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The impact of ChatGPT service on students' performance: Moderated by training

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C H R O N I C L E

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A B S T R A C T

This research paper aims to test the effects of ChatGPT on students' performance while using training to moderate this effect. The current paper uses a quantitative, descriptive, cause-effect approach. A cross-sectional sampling approach was used to collect the data online from 117 students in three Jordanian universities (Princess Sumaya University, University of Jordan, and German Jordanian University) by using a survey questionnaire. Data has been tested for its validity and reliability before testing hypotheses. The results indicated that the students agreed on the importance of ChatGPT (ease of use, accuracy, and plagiarism), however, most of the respondents did not agree on the importance of training on ChatGPT and they say it is easy and does not need training. The results also show that there are significant correlations among ChatGPT dimensions (ease of use, accuracy, and plagiarism). However, there is a significant correlation between training and plagiarism only, and there is an insignificance between training and both ease of use and accuracy, which supports the respondents' viewpoint that the training is not important. Finally, findings indicate that there is a significant strong correlation between all other variables (ease of Use, accuracy, and plagiarism) and students' performance, and a weak relationship with training. Finally, results show that there is a significant impact of ChatGPT (Accuracy, ease of use, and plagiarism) on students' performance, where plagiarism has rated the highest significant effect, then accuracy, while ease of use has an insignificant effect. Moreover, results demonstrated that training has an insignificant moderation effect between ChatGPT and students' performance.

1. Introduction

Recently, there has been increasing interest in integrating artificial intelligence (AI) techniques into educational environments. Open AI created ChatGPT, which is also referred to as Chat Generative Pre-Trained Transformer. According to (Tlili et al., 2023), ChatGPT is an advanced intelligence interface (Kim, 2023). Assisted by pre-trained generation transformers, it can also understand and respond to the spoken word (Camilleri, 2024). When natural language text is analyzed and processed, ChatGPT produces responses to various inquiries, asks questions in return, points out wrong introductions or introduces alternative ones, and refuses inappropriate requests (Kocoń et al., 2023). With its output, human-like ChatGPT is a valuable tool for chatting and Chatbot applications. Using ChatGPT to enhance student learning outcomes has been a major focus for teachers and researchers these days (Atlas, 2023). To understand the effects of deploying ChatGPT in education contexts, it is important to explore training. The word

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training refers to the process of providing ChatGPT with large-scale groupings of data and letting it learn patterns and linguistic structures from that data (Elshaer & Hasanein, 2024). It is through such ChatGPT training that accurate and appropriate responses are generated. Training determines the capabilities and performance of ChatGPT (Toktosunova et al., 2023). Through suitable instruction, ChatGPT may be improved to provide correct and relevant information in educational contexts (Masters-wheeler et al., 2023). With the integration of technology into educational institutions, ChatGPT is a dependent service that represents a signpost in the way students learn. With these conversational AI tools gradually being incorporated into education, ChatGPT service has a positive influence on the quality of students in the humanities, so a training workshop should be organized in time (Bai et al., 2023; Castillo et al., 2023). This entails a capacity for novelty, which must be noticed and approved before pupils feel comfortable using it (Kim, 2023). It is expected that this research paper will provide the best view for teachers, policymakers, and researchers to create possible advantages & challenges of machine learning in CL communication games (Vrontis et al., 2023). In addition, these ideas may suggest that an analysis can offer to teachers in returning a valid sight, and the training programs discovered for this review could allow coaches to indirectly direct students towards using ChatGPT services leading to a substantial impression on learning results. Therefore, the objective of the research is to measure the effect of ChatGPT on student performance in presence moderation for training. More particularly, this study will endeavor to achieve the following sub-objectives:

1.1: To identify the Check ChatGPT usage and its performance with students.

1.2: To explore the influence of ChatGPT accuracy, ease of use, and plagiarism on students' performance as a sub-objective this will be analyzed to clarify how it affects students' behavior respectively into a relevant dimension.

1.3: To Explore the moderating effect of training between ChatGPT service and students' performance

2. Literature Review and Hypotheses Development

2.1 ChatGPT

The ChatGPT (which stands for pre-chatting timeline) should be seen as an improved user interface to a dialogue engine (Tlili et al., 2023). Due to the growth of another million customers and the creation of artificial intelligence (AI), ChatGPT contains an Achilles heel: self-directed learning. Investigating the potential of ChatGPT as a self-directed learning platform is critical to defining the future of education and technology-enabled learning, and finding ways we can harness Chatbots & AI correctly by how it should be used for educators/students through their skill sets with the support they may avail from an autonomous AI system (like implementing into programs), which students can then use automatically at any time making way toward independent study that may help them further accelerate in their learnings/growths. Information regarding decisions on policy for integrating these technologies in educational contexts can come from research. Similar: A Chatbot deployed using ChatGPT available across several channels such as messaging services, websites, or smartphone applications. It can also be conveyed through a text or voice and it will respond immediately (Karakose et al., 2023). It is designed to handle a massive number of conversations at the same time with different individuals. Q: Your technology is powered by the GPT-3 language model, which allows Chat Phrases to talk naturally and conversationally with consumers on support issues (Bragg et al., 2021; Demszky et al., 2021). For those learners who are learning themselves, this may be useful since it can understand natural language input and provide custom recommendations (Bin-Nashwan et al., 2023). Several papers discussing ChatGPT were written in the education field and students including, a paper by (Montenegro-Rueda et al., 2023), which evaluates the impact of using the ChatGPT tool in educational settings. The research gives different overviews of analyzing the previous studies on ChatGPT in learning to define its effect, challenges, and ways of application in education (Borger et al., 2023). Moreover, an article by (Sharma & Yadav, 2022) talks about ChatGPT as a Technological tool that creates benefits and Challenges for the Education System, this article helps us to answer the following question: Is ChatGPT advantageous or harmful to the educational system? Can ChatGPT be implemented as a tool for teaching and learning? The findings and results of the paper came from balancing the benefits of the ChatGPT against its disadvantages. Even if it seems promising at first, it's in the early stages of development. AI-based Chatbots like ChatGPT and human roles must coexist since the core of learning is supervising or directing education for the learners (Hill-Yardin et al., 2023). Human and mechanical responsibilities complement each other because pupils must have someone watching over them as they learn. This article's conclusions suggest using ChatGPT as a teaching and learning tool. However, responsible use of digital technology is something that both educators and students need to master.

2.2 Students' Performance

Performance in this study will be measured by focusing on creativity, writing skills, and personal learning.

Creative: it transfers opinion to fact and keeps open-minded to various viewpoints. Moreover, it is the capacity to organize the learned knowledge into a comprehensible and consistent whole (Ali & Djalilian, 2023). Furthermore, it is not limited to writing. It might involve reading, talking about, and debating. Since writing aids in certain students' ability to organize their schooling, it is a vital component of academic instruction. Speaking, painting, and making art are all powerful ways to organize ideas in addition to writing. The kind of analytical and problem-solving skills necessary for success in the classroom and daily life are not developed by dependence on these technologies (Alrayes et al., 2024). Over time, students' ability to think independently and creatively may

wane. Over-reliance on ChatGPT by students can cause them to lose interest in independent study, which could ultimately result in a loss of human intelligence. It is crucial to balance between traditional teaching methods and technology utilization. Furthermore, not every response given by ChatGPT would be trustworthy (Fijačko et al., 2023).

Writing skills: To help pupils practice their language abilities, ChatGPT 's writing talents can be utilized to build Chatbots and online language instructors (Susnjak & McIntosh, 2024). These Chatbots may mimic in-person interactions and give students immediate feedback on their vocabulary, grammar, and pronunciation, this works as writing support so students can use ChatGPT to help them become better writers (Chen et al., 2023). ChatGPT can make recommendations for enhancements and offer comments on spelling, grammar, and punctuation mistakes by examining a student's writing style, essays, written assignments, and computerized grading that can be spontaneously graded through ChatGPT. This can provide kids with instant feedback on their work and save teachers time (Fijačko et al., 2023).

Personalized learning: ChatGPT can personalize instructional materials, giving students a tailored education and freeing up teachers' time to concentrate on interesting crafting classes. Students can have individualized learning experiences thanks to ChatGPT (Chaudhry et al., 2023). ChatGPT can provide individualized recommendations for learning materials. Based on an analysis of a student's learning styles and interests (Lo, 2023). It provides students with individualized self-learning experiences, enhances their language, and writing abilities, and saves teachers' time on tedious duties, ChatGPT has the potential to completely transform the educational system. It's crucial to remember that ChatGPT shouldn't be utilized in place of actual teachers; rather, it should be a tool to enhance learning (Bai et al., 2023).

2.3 ChatGPT and students' performance

Artificial intelligence is being used extensively in education to help students learn, particularly at institutions with good facilities. ChatGPT is one type of artificial intelligence that is utilized, along with voice assistants, smart classrooms, creative material, automated tests, and personalized learning (Fuchs, 2023). ChatGPT is a Chatbot powered by artificial intelligence that can converse and facilitate tasks (Jose & Jose, 2024). An earlier study's work (Siregar et al., 2023) examines the effect of ChatGPT usage on Scout students' motivation to learn (Jose & Jose, 2024). The study indicates that using ChatGPT can boost students' motivation to learn, according to the article's conclusion. However, other elements affect students' motivation as well, like the learning environment and the impact of the teacher. These results demonstrate the potential benefits of artificial intelligence (AI) technology like ChatGPT in enhancing and inspiring students to learn (Atlas, 2023). Depending on the previous discussion, this study provides the following hypothesis:

H_1: *There is no impact of ChatGPT (Accuracy, ease of use, and plagiarism) on students' performance.*

2.4 Ease to Use and Students' Performance

Moreover, other studies were carried out about the ease with which can determine how responsive the system appears when responding to text or voice queries that a user does not provide. To help students accomplish the tasks given by the teacher (Alawida et al., 2023). However, ChatGPT has some problems among others improving student performance (Shidiq, 2023). Depending on the previous discussion, this study provides the following hypothesis:

$H_{1.1}$: *There is no impact of ease of use on students' performance.*

2.5 Accuracy and Students' Performance

The key to ensuring dependable interactions lies in evaluating how correct ChatGPT responses are. Many novel examinations such as (Alawida et al., 2023) have investigated the precision of ChatGPT in specific directive contrails, throwing light on both its goods and evils. Knowing what led to being accused in the first place, is crucial for making sure that our model works as well as it can be (Hassani & Silva, 2023). Regarding information accuracy, ChatGPT creates responses, but it may lack a real understanding of the outside world. This may sometimes lead to the spread of misleading or inaccurate information, which harms learning (Kim, 2023). Depending on the previous discussion, this study provides the following hypothesis:

$H_{1.2}$: *There is no impact of accuracy on students' performance.*

2.6 Plagiarism and Student's Performance

When talking about ChatGPT or any other land model, you are familiar with copyright. The organic works of authorship, such as plays, songs, nobles, and artwork, are protected under the law of copyright from their use with birch or permission (Hill-Yardin et al., 2023). Therefore, if you use any copyright-protected content in your conversations using ChatGPT, then you risk violating the rights of the original owner. It is imperative to acknowledge that the results generated by ChatGPT do not inherently confer liberty of use. These generated results may be protected by copyright, just like other types of content. Therefore, before using the results in any way, consent from the copyright holder may be required (Hill-Yardin et al., 2023). It is also important to remember that ChatGPT is not meant to be utilized for any commercial reasons because it is a sizable language model that was built by Open AI. The results of ChatGPT are prohibited from being used for commercial purposes by Open AI Terms of Service (Hassani &

Silva, 2023). This is the only way to make sure you are not violating any copyright legislation by using certain content in your ChatGPT conversations (you need usage rights for that and those can be granted from within Stack Edit). They are made by the self and other work, under licenses like Creative Commons or content licenses that specifically allow its usage against for example (Fijačko et al., 2023). When it comes to the use of content in the ChatGPT chat, you should be keen on whether there is a specific part of the content protected, or if you have permission to use it (Masters-wheeler et al., 2023). It is better to make a mistake to be careful and obtain permission from copyright owners to maintain compliance with copyright laws (Wang & Guo, 2023). By doing this, one can protect the rights of all concerned parties and ensure that any possible legal repercussions are avoided (Ali & Djalilian, 2023). More generally, it is highly recommended that you proceed with caution when utilizing the output generated by ChatGPT or any similar language model (Sharma & Yadav, 2022). If you're unsure about whether the results from ChatGPT are legal, then get in touch with those who own the copyright on the content you want to use; if not, content in the public domain, licensed under Creative Commons, or content with a different license that specifically permits for using the piece of work can be used also. By taking these steps, one can ensure they are following copyright laws and minimize the potential for legal conflict due to passing off unauthorized content. Assessing the accuracy of ChatGPT responses not only guarantees honest and trustworthy exchanges (Siregar et al., 2023). Based on the previous discussion, this study provides the following hypothesis:

$H_{1.3}$: *There is no impact of plagiarism on students' performance.*

2.7 ChatGPT, Training, and Students' Performance

It is a useful review to have done; the best thing is that it summarizes how extensive an effort has gone into creating effective teacher training methods and resources. Investigations into the Teaching Proficiency of Teacher Language Exams have produced studies on other related topics. However, the possibility of embedding this capability in the formative assessment reveals a gap in research (Demszky et al., 2021). According to (Bragg et al., 2021), the teachers are ranked for all four criteria according to their performance during the 25 trials of student-teacher sessions on average (Montenegro-Rueda et al., 2023). A three-year study by the National Centre for Teacher Effectiveness (NCTE) considered human assessments of uptake, which occur when an instructor recognizes and repeats students' ideas during teaching (Karakose & Tülübaş, 2023), also created an automated technique that was able to predict uptake in the context of a next-utterance categorization assignment (Demszky et al., 2021). Based on the foregoing discussion, this study offers the following hypotheses:

H_2: *Training does not moderate the impact of ChatGPT service on student performance.*

Model Variables:

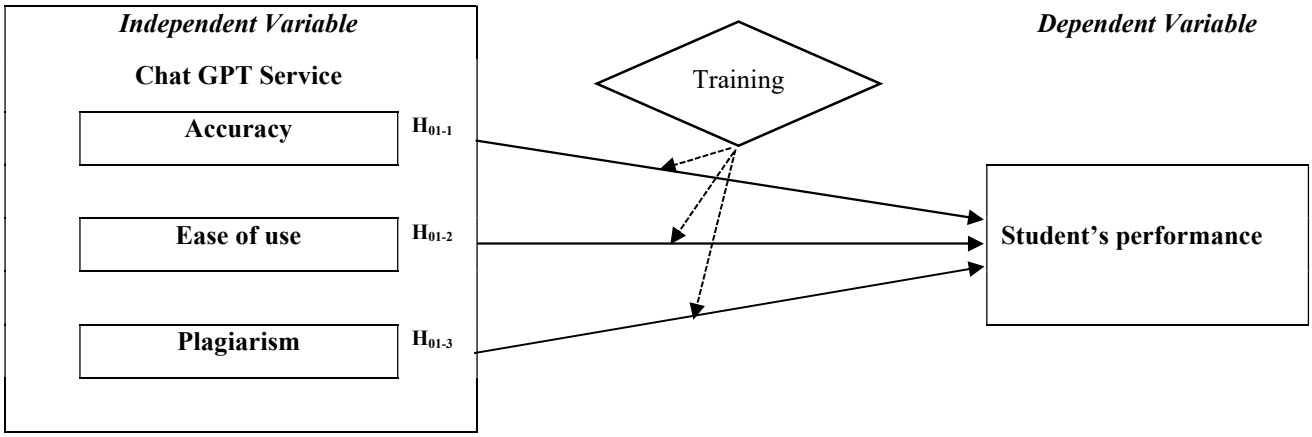

Fig. 1. Study Model

3. Research Methodology

3.1 Research Design

The current study implements a quantitative, descriptive, cause-effect approach to explore the influence of ChatGPT service on students' performance and using training as a moderator. A convenience cross-sectional sampling procedure was applied to collect needed data through a questionnaire. Gathered data were coded against IBM SPSS and then checked for validity and reliability before testing the study hypothesis (Hair & Brunsveld, 2020; Sekaran & Bougie, 2016b).

3.2 Data Collection

Online survey approaches are the most suitable for investigating the phenomenon being studied (Susan DeFranzo, 2012). Therefore, the survey was created and used to collect quantitative data from representative students with the help of various social media sites. A five-point Likert scale ranging from one (strongly disagree) to five (strongly agree) for each paragraph in the questionnaire

was used, and questions were managed through the Google Forms platform. There were bilingual surveys available in Arabic and English. The surveys were distributed to several Jordanian universities within the capital, Amman (Princess Sumaya University - University of Jordan - German Jordanian University), so this constitutes the intended student sample. The total number of respondents was 117 and all responses were valid for further analysis. After collecting the data, it was coded and analyzed with IBM SPSS standard analysis software.

Summary of Profile Respondents: Table 1 demonstrates the gender of the students who participated in this study. Women accounted for 48.7% (57 out of 117) and men accounted for 51.3% (60 out of 117). According to the responses gathered, many respondents are under the age of 18-34 years old 71.8%. Most respondents hold BAs degrees with 71.8%, 12.8% holding a master's degree, 5.1% holding doctoral degrees, and 10.3% having intermediate diploma degrees.

Table 1
Sample Demographic Profile

		Frequency	Percent
Gender	Female	57	48.7
	Male	60	51.3
	Total	**117**	**100.0**
Age	18-24	84	71.8
	25-34	30	25.6
	35-44	3	2.6
	Total	**117**	**100.0**
Education	Diploma degree	12	10.3
	Bachelor's degree	84	71.8
	Master's degree	15	12.8
	PhD degree	6	5.1
	Total	**117**	**100.0**

3.3 Data Analysis and Results

Before carrying out further analysis validity and reliability should be ensured, where validity describes the tool's accuracy and reliability describes the tool's consistency (Hair Jr. et al., 2017; Sekaran & Bougie, 2016a).

Data Validity

Factor analysis was conducted by applying Principal Component Analysis with KMO. Factor Analysis shows the correlation between variables and sub-variables, as well as, between items and constructs. Some authors stated the minimum accepted factor loading is 0.40, while others said 0.60 (Dziuban & Shirkey, 1974; Hair et al., 2016; Nkansah, 2018). KMO is used to test the partial correlation strength between the items. A KMO value close to 1.0 is perfect, values higher than 0.80 are good, and values between 0.60 to 0.80 are accepted, but a value lower than 0.5 is unaccepted. The variance percentage demonstrates each construct's power of explanation, which should be above 0.50. Bartlett's test of Sphericity is implemented to check the null hypothesis correlation if the significance is lower than 0.05, the null hypothesis is dismissed and factor analysis is suitable for use (Cerny & Kaiser, 1977; Kaiser et al., 1974; Nkansah, 2018). Table 2 demonstrates factor loading for all paragraphs is more than 0.60, KMO for all constructs is 0.60, the explanation power is more than 0.50, and the significance is 0.000 for all constructs. Therefore, the data validity is confirmed.

Table 2
Validity and Reliability Test

	F1	KMO	Chi^2	Var%	Sig.	Alpha
Accuracy1	.943					
Accuracy2	.804	.648	199.763	78.390	0.000	0.861
Accuracy3	.904					
Ease of Use1	.896					
Ease of Use2	.894	.670	136.933	73.276	0.000	0.817
Ease of Use3	.772					
Plagiarism1	.871					
Plagiarism2	.892	.672	121.452	71.857	0.000	0.800
Plagiarism3	.775					
Training1	.844					
Training2	.794	.639	134.039	72.841	0.000	0.809
Training3	.918					
Students Performance1	.922					
Students Performance2	.846	.696	166.006	77.830	0.000	0.853
Students Performance3	.877					

Data Reliability:

The reliability test is used to evaluate the consistency and dependability of items. Cronbach's alpha was used to test reliability among the items of constructs. Some studies said that more than 0.60 is acceptable, while others stated that 0.70 is acceptable (Bruin, 2006; Emerson, 2019; Gliem & Gliem, 1992; Singh et al., 2020; Taber, 2018). Table 2 elucidates that Cronbach's Alpha for all constructs is more than 0.70, which is accepted.

Descriptive Analysis:

Table 3 indicates that respondents semi-agree with ChatGPT's ease of use, accuracy, and plagiarism because the mean is medium and the standard deviation is large, while respondents do not agree with the usefulness of training on ChatGPT because the mean is less than 3 and the standard deviation is more than 1.

Table 3
Descriptive statistics

	Mean	Std. Deviation
Ease of Use	3.422	.954
Accuracy	3.268	.929
Plagiarism	3.205	.921
Training	2.980	1.011
Students Performance	3.316	1.086

Correlations:

The bivariate Pearson Correlation Matrix shows the relationship variables. Table 4 indicates that there is a significant correlation between ChatGPT dimensions (ease of use, accuracy, and plagiarism), and there is a significant correlation between training and plagiarism, however, there is an insignificant between training and both ease of use and accuracy. Finally, results show that there is a significant correlation between students' performance and all other variables (Ease of Use, Accuracy, Plagiarism, and Training)

Table 4
Correlations

	Dimensions	1	2	3	4	5
1	Ease of Use					
2	Accuracy	.746**				
3	Plagiarism	.533**	.581**			
4	Training	.140	.155	.296**		
5	Students Performance	.508**	.622**	.829**	.315**	1

**. Correlation is significant at the 0.01 level (2-tailed).

3.4 Testing the Hypotheses

Prior to testing the hypothesis, the following assumptions should be confirmed: linearity, no collinearity, Homoscedasticity, and normality (Hair et al., 2016; Sekaran & Bougie, 2016b).

Multi-collinearity test: Both Variance Inflation Factor (VIT) and Tolerance are implemented to check Multi-collinearity. Tolerance should be more than 0.10 and less than 90%, while VIF should not be more than 10. Table 5 shows that Tolerance is more than 0.10 and VIT is less than 10, so the Multi-collinearity assumption is not violated.

Normality: Fig. 2 shows that data were normally distributed.

Table 5
Multi-collinearity test

Model		Collinearity Statistics	
		Tolerance	VIF
1	Ease of Use	.429	2.332
	Accuracy	.397	2.522
	Plagiarism	.640	1.563
	Training	.912	1.096

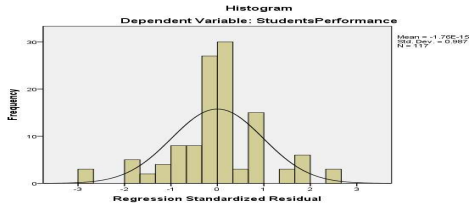

Fig. 2. Normal Distribution

Linear Relationship: Figu. 3 demonstrates that there is a linear correlation between both the independent variable and the dependent variables.

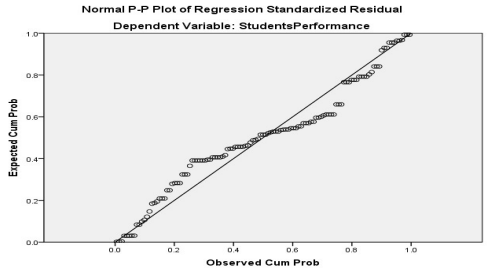

Fig. 3. Linear Relationship

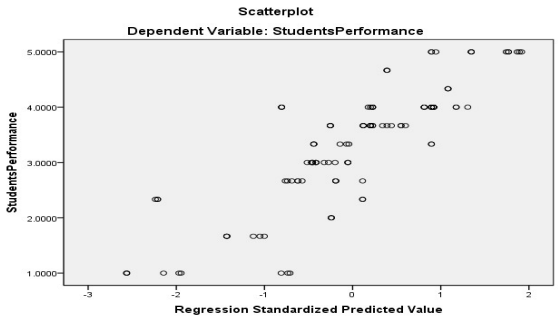

Fig. 4. Homoscedasticity

Homoscedasticity: Fig. 4 scatterplot demonstrates that errors are consistent across all independent variables.

3.4.1 The first hypothesis: The effect of ChatGPT in terms of Accuracy, Ease of use and Plagiarism on students' performance

Table 6 demonstrates that when ChatGPT dimensions together regressed against Students' Performance, r equals 84.7% (the relationship between ChatGPT dimensions together with Students' Performance); R^2 explains the variation of ChatGPT dimensions on Students' Performance at a significance of 0.000. F shows model fitness. Since R^2=0.847, F=95.964, Sig. 0.000, the null hypothesis is ignored and the substitutional is suggested indicating that there is a statistically significant impact of ChatGPT (Accuracy, ease of use, and plagiarism) on students' performance, at $\alpha \leq 0.05$.

Table 6
Regressing ChatGPT Dimensions against Students' Performance

Model	R	R^2	Adjusted R^2	F	Sig.
1	.847[a]	.718	.711	95.964	.000[a]

a. Predictors: (Constant), Plagiarism, Ease of Use, Accuracy
b. Dependent Variable: Students' Performance

Table 7 shows the of each ChatGPT on students' performance.

Table 7
Regressing ChatGPT Dimensions against Students' Performance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.111	.229		.485	.629
	Ease of Use	.069	.087	.060	.792	.430
	Accuracy	.294	.093	.251	3.167	.002
	Plagiarism	.843	.074	.715	11.452	.000

a. Dependent Variable: Students' Performance

The first sub-hypothesis: The effect of ease of use on students' performance

For ease of use, since β=0.06, t=0.792, sig=0.430, the null hypothesis is accepted demonstrating that *ease of use has an insignificant impact on students' performance, at $\alpha \leq 0.05$.*

The second sub-hypothesis: The effect of accuracy on students' performance

Referring to accuracy, since β=0.251, t=3.167, sig=0.002, the null hypothesis is discarded, and the opposite is regarded demonstrating that accuracy has an insignificant impact on students' performance, at $\alpha \leq 0.05$.

The third sub-hypothesis: The effect of plagiarism on students' performance

Regarding plagiarism, since β=0.715, t=11.452, sig=0.000, the null hypothesis is refused, and the opposite is accepted demonstrating that plagiarism has a significant impact on students' performance, at $\alpha \leq 0.05$.

3.4.2 The second hypothesis: The moderating effect of ChatGPT service on student's performance

When regressing ChatGPT dimensions against students' performance in the presence of training as a moderator, the result in Table 8 shows that R^2 increases from 0.718 to 0.724 and model fitness F decreases from 95.964 to 73.431 i.e. R^2 increased only 0.006 and model fitness decreased, which means it has a marginal effect.

Table 8
Regressing ChatGPT Dimensions against Students' Performance in the Presence of Training

Model	R	R^2	Adjusted R^2	F	Sig.
1	.847[a]	.718	.711	95.964	.000[a]
2	.851[b]	.724	.714	73.431	.000[b]

a. Predictors: (Constant), Plagiarism, Ease of Use, Accuracy; b. Predictors: (Constant), Plagiarism, Ease of Use, Accuracy, Training; c. Dependent Variable: Students Performance

Table 9 demonstrates that accuracy affects students' performance in the presence of training since β=0.252, t=3.202, sig=0.002, and plagiarism affects students' performance in the presence of training since β=0.690, t=10.755, sig=0.000, while ease of use has an insignificant effect on student's performance in the presence of training since β=0.059, t=0.782, sig=0.0.436. Finally, results demonstrate that training has an insignificant influence on student's performance in the presence of training since β=0.080, t=1.537, sig=0.0.127.

Table 9
Regressing ChatGPT Dimensions against Students' Performance in the Presence of Training

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.111	.229		.485	.629
	Ease of Use	.069	.087	.060	.792	.430
	Accuracy	.294	.093	.251	3.167	.002
	Plagiarism	.843	.074	.715	11.452	.000
2	(Constant)	.282	.253		1.114	.268
	Ease of Use	.067	.086	.059	.782	.436
	Accuracy	.295	.092	.252	3.202	.002
	Plagiarism	.814	.076	.690	10.755	.000
	Training	.086	.056	.080	1.537	.127

a. Dependent Variable: Students Performance

Table 10
Hypothesis Testing

Hypo	Direct Effect Hypothesis	P-Value	Null
H1	ChatGPT (Accuracy, ease of use, and plagiarism) has a significant impact on student's performance, at $\alpha \leq 0.05$.	= 0.000	Rejected
H1.1	Ease of use has an insignificant impact on students' performance, at $\alpha \leq 0.05$.	= 0.430	Supported
H1.2	Accuracy has an insignificant impact on student performance, at $\alpha \leq 0.05$	= 0.002	Rejected
H1.3	Plagiarism has a significant impact on student's performance, at $\alpha \leq 0.05$	= 0.000	Rejected
H2	Training has an insignificant moderating role on the impact of ChatGPT service on student performance, at $\alpha \leq 0.05$	= 0.127	Supported

4. Discussion

This study aimed to explore the influence of Chat GPT service (ease of use, accuracy, and plagiarism) on students' performance while using training as a moderating variable. The data was collected online by using a survey questionnaire from 117 respondents from three universities (Princess Sumaya University, University of Jordan, and German Jordanian University) in Amman, Jordan. The collected data was coded on SPSS, and then after assuring the data validity, and reliability, the hypotheses testing have been tested. The results indicated that the students agreed on the importance of ChatGPT (ease of use, accuracy, and plagiarism), however, most of the respondents do not agree on the importance of training on ChatGPT and they say it is easy and does not need training. The results also show that there are significant correlations among ChatGPT dimensions (ease of use, accuracy, and plagiarism). However, there is a significant correlation between training and plagiarism only, and there is an insignificance between training and both ease of use and accuracy, which supports the respondents' viewpoint that the training is not important. Finally, findings demonstrate that there is a significant strong correlation between all other variables (ease of Use, accuracy, and plagiarism) and students' performance, and a weak relationship with training. Finally, results show that there is a significant influence of ChatGPT (Accuracy, ease of use, and plagiarism) on students' performance, where plagiarism has rated the highest significant effect, then accuracy, while ease of use has an insignificant effect. Moreover, results demonstrated that training has an insignificant moderation effect between ChatGPT and students' performance

There is no consensus among previous studies' results related to the effect of ChatGPT on students' performance. Though many studies state that there are many benefits, it is also accompanied by many challenges such as students can have individualized learning experiences thanks to ChatGPT (Chaudhry et al., 2023). ChatGPT can provide individualized recommendations for learning materials (Lo, 2023). ChatGPT has the potential to completely transform the educational system (Bai et al., 2023). ChatGPT is powered by artificial intelligence that can converse and facilitate tasks (Jose & Jose, 2024). Using ChatGPT can boost students' motivation to learn (Siregar et al., 2023). ChatGPT enhances and inspires students to learn (Atlas, 2023). On the other hand, writing, speaking, painting, and making art are crucial components of academic instruction, as well as analytical and problem-solving skills that are necessary for teaching and daily life. These skills will not be well-developed technologies (Alrayes et al., 2024). Over-reliance on ChatGPT by students can cause them to lose interest in independent study, which reduces human

intelligence (Fijačko et al., 2023). Students can use ChatGPT to help them become better writers (Chen et al., 2023). ChatGPT can provide users with instant feedback on their work and save teachers time (Fijačko et al., 2023).

Some of the previous studies' results do not match with current study results which indicated that ChatGPT ease of use does not affect student's performance such as ChatGPT helps students accomplish tasks easily (Alawida et al., 2023). On the other hand, ChatGPT has some problems among others improving student performance (Shidiq, 2023).

Previous studies' results on the effect of ChatGPT accuracy and students' performance have different opinions such as the precision of ChatGPT should be checked throwing light on both its goods and evils (Alawida et al., 2023; Hassani & Silva, 2023). Regarding information accuracy, ChatGPT creates responses, but it may lack a real understanding of the outside world. This may sometimes lead to the spread of inaccurate or misleading information, which harms learning (Kim, 2023).

Regarding the ChatGPT plagiarism affects students' performance results stated ChatGPT plagiarism affects students' performance also there is a debate about this result especially about copyright. It is important to consider copyright while using ChatGPT, which needs permission (Hill-Yardin et al., 2023). The ChatGPT is prohibited from being used for commercial purposes (Hassani & Silva, 2023). It is important to not violate any copyright legislation by using certain content in ChatGPT conversations (Fijačko et al., 2023). Protected content needs permission to use it (Masters-wheeler et al., 2023; Wang & Guo, 2023) to ensure that any possible legal repercussions are avoided (Ali & Djalilian, 2023). Assessing the accuracy of ChatGPT responses guarantees honest and trustworthy exchanges (Siregar et al., 2023).

Finally, results indicated that training did not moderate the correlation between ChatGPT and students' performance. This outcome does not go with previous studies' results, such as training that determines the capabilities and performance of ChatGPT (Toktosunova et al., 2023). ChatGPT service training has a positive influence on the quality of students in the humanities (Bai et al., 2023; Castillo et al., 2023).

5. Conclusion

The current research proposed that the Chat GPT service (ease of use, accuracy, and plagiarism) affects students' performance and the training moderates this relationship and effect. The data was gathered online from 117 respondents from different Jordanian universities (Princess Sumaya University, University of Jordan, and German Jordanian University). Data validity and reliability have been confirmed and the hypotheses have been tested using SPSS. The results indicated that the students agreed on the importance of ChatGPT (ease of use, accuracy, and plagiarism), however, most of the respondents do not agree on the importance of training on ChatGPT and they say it is easy and does not need training.

The results also show that there are significant correlations among ChatGPT dimensions (ease of use, accuracy, and plagiarism). However, there is a significant correlation between training and plagiarism only, and there is an insignificance between training and both ease of use and accuracy, which supports the respondents' viewpoint that the training is not important. Finally, findings indicate that there is a significant strong correlation between all other variables (ease of Use, accuracy, and plagiarism) and students' performance, and a weak relationship with training.

Finally, the results have shown that there is a significant impact of ChatGPT (Accuracy, ease of use, and plagiarism) on students' performance, where plagiarism has rated the highest significant influence, then accuracy, while ease of use has an insignificant effect. Moreover, results demonstrated that training has an insignificant moderation effect between ChatGPT and students' performance.

There is no consensus among previous studies' results related to the influence of ChatGPT on students' performance. Using ChatGPT has several advantages and many disadvantages and challenges. Including its effect on individual learning skills and experience (writing, speaking, painting, making art, analytical and problem-solving skills), while it has the potential to completely transform the educational system. Being over-dependent on ChatGPT reduces human intelligence. The ChatGPT outcomes should be checked for accuracy and sometimes may not reflect a real understanding, or inaccurate, or misleading information. Regarding copyright topics, ChatGPT results should be checked carefully for plagiarism. Some contents are prohibited from commercial use and need permission to match with copyright legislation and avoid any possible legal repercussions.

Finally, there is a debate about the effect of training on the relationship between ChatGPT and students' performance.

6. Recommendations

Based on the study results, the study recommends the following:

This study uses a cross-sectional approach to collect data from Jordanian students in three Jordanian universities, therefore it is recommended to conduct longitudinal research for a longer time, to cover more universities and schools, and conduct similar research in other countries, particularly in the Arab region, which is having same social and cultural environment.

Moreover, when using ChatGPT it is important to be careful with accuracy and plagiarism, especially about copyright issues. Conduct proper training to be aware of copyrights and accuracy. To be used to support the learning process but not as a sole tool

for learning or searching for information. It is important to develop and update ethical guidelines for using ChatGPT in academia. Finally, many other factors may be included within ChatGPT dimensions.

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