Knowledge, Attitude, and Perception Towards ChatGPT Among University Students and Faculty: A Preliminary Exploration

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Abstract
Launched on November 30, 2022, ChatGPT has taken the world by storm with its ability to generate human-like text in a conversational style. The reactions varied from enthusiasm about its potential to enhance learning to concerns about its threat to students' cognitive development and academic integrity. This exploratory study aims to (1) gauge the level of Knowledge, Attitude, and Perception (KAP) towards ChatGPT among university students and faculty, (2) determine if there is a significant relationship among the three KAP indexes and (3) explore the effect of some demographic characteristics on participants' KAP. To achieve this goal, we use a cross-sectional survey research design based on questionnaires distributed to 145 faculty members as well as 855 students at ESPRIT Schools of Engineering and Business. We present the statistical analysis of our data and discuss the implications of our research findings. Our study revealed that compared to students, the surveyed faculty demonstrated a higher level of knowledge, a more reserved attitude with a wide range of variations, and a more negative perception towards ChatGPT. More than 40% of surveyed respondents expressed trust in the reliability of ChatGPT responses, a perception that does not align with reality. To the best of our knowledge, this is the first reported study assessing the levels of knowledge, attitude, and perception of students and faculty towards AI-driven conversational models. The results of our research can guide towards developing effective institutional policies, strategies, and actions to leverage the opportunities and counter the threats posed by these models.

Keywords: ChatGPT, Generative Pre-trained Transformer, Knowledge, Perception, Attitude, Academic Integrity, Student Ethics, AI-Driven Conversational Model, Technology Adoption

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Introduction

On November 30th, 2022, OpenAI released a new AI-powered conversational model named ChatGPT and made it freely available to the public. ChatGPT is a Natural Language Processing (NLP) model that enables users to engage in coherent, human-like conversations that can exhibit some forms of humor, intelligence, creativity, and emotion. ChatGPT is based on a language model architecture known as the Generative Pre-trained Transformer (GPT) (OpenAI, 2023).

On March 14th, 2023, OpenAI announced the release of GPT-4. GPT-4 is a 100 trillion parameter, multimodal, large-scale conversational model that takes images and text as input to generate text output. ChatGPT has currently over 100 million users and its website generates over one billion visitors per month, making it among the most popular AI-driven conversational models (Nerdy NAV, 2023). ChatGPT can perform several tasks such as providing answers to a variety of questions, generating human-like responses, generating code, performing language translation, simulating conversations with different characters, engaging in creative writing and storytelling, synthesizing long text, expanding short sentences, paraphrasing ideas, performing sentiment analysis, acting as a recommender system, performing spell checking and language editing, and engaging in various interactive learning scenarios, among many others. Although ChatGPT can perform these tasks, it may not always generate correct, accurate or optimal results, as it is limited by the amount and the diversity of the data it has been trained on.

During the past few months, there has been a growing concern regarding the potential threats that AI-powered conversational models present to the field of higher education. Some universities have developed formal responses, comprehensive suggestions, and resources to promote the efficient, responsible, and ethical use of generative AI conversational models (Montclair, 2023), while many others are still struggling to assimilate the implications of AI-driven chatbots on teaching, learning, and assessment. Among the band-aid solutions that have been put in place to address the potential threats, we cite the implementation of third-party AI-based content detection systems and the complete ban of on-campus use of AI-driven conversational models.

This study aims to probe student and faculty Knowledge, Attitude, and Perception (KAP) towards ChatGPT. We argue that such an inquiry is crucial in proactively addressing the multifaceted aspects of this cutting-edge technology. The lack of it can potentially lead to a blurry adoption strategy as well various forms of misconceptions and stigmatization among students, faculty, and Higher Education Institutions (HEIs). To achieve this objective, we have conducted an empirically study whose main objective was to gain insights into the KAP towards ChatGPT among students and faculty so that appropriate actions could be formulated to close the gap between the potential merits of AI-powered conversational models and the institutional readiness to tap into these benefits in a responsible and ethical manner.

The remaining of this paper is organized as follows: Section 2 presents a literature review of related studies. Section 3 details our research methodology. Section 4 presents the results of our study, while section 5 discusses the main research findings. Finally, section 6 presents a summary of this contribution and its limitations.

Literature Review

Petress (2003) considers plagiarism as a virus to the educational profession that eradicates the ethic of hard work, the moral value of honesty, while degrading the role of assessment. This construction of plagiarism assumes that knowledge has a history and that past authors must be acknowledged.

Marsden, Carroll, and Neil (2005) emphasized that plagiarism hinders graduates' training and readiness for the workplace, which could harm society in various ways. Public safety, well-being, and financial decisions could be at risk due to inadequately trained graduates.

Trushell et al. (2012) attributed the increase in the number of reported plagiarism cases to technology-facilitated electronic access and the effortless process of copying and pasting text from the Internet.

Susnjak (2022) conducted several experiments to probe the potential misuse of ChatGPT as a tool for academic misconduct in online exams. The study revealed that ChatGPT demonstrated insightful critical thinking skills and generated human-like text with minimal effort, making it a potential menace to the integrity of online exams. The study highlighted the need for further research to better apprehend the implications ChatGPT on higher education and to devise strategies to mitigate its misuse for online exam cheating.

Ul Haque et al (2022) conducted an empirical study using 10,732 tweets from early ChatGPT users. They found that most of the early adopters have demonstrated overwhelmingly positive sentiments related to topics such as disruptions to software development, entertainment, and exercising creativity. Only a few users expressed concerns about misuses such as the potential role of Chat- GPT in stimulating plagiarism among students in take-home assignments and essay writing tasks.

The aim of this empirical study is to systematically investigate student and faculty knowledge, attitudes, and perception towards ChatGPT. The potential merits of such an investigation are manyfold:

- Uncover biases and misconceptions around the usage of ChatGPT among students and faculty. This might assist in promoting trust and facilitating the acceptance and adoption of ChatGPT and other AI-powered conversational models, while addressing the underlying ethical issues.
- Facilitate the development of innovative instructional approaches to integrate ChatGPT into curricula and existing pedagogical practices in a responsible way, while stimulating students' engagement and learning experience.
- Stimulate further research on the impact of AI-powered conversational models on teaching, learning and assessment.

Sample Selection

Our prospective cross-sectional empirical study was conducted over a three-month period from February to April 2023 at ESPRIT (Tunisia), which comprises two major schools, namely ESPRIT School of Engineering (ESE) and ESPRIT School of Business (ESB). The student sample was selected via a combination of stratified sampling (classification based on field of study and educational level, followed by random sampling) and convenience

sampling (due to ease of access by two co-authors) methods. The faculty sample was selected via a census sampling approach targeting the entire full-time engineering and business faculty.

Data Collection Procedure

Student surveys were conducted via paper-based questionnaires that have been distributed during class-time. Respondents were briefed about the objectives of the study and were made aware that their participation is completely voluntary and that they have the right to opt out without any consequences or negative impact on them. Students were also duly informed that all collected data is anonymous and will be treated with confidentiality.

Faculty surveys, on the other hand, were conducted online via Google forms emailed to all ESE and ESB full-time faculty members. Participants were also informed about the purpose of the study as well as the voluntary, confidential, and anonymous nature of their participation.

Instrument and Measures

The instrument employed consisted of surveys that covered three main domains: *Knowledge (K)*, *Attitude (A)*, and *Perception (P)* towards ChatGPT.

The first (*K*) domain aimed to probe student and faculty knowledge about ChatGPT. Each knowledge item response score was either 0 (false answer) or 10 (correct answer). One specific item (K1) asked responders if they have heard about ChatGPT before, while another item (K4) prompted students to indicate for what purpose they have used ChatGPT. The remaining items (K2-K3 & K5-K9 for students and K2-K10 for faculty) had a total score from 0 to 70 and from 0 to 90 for students and faculty, respectively. In both cases, the percentage of correct responses r_k was computed by dividing the score by 70 or 90 as applicable and multiplying by 100%, and this measure was used to group the knowledge scores on a 5-point Likert scale as follows: $r_k < 20 = 1$, $20 \leq r_k < 40 = 2$, $40 \leq r_k < 60 = 3$, $60 \leq r_k < 80 = 4$ and $r_k \geq 80 = 5$. Knowledge scores were interpreted as follow: 1 = very low, 2 = low, 3 = moderate, 4 = high and 5 = very high. A good knowledge was regarded when the overall average score, out of 5, and across all the items is greater than or equal to 4.

The second domain (*A*) probed student and faculty attitude towards ChatGPT and contained thirteen 5-point Likert items (A1-A13) and sixteen 5-point Likert items (A1-A16) for students and faculty, respectively. The responses ranged from strongly agree, agree, neutral, disagree, and strongly disagree; each weighting 5, 4, 3, 2, and 1, respectively. High index scores reflect more positive attitude towards ChatGPT and vice-versa. To reduce bias, we have reverse-coded some items such that a response of "strongly agree" truly represents “strongly disagree”. For these reverse-coded items, scores were also reversed and recomputed accordingly. Attitude scores were interpreted as follows: 1 = very negative, 2 = negative, 3 = indifferent, 4 = positive and 5 = very positive. A positive attitude was noted when the overall average score, out of 5, and across all the items is greater than or equal to 4.

The third domain (*P*) probed student and faculty perception towards the ethical and academic usage of ChatGPT and contained fifteen YES/NO items (P1-P15) and ten YES/NO items (P1-P10) for students and faculty, respectively. Each item asked respondents to rate their agreement or disagreement with a given statement. Some student survey items were not

related to ChatGPT but rather to personal perception towards plagiarism in general and these were not included in our perception scoring. For the case of student survey, seven items (P4, P7, P10, P12-P15) conveyed a negative perception towards ChatGPT, while five items (P5-P6, P8-P9, P11) conveyed a general positive perception. For the case of faculty survey, four items (P1, P4, P6, P8) conveyed a negative perception towards ChatGPT, while six items (P2-P3, P5, P7, P9-P10) conveyed a positive perception.

Each perception item is evaluated on a binary scale (YES=1, NO=0), except for the reverse-coded items that conveyed a negative perception where the scores are reversed and recomputed accordingly. The perception items under consideration have a total score range from 0 to 12 (student case) and from 0 to 10 (faculty case). In both cases, the positive perception rate r_p was computed by dividing the score by 12 or 10 as applicable and multiplying by 100%, and this measure was used to group the adjusted (positive) perception scores on a 5-point Likert scale as follows: $r_p < 20 = 1$, $20 \leq r_p < 40 = 2$, $40 \leq r_p < 60 = 3$, $60 \leq r_p < 80 = 4$ and $r_p \geq 80 = 5$. Perception scores were interpreted as follow: 1 = very negative, 2 = negative, 3 = indifferent, 4 = positive and 5 = very positive. A positive perception was inferred when the overall average score, out of 5, and across all the items is greater than or equal to 4.

Statistical Analysis

This study used Statistical Package for Social Sciences SPSS (IBM Corporation, NY, USA, version 17) for data analysis. Demographic data was analyzed descriptively and depicted as frequencies as well as percentages. We applied the χ square test for goodness of fit to analyze single categorical variable. We present general KAP levels descriptively in terms of means and standard deviations and we use independent t-test for KAP score comparisons based on demographic variables which we illustrate in terms of means, standard deviations, and *p* values.

Table 1: Demographic characteristics of sample student respondents (*n*=855)

Demographic variable	Frequency (*n*)	Percentage (%)	p value*
Gender			0.007
Male	475	55.6	
Female	380	44.4	
Age			
18-22	446	52.2	
23-25	336	39.3	
> 25	73	8.5	
Field of Study			0.16
Management	300	35.08	
Bachelor	180	21	
Master	120	14	
Engineering	555	64.9	
Informatics / Telecom	318	57.3	
Electro-mechanical	187	33.7	
Civil	50	9	
Year of study			0.00
1	244	28.5	
2	161	18.8	
3	207	24.2	
4	243	28.4	
Nationality			0.00
Tunisian	836	97.8	
Other	19	2.2	

* *χ-square test for goodness of fit. (Significance level p <0.05)*

Faculty Demographics

One hundred and forty-five faculty members (94 from the School of Engineering school and 51 from the School of Business) participated in this study. Females constituted the majority with 70.3%, compared to 29.7% male participation. Majority of respondents (66.9%) have less than 6 years of work experience at either school and the majority of faculty participants were from the School of Engineering (64.9%). Further details are shown in Table 2.

Table 2: Demographic characteristics of sample faculty respondents (n=145)

Demographic variable	Frequency (n)	Percentage (%)	p value*
Gender			0.001
Male	43	29.7	
Female	102	70.3	
Affiliation			0.00
School of Engineering (ESE)	94	64.9	
School of Business (ESB)	51	35.1	
University rank			0.00
Lecturer	58	40	
Assistant professor	70	48.3	
Associate professor	14	9.7	
Full professor	3	2.1	
Working experience at ESPRIT			0.041
< 3 years	53	36.6	
3-5 years	44	30.3	
6- 10 years	29	20	
> 10 years	19	13.1	

* χ-*square test for goodness of fit. (Significance level p <0.05)*

Reliability of Students' KAP

Internal consistency reliability (Cronbach's α) for overall and each domain in student KAP emerged as high (0.711–0.860) whereby: Knowledge (Cronbach's α = 0.860), Attitude (Cronbach's α = 0.715), Perception (Cronbach's α = 0.711) and total KAP (Cronbach's α = 0.742). All areas have a Cronbach's α > 0.7. Refer to Table 3 for further details.

Reliability of Faculty's KAP

Internal consistency reliability (Cronbach's α) for overall and each domain in faculty KAP was relatively high (0.701–0.715) whereby: Knowledge (Cronbach's α = 0.715), Attitude (Cronbach's α = 0.701), Perception (Cronbach's α = 0.713), and total KAP (Cronbach's α = 0.710). Refer to Table 4 for further details.

Validity of Students' KAP

Principal Component Factor (PCF) analysis was performed to provide evidence on the construct validity of the student KAP instrument. Refer to Table 3 for details. As may be seen, most of the items loaded highly as expected ($r > 0.4$), except for items K7, A1, A2, A7, P7, and P10. In addition, evidence of convergent validity was demonstrated whereby the correlation between subscales Knowledge, Attitude, and Perception with the total KAP score was relatively high and significant ($r > 0.5$ & $p < 0.05$).

Validity of Faculty's KAP

Similarly, PCF analysis was conducted to provide evidence on the construct validity of faculty KAP instrument. Refer to Table 4 for details. As may be seen, all the items loaded highly as expected ($r > 0.4$), except for item K9. In addition, evidence of convergent validity was demonstrated whereby the correlation between subscales Knowledge, Attitude, and Perception with the total KAP score was relatively high and significant ($r > 0.5$ & $p < 0.05$).

General KAP Levels

The student general KAP level was in the moderate category (mean = 3.1 $\pm$0.61). Among the three KAP domains, Perception (mean = 3.6 $\pm$0.65) emerged with the highest mean, followed by Attitude (mean = 3.2 $\pm$0.64) and lastly Knowledge (mean = 2.4 $\pm$0.6). Based on the mean scores, the sample of student population demonstrated moderate positive attitude and perception towards ChatGPT and a level of knowledge that is below average. Refer to Table 5 for further details.

The faculty general KAP level was in the moderate to neutral category (mean = 3.0 $\pm$1.05). Among the three KAP domains, Knowledge (mean = 3.6 $\pm$0.93) emerged with the highest mean, followed by Attitude (mean = 3.0, $\pm$1.33), and lastly Perception (mean = 2.8 $\pm$0.96). Refer to Table 6 for further details. We also note that faculty members had varied opinions around the KAP as reflected by the dispersion of the responses around the mean. This is particularly noticeable for the attitude.

Table 3: Internal consistency reliability and validity of students' KAP

KAP index	**Reliability* (Cronbach's α)**	**Validity****	
		Construct (Rotated component matrix)	**Convergent (Correlation with total KAP)**
Knowledge	**0.860**	0.564 (Item K2) 0.512 (Item K3) 0.502 (Item K5) 0.546 (Item K6) **0.381** (Item K7) 0.772 (Item K8) 0.493 (Item K9)	0.652
Attitude	**0.715**	**0.271** (Item A1) **0.330** (Item A2) 0.975 (Item A3) 0.452(Item A4) 0.452 (Item A5) 0.529 (Item A6) **0.330** (Item A7) 0.524(Item A8) 0.589(Item A9) 0.526(Item A10) 0.479(Item A11) 0.772(Item A12) 0.493 (Item A13)	0.652
Perception	**0.711**	0.681(Item P4) 0.736(Item P5) 0.671(Item P6) **0.285**(Item P7) 0.417(Item P8) 0.677(Item P9) **0.315**(Item P10) 0.594(Item P11) 0.648(Item P12) 0.630(Item P13) 0.609(Item P14) 0.548(Item P15)	0.520
Total KAP	**0.742**	-	-

* For Reliability, Cronbach's α >0.70

** For validity, values quoted with p< 0.05

Table 4: Internal consistency reliability and validity of the faculty's KAP

KAP index	Reliability (Cronbach's α)	Validity	
		Construct (Rotated component matrix)	**Convergent (Correlation with total KAP)**
Knowledge	**0.715**	0.716 (Item K2) 0.741 (Item K3) 0.610 (Item K4) 0.522 (Item K5) 0.521 (Item K6) 0.490 (Item K7) 0.599 (Item K8) **0.390** (Item K9) 0.727 (Item K10)	**0.735**
Attitude	**0.701**	0.719 (Item A1) 0.621(Item A2) 0.526 (Item A3) 0.540 (Item A4) 0.549 (Item A5) 0.626 (Item A6) 0.625 (Item A7) 0.663 (Item A8) 0.643 (Item A9) 0.592 (Item A10) 0.608 (Item A11) 0.607(Item A12) 0.574 (Item 13) 0.688 (Item A14) 0.654(Item A15) 0.634 (Item A16)	**0.696**
Perception	**0.713**	0.664 (Item P1) 0.722 (Item P2) 0.601 (Item P3) 0.560 (Item P4) 0.522 (Item P5) 0.640 (Item P6) 0.694 (Item P7) 0.467 (Item P8) 0.594 (Item P9) 0.461 (Item P10)	**0.705**
Total KAP	**0.710**	-	-

***** For Reliability, Cronbach's α >0.7

****** For validity, values quoted with p< 0.05

Table 5: Overall faculty's Knowledge, Attitude, Perception, and total KAP level (1-5)

Domain	Mean	Standard deviation	Median (Inter quantile range)	Interpretation
Knowledge	2.4	0.600	2	Low to moderate
Attitude	3.2	0.643	3	Moderately positive
Perception	3.6	0.650	4	Moderately positive
Total KAP	3.1	0.615	2.8	Moderately positive

Table 6: Overall students' Knowledge, Attitude, Perception and total KAP level (1-5)

Domain	Mean	Standard deviation	Median (Inter quantile range)	Interpretation
Knowledge	3.6	0.931	4	Moderate
Attitude	3	1.332	2.8	Moderate to neutral
Perception	2.8	0.960	3	Low to moderate
Total KAP	3	1.054	3	Moderate to neutral

Knowledge

The knowledge level of the students' sample was low to moderate (mean = 2.4 ±0.6). 42.5% of sampled students did not recognize that the failure of ChatGPT to provide correct responses is among its main limitations (*K8*), while 61.4% did not recognize that a key strength behind ChatGPT resides in its extensive "training" on a substantial volume of textual data (*K9*). Refer to Table 7 and Figure 1 for more details.

The knowledge level of the faculty sample regarding ChatGPT was moderate (mean = 3.6 ±0.93). When asked if ChatGPT can help in the automatic grading of assignments, 46.9% answered "No". Among all faculty respondents 42.5% did not recognize that the failure of ChatGPT to provide correct responses is among its main limitations (*K8*), while 46.9% did not recognize that a key strength behind ChatGPT resides in its extensive "training" on a substantial volume of textual data (*K7*). Refer to Table 8 and Figure 2 for more details.

Table 7: Students' knowledge regarding ChatGPT (*n*=855)

Question	% of correct answers
K2- What is ChatGPT?	38.6
K3- Have you used ChatGPT before?	88.9
K5- Who is the developer of ChatGPT?	89.7
K6- Can ChatGPT write computer programs?	89.7
K7- Can ChatGPT write poetry or song lyrics?	84.2
K8- What is the MAIN limitation of ChatGPT?	57.5
K9- What is the key strength behind ChatGPT?	38.6

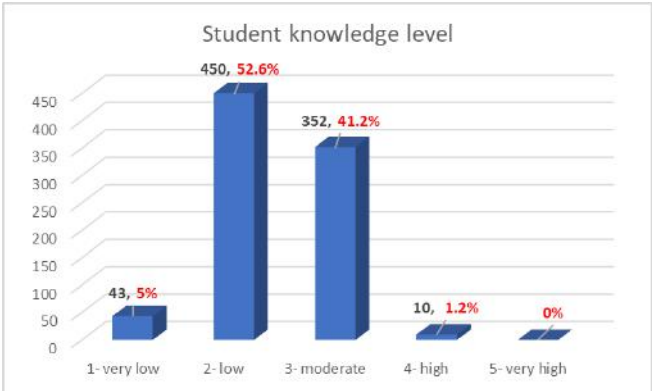

Figure 1: Distribution of students' knowledge scores (*n=855*)

Table 8: Faculty's knowledge regarding ChatGPT (*n*=145)

Question	**% of correct answers**
K2- What is ChatGPT?	62.1
K3- Have you used ChatGPT before?	91.7
K4- When was ChatGPT released?	60.7
K5- Who is the developer of ChatGPT?	89.7
K6- What is the MAIN limitation of ChatGPT?	51
K7- What is the key strength behind ChatGPT?	53.1
K8. ChatGPT can be used to create content including quizzes, and exam questions	77.9
K9. I am familiar with plagiarism detection tools for ChatGPT-generated content	77.9
K10- ChatGPT can help me in the automatic grading of assignments.	46.9

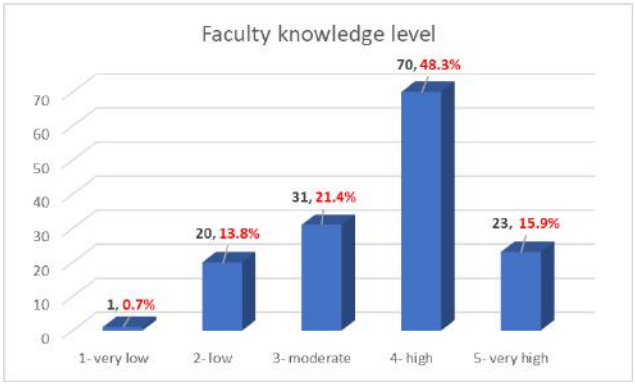

Figure 2: Distribution of faculty's knowledge scores (*n=145*)

Figure 1 suggests that most students had knowledge scores concentrated around the lower end of the scale, suggesting that there is ample room for improvement. On the other hand, the distribution of faculty knowledge scores, depicted in Figure 2, is rather skewed to the right, suggesting that faculty have a relatively higher level of knowledge compared to that of students.

Attitude

The mean student attitude score towards ChatGPT was 3.2 $\pm$0.64 and the median was 3 out of 5, implying a moderately positive attitude. Refer to Table 9 for details. As mentioned before, in both cases (Tables 9-10) while calculating the descriptive statistics of the attitude scores, we reversed the scores for statements that implied a negative attitude so that a sore of 5 reflects the highest positive attitude, while a score of 1 represents the highest negative attitude.

Combining the percentages of strong agreement and simple agreement results, we observe that while 63.2% of students agreed that ChatGPT enhances the quality of knowledge attained (*A4*), and 62.7% concurred that it should be integrated as a supplementary learning resource (A6), nevertheless, 45% agreed that ChatGPT inhibits critical thinking (*A3*) and 46.8% agreed that it favors students' plagiarism (*A2*). 77% of surveyed students agreed that ChatGPT is easy to use (*A5*) and 47.2% enjoy reading academic writing produced by ChatGPT. Further, only 25.5% of students agreed with the statement that ChatGPT is an unreliable source of knowledge that should not be trusted (*A8*).

For the case of faculty, the mean attitude score towards ChatGPT was 3 $\pm$ 1.33 and the median was 2.8 out of 5 implying an overall moderate to neutral attitude. Refer to Table 10 for details.

As may be seen, while students exhibited a moderately positive attitude towards ChatGPT, the faculty's attitude appeared to be comparatively more reserved. Combining the percentages of strong and simple agreement results, we observe that 78.6% of surveyed faculty agreed with the statement that ChatGPT favors students' plagiarism (*A2*), 61.4% concurred with the argument that it inhibits students' critical thinking (*A3*), 74.5% agreed that it will make traditional homework obsolete (A14), and 45.6 % believed that ChatGPT can harm the reputation of the institution (*A10*). Looking forward, 42.8% of faculty agreed that ChatGPT can eventually question the future role of faculty (*A15*), 35.8% concurred with the statement that it is a real threat to the profession (*A12*), and 60% agreed that it will open new opportunities for innovative pedagogical practices (*A16*). Further, 83.3% of surveyed faculty agreed that ChatGPT is easy to use (*A5*) and only 37.3% of surveyed faculty agreed with the statement that ChatGPT is an unreliable source of knowledge that should not be trusted (*A8*).

Table 9: Students' attitude towards ChatGPT**

Statement	5. SA	4. A	3. N	2. D	1. SD	Mean*	SDev*	Median*
A1. ChatGPT enhances students' creativity	153 17.9%	266 31.1%	219 25.6%	147 17.2%	70 18.2%	3.3	1.190	3
A2. ChatGPT favors students' plagiarism	84 9.8%	316 37%	303 35.4%	110 12.9%	42 4.9%	3.3	0.987	3
A3. ChatGPT inhibits students' critical thinking	125 14.5%	261 30.5%	295 31.5%	121 14.2%	54 6.3%	3.3	1.083	3
A4. ChatGPT enhances the quality of knowledge attained	223 26.1%	317 37.1%	189 22.1%	85 9.9%	41 4.8%	3.7	1.105	4
A5. ChatGPT is easy to use	376 44%	282 33%	103 12%	50 5.8%	44 5.1%	4	1.121	4
A6. ChatGPT should be integrated as a supplementary learning resource	250 29.2%	286 33.5%	186 21.8%	72 8.4%	61 7.1%	3.7	1.181	4
A7. The usage of ChatGPT should be banned at ESPRIT	84 9.8%	116 13.6%	198 23.2%	161 18.8%	296 34.6%	2.4	1.343	2
A8. ChatGPT is an unreliable source of knowledge - I do not trust it	69 8.1%	149 17.4%	300 35.1%	208 24.3%	129 15.1%	2.8	1.141	3
A9. I enjoy reading academic writing produced by ChatGPT	121 14.2%	282 33%	303 35.4%	91 11.1%	54 6.3%	3.4	1.058	3
A10. Use of ChatGPT for academic writing can harm the reputation of ESPRIT	87 10.2%	226 26.4%	239 28%	170 20.6%	127 14.9%	2.9	1.213	3
A11. ChatGPT will help develop my skills in asking good questions	230 26.9%	342 40%	173 20.2%	69 8.1%	41 4.8%	3.7	1.082	4
A12. ChatGPT can be my personal tutor	168 19.6%	276 32.3%	243 28.3%	126 14.7%	43 5%	3.4	1.114	4
A13. ChatGPT is a real threat to the engineering / management profession	109 12.7%	178 20.8%	264 30.9%	192 22.5%	112 13.1%	2.9	1.212	3

**Greyed cells convey negative attitude statements. Descriptive statistics (mean, SDev and median) were adjusted accordingly*

*** SA: Strongly Agree, A: Agree, N: Neutral, D: Disagree; SD: Strongly Disagree. SDev: Standard deviation*

Table 10: Faculty's attitude towards ChatGPT**

Statement	5. SA	4. A	3. N	2. D	1. SD	Mean*	SDev*	Median*
A1. ChatGPT enhances students' creativity	9 16.2%	32 22.1%	20 13.8%	34 23.4%	50 34.5%	2.42	1.386	2
A2. ChatGPT favors students' plagiarism	67 46.2%	47 32.4%	16 11%	8 5.5%	7 4.8%	4.10	1.108	4
A3. ChatGPT inhibits students' critical thinking	32 22.1%	57 39.3%	18 12.4%	16 11%	22 15.2%	3.42	1.352	4
A4. ChatGPT enhances the quality of knowledge attained by students	18 12.4%	52 35.9%	27 18.6%	29 20%	19 13.1%	3.14	1.253	3
A5. ChatGPT is easy to use	63 43.3%	58 40%	12 8.3%	12 8.3%	--	4.19	1.905	4
A6. ChatGPT should be integrated as a supplementary learning resource in my courses	31 21.4%	38 26.2%	35 24.1%	25 17.2%	16 11%	3.30	1.286	3
A7. The usage of ChatGPT should be banned at ESPRIT	15 10.3%	17 11.7%	31 21.4%	38 26.2%	44 30.3%	2.46	1.312	2
A8. ChatGPT is an unreliable source of knowledge - I do not trust it	12 8.3%	32 29%	46 31.7%	39 26.9%	16 11%	2.90	1.123	3
A9. I enjoy reading academic writing produced by ChatGPT	13 9%	42 29%	50 34.5%	21 14.5%	19 13.1%	3.06	1.150	3
A10. The use of ChatGPT to produce academic writing can harm the reputation of ESPRIT	23 15.9%	43 29.7%	32 22.1%	32 22.1%	15 10.3%	3.19	1.242	3
A11. ChatGPT will help develop my skills in asking good questions	23 15.9%	53 36.6%	40 27.6%	15 10.3%	14 9.7%	3.39	1.161	4
A12. ChatGPT is a real threat to the engineering / management profession	17 11.7%	35 24.1%	35 24.1%	36 24.8%	22 15.2%	2.92	1.253	3
A13. I believe that ChatGPT will make unsupervised online exams impossible	36 24.8%	47 32.4%	27 18.6%	27 17.6%	8 5.5%	3.52	1.208	4
A14. I believe that ChatGPT will make traditional homework obsolete	40 27.6%	68 46.9%	13 9%	18 12.4%	6 4.1%	3.81	1.099	4
A15. ChatGPT can eventually question the future role of instructors	19 13.1%	43 29.7%	25 17.2%	32 22.1%	26 17.9%	2.98	1.331	3
A16. I believe that ChatGPT will open for me new opportunities for innovative pedagogical practices	37 25.5%	50 34.5%	29 20%	18 12.4%	11 7.6%	3.58	1.211	4

** Greyed cells convey negative attitude statements. Descriptive statistics (mean, SDev and median) were adjusted accordingly*

*** SA: Strongly Agree, A: Agree, N: Neutral, D: Disagree; SD: Strongly Disagree. SDev: Standard deviation*

Perception

Student perception level towards the ethical usage of ChatGPT was moderately positive (mean = 3.6 ±0.65). Across all respondents, 63% considered that the usage of ChatGPT for plagiarism can be acceptable under certain circumstances (*P12*), 63.6% considered that academically weak students are more likely to plagiarize with ChatGPT (*P15*), and 56.1%

believed that in the absence of university rules, using ChatGPT for plagiarism would be acceptable (*P13*). While around half of the surveyed students are not aware of the institutional policy regarding the usage of ChatGPT (*P5*), 60% claimed that they know that they are not allowed to use ChatGPT for graded assessments (*P4*). The fact that 48.2% of surveyed students disagreed with the statement that using ChatGPT without proper attribution would be considered plagiarism (*P6*) strongly corroborates with their general perception towards what constitutes plagiarism in the first place, as reflected by their responses to statements (*P2*) and (*P3*). Refer to Table 11 for further details.

Table 11: Students' perception towards the ethical usage of ChatGPT*

Statement	**YES** *Frequency* *Percentage*	**NO** *Frequency* *Percentage*
P1. Plagiarism is a form of academic dishonesty because it involves presenting someone else's work as one's own, without giving credit to the original author or source.	637 74.5%	218 25.5%
P2. Rewriting or paraphrasing the material from any source without saying where the original material comes from is plagiarism	450 52.6%	405 47.4%
P3. Cutting and pasting material from various sources without referencing where it comes from is plagiarism	491 57.4%	364 42.6%
P4. I know that I am not allowed to use ChatGPT for graded assessments	513 60%	42 40%
P5. I am fully aware of ESPRIT policy regarding the usage of ChatGPT	435 50.9%	420 49.1%
P6. Using ChatGPT to produce academic writing without proper attribution would be considered plagiarism	443 51.8%	412 48.2%
P7. Reliance on ChatGPT discourages critical thinking, problem solving and creativity	389 45.5%	466 54.5%
P8. Plagiarism from ChatGPT can be detected by my instructor using special plagiarism detection software	495 57.9%	360 42.1%
P9. ChatGPT can infringe copyright because the generated text can violate the rights of the original creators and authors	454 53.1%	401 46.9%
P10. For academic writing, it is better for students to use their own knowledge, skills, and research than relying on ChatGPT	525 61.4%	330 38.6%
P11. ChatGPT should be used to complement my own research and writing and not to complete my assigned homework	584 68.3%	271 31.7%
P12. Using ChatGPT for plagiarism can be acceptable under certain circumstance (e.g., extreme financial pressures, or low learning value of the assignment)	539 63%	316 37%
P13. In the absence of university rules, using ChatGPT for plagiarism is acceptable	480 56.1%	375 43.9%
P14. It is no big deal if I submit a homework using ChatGPT generated text and with no referencing	440 51.5%	415 48.5%
P15. Academically weak students are more likely to plagiarize with ChatGPT	544 63.6%	311 36.4%

** Green-shaded cells are statements related to student perception towards plagiarism in general. These were not covered in our descriptive statistics*

** Greyed cells convey negative perception statements*

Faculty perception level towards ChatGPT was low to moderate (mean = 2.8 ±0.96). Across all respondents, 65.5% considered that students are aware that they are not allowed to use ChatGPT for graded assessments (P1), 82.8% believed that using ChatGPT without proper attribution would be considered plagiarism (P3), and only 42.8% would accept ChatGPT-generated homework if it is credited (P9). Further, only 40.7% of surveyed faculty believed that students are fully aware of the institutional policy regarding the usage of ChatGPT (P2).

The fact that 83.4% of surveyed faculty (1) were concerned about the potential copyright violations induced by ChatGPT (P5), (2) considered that academically weak students are more likely to plagiarize with ChatGPT (P8), and (3) believed that students ought to rely on their own knowledge, skill and research than counting on ChatGPT (P6) is yet another indication of their higher degree of reservation and skepticism compared to that of students. Refer to Table 12 for further details.

Table 12. Faculty's perception towards ChatGPT*

Statement	**YES** *Frequency* *Percentage*	**NO** *Frequency* *Percentage*
P1. Students know that they are not allowed to use ChatGPT for graded assessments	95 65.5%	50 34.5%
P2. Students are fully aware of ESPRIT policy regarding the usage of chatGPT	59 40.7%	86 59.3%
P3. Using ChatGPT to produce academic writing without proper attribution would be considered plagiarism	120 82.8%	25 17.2%
P4. Reliance on ChatGPT discourages critical thinking, problem solving and creativity	112 77.2%	33 22.8%
P5. ChatGPT can infringe copyright because the generated text can violate the rights of the original creators and authors	121 83.4%	24 16.6%
P6. For academic writing, it is better for students to use their own knowledge, skills, and research than relying on ChatGPT	121 83.4%	24 16.6%
P7. The information generated by ChatGPT is accurate and reliable	69 47.6%	76 52.4%
P8. Academically weak students are more likely to plagiarize with ChatGPT	121 83.4%	24 16.6%
P9. I would accept ChatGPT-generated homework as long as it is credited	62 42.8%	83 57.2%
P10. ChatGPT is likely to have a significant impact on university education (e.g. teaching and assessment)	122 84.1%	23 15.9%

** Greyed cells convey negative perception statements (descriptive statistics for mean and SDev were reversed accordingly)*

Comparison of KAP Levels Based on Demographic Characteristics

Table 13 illustrates the associations between students' key categorical demographic variables and their knowledge, attitude, and perception towards ChatGPT, based on an independent t-test. A $p < 0.05$ was considered statistically significant to reject the null hypothesis and infer that there is significant evidence that the demographic variable under consideration influences the mean K, A, or P level. As may be seen, at a 95% CI, apart from gender, the remaining demographical variables have some impact with varying degrees on students' reported knowledge, attitude, and perception. For instance, older students demonstrated better knowledge about ChatGPT and less positive attitude towards it. In terms of field of study, Management students demonstrated better knowledge than their Engineering counterparts, yet they reported lower positive attitude and perception. While international students showcased lower knowledge about ChatGPT, they reported a more positive attitude towards it. Clearly, there were no significant difference in the reported KAP levels between male and female respondents.

Table 14 illustrates the comparison of the reported KAP levels, for the case of faculty, based on demographic characteristic and using again an independent t-test. As may be seen, at 95% CI, none of the faculty demographic variables had a significant impact on the KAP level.

Correlation Analysis

We performed a Pearson correlation test to investigate if there is a relationship between the reported knowledge, attitude, and perception levels among student and faculty participants. The results are shown in tables 15 and 16, respectively.

Table 13. Association between students' demographic information and their KAP towards ChatGPT (*n*=855)

Demographic variable		Knowledge			Attitude			Perception		
		Mean	**SD**	**p-value***	**Mean**	**SD**	**p-value***	**Mean**	**SD**	**p-value***
Gender	Male	2.4	0.555	0.839	3.8	0.657	0.452	3.6	0.670	0.330
	Female	2.4	0.650		3.9	0.639		3.6	0.645	
Age	18-22	2.3	0.589	0.000	4.1	0.632	0.000	3.6	0.642	0.001
	23-25	2.4	0.598		3.9	0.645		3.6	0.659	
	> 25	2.5	0.575		3.8	0.655		3.5	0.606	
Field of Study	**Management**	--	--	0.000	--	--	0.003	--	--	0.002
	Bachelor	2.2	0.668		3.2	0.551		3.6	0.567	
	Master	2.4	0.684		3.4	0.592		3.4	0.716	
	Engineering	--	--		--	--		--	--	
	Informatics / Telecom	2.3	0.542		3.8	0.632		3.6	0.661	
	Electro-mechanical	2.3	0.532		3.5	0.631		3.7	0.617	
	Civil	2.4	0.597		3.6	0.658		3.6	0.728	
Year of study	1	2.3	0.555	0.001	3.5	0.666	0.000	3.7	0.652	0.001
	2	2.2	0.661		4	0.687		3.8	0.586	
	3	2.4	0.564		3.2	0.672		3.6	0.658	
	4	2.4	0.616		3.8	0.683		3.5	0.663	
	5	--	--		--	--		--	--	
Nationality	Tunisian	2.4	0.604	0.040	3.6	0.642	0.04	3.6	0.648	0.005
	Other	2.1	0.315		3.7	0.31		4	0.621	

** Independent **t-test** ($p<0.05$ is considered statistically significant to confirm the impact of the demographic variable on the domain)*

Table 14: Association between faculty's demographic information and their KAP towards ChatGPT (*n*=145)

Demographic variable		Knowledge			Attitude			Perception		
		Mean	**SD**	**p-value* inter group**	**Mean**	**SD**	**p-value* inter group**	**Mean**	**SD**	**p-value* inter group**
Gender	Male	3.7	0.989	0.233	3.5	0.983	0.217	2.9	0.995	0.760
	Female	3.5	0.904		3.6	0.945		2.8	0.958	
Affiliation	School of Engineering	3.8	0.854	0.140	3.8	0.998	0.235	2.9	0.988	0.678
	School of Business	3.4	1.021		3.7	0.991		2.8	0.966	
University rank	Lecturer	3.7	0.917	0.750	3.7	0.873	0.341	3	1.040	0.260
	Assistant professor	3.5	1.003		4	0.912		2.8	0.905	
	Associate professor	4	0.267		4.1	0.932		2.5	0.854	
	Full professor	4.3	0.577		4	0.945		3.3	1.154	
Working experience at ESPRIT	< 3 years	3.4	1.011	0.298	3.7	0.885	0.221	2.7	0.863	0.328
	3-5 years	3.7	0.883		3.8	0.881		2.9	0.976	
	6- 10 years	3.7	1.023		3.7	1.021		2.7	1.099	
	> 10 years	3.9	0.567		3.6	0.994		2.8	0.966	

** Independent **t-test** ($p<0.05$ is considered statistically significant to confirm the impact of the demographic variable on the domain)*

Table 15: Correlation among students' KAP levels*

Variable	Knowledge	Attitude	Perception
Knowledge	1	0.000	0.010
Attitude	0.000	1	0.010
Perception	0.010	0.010	1

** Pearson correlation coefficients – Correlations are significant at the 0.01 level (two-tailed)*

Table 16: Correlation among faculty's KAP levels*

Variable	Knowledge	Attitude	Perception
Knowledge	1	0.075	-0.028
Attitude	0.075	1	0.065
Perception	-0.028	0.065	1

** Pearson correlation coefficients – Correlations are significant at the 0.01 level (two-tailed)*

In the case of students, a very weak positive association exists between their knowledge and perception, as well as between their attitude and perception.

In the case of faculty, the correlation coefficients are also generally low, implying subtle associations among the KAP variables. Nevertheless, we can infer a tendency for increased knowledge to induce a slightly higher positive attitude towards ChatGPT. We also observe that faculty knowledge and perception are mildly inversely related, while attitude and perception have a modest positive association.

Discussions

Our results indicated that faculty demonstrated a higher level of knowledge than students. Yet, more than 40% of surveyed students and faculty expressed unwavering trust in the

reliability of ChatGPT's responses, a perception that doesn't align with reality (see for example, Amaro et al [2023]).

Surveyed students showcased a moderately positive attitude towards ChatGPT. On the positive side, the majority perceived it as being useful (e.g., enhancing quality of knowledge), easy to use, and reliable. On the negative side, the fact that 46.8% of surveyed students believed that ChatGPT favors plagiarism is aligned with earlier research findings (see e.g., Lovett-Hooper et al (2007) that highlighted the mediating role of Information Technology in tempting students to engage in plagiarism.

Faculty attitude towards ChatGPT was comparatively more reserved compared to that of students and our results showcased varying opinions as reflected by the dispersion of the responses around the mean attitude score.

Students' predisposition to what constitutes plagiarism in general influenced their perception towards the ethical usage of ChatGPT. For instance, 48.2% of surveyed students did not believe that using ChatGPT without proper attribution would be considered plagiarism.

The surveyed faculty showcased a more negative perception towards ChatGPT than students and they expressed a greater degree of skepticism (e.g., concerns about potential copyright infringement (83.4%), belief that weak students are more likely plagiarize with ChatGPT [83.4%], perception that ChatGPT inhibits critical thinking, problem solving, and creativity [77.2%], and reluctance to accept ChatGPT-generated homework even if it is credited [57.2%]).

The fact that students will most likely utilize AI text generators in their future workplaces, suggests that formulating relevant queries and engaging in meaningful conversations with AI chatbots are likely to become lifelong learning competencies. We therefore recommend the introduction of a specialized course to train students on the art of formulating and refining queries when interacting with AI-driven conversational models while adhering to the principles of ethical and responsible usage. Students should also be made aware that ChatGPT responses are not always reliable, and they should be trained on challenging the responses and cross-examining them against other available online and offline sources.

Conclusion

The findings presented in this study provided some insights into the lower-than-expected KAP levels concerning ChatGPT among students and faculty. These insights can serve as a basis for effective interventions in terms of institutional policies, guidelines, awareness campaigns, and training programs. Enhancing the KAP level can potentially disperse misconceptions, biases, worries and mistrust that would impede the adoption of ChatGPT.

We argue that Higher Education Institutions (HEIs) must find the right balance between leveraging ChatGPT to enhance students' learning and the need for the assessment to authentically reflect the students' competences. HEIs should facilitate constructive open forums and dialogues among students, faculty, and other key stakeholders to debate on the impact of AI-driven conversational models on students' learning and to collaboratively devise appropriate strategies to tailor ChatGPT to meet the educational needs of students ethically and responsibly.

Like many other empirical studies, this research has several limitations:

First, the findings of this contribution were based on surveys conducted in a particular educational setting at a private higher educational institution in Tunisia and therefore it is not sure whether these are also applicable elsewhere.

Second, this study was conducted just two months after the official launch of ChatGPT and hence it captures the initial KAP among students and faculty. It would be interesting to conduct a longitudinal study to examine the evolution of the KAP levels as students and faculty gain more exposure to ChatGPT.

Third, the computation of the KAP statistics was based on the simplified "equal weighting assumption" among the KAP items which can lead to skewed interpretations. Future research can focus on introducing appropriate weighting techniques to reflect the actual significance of each individual KAP item.

Finally, the exclusive reliance on a quantitative approach limited the in-depth interpretation of our empirical results and hence a qualitative study is warranted to delve deeper into understanding the individual attitudes, perceptions and opinions among the surveyed participants.

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