EXPLORING STUDENTS' AND FACULTY'S KNOWLEDGE, ATTITUDES, AND PERCEPTIONS TOWARDS CHATGPT: A CROSS-SECTIONAL EMPIRICAL STUDY

Faouzi Kamoun*	ESPRIT School of Business, ESPRIT School of Engineering, Tunis, Tunisia	faouzi.kammoun@esprit.tn
Walid El Ayeb	ESPRIT School of Business, Tunis, Tunisia	walid.elayeb@esprit.tn
Ibtissem Jabri	ESPRIT School of Business, Tunis, Tunisia	sami.sifi@esprit.tn
Sami Sifi	ESPRIT School of Engineering, Tunis, Tunisia	ibtissem.jabri@esprit.tn
Farkhund Iqbal	Zayed University, Abu Dhabi, UAE	Farkhund.Iqbal@zu.ac.ae

* Corresponding author

ABSTRACT

Aim/Purpose	This study explores the Knowledge, Attitude, and Perception (KAP) towards ChatGPT among university students and faculty. It also examines the faculty's readiness to cope with the challenges and leverage the opportunities presented by AI-powered conversational models.
Background	Launched on November 30, 2022, ChatGPT took the world by storm with its capability to generate high-quality written expressions in a conversational manner. The reactions to this innovation varied, from enthusiasm regarding its potential to enrich students' learning to concerns about its threat to students' cognitive development and academic integrity. A systematic exploration of students' and faculty's KAP towards ChatGPT can play an important role in addressing the multifaceted dimensions of AI-driven conversational models.
Methodology	This study employs a cross-sectional survey research design based on questionnaires distributed to 145 faculty members, as well as 855 undergraduate and

graduate students at the ESPRIT School of Engineering and School of Business. The student sample was based on stratified and convenience sampling, while the faculty sample was based on a consensus sampling approach.

Contribution	To the best of our knowledge, this is the first reported study that contributes to understanding the KAP of students and faculty towards ChatGPT, as well as the readiness of faculty to effectively adopt AI-driven conversational models. Furthermore, our research contributes to the body of knowledge by taking Vygotsky's (1978) principle of social interaction and its role in promoting cognitive development to a new level by hypothesizing that if students were to acquire the competencies to actively engage with AI-driven chatbots in meaningful discussions and collaborative conversations, they might be able to develop some higher-order thinking skills further.
Findings	Our results indicated that faculty demonstrated a higher level of ChatGPT knowledge than students and that more than 40% of surveyed students and faculty expressed some trust in the reliability of ChatGPT's responses, a perception that does not align with reality. Faculty attitude towards ChatGPT was comparatively more reserved compared to that of students and showcased varying opinions. Furthermore, the surveyed faculty showcased a more negative perception of ChatGPT than students, and they expressed a greater degree of skepticism. Our research revealed that 63.4% of surveyed faculty reported that they lack the requisite training and resources to integrate ChatGPT into their pedagogical practices.
Recommendations for Practitioners	HEIs should take appropriate measures to enhance students' and faculty's knowledge, attitude, and perception regarding ChatGPT to stimulate ethical, meaningful, innovative, and engaging interactions and learning experiences.
Recommendations for Researchers	Our study has shed light on some moderating factors that shape the acceptance of AI-driven conversational models and some adoption barriers. It delves into the perceptions, biases, and misconceptions held by both students and faculty, thereby providing a basis for future investigations on the effective integration of AI-driven conversational models in higher education.
Impact on Society	This research provides new insights that can harness the potential merits of ChatGPT in enhancing students' learning while mitigating potential pitfalls. It suggests facilitating open forums and dialogues among students, faculty, employers, and other key stakeholders to debate the impact of AI-driven conversational models on students' learning and faculty's teaching and assessment.
Future Research	We invite researchers to conduct cross-cultural studies on this topic while also taking into consideration a qualitative research design approach. Future research can also test the hypothesis that AI-driven conversational models inhibit critical thinking by facilitating the passive consumption of information.
Keywords	ChatGPT, Generative Pre-trained Transformer, knowledge, perception, attitude, academic integrity, student ethics, AI-driven conversational model, technology adoption

INTRODUCTION

On November 30, 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). Generative AI (GAI) is a field of artificial intelligence that focuses on generating new content using advanced learning algorithms after being pre-trained on massive amounts of large datasets. Unlike traditional chatbots, ChatGPT recalls what the user entered in earlier conversations for follow-up queries, rejects inappropriate requests, and challenges incorrect responses (OpenAI, 2023).

On March 14, 2023, OpenAI announced the release of GPT-4, which is a 100 trillion parameter, multimodal, large-scale conversational model that takes images and text as input to generate text output. ChatGPT currently has 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 spellchecking 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.

ChatGPT has been applied across various industries and domains, including customer service, healthcare, education, marketing, finance, and entertainment. Recently, 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 already established formal responses, comprehensive suggestions, and resources to promote the efficient, responsible, and ethical use of GAI conversational models (Montclair State University, 2023), while many others are still struggling to assimilate the implications of ChatGPT and develop effective strategies to cope with its challenges. Some quick "band-aid" solutions have been implemented to address the potential threats of ChatGPT, including the implementation of third-party AI-based content detection systems or, in some cases, the complete ban of on-campus use of AI-driven conversational models.

Today, several relevant questions remain unanswered, such as (1) how to leverage ChatGPT capabilities to make it a learning opportunity for students, (2) how ChatGPT would shape future job roles, and what implications this will have on the design of curricula, and (3) how to educate students on the responsible and ethical use of ChatGPT and what role can faculty members play towards achieving this goal?

This study aims to shed light on some of these questions by providing valuable insights and a deeper understanding of the topic at hand. This is achieved by probing 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 as various forms of misconceptions and stigmatization among students, faculty, and Higher Education Institutions (HEIs). For instance, by understanding student and faculty attitudes and perceptions towards ChatGPT, universities can devise strategies and allocate the necessary funds to promote its adoption by addressing the potential negative attitudes and perceptions. This understanding can potentially assist faculty in tailoring the use of ChatGPT to enhance student's learning and engagement while raising awareness about its potential misuse, thus leading to enhanced student satisfaction, engagement, and retention. A clear understanding of student and faculty knowledge, attitude, and perception towards ChatGPT is also important for uncovering potential biases and misconceptions, leading to building a more positive attitude and establishing shared and efficient institutional policies, ethical guidelines, and tailored coaching and professional development programs. Without them, it is unlikely that universities will be able to unlock the innovative potential of ChatGPT in an efficient, transparent, and responsible

way. It is equally important to assess whether faculty members are ready to cope with the challenges posed by ChatGPT and effectively exploit the opportunities of integrating AI-driven conversational models into innovative pedagogical practices.

To explore the KAP of students and faculty towards ChatGPT and assess the readiness of faculty, this study adopts a cross-sectional survey research design based on questionnaires distributed to 855 undergraduate and graduate students and 145 faculty members from ESPRIT School of Engineering and ESPRIT School of Business.

The remainder of this paper is organized as follows. The next section presents the literature review of related studies, followed by the details of the research methodology. Then, the results of our study are presented, followed by a discussion of these findings. Finally, a synthesis of the key research results, their implications, and some suggestions for future research are presented.

LITERATURE REVIEW

This section begins by providing a literature review of previous research related to academic integrity and plagiarism, with a special focus on online assessment. This is followed by a survey of earlier contributions regarding the implications of ChatGPT on higher education.

Plagiarism is a type of academic dishonesty that is classified as a dishonest behavior since it undermines the intellectual property of the original author while rewarding plagiarists for their fraudulent work (Gullifer & Tyson, 2010). Petress (2003) considers plagiarism to be a virus in the educational profession that eradicates the ethic of hard work and 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. Stearns (1992) argues that when past contributing authors are not acknowledged, the chain that binds the creator of the work and the creation gets broken.

The literature on plagiarism identified several contributing factors, including poor time management, time pressure, perceived disconnection between grades and required effort, perception of not being caught, perceived harshness of penalties for cheating, inadequate faculty familiarity with institutional plagiarism policies, and individual factors such as academic standing, gender, age, and personality type (Gullifer & Tyson, 2010).

Lovett-Hooper et al. (2007) found a positive relationship between all three academic dishonesty subscales (self-dishonest, social falsifying, and plagiarism) and norm/rule-violating behaviors in the future. Among the many dishonest behaviors, plagiarism has become a major concern, especially with the recent advances in information technology. In particular, the vast amount of information available online makes it tempting for students to plagiarize, as they can find related material with a few clicks. In this regard, 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.

Gullifer and Tyson (2010) argue that plagiarism impedes good academic writing, which requires developing and refining rigorous skills in both research and writing, especially when it comes to critically reading and understanding appropriate sources, thorough notetaking, paraphrasing, careful use of quotations, and crediting authors for their intellectual contribution and writing (Burton, 2007).

On a global level, Marsden et al. (2005) emphasized that plagiarism hinders graduates' training and readiness for the workplace, which could harm society. Public safety, well-being, and financial decisions could be at risk due to inadequately trained graduates. This could damage the reputation of HEIs and lead to heightened scrutiny from the media.

Earlier studies (e.g., Alessio et al., 2017; Corrigan-Gibbs et al., 2015; Fask et al., 2014) have revealed that the degree of cheating in online assessment is significant, while others (e.g., Noorbehbahani et

al., 2022) found that cheating is more prevalent in online exams than in traditional face-to-face exams. Among the proposed suggestions to reduce cheating in online exams is to shift from multiple-choice and memory-based questions to more demanding essay-style questions that require advanced critical thinking and reasoning abilities (Khan et al., 2022; Stanger-Hall, 2012; Whisenhunt et al., 2022). However, the rise of Generative Pre-trained Transformer models like ChatGPT has made this recommendation obsolete because these conversational models can effectively generate answers to challenging questions that require complex analysis, synthesis, and significant cognitive effort (Susnjak, 2022).

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 capabilities and generated human-like text with minimal effort, making it a potential menace to the integrity of online exams. The author suggested a few potential remedies, such as switching to invigilated and oral exams or adopting advanced proctoring techniques and using AI-text output detectors. The study highlighted the need for further research to better understand the implications of ChatGPT on higher education and to devise strategies to mitigate its misuse for online exam cheating.

Haque et al. (2022) conducted an empirical study using 10,732 tweets from early ChatGPT users. They found that most 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 misuse, such as the potential role of ChatGPT in encouraging plagiarism among students in take-home assignments and essay writing tasks.

Cotton et al. (2023) examined the opportunities and challenges of using AI-powered conversational models in higher education and provided some recommendations for the ethical and responsible use of these models. Among the identified opportunities, the authors cited enhancing student engagement and collaboration, facilitating remote personalized learning, and grading assignments in real-time. However, the study was co-conducted with the assistance of ChatGPT itself and did not provide any empirical evidence in support of the research findings.

Pavlik (2023) collaborated with ChatGPT to produce an essay that looked at the capacity and limitations of ChatGPT to infer new insights on the implications of generative AI on journalism and media education. The study revealed the strong potential of ChatGPT to generate high-quality written expressions that are relevant to the journalism and media domains. It also highlighted the limitations of ChatGPT in terms of a lack of knowledge depth and the limited capacity to reason critically or creatively.

In their research on exploring university students' perceptions of plagiarism, Gullifer and Tyson (2010) highlighted that in clinical psychology, when trying to modify people's attitudes or behaviors, it is essential to have a good understanding of the target person's perceptions of, and attitudes towards, the issue before commencing therapy. Ashworth et al. (1997, p. 187) argued that "understanding the student perspective on … plagiarism can significantly assist academics in their efforts to communicate appropriate norms." Likewise, it can be argued that exploring the attitude and perception of students and faculty towards ChatGPT can guide the development of appropriate strategies to address the issue with a higher likelihood of effectiveness.

This study aims to systematically investigate student and faculty knowledge, attitude, and perception towards ChatGPT, as well as faculty readiness to cope with it. The potential merits of such an investigation are as follows:

- Uncover biases and misconceptions around the use 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. In addition, this empirical study can guide the institution in updating its ethical guidelines and academic integrity policies to ensure the responsible use of ChatGPT.

- 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.

- Assess faculty preparedness and readiness to effectively use ChatGPT as a value-added educational tool while identifying the underlying adoption barriers. This can guide HEIs in developing faculty training and capacity-building programs to accelerate the integration of ChatGPT into the higher education realm.

- Stimulate further research on the impact of AI-powered conversational models on student learning and the moderating factors that shape such learning.

This study aims to address the following four main research questions:

RQ1: What are the students' and faculty's knowledge, attitude, and perception towards ChatGPT?

RQ2: Are faculty members adequately prepared to leverage the opportunities and address the challenges presented by ChatGPT?

RQ3: Do demographic variables, such as age, gender, field of study, and educational level, influence students' KAP regarding ChatGPT?

RQ4: Is there a correlation between students' and faculty's knowledge, attitudes, and perceptions regarding ChatGPT?

To address the above questions, we adopt a research design methodology that is guided by well-established theories and frameworks. These theories helped enhance the validity and reliability of our questionnaire and provided valuable guidance in interpreting the research results. These include:

- *Ethical Theories of Plagiarism* (e.g., Fishman, 2009): Looking at the ethical implications of ChatGPT not just as a potential stimulus for academic offenses but also as a potential trigger for deeper ethical and moral issues. This theory guided us in probing students' perception of ChatGPT regarding plagiarism, academic integrity, and moral values.

- *Theory of Unintentional Plagiarism* (e.g., Belter & DuPre, 2009): Looking at student and faculty awareness of and perspectives on ChatGPT's impact on plagiarism and raising the question of whether unaware students should be penalized.

- *Institutional Theory* (DiMaggio & Powell, 1983): Looking at how institutional policies and guidelines can shape the attitude and perception of students and faculty towards the effective use of ChatGPT.

- *Technology-Enhanced Learning (TEL) Framework* (Conole, 2013): Looking at some of the best ways to integrate technology (ChatGPT in our case) in educational settings. These include:

  - *Pedagogical design:* Aligning ChatGPT use with pedagogical goals such as personalized tutoring and feedback, engagement, etc.
  - *Institutional support:* Examining how faculty training on the appropriate use of ChatGPT and how a better awareness of use policies and guidelines could nurture a culture that promotes the effective and ethical adoption of ChatGPT.
  - *Learner characteristics:* Examining how understanding students' prior knowledge about ChatGPT, in addition to their perceptions and expectations, could help in the design of engaging and meaningful ChatGPT learning experiences.

- *Technology Acceptance Model (TAM3)* (Venkatesh & Bala, 2008): By examining the factors that could shape the adoption of and attitude towards ChatGPT, including perceived usefulness and ease of use.

- *Expectancy-Value Theory (EVT)* (Wigfield & Eccles, 2000): By examining how students and faculty perceive the merits of ChatGPT and how this perception influences their attitude towards adopting it.

- *Technological Pedagogical Content Knowledge Framework (TPACK)* (Mishra & Koehler, 2006): By examining how the interplay between Pedagogical Knowledge (PK), Content Knowledge (CK), and Technological Knowledge (TK) forms a solid foundation to explain and guide towards effective ChatGPT integration into educational practices and to develop efficient professional development programs to facilitate such integration.

This study is a major extension of our preliminary investigation presented in Kamoun et al. (2023).

METHODS

RESEARCH METHODOLOGY

The research methodology is based on an empirical quantitative approach, using surveys as data collection instruments. The survey employed structured questionnaires consisting of closed-ended questions to elicit responses from students and faculty and to gain insights into their KAP towards ChatGPT. A quantitative approach is a valuable research method to explore and understand phenomena while reaching out to a large sample, favoring generalization to a larger population, and safeguarding the respondents' anonymity (Xiong, 2022). A complementary qualitative study might be considered in the future to gain richer perspectives that a quantitative approach might not be able to uncover.

SAMPLE SELECTION

Our prospective cross-sectional empirical study was conducted over three months 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 the field of study and educational level, followed by random sampling) and convenience sampling methods (due to ease of access by two co-authors). 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 were distributed during class time. Respondents were briefed about the objectives of the study. They were made aware that their participation was completely voluntary and that they had the right to opt-out without any consequences or negative impact on them. Students were also duly informed that all collected data was anonymous and would be treated with confidentiality.

Faculty surveys, on the other hand, were conducted online via Google Forms that were 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 faculty survey included a fourth domain related to Readiness (R). Details of the questionnaires distributed to students and faculty can be found in Appendix A and Appendix B, respectively.

The first domain *(K)* aimed to probe students' and faculty members' knowledge of ChatGPT. Each knowledge item response score was either 0 (false answer) or 10 (correct answer). One specific item (K1) asked responders if they had heard about ChatGPT before, while another item (K4) prompted students to indicate for what purpose they have used ChatGPT. Though knowledge item (K3) does not have a "correct"answer, it does reflect familiarity of the respondent with ChatGPT, which could be a measure of knowledge. The knowledge items (K2-K3 and 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 it by 100%. 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 follows: 1 = very low, 2 = low, 3 = moderate, 4 = high and 5 = very high. 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 attitudes 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 a more positive attitude towards ChatGPT and vice-versa. To reduce bias, we reverse-coded some items such that a "strongly agree" response 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 perceptions toward the ethical and academic use of ChatGPT. It 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 the students' survey, seven items (P4, P7, P10, P12-P15) conveyed a negative perception towards ChatGPT, while five items (P5-P6, P8-P9, P11) conveyed a generally positive perception. For the faculty survey, four items (P1, P4, P6, P8) conveyed a negative perception of ChatGPT, while six (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%. 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 follows: 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.

The fourth and last domain *(R)* is applicable to faculty members only and probes their readiness toward the adoption of ChatGPT. It consisted of eight YES/NO items (R1-R8). Each item asked respondents to rate their agreement or disagreement with a given readiness statement, and it was evaluated on a binary scale (YES = 1, NO = 0). The readiness items under consideration have a total score range from 0 to 8. The readiness rate R_r was computed by dividing the readiness score by 8 and multiplying by 100%, and this measure was used to group the readiness scores on a 5-point Likert scale as follows: $R_r < 20 = 1$, $20 \leq R_r < 40 = 2$, $40 \leq R_r < 60 = 3$, $60 \leq R_r < 80 = 4$ and $R_r \geq 80 = 5$. Readiness scores were interpreted as follows: 1 = very low, 2 = low, 3 = moderate, 4 = high and 5 =

very high. Good readiness was noted when the overall average score, out of 5, and across all the items was greater than or equal to 4.

STATISTICAL ANALYSIS

This study used the 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 a single categorical variable. We present general KAPR levels descriptively in terms of means and standard deviations, and we use an independent t-test for KAPR score comparisons based on demographic variables, which we illustrate in terms of means, standard deviations, and p values.

RESULTS

DEMOGRAPHIC CHARACTERISTICS

Student demographic

Eight hundred and fifty-five respondents (555 engineering and 300 business students) participated in this study. Males constituted a slight majority, with 55.6%, compared to 44.4% female participation. The majority of respondents were Tunisians (97.8%), and 91.5% of the surveyed students were younger than 26 years old (Table 1).

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 demographic

The participants in this study were 145 faculty members (94 from the School of Engineering and 51 from the School of Business). Females constituted the majority, with 70.3%, compared to 29.7%

male participation. The majority of respondents (66.9%) had less than six years of work experience at either school, and the majority of faculty participants were from the School of Engineering (64.9%) (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 STUDENT 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 (Table 3).

Table 3. Internal consistency reliability and validity of student KAP

KAP index	Reliability* (Cronbach's α)	Validity**	
		Construct (Rotated component matrix)	Convergent (Correlation with total KAP)
Knowledge	**0.860**	0.564 (Item K2)	0.652
		0.512 (Item K3)	
		0.502 (Item K5)	
		0.546 (Item K6)	
		0.381 (Item K7)	
		0.772 (Item K8)	
		0.493 (Item K9)	
Attitude	**0.715**	**0.271** (Item A1)	0.652
		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)	

KAP index	Reliability* (Cronbach's α)	Validity**	
Perception	0.711	0.772(Item A12) 0.493 (Item A13) 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

RELIABILITY OF FACULTY KAP

Internal consistency reliability (Cronbach's α) for overall and each domain in faculty KAPR was relatively high (0.701–0.715): Knowledge (Cronbach's α = 0.715), Attitude (Cronbach's α = 0.701), Perception (Cronbach's α = 0.713), Readiness (Cronbach's α = 0.711), and total KAPR (Cronbach's α = 0.712) (see 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 KAP

Similarly, PCF analysis was conducted to provide evidence on the construct validity of the faculty KAPR instrument (Table 4). As may be seen, most of the items loaded highly as expected ($r > 0.4$), except for items K9 and R8. In addition, evidence of convergent validity was demonstrated whereby the correlation between subscales Knowledge, Attitude, and Perception with the total KAPR score was relatively high and significant ($r > 0.5$ & $p < 0.05$).

Table 4. Internal consistency reliability and validity of the faculty KAPR

KAPR index	Reliability (Cronbach's α)	Validity	
		Construct (rotated component matrix)	Convergent (correlation with total KAPR)
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)	**0.570**

KAPR index	Reliability (Cronbach's α)	Validity	
Attitude	0.701	0.727 (Item K10)	0.563
		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)	
Perception	0.713	0.664 (Item P1)	0.599
		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)	
Readiness	0.711	0.680 (Item R1)	0.572
		0.553 (Item R2)	
		0.661 (Item R3)	
		0.703 (Item R4)	
		0.513 (Item R5)	
		0.508 (Item R6)	
		0.423 (Item R7)	
		0.382 (Item R8)	
Total KAPR	0.712	-	-

* For reliability, Cronbach's α > 0.7
** For validity, values quoted with $p < 0.05$

GENERAL KAP/KAPR LEVELS

The students' 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 student population sample demonstrated moderate positive attitudes and perceptions toward ChatGPT and a below-average knowledge level (Table 5).

The faculty general KAPR level was in the moderate to neutral category (mean $= 3.0 \pm 1.05$). Among the three KAPR domains, Knowledge (mean $= 3.6 \pm 0.93$) emerged with the highest mean, followed by Attitude (mean $= 3.0, \pm 1.33$), Readiness (mean $= 3.0 \pm 1.06$), and lastly Perception (mean $= 2.8 \pm 0.96$) (Table 6). We also note that faculty members had varied opinions about the KAPR, as reflected by the dispersion of the responses around the mean. This is particularly noticeable for the attitude.

Table 5. Overall student 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 faculty Knowledge, Attitude, Perception,
Readiness, and total KAPR 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
Readiness	3	1.068	3.2	Moderate to neutral
Total KAPR	3	1.05	3	Moderate to neutral

KNOWLEDGE

The knowledge level of our student sample was low to moderate (mean = 2.4 ± 0.6). Among all respondents, 61.4% failed to recognize that ChatGPT is a chatbot, as opposed to being an AI-based programming language, a search engine, or a smart database system (*K2*). Of the sampled students, 42.5% did not recognize that the failure of ChatGPT to consistently provide entirely flawless responses is among its main limitations (*K8*). In comparison, 61.4% did not recognize that a key strength behind ChatGPT resides in its extensive "training" on a substantial volume of textual data (*K9*) (see Table 7 and Figure 1).

The knowledge level of the faculty sample regarding ChatGPT was moderate (mean = 3.6 ± 0.93). When asked if ChatGPT can help automatically grade assignments, 46.9% answered "No." Among all faculty respondents, 42.5% did not recognize that the failure of ChatGPT to provide flawless responses consistently 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*) (see Table 8 and Figure 2).

Table 7. Student knowledge regarding ChatGPT (*n* = 855)

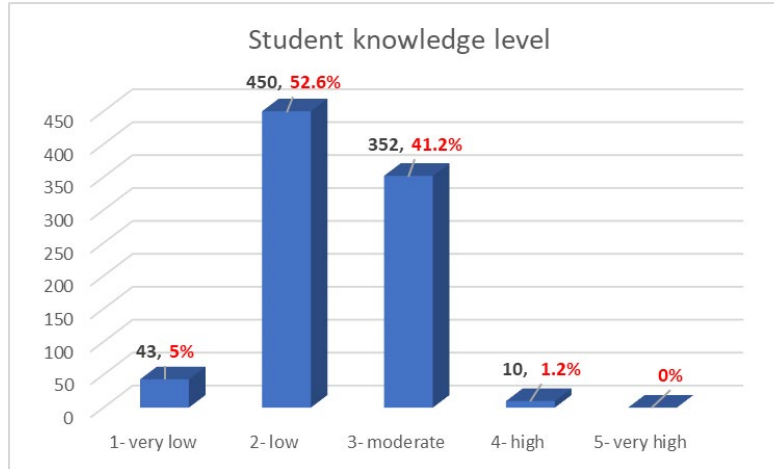| Question	% of correct answers
K2. What is ChatGPT?	38.6
K3. Have you used ChatGPT before?	88.9
K5. Who is the developer of ChatGPT?	89.7
K6. Can ChatGPT write computer programs?	89.7
K7. Can ChatGPT write poetry or song lyrics?	84.2
K8. What is the MAIN limitation of ChatGPT?	57.5
K9. What is the key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

Figure 1. Distribution of student knowledge scores ($n = 855$)

Table 8. Faculty 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?	51.0
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
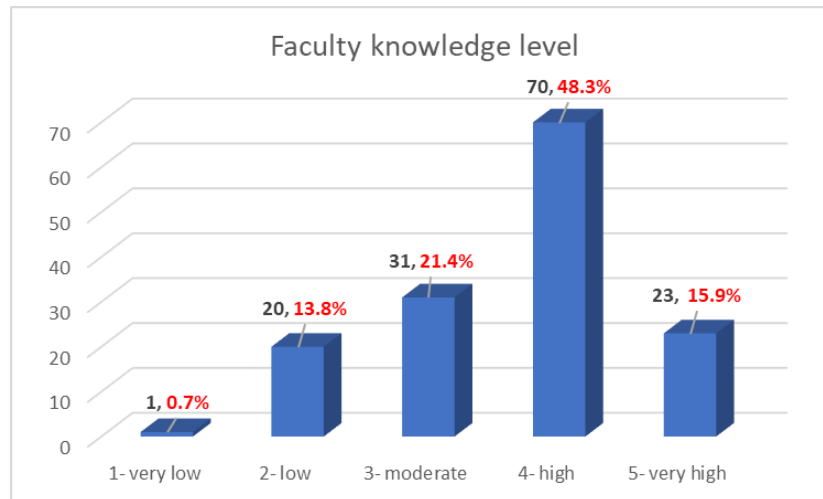
Figure 2. Distribution of faculty knowledge scores ($n = 145$)

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 ± 0.64, and the median was 3 out of 5, implying a moderately positive attitude (Table 9). 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 score 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 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 it favors students' plagiarism (A2). Of the surveyed students, 77% 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).

Table 9. Student 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. The 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

For the case of faculty, the mean attitude score towards ChatGPT was 3 ± 1.33, and the median was 2.8 out of 5, implying an overall moderate to neutral attitude (Table 10).

Table 10. Faculty 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

Statement	5. SA	4. A	3. N	2. D	1. SD	Mean*	SDev*	Median*
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

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 would 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 could 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 would 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).

PERCEPTION

Student perception level towards the ethical use of ChatGPT was moderately positive (mean = 3.6 ± 0.65). Across all respondents, 63% considered that the use 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 use 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 responses to general statements (P2 and P3) (Table 11).

Table 11. Student perception towards the ethical use 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 circumstances (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 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 use 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 (Table 12).

Table 12. Faculty 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%

Statement	YES Frequency percentage	NO Frequency percentage
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

FACULTY READINESS

The overall preparedness of faculty to adopt ChatGPT, explore its opportunities, and cope with its underlying challenges was regarded as moderate to neutral (mean = 3 ± 1.06). More than half of the surveyed faculty have discussed with students the ethical implications of ChatGPT (R1), and the majority (62.1%) felt that they are capable of distinguishing between students' own writing and the responses generated by ChatGPT (R8). On the negative side, 63.4% reported that:

- they do not have the needed training, support, and resources to integrate ChatGPT into their teaching practices (R6), and
- they did not train students on how to use ChatGPT effectively and responsibly (R2).

Further, only 44.1.% of faculty respondents are planning to integrate ChatGPT into their lesson plans (R4) (Table 13).

Table 13. Faculty readiness to adopt ChatGPT

Statement	YES Frequency percentage	NO Frequency percentage
R1. I discussed with students the ethical considerations involved in using ChatGPT, such as avoiding plagiarism and properly citing sources.	76 52.4%	69 47.6%
R2. I taught students how to use ChatGPT effectively and responsibly	53 36.6%	92 63.4%
R3. I feel that ESPRIT provided the necessary guidance and resources to ensure that students are able to use ChatGPT responsibly and effectively	49 33.8%	96 66.2%
R4. I plan to incorporate ChatGPT into my lesson plans	64 44.1%	81 55.9%
R5. I know how to use ChatGPT to foster collaborative problem-solving among students	56 38.6%	89 61.4%
R6. I have the needed training, support, and resources to effectively implement the usage of ChatGPT in my class	53 36.6%	92 63.4%
R7. I am ready to forward ChatGPT-based plagiarism cases to the academic misconduct disciplinary council	79 54.5%	66 45.5%
R8. I feel capable of distinguishing between student's own writing and the responses generated by ChatGPT.	90 62.1%	55 37.9%

COMPARISON OF KAP AND KAPR LEVELS BASED ON DEMOGRAPHIC CHARACTERISTICS

Table 14 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. At a 95% Confidence Interval (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 a less positive attitude towards it. Regarding the field of study, Management students demonstrated better knowledge than their Engineering counterparts, yet they reported lower positive attitudes and perceptions. While international students showcased lower knowledge about ChatGPT, they reported a more positive attitude towards it. There were no significant differences in the reported KAP levels between male and female respondents.

Table 14. 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		4.1	0.632		3.6	0.642	
	23-25	2.4	0.598	0.000	3.9	0.645	0.000	3.6	0.659	0.001
	> 25	2.5	0.575		3.8	0.655		3.5	0.606	
Field of Study	**Management**	--	--		--	--	--	--	--	
	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	--	--	0.000	--	--	0.003	--	--	0.002
	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		3.5	0.666		3.7	0.652	
	2	2.2	0.661		4	0.687		3.8	0.586	
	3	2.4	0.564	0.001	3.2	0.672	0.000	3.6	0.658	0.001
	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)

Tables 15 and 16 illustrate the comparison of the reported KAPR levels for the faculty based on demographic characteristics and using an independent t-test. At 95% CI, none of the faculty demographic variables had a significant impact on the KAPR level.

Table 15. Association between faculty 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	

Demographic variable		Knowledge			Attitude			Perception		
		Mean	SD	p-value* inter-group	Mean	SD	p-value* inter-group	Mean	SD	p-value* inter-group
University rank	Lecturer	3.7	0.917		3.7	0.873		3	1.040	
	Assistant professor	3.5	1.003		4	0.912		2.8	0.905	
	Associate professor	4	0.267	0.750	4.1	0.932	0.341	2.5	0.854	0.260
	Full professor	4.3	0.577		4	0.945		3.3	1.154	
Working experience at ESPRIT	< 3 years	3.4	1.011		3.7	0.885		2.7	0.863	
	3-5 years	3.7	0.883		3.8	0.881		2.9	0.976	
	6- 10 years	3.7	1.023	0.298	3.7	1.021	0.221	2.7	1.099	0.328
	> 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 16. Association between faculty demographic information and their readiness (R) for ChatGPT (n=145)

Demographic variable		Readiness		
		Mean	SD	p-value* inter-group
Gender	Male	2.4	1.075	0.388
	Female	2.6	1.045	
Affiliation	School of Engineering	2.5	1.074	0.161
	School of Business	2.7	1.001	
University rank	Lecturer	2.3	1.063	0.65
	Assistant professor	2.6	1.047	
	Associate professor	2.9	0.828	
	Full professor	3.3	1.154	
Working experience at ESPRIT	< 3 years	2.6	1.045	0.154
	3-5 years	2.3	1.077	
	6- 10 years	2.5	0.948	
	> 10 years	3	1.105	

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

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 17 and 18, respectively. The null hypothesis that the correlation is 0 was rejected at 0.01 level of significance (p <1%), implying that there is a positive correlation between knowledge, attitude, and perception levels.

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 KAPR variables. Nevertheless, we can infer a tendency for increased knowledge to induce a slightly higher attitude towards ChatGPT and a slightly better readiness. We also observe that faculty knowledge and perception are mildly inversely related, while attitude and perception, as well as attitude and readiness, have a modest positive association. Further, we notice a moderate positive correlation between faculty perception and readiness, suggesting a more notable association between these two variables.

Table 17. Correlation among student 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 18. Correlation among faculty KAPR levels*

Variable	Knowledge	Attitude	Perception	Readiness
Knowledge	1	0.075	-0.028	0.039
Attitude	0.075	1	0.065	0.061
Perception	-0.028	0.065	1	0.182
Readiness	0.039	0.061	0.182	1

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

The rich array of data depicted in Tables 5-18 and Figures 1-2 provides a wealth of insightful information in response to our research questions. The next section provides a deeper interpretation of the results and relates them to existing literature.

DISCUSSIONS AND IMPLICATIONS

Our study's findings captured the knowledge, attitude, and perception towards ChatGPT among a sample of 1000 surveyed individuals comprised of 855 students and 145 faculty members. It provided empirical evidence to previous contributions (e.g., Cotton et al., 2023) that tried to explore the merits and challenges of AI-driven conversational models in higher education.

KNOWLEDGE

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 does not align with reality given that most AI-driven conversational models are prone to errors and biases (e.g., Amaro et al., 2023; Ray, 2023). There are two direct implications for this finding. First, students and faculty should be trained on how to validate the reliability of AI-generated text by critically challenging the responses and cross-checking them against other credible information sources. Second, the providers of AI-driven conversational chatbots have the moral obligation to exercise due diligence through extended testing and validation to ensure that the generated text is accurate and reliable. They should also be held accountable for taking the necessary remedial actions and communicating the limitations of their solutions to the users. Doing so will help build a sustainable, trustworthy relationship with the public.

The fact that more than half of the surveyed faculty did not recognize the potential capability of ChatGPT in grading assignments suggests that there is a need to expose them to the merits (and potential pitfalls) of integrating ChatGPT into the assessment of students' work. Our study also revealed that while gender did not have an impact on the reported students' knowledge, other demographic variables, such as age, field of study (Management versus Engineering), and nationality, had some influence. For the case of faculty, none of the demographic variables influenced the reported KAPR levels.

ATTITUDE

Surveyed students showcased a moderately positive attitude towards ChatGPT. On the positive side, the majority perceived it as being useful (e.g., enhancing the quality of knowledge), easy to use, and reliable. These findings, when viewed through the lens of the Technology Acceptance Model (TAM3) (Venkatesh & Bala, 2008), underscore the important role that user-centered design plays in

facilitating the adoption of ChatGPT (Perceived Usefulness [PU], Perceived Ease of Use [PEOU] and output Quality [OQ]). The fact that more than half of the surveyed students consider ChatGPT as a potential tutor is in line with the growing proliferation of adaptive and personalized AI-based learning platforms that aim to align with students' learning characteristics to offer personalized and contextualized learning experiences.

On the negative side, the fact that 46.8% of surveyed students believed that ChatGPT favors plagiarism is similar to past research findings (e.g., Lovett-Hooper et al., 2007; Trushell et al., 2012) that highlight the mediating role of Information Technology in tempting students to engage in plagiarism. In addition, the fact that 45% of surveyed students believed that ChatGPT inhibits critical thinking provides evidence for the argument of Pavlik (2023) that not only can ChatGPT and other conversational models hinder critical thinking by stimulating passive consumption of information, but its output often displays limited creativity and critical thinking capacity. However, when viewed through the lens of Vygotsky's (1978) socio-cultural theory, we argue that ChatGPT and other AI-driven conversational models can take Vygotsky's key principle of "Social Interaction" and its role in promoting learning and cognitive development to a new level. In fact, if students were to acquire the skills and competencies to frame the right ChatGPT queries, refine their questions, and engage with ChatGPT in meaningful discussions and collaborative conversations, they might be able to further develop some higher-order thinking skills in the same way they would have achieved by engaging in conversational dialogues with other people.

Faculty attitude towards ChatGPT was comparatively more reserved than that of students. Our results showcased varying opinions, as reflected by the dispersion of the responses around the mean attitude score. This can be partially attributed to a combination of:

- limited knowledge among certain respondents,
- differences in prior hands-on experience with ChatGPT,
- personal attitude toward change and innovation, and
- prevalent misconceptions and stigmatization surrounding ChatGPT.

Despite the perceived reported skepticism about ChatGPT (catalyst for plagiarism [78.6%]; inhibitor of critical thinking [61.4%]; threat to the reliability of traditional homework assessments [74.5%]; the institutional reputation [45.6%]; and the profession [35.8%]), 60% of the surveyed faculty perceived ChatGPT as a potential catalyst for new innovative pedagogical practices. The fact that more than half of the surveyed faculty consider ChatGPT to be a threat to the integrity of unsupervised online exams aligns with Susnjak's (2022) argument that ChatGPT will jeopardize the authenticity of online assessments.

PERCEPTION

Students' predisposition to what constitutes plagiarism generally influenced their perception of the ethical use of ChatGPT. For instance, 48.2% of surveyed students did not believe that using ChatGPT without proper attribution would be considered plagiarism. Further, the fact that 63.6% of respondents perceived academically weak students to be more prone to plagiarize with ChatGPT confirms the finding of Gullifer and Tyson (2010) that academic standing is among the contributing factors towards plagiarism. The following additional reported perceptions towards the ethical use of ChatGPT raise a few concerns and have some implications for practice: plagiarism through the use of ChatGPT can be acceptable under certain circumstances (63.6%), and plagiarism arising from the use of ChatGPT would be acceptable in the absence of university rules (56.1%). According to the ethical theories of plagiarism (Fishman, 2009; Petress, 2003), if the use of ChatGPT without referencing can be justified from a student's viewpoint, then this poses a threat to (1) the academic integrity and the ethic of hard work, (2) the educational profession, (3) their readiness for the workplace (Marsden et al., 2005), and (4) more significantly, the core values of honesty and its deeper ethical

and moral underpinnings. In addition, when ChatGPT does not acknowledge the contributing authors in its "composite" response, it breaks the chain that links the original creators and the produced work, hence amplifying the impact of plagiarism (Stearns, 1992).

When examined under the lens of the Theory of Unintended Plagiarism (Belter & DuPre, 2009), the fact that most students are not fully aware of the unethical use of ChatGPT and its potential implications raises ethical questions on whether they should be penalized. Drawing from the Institutional Theory (DiMaggio & Powell, 1983), the latter argument brings into evidence the significant influence institutional policies and guidelines can exert on shaping students' perceptions and attitudes toward the effective and responsible utilization of ChatGPT. We also contend that the above insights into students' perceptions provide us with a deeper understanding of "learner characteristics" (a key pillar of the Technology-Enhanced Learning [TEL] framework [Conole, 2013]). This understanding suggests that most surveyed students are struggling to grasp the ethical and moral dimensions associated with the use of ChatGPT and that they are not ready yet to integrate it ethically and responsibly into their learning journey. Hence, there is a need to enhance students' awareness and stimulate their responsible engagement to create innovative and meaningful ChatGPT interactions and learning experiences.

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%]; the belief that weak students are more likely to plagiarize with ChatGPT [83.4%]; the 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%]). These findings reflect more pessimistic impressions than the general positive sentiments among early adopters of ChatGPT, as Haque et al. (2022) reported. Further, the fact that 17.2% of surveyed faculty hold a view that the use of ChatGPT without proper referencing does not constitute an act of plagiarism raises a few concerns and calls for clear communication and training on the ethical use of AI-generated content in academia. In this regard, we argue that "institutional support," which is another pillar of the TEL framework (Conole, 2013), can play an important role in facilitating the integration of the responsible use of ChatGPT through properly funded initiatives, training, and awareness programs, and well-articulated academic integrity policies. When viewed through the lens of the Expectancy-Value Theory (EVT) (Wigfield & Eccles, 2000), our research findings regarding the modest perception of faculty towards ChatGPT suggest that training and awareness campaigns aimed at showing the merits of ChatGPT can eventually change this perception, which can enhance faculty willingness to experiment with AI-driven conversational models.

FACULTY READINESS

Our empirical results on faculty readiness revealed that while most respondents plan to integrate ChatGPT into their pedagogical practices, 63.4% of them reported that they lack the requisite training, support, and resources to do so. This finding highlights the prevailing gap between the potential merits of ChatGPT in higher education and the faculty's readiness to reap these benefits. This could be explained by the fact that the sudden and rapid evolution of AI-driven conversational models has taken the academic community by surprise, leaving most institutions falling behind in terms of providing the support, professional development, and training needed. As suggested by the Technological Pedagogical Content Knowledge (TPACK) framework (Mishra & Koehler, 2006), the effective integration of AI-driven conversational models into future educational practices would require recognizing the intricate relationship between content knowledge, pedagogical knowledge, and technological knowledge. In particular, cultivating adequate Technological Pedagogical Knowledge (TPK), which describes how faculty members assimilate the impact of ChatGPT on their teaching methods and students' learning experiences, emerges as a requisite for an effective training and professional development strategy. Most HEIs have established centers for teaching and learning or pedagogical innovation, and these should take the lead in developing faculty Technological Pedagogical

Knowledge around ChatGPT and in sharing exemplar case studies and best practices to integrate it in the classroom.

Moving forward, we argue that it is most likely that AI-driven conversational models will soon be seamlessly incorporated into students' writing practices, similar to how predictive text, spelling, and grammar checkers have been integrated. 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. Therefore, we recommend introducing a specialized course to train students on the art of formulating and refining queries when interacting with AI-powered conversational models while adhering to the principles of ethical and responsible use.

RESEARCH LIMITATIONS

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

1. The findings of this contribution were based on surveys conducted in a particular educational setting at a private higher educational institution in Tunisia. Therefore, it is not sure whether these are also applicable elsewhere. This is particularly true, given that differences in culture might influence the way responders perceive the merits and the ethical issues associated with ChatGPT.
2. Caution must be exercised in generalizing our findings due to the study's exploratory nature and relatively small sample size. Some bias with sample selection is worth mentioning, especially with the partial reliance on convenience sampling in the administration of the engineering students' surveys.
3. This study was conducted just two months after the official launch of ChatGPT, and hence, it captures the initial KAP among students and faculty.
4. The computation of the KAP statistics was based on the simplified "equal weighting assumption" among the KAP items, which can lead to skewed interpretation. Future research can focus on introducing appropriate weighting techniques to reflect the actual significance of each individual KAP item.
5. The exclusive reliance on a quantitative approach limited the in-depth interpretation of our empirical results.

CONCLUSION

The recent rise of AI-based conversational models has taken the academic community by surprise, and this was reflected in the reported lack of faculty readiness to integrate ChatGPT into their pedagogical practices. Our research findings highlight the gap between the potential merits of ChatGPT and the faculty's readiness to tap into the opportunities it offers as a value-added pedagogical tool.

Our study echoed earlier concerns that the irresponsible use of ChatGPT might not only hinder academic integrity but also challenge the deeper ethical and moral values of honesty and hard work while questioning the authenticity of online academic work and assessment. HEIs should take the lead in providing the needed institutional support to facilitate the ethical integration of ChatGPT. The emergence of AI-powered conversational models in higher education calls for immediate actions to address the academic integrity concerns reported in this study and its associated moral values. These actions can take many forms, including revisiting existing academic integrity policies, communicating clear guidelines on the ethical use of AI chatbots, and rethinking the way homework assessments are designed by incorporating oral presentations and discussions (in addition to reports' submissions) and requesting a formal written statement on whether AI-driven conversational models have been used in preparing the submitted work.

This study provided valuable insights into the lower-than-expected ChatGPT's KAP levels 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 HEIs must find the right balance between leveraging ChatGPT to enhance students' learning, engagement, and retention and the need for the assessment to authentically reflect the students' competencies. HEIs should facilitate constructive open forums and dialogues among students, faculty, and other key stakeholders to debate 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.

This study can be further explored in many directions:

- First, it would be useful to conduct cross-cultural studies to investigate if cultural differences might influence students' and faculty's KAP towards ChatGPT.
- Second, we suggest conducting a longitudinal study to examine the evolution of the KAP levels as students and faculty gain more exposure to ChatGPT.
- Third, it will be interesting to conduct a qualitative research methodology to complement this study and uncover new insights that this quantitative study alone might not have captured.
- Fourth, future research can test whether AI-driven conversational models inhibit critical thinking by facilitating the passive consumption of information or whether they can develop some higher-order thinking skills when students actively engage in meaningful discussions and collaborative conversations with these models.
- Finally, we invite other researchers to refine the surveys adopted in this study further to gain more in-depth perspectives regarding the KAP levels among students and faculty.

REFERENCES

Alessio, H. M., Malay, N., Maurer, K., Bailer, A. J., & Rubin, B. (2017). Examining the effect of proctoring on online test scores. *Online Learning*, *21*(1), 146–161. https://doi.org/10.24059/olj.v21i1.885

Amaro, I., Della Greca, A., Francese, R., Tortora, G., & Tucci, C. (2023). AI unreliable answers: A case study on ChatGPT. In H. Degen, & S. Ntoa (Eds.), *Artificial intelligence in HCI*. Springer. https://doi.org/10.1007/978-3-031-35894-4_2

Ashworth, P., Bannister, P., & Thorne, P. (1997). Guilty in whose eyes? University students' perceptions of cheating and plagiarism in academic work and assessment. *Studies in Higher Education*, *22*(2), 187–203. https://doi.org/10.1080/03075079712331381034

Belter, R. W., & DuPre, A. (2009). A strategy to reduce plagiarism in an undergraduate course. *Teaching of Psychology*, *36*(4), 257–261. https://doi.org/10.1080/00986280903173165

Burton, L. J. (2007). *An interactive approach to writing essays and research reports in psychology* (2nd ed.). John Wiley & Sons.

Conole, G. (2013). *Designing for learning in an open world*. Springer. https://doi.org/10.1007/978-1-4419-8517-0

Corrigan-Gibbs, H., Gupta, N., Northcutt, C., Cutrell, E., & Thies, W. (2015). Deterring cheating in online environments. *ACM Transactions on Computer-Human Interaction*, *22*(6), 1–23. https://doi.org/10.1145/2810239

Cotton, D. R. E., Cotton, P. A., & Shipway, J. R. (2023). Chatting and cheating: Ensuring academic integrity in the era of ChatGPT. *Innovations in Education and Teaching International*. https://doi.org/10.1080/14703297.2023.2190148

DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, *48*(2), 147–160. https://doi.org/10.2307/2095101

Fask, A., Englander, F., & Wang, Z. (2014). Do online exams facilitate cheating? An experiment designed to separate possible cheating from the effect of the online test taking environment. *Journal of Academic Ethics*, *12*(2), 101–112. https://doi.org/10.1007/s10805-014-9207-1

Fishman, T. (2009, September). "We know it when we see it" is not good enough: Toward a standard definition of plagiarism that transcends theft, fraud, and copyright. *Proceedings of the 4th Asia-Pacific Conference on Educational Integrity, Wollongong, Australia,* 45–53.

Gullifer, J., & Tyson, G. A. (2010). Exploring university students' perceptions of plagiarism: A focus group study. *Studies in Higher Education*, *35*(4), 463–481. https://doi.org/10.1080/03075070903096508

Haque, M. U., Dharmadasa, I., Sworna, Z. T., Rajapakse, R. N., & Ahmad, H. (2022). *"I think this is the most disruptive technology": Exploring sentiments of ChatGPT early adopters using Twitter data.* arXiv:2212.05856. https://doi.org/10.48550/arXiv.2212.05856

Kamoun, F., El Ayeb, W., Jabri, I., Sifi, S., & Iqbal, F. (2023, July). Knowledge, attitude, and perception towards ChatGPT among university students and faculty: A preliminary exploration. *Proceedings of the 11th European Conference on Education, London, UK.* https://doi.org/10.22492/issn.2188-1162.2023.20

Khan, S., Kambris, M. E. K., & Alfalahi, H. (2022). Perspectives of university students and faculty on remote education experiences during COVID-19: A qualitative study. *Education and Information Technologies*, *27*(3), 4141–4169. https://doi.org/10.1007/s10639-021-10784-w

Lovett-Hooper, G., Komarraju, M., Weston, R., & Dollinger, S. J. (2007). Is plagiarism a forerunner of other deviance? Imagined futures of academically dishonest students. *Ethics & Behavior*, *17*(3), 323–336. https://doi.org/10.1080/10508420701519387

Marsden, H., Carroll, M., & Neill, J. T. (2005). Who cheats at university? A self-report study of dishonest academic behaviors in a sample of Australian university students. *Australian Journal of Psychology*, *57*(1), 1–10. https://doi.org/10.1080/00049530412331283426

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for integrating technology in teachers' knowledge. *Teachers College Record*, *108*(6), 1017–1054. https://doi.org/10.1111/j.1467-9620.2006.00684.x

Montclair State University. (2023). *Practical responses to ChatGPT.* https://www.montclair.edu/faculty-excellence/teaching-resources/clear-course-design/practical-responses-to-chat-gpt/

Nerdy NAV. (2023). *ChatGPT Statistics.* https://nerdynav.com/chatgpt-statistics/

Noorbehbahani, F., Mohammadi, A., & Aminazadeh, M. (2022). A systematic review of research on cheating in online exams from 2010 to 2021. *Education and Information Technologies*, *27*, 8413–8460. https://doi.org/10.1007/s10639-022-10927-7

OpenAI. (2023). *Introducing ChatGPT.* https://openai.com/blog/chatgpt/

Pavlik, J. V. (2023). Collaborating with ChatGPT: Considering the implications of generative artificial intelligence for journalism and media education. *Journalism & Mass Communication Educator*, *78*(1), 84–93. https://doi.org/10.1177/10776958221149577

Petress, K. (2003). Academic dishonesty: A plague on our profession. *Education*, *123*(3), 624–627.

Ray, P. P. (2023). ChatGPT: A comprehensive review on background, applications, key challenges, bias, ethics, limitations and future scope. *Internet of Things and Cyber-Physical Systems*, *3*, 121–154. https://doi.org/10.1016/j.iotcps.2023.04.003

Stanger-Hall, K. F. (2012). Multiple-choice exams: An obstacle for higher-level thinking in introductory science classes. *CBE – Life Sciences Education*, *11*(3), 294–306. https://doi.org/10.1187/cbe.11-11-0100

Stearns, L. (1992). Copy wrong: Plagiarism, process, property, and the law. *California Law Review*, *80*(2), 513–553. https://doi.org/10.2307/3480772

Susnjak, T. (2022). *ChatGPT: The end of online exam integrity?* arXiv:2212.09292. https://doi.org/10.48550/arXiv.2212.09292

Trushell, J., Byrne, K., & Simpson, R. (2012). Cheating behaviours, the Internet and education undergraduate students. *Journal of Computer Assisted Learning*, *28*(2), 136–145. https://doi.org/10.1111/j.1365-2729.2011.00424.x

Venkatesh, V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*, *39*(2). 273–315. https://doi.org/10.1111/j.1540-5915.2008.00192.x

Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes.* Harvard University Press.

Whisenhunt, B. L., Cathey, C. L., Hudson, D. L., & Needy, L. M. (2022). Maximizing learning while minimizing cheating: New evidence and advice for online multiple-choice exams. *Scholarship of Teaching and Learning in Psychology*, *8*(2), 140–153. https://doi.org/10.1037/stl0000242

Wigfield, A., & Eccles, J. S. (2000). Expectancy-value theory of achievement motivation. *Contemporary Educational Psychology*, *25*(1), 68–81. https://doi.org/10.1006/ceps.1999.1015

Xiong, X. (2022). Critical review of quantitative and qualitative research. *Proceedings of the Third International Conference on Mental Health, Education and Human Development* (pp. 956–959). Atlantis Press. https://doi.org/10.2991/assehr.k.220704.172

APPENDIX A – STUDENT QUESTIONNAIRE

Dear student: We are conducting this research to explore ways to make best usage of generative AI-powered conversational tools, including ChatGPT at ESPRIT. We would greatly appreciate a few moments of your time to complete this survey (it should require about 10 minutes). Your participation in this study is completely voluntary, and you have the right to opt out without any consequences or negative impact on you. The data collected in this survey will be kept **confidential** and **anonymous**. Thank you for your kind contribution.

D. 1. What is your gender?
☐ Male   ☐ Female

D.2. What is your age?
☐ 18-22   ☐ 23-25   ☐ > 25

D.3. What are you studying?
☐ Management – License
☐ Management – Master
☐ Engineering – Informatics / Telecom
☐ Engineering – Electro-mechanical
☐ Engineering – Civil

D.4. Which year of study in the current cycle?
☐ 1   ☐ 2   ☐ 3   ☐ 4   ☐ 5

D.5. What is your Nationality?
☐ Tunisian   ☐ Other

K.1. Have you heard about ChatGPT before?
☐ YES   ☐ NO

K.2. What is ChatGPT?

☐ Search engine   ☐ Chatbot ☐ Smart database system   ☐ AI-based programming language

K.3. Have you used ChatGPT before?
☐ YES   ☐ NO

K4. If yes, for what purpose?
☐ Help in an assignment/ project ☐ Help in an exam ☐ Just for curiosity ☐ Others:

K5. Who is the developer of ChatGPT??
☐ Google   ☐ GPTInc   ☐OpenAI   ☐ Nvidia

K6. Can ChatGPT write computer programs?
☐ YES   ☐ NO

K7. Can ChatGPT write poetry or song lyrics?
☐ YES   ☐ NO

K8. What is the MAIN limitation of ChatGPT?
☐ It can be very slow
☐ It does not always provide correct responses
☐ It requires a computing device with large processing power
☐ It has limited knowledge of events that occurred after 2019

K9. What is the key strength behind ChatGPT ?
☐ It integrates Google and Bing search engines
☐ It uses a very large database thanks to Microsoft Azure cloud
☐ It has been "trained" on a large amount of text
☐ It uses an advanced predictive tool

A. On a scale from 5 (strongly agree) to 1 (strongly disagree), please rate the following statements.

Statement	5. Strongly Agree	4. Agree	3. Neutral	2. Disagree	1. Strongly Disagree
A1. ChatGPT enhances students' creativity	O	O	O	O	O
A2. ChatGPT favors students' plagiarism	O	O	O	O	O
A3. ChatGPT inhibits students' critical thinking	O	O	O	O	O
A4. ChatGPT enhances the quality of knowledge attained	O	O	O	O	O
A5. ChatGPT is easy to use	O	O	O	O	O
A6. ChatGPT should be integrated as a supplementary learning ressource	O	O	O	O	O
A7. The usage of ChatGPT should be banned at ESPRIT	O	O	O	O	O
A8. ChatGPT is an unreliable source of knowledge - I do not trust it	O	O	O	O	O
A9. I enjoy reading academic writing produced by ChatGPT	O	O	O	O	O

Statement	5. Strongly Agree	4. Agree	3. Neutral	2. Disagree	1. Strongly Disagree
A10. Use of ChatGPT for academic writing can harm the reputation of ESPRIT	◯	◯	◯	◯	◯
A11. ChatGPT will help develop my skills in asking good questions	◯	◯	◯	◯	◯
A12. ChatGPT can be my personal tutor	◯	◯	◯	◯	◯
A13. ChatGPT is a real threat to the engineering/management profession	◯	◯	◯	◯	◯

P. Please rate your agreement (YES) or disagreement (NO) with the following statements.

Statement	YES	NO
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.	◯	◯
P2. Rewriting or paraphrasing the material from any source without saying where the original material comes from is plagiarism	◯	◯
P3. Cutting and pasting material from various sources without referencing where it comes from is plagiarism	◯	◯
P4. I know that I am not allowed to use ChatGPT for graded assessments	◯	◯
P5. I am fully aware of ESPRIT policy regarding the usage of ChatGPT	◯	◯
P6. Using ChatGPT to produce academic writing without proper attribution would be considered plagiarism	◯	◯
P7. Reliance on ChatGPT discourages critical thinking, problem solving and creativity	◯	◯
P8. Plagiarism from ChatGPT can be detected by my instructor using special plagiarism detection software	◯	◯
P9. ChatGPT can infringe copyright because the generated text can violate the rights of the original creators and authors	◯	◯
P10. For academic writing, it is better for students to use their own knowledge, skills, and research than relying on ChatGPT	◯	◯
P11. ChatGPT should be used to complement my own research and writing and not to complete my assigned homework	◯	◯
P12. Using ChatGPT for plagiarism can be acceptable under certain circumstance (e.g., extreme financial pressures, or low learning value of the assignment)	◯	◯
P13. In the absence of university rules, using ChatGPT for plagiarism is acceptable	◯	◯
P14. It is no big deal if I submit a homework using ChatGPT generated text and with no referencing	◯	◯
P15. Academically weak students are more likely to plagiarise with ChatGPT	◯	◯

Knowledge, Attitudes, and Perceptions Towards ChatGPT

APPENDIX B – FACULTY QUESTIONNAIRE

Dear faculty: We are conducting this research to explore ways to make best usage of generative AI-powered conversational tools, including ChatGPT at ESPRIT. We would greatly appreciate a few moments of your time to complete this survey (it should require about 10 minutes). Your participation in this study is completely voluntary, and you have the right to opt out. The data collected in this survey will be kept **confidential** and **anonymous**. **No email addresses will be collected**. Thank you for your kind contribution.

D. 1. What is your gender?

☐ Male   ☐ Female

D.2. What is your School/Department?

☐ ESE – Informatique
☐ ESE – Telecom
☐ ESE – Tronc commun TIC
☐ ESE – COGED
☐ ESE - EM
☐ ESE - GC
☐ ESB – Management
☐ ESB – LACC
☐ ESB – IMA

D.3. What is your title?

☐ Stagiaire / Ingénieur Formateur
☐ Assistant Technologue / Enseignant Formateur Associé / Professeur de Langue
☐ Technologue / Enseigant Formateur / Professeur aggrégé de Langue
☐ Maitre Technologue / Enseigant Formateur Senior / Professeur aggrégé de Langue classe II
☐ Profeseur Technologue / Enseignat Formateur Manager/ Professeur aggrégé de Langue Classe III

D.4. How long have you been working at ESPRIT?

☐ Less than 3 years   ☐ 3-5 years   ☐ 6-10 years   ☐ > 10 years

K.1. Have you heard about ChatGPT before?

☐ YES   ☐ NO

K.2. What is ChatGPT?

☐ Search engine ☐ Chatbot ☐ Smart database system ☐ AI-based programming language

K.3. Have you used ChatGPT before?

☐ YES   ☐ NO

K.4. When was ChatGPT released?

☐ Feb-2021   ☐ March-2022   ☐ Jan-2023 ☐ Nov-2022

K5. Who is the developer of ChatGPT??

☐ Google   ☐ GPTInc   ☐OpenAI   ☐ Nvidia

30

K6. What is the MAIN limitation of ChatGPT?
☐ It can be very slow
☐ It does not always provide correct responses
☐ It requires a computing device with large processing power
☐ It has limited knowledge of events that occurred after 2019

K7. What is the key strength behind ChatGPT ?
☐ It integrates Google and Bing search engines
☐ It uses a very large database thanks to Microsoft Azure cloud
☐ It has been "trained" on a large amount of text
☐ It uses an advanced predictive tool

K8. ChatGPT can be used to create content including quizzes, and exam questions
☐ YES   ☐ NO

K9. I am familiar with plagiarism detection tools for ChatGPT-generated content
☐ YES   ☐ NO

K10. ChatGPT can help me in the automatic grading of assignments.
☐ YES   ☐ NO

A. On a scale from 5 (strongly agree) to 1 (strongly disagree), please rate the following statements.

Statement	5. Strongly Agree	4. Agree	3. Neutral	2. Disagree	1. Strongly Disagree
A1. ChatGPT enhances students' creativity	○	○	○	○	○
A2. ChatGPT favors students' plagiarism	○	○	○	○	○
A3. ChatGPT inhibits students' critical thinking	○	○	○	○	○
A4. ChatGPT enhances the quality of knowledge attained by students	○	○	○	○	○
A5. ChatGPT is easy to use	○	○	○	○	○
A6. ChatGPT should be integrated as a supplementary learning resource in my courses	○	○	○	○	○
A7. The usage of ChatGPT should be banned at ESPRIT	○	○	○	○	○
A8. ChatGPT is an unreliable source of knowledge - I do not trust it	○	○	○	○	○
A9. I enjoy reading academic writing produced by ChatGPT	○	○	○	○	○
A10. The use of ChatGPT to produce academic writing can harm the reputation of ESPRIT	○	○	○	○	○
A11. ChatGPT will help develop my skills in asking good questions	○	○	○	○	○
A12. ChatGPT is a real threat to the engineering / management profession	○	○	○	○	○
A13. I believe that ChatGPT will make unsupervised online exams impossible	○	○	○	○	○
A14. I believe that ChatGPT will make traditional homework obsolete	○	○	○	○	○

A15. ChatGPT can eventually question the future role of instructors	○	○	○	○	○
A16. I believe that ChatGPT will open for me new opportunities for innovative pedagogical practices	○	○	○	○	○

P. Please rate your agreement (YES) or disagreement (NO) with the following statements.

Statement	YES	NO
P1. Students know that they are not allowed to use ChatGPT for graded assessments	○	○
P2. Students are fully aware of ESPRIT policy regarding the usage of chatGPT	○	○
P3. Using ChatGPT to produce academic writing without proper attribution would be considered plagiarism	○	○
P4. Reliance on ChatGPT discourages critical thinking, problem solving and creativity	○	○
P5. ChatGPT can infringe copyright because the generated text can violate the rights of the original creators and authors	○	○
P6. For academic writing, it is better for students to use their own knowledge, skills, and research than relying on ChatGPT	○	○
P7. The information generated by ChatGPT is accurate and reliable	○	○
P8. Academically weak students are more likely to plagiarise with ChatGPT	○	○
P9. I would accept ChatGPT-generated homework as long as it is credited	○	○
P10, ChatGPT is likely to have a significant impact on university education (e.g. teaching and assessment)	○	○

R. Please rate your agreement (YES) or disagreement (NO) with the following statements.

Statement	YES	NO
R1. I discussed with students the ethical considerations involved in using ChatGPT, such as avoiding plagiarism and properly citing sources.	○	○
R2. I taught students how to use ChatGPT effectively and responsibly	○	○
R3. I feel that ESPRIT provided the necessary guidance and resources to ensure that students are able to use ChatGPT responsibly and effectively	○	○
R4. I plan to incorporate ChatGPT into my lesson plans	○	○
R5. I know how to use ChatGPT to foster collaborative problem-solving among students	○	○
R6. I have the needed training, support and ressources to effectively implement the usage of ChatGPT in my classs	○	○
R7. I am ready to forward ChatGPT-based plagiarism cases to the academic misconduct disciplinary council	○	○
R8. I feel capable of distinguishing between student's own writing and the responses generated by ChatGPT.	○	○

AUTHORS

Professor Faouzi Kamoun is the Deputy General Manager of ESPRIT School of Business and the Director of the Research Office at ESPRIT. His most recent research focuses on the ethical, legal, and social implications of emerging technologies. Recently, Faouzi has been involved in projects exploring the impact of Generative AI models on cybersecurity as well as on students' learning and faculty's teaching and assessment.

Dr. Walid El Ayeb is the Director of studies at ESPRIT School of Business. He is a Software Engineer and holds a Ph.D. in Information Technology. He worked as a data consultant in the industry and taught in several engineering and business schools. His research focuses on the importance of adapting services to users through the applications of AI and data analytics techniques.

Ibtissem Jabri is the head of admissions at ESPRIT School of Business, and she currently leads many institutional effectiveness initiatives. She is a professional with 22 years of experience in statistics and data analysis. Before joining the ESPRIT School of Business, Ibtissem held many project management positions and led various missions in Tunisia and Algeria on behalf of multinational companies.

Sami Sifi is the head of the "Evening Classes" program at ESPRIT School of Engineering. He is an Associate Professor in Applied Mathematics with a special interest in the applications of AI and machine learning algorithms. Sami holds a Ph.D. in Management Science and has conducted research on pedagogical innovation and the development of academic social networks to enhance collaboration and stimulate collective intelligence among students.

Farkhund Iqbal is a Professor at the College of Technological Innovation, Zayed University, United Arab Emirates. He is the team lead for the Cybersecurity and Digital Forensics (CAD) research group at the Center for Smart Cities and Intelligent Systems, Zayed University. He holds a Master's (2005) and a Ph.D. (2011) from Concordia University, Canada. He has more than 15 years of teaching and research experience. He is using Artificial Intelligence, Machine Learning, Service Robotics, and Data Analytics techniques for problem-solving in digital security, digital forensics, healthcare, education, and smart city domains. He is an Adjunct Professor at the School of Information Studies, McGill University, Canada, and an Associate Graduate Faculty member in the Faculty of Business and IT, Ontario Tech University, Canada.