkedIn, etc. for potential participants.

In addition, a selective individual online interview was conducted with

respondents.

Cronbach's alpha confirmed adequate internal consistency ( $\alpha$ =0.837).





# Research Findings

The role of artificial intelligence-based chatbots in higher education practice was considered. The use of chatbots among higher education stakeholders (students and faculty) was studied. A model of stakeholder behaviour was developed. This model describes two ways of solving problems: with and without the use of artificial intelligence.

Trends in the use of chatbots in higher education were identified: students were 26.9% more likely than faculty to use artificial intelligence-based chatbots to prepare for classes or complete assignments at their college/university; almost all students (68.0% of 68.3% who use chatbots) edited the results returned by generative chatbots at their request; students were 30.1% more likely than faculty to edit these results.

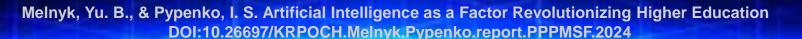




# Comparative Characteristics of Respondents Grouped by Country

Committee	Dear	ato ====1	D	lanto Of	D		Da	ndont- Of	D	
Country	Responder		Respond			ents, people		ndents, %	Responder	
US	Students 21	Faculty 24	Students 2.7	Faculty	Male	Female 14	Male	Female	People 45	5.7
				3.0	31		3.9	1.8		
India	23	21	2.9	2.7	21	23	2.7	2.9	44	5.6
Ukraine	36	3	4.6	0.4	4	35	0.6	4.4	39	4.9
Indonesia	21	18	2.7	2.3	25	14	3.2	1.8	39	4.9
Singapore	16	19	2.0	2.4	16	19	2.0	2.4	35	4.4
China	18	16	2.3	2.0	15	19	1.9	2.4	34	4.3
UK	18	15	2.3	1.9	16	17	2.0	2.2	33	4.2
Canada	17	14	2.2	1.8	12	19	1.5	2.4	31	3.9
Japan	16	14	2.0	1.8	14	16	1.8	2.0	30	3.8
Australia	15	13	1.9	1.6	11	17	1.4	2.2	28	3.6
Portugal	11	16	1.4	2.0	10	17	1.3	2.2	27	3.4
Germany	8	18	1.0	2.3	12	14	1.6	1.7	26	3.3
France	11	15	1.4	1.9	12	14	1.6	1.7	26	3.3
Spain	10	14	1.3	1.8	11	13	1.5	1.6	24	3.0
Italy	10	11	1.3	1.4	9	12	1.1	1.5	21	2.7
Brazil	9	12	1.1	1.5	10	11	1.3	1.4	21	2.7
Philippines	12	8	1.5	1.0	8	12	1.0	1.5	20	2.5
Austria	10	8	1.3	1.0	10	8	1.3	1.0	18	2.3
Denmark	8	5	1.0	0.6	4	9	0.5	1.1	13	1.6
Ireland	2	10	0.3	1.3	6	6	0.7	0.8	12	1.5
Israel	9	3	1.1	0.4	5	7	0.6	0.9	12	1.5
Sweden	5	6	0.6	0.8	6	5	0.7	0.7	11	1.4
South Africa	2	8	0.3	1.0	5	5	0.7	0.6	10	1.3
South Korea	3	7	0.4	0.9	4	6	0.5	0.8	10	1.3
New Zealand	6	5	0.8	0.6	6	5	0.7	0.7	11	1.4
UAE	2	7	0.3	0.9	5	4	0.6	0.5	9	1.1
Finland	1	8	0.1	1.0	5	4	0.6	0.5	9	1.1
Czech Republic		5	0.4	0.6	3	5	0.4	0.6	8	1.0
Argentina	1	6	0.1	0.8	4	3	0.5	0.4	7	0.9
Poland	3	4	0.4	0.5	4	3	0.5	0.4	7	0.9
Estonia	1	6	0.1	0.8	3	4	0.4	0.5	7	0.9
Switzerland	2	5	0.3	0.6	4	3	0.5	0.4	7	0.9
Lithuania	1	5	0.1	0.6	2	4	0.3	0.5	6	0.8
Belgium	0	6	0.0	0.8	3	3	0.4	0.4	6	0.8
Mexico	0	6	0.0	0.8	2	4	0.3	0.5	6	0.8
Saudi Arabia	2	4	0.3	0.5	4	2	0.5	0.3	6	0.8
Nigeria	1	5	0.1	0.6	5	1	0.6	0.1	6	0.8
Malaysia	2	4	0.3	0.5	3	3	0.4	0.4	6	0.8
Romania	0	6	0.0	0.8	2	4	0.3	0.5	6	0.8
Greece	1	4	0.1	0.5	1	4	0.1	0.5	5	0.6
Iceland	4	1	0.5	0.1	3	2	0.3	0.3	5	0.6
Tunisia	2	3	0.3	0.4	3	2	0.3	0.3	5	0.6
Latvia	2	3	0.3	0.4	3	2	0.3	0.3	5	0.6
Norway	1	4	0.1	0.5	3	2	0.3	0.3	5	0.6
Slovakia	1	4	0.1	0.5	3	2	0.3	0.3	5	0.6
Turkey	0	5	0.0	0.6	3	2	0.3	0.3	5	0.6
Netherlands	3	2	0.4	0.3	3	2	0.3	0.3	5	0.6
Thailand	2	3	0.3	0.4	3	2	0.3	0.3	5	0.6
Taiwan	1	4	0.1	0.5	3	2	0.3	0.3	5	0.6
Oman	3	1	0.4	0.1	3	1	0.4	0.1	4	0.5
Algeria	0	4	0.0	0.5	3	1	0.4	0.1	4	0.5
Bahrain	2	1	0.3	0.1	3	0	0.4	0.0	3	0.4
Colombia	1	2	0.1	0.3	2	1	0.2	0.2	3	0.4
Benin	2	0	0.3	0.0	2	0	0.3	0.0	2	0.3
Iraq	0	2	0.0	0.3	2	0	0.3	0.0	2	0.3
Kenya	1	1	0.1	0.1	1	1	0.1	0.1	2	0.3
Peru	1	1	0.1	0.1	1	1	0.1	0.1	2	0.3
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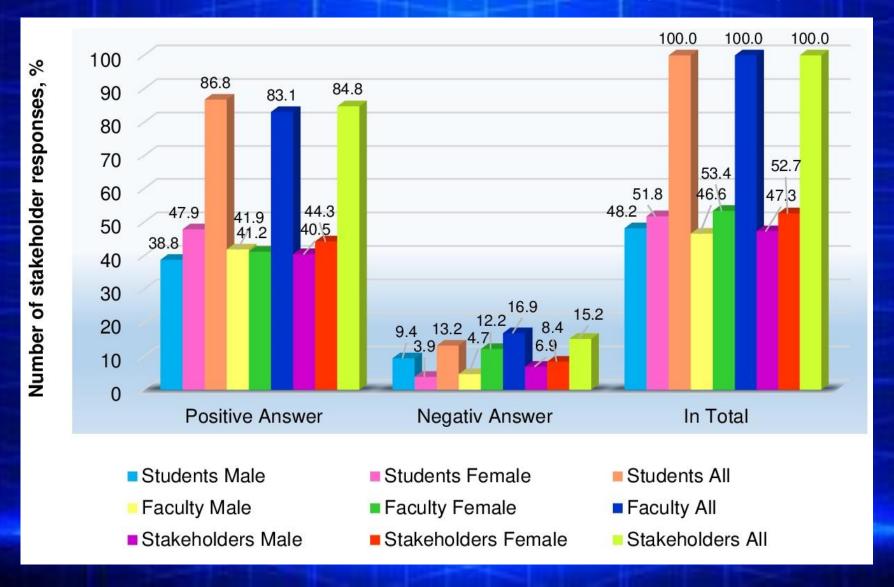






# Use of Hybrid (Face-to-Face/Distance) Learning by Higher Education Stakeholders (Students and Faculty) at Their College/University

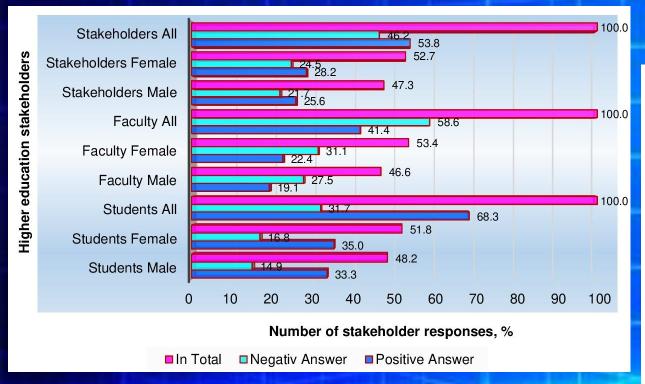




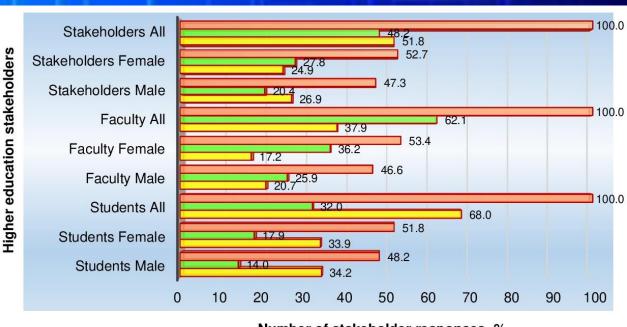




Use of Artificial Intelligence-Based Chatbots by
Higher Education Stakeholders (Students and Faculty)
to Prepare for Classes or Complete Assignments
at Their College/University



## Processing of Results by Higher Education Stakeholders (Students and Faculty) Returned by Generative Chatbots for Their Request



■ Negativ Answer

In Total

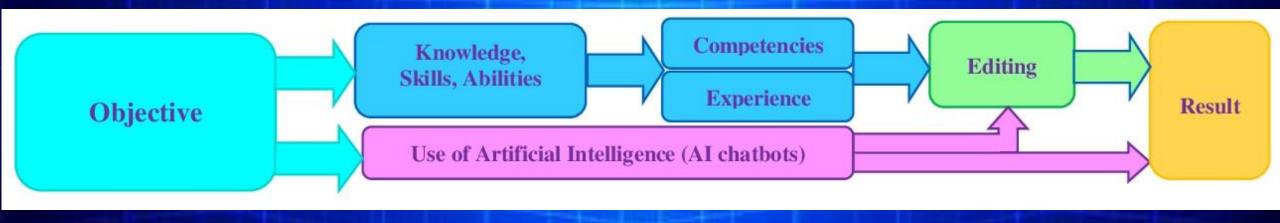
Number of stakeholder responses, %

□ Positive Answer





# A Model of Stakeholder Behaviour Describing two Options for Problem Solving: With and Without the Use of Artificial Intelligence







# **Research Conclusion**

The new technologies of generative artificial intelligence have been the factors that have revolutionised the industry of higher education.

A new "Human-AI" system has emerged that is fundamentally changing the rules for training young professionals.

The study emphasizes that higher education stakeholders using chatbots should do so correctly, consider the possibilities and limitations of using this toolkit, and recognize their responsibility for the outcomes and consequences of their use.

