

ChatGPT as an Educational Tool: Opportunities, Challenges, and Recommendations for Communication, Business Writing, and Composition Courses

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(Received 30 January 2023; Revised 02 March 2023; Accepted 02 March 2023; Published online 06 March 2023)

Abstract: This empirical study examines ChatGPT as an educational and learning tool. It investigates the opportunities and challenges that ChatGPT provides to the students and instructors of communication, business writing, and composition courses. It also strives to provide recommendations. After conducting 30 theory-based and application-based ChatGPT tests, it is found that ChatGPT has the potential of replacing search engines as it provides accurate and reliable input to students. For opportunities, the study found that ChatGPT provides a platform for students to seek answers to theory-based questions and generate ideas for application-based questions. It also provides a platform for instructors to integrate technology in classrooms and conduct workshops to discuss and evaluate generated responses. For challenges, the study found that ChatGPT, if unethically used by students, may lead to human unintelligence and unlearning. This may also present a challenge to instructors as the use of ChatGPT negatively affects their ability to differentiate between meticulous and automation-dependent students, on the one hand, and measure the achievement of learning outcomes, on the other hand. Based on the outcome of the analysis, this study recommends communication, business writing, and composition instructors to (1) refrain from making theory-based questions as take-home assessments, (2) provide communication and business writing students with detailed case-based and scenario-based assessment tasks that call for personalized answers utilizing critical, creative, and imaginative thinking incorporating lectures and textbook material, (3) enforce submitting all take-home assessments on plagiarism detection software, especially for composition courses, and (4) integrate ChatGPT generated responses in classes as examples to be discussed in workshops. Remarkably, this study found that ChatGPT skillfully paraphrases regenerated responses in a way that is not detected by similarity detection software. To maintain their effectiveness, similarity detection software providers need to upgrade their software to avoid such incidents from slipping unnoticed.

Keywords: artificial intelligence; business writing courses; ChatGPT; composition courses; communication courses; Turnitin

I. INTRODUCTION

OpenAI, a research and development American company, came up with their ChatGPT chatbot in November 2022. The new chatbot is an improved guided and reinforcement learning technique or a method of transferring learning. At this stage, OpenAI still receives feedback from users who can either upvote or downvote responses generated by ChatGPT, and they can provide textual feedback. They may also ask ChatGPT to regenerate responses. As an artificial intelligence, Chatbot is considered the most advanced Chatbot tool.

In the first 2 months of testing, users had a mix of positive and negative reactions to ChatGPT. According to Roose [1], ChatGPT is one of the best artificial intelligence tools released to the general public. In addition, Lock [2] also believes the same as it can produce human-like text. On the other hand, Krugman [3] believes that the use of ChatGPT may affect the demand for knowledge works. It was stated that the use of ChatGPT may affect decision-making as people may use the tool to come up with automated responses that may affect decision-making [4]. This, according to

Cowen [4], may have a negative influence on democracy. The hype of speculation intensified as Sundar Pichai, Google CEO, declared a 'red code' over fears it might eat into the firm's \$149bn search business. Fears also encompass the possibility of students cheating in exams and writing malware. Researchers said there was a risk that ChatGPT, which is trained on data scraped from the web, would learn harmful stereotypes and representations. This goes hand in hand with the suggestion that it has the potential to revolutionize many industries, including research and academics.

Amid this controversial discussion of the positive and negative reactions to the use of ChatGPT on skilled workers, decision-making, and democracy, we may also have another discussion on the use of ChatGPT for academic submissions and work. This can possibly be a nightmare for school teachers and university professors as the last thing they may want is grading a submission that is generated by an artificial intelligence tool but claimed as the original work of a school or a university student. This study examines the use of the ChatGPT chatbot for academic purposes. It investigates the opportunities and challenges of using ChatGPT for academic purposes and strives to provide recommendations to school teachers and university professors. In specific, this study strives to answer the below research questions.

1. What are the possible opportunities for using the ChatGPT chatbot for academic purposes?

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2. What are the challenges of using ChatGPT for academic purposes?
3. What recommendations can be given to instructors?

The focus of this study is on composition, business writing, and communication courses.

II. LITERATURE REVIEW

Artificial intelligence refers to intelligent devices and software that can reason, absorb, gather knowledge, interact, control, and distinguish between objects. John McCarthy used the term artificial intelligence in 1956 to describe a brand-new area of computer science that tries to make machines behave like people. It is a relatively recent topic in the field of research (mid-twentieth century). Alan Turing in the 1950s wrote an article asking the question of whether machines can think. This question opened the door for a lot of research and later on applied developments in the field of artificial intelligence. Artificial intelligence can be divided into a number of fields that include text and speech synthesis, robotics, machine learning, natural language processing, computer vision, and planning and expert systems [5]. Every single division of the above can be further divided into a number of divisions that make artificial intelligence an enormous field that includes a big number of disciplines that are directly related to our modern lifestyle.

Machine learning, which does not require programming but instead uses inferences to learn and adapt to user trends, is the current focus of the majority of artificial intelligence applications. The most valuable resource for implementing and maintaining artificial intelligence in this scenario is data. According to [6], artificial intelligence is now commonplace in our daily life. Not to mention that it has altered how people learn, artificial intelligence technology is employed in personalized help, smart sensors for shooting images, and automatic parking systems.

Artificial intelligence, as mentioned above, includes applications that are used by normal people on a daily basis. Search engines use artificial intelligence to provide the search outcome over the world wide web. Recommended systems on social media apps also make use of artificial intelligence to provide suggestions based on previous searches or 'likes'. iPhone users' communications with 'Siri' are also based on voice recognition, which is based on artificial intelligence. A big number of computer games and self-driven cars are also based on the use of artificial intelligence for human convenience. The impacts of AI have touched nearly every business including academics which is the focus of this study.

Today, artificial intelligence technology is transforming schools and classrooms and making teachers' jobs easier [7]. The latest development in artificial intelligence is the introduction of the ChatGPT, which provides responses to questions by providing a comprehensive textual answer. The use of this latest development (ChatGPT) is investigated in this study to examine the opportunities it provides and the challenges it presents to the academic world in general and the teaching of composition, business writing, and communication courses in particular. However, it is worth mentioning that artificial intelligence applications have been used for education for a very long time.

Artificial intelligence is used in education as demonstrated in computer-based training and computer-aided instruction [8]. It can be argued that the growing number of students from various geographic regions enrolled in higher education courses offered at a campus is one of the compelling reasons for artificial intelligence adoption in education. This can be a great help to institutions, but this

results in fewer teaching staff members and corresponding cost savings at most universities [9,10]. Therefore, there is an increasing need for online courses as a way to assist remote learning through technology. Over the years, improvements in artificial intelligence in education systems are being made as a result of ongoing research. The employment of user-friendly interface agents like avatars to help users with language, facial expressions, and identity challenges is one of these improvements [11].

The employment of teacher bots and other intelligent apps that resemble human intelligence in education, according to [12], is intended to replace instructors despite these new technological advancements in education [12,13]. Right now, smart gadgets can be used to access educational resources [14]. To offer teachers more time to focus on pupils, administrative chores at educational institutions have been automated in certain cases and are still being automated in others [7,14]. Artificial intelligence can be used to accomplish administrative tasks [14], tutoring [15], and content development [16]. Artificial intelligence, these days, can also be used to write entire assignments. This is, from an educational perspective, scary as teachers do not want to find themselves in a situation grading a ChatGPT written assignment and giving a grade to a student. On the other side, it is noted that artificial intelligence can enhance demand for some existing occupations while also creating new ones. This last point is the main motive behind carrying out this study.

III. METHODOLOGY

This article strives to answer three research questions on the influence of ChatGPT on composition, business writing, and communication course student submissions. The methodology of carrying out the analysis is based on quantitative data in terms of Turnitin similarity index percentages and qualitative grading based on composition, business writing, and communication rubrics. In short, this study adopts the mixed research methodology.

The mixed research method is not a new approach to carrying out research in social science. The mixed research method is a method that adopts the strengths of quantitative and qualitative research methods. Quantitative methods provide numbers and statistics that can give an overview of a phenomenon and qualitative methods make sense of these numbers and statistics through words and interpretations [17].

In order to investigate the three research questions, a prompt and question for each of the focus disciplines (composition, business writing, and communication) are created. The questions are theory-based questions that require students to recall or remember information as provided in textbooks or possibly classes. The prompts are questions that require students to put their theoretical knowledge into practice to create a new whole. That is, testing is carried out on the 1st taxonomy and the 6th levels of Bloom's taxonomy (remember and create).

The questions and the prompts are asked to ChatGPT. Every single question and prompt is regenerated five times through the 'regenerate response' option on ChatGPT. Every single response is copied. After collecting the five responses for every single discipline, five files were created and named test 1, test 2, test 3, test 4, and test 5. Test 1 file includes the first responses for every single question and prompt. Test 2 file includes the first regenerated responses for all questions and prompts, test 3 file includes the second round of regenerated responses for the questions and prompts, test 4 includes the third round of regenerated responses, and test 5 file includes the fourth round of regenerated responses.

These ChatGPT responses were evaluated in terms of (1) plagiarism similarity and (2) task accomplishment.

1. To test the similarity index in the test files, the files were uploaded on Turnitin with 30 minutes time lag from each other. The time lag allowed Turnitin to (1) generate the similarity index for the uploaded file and (2) add the text to the Turnitin database. This should have allowed Turnitin to identify similarities among the five test files if similarity exists.
2. To test task accomplishment, the generated answers were evaluated by composition, business writing, and communication professors. The professors evaluated the responses based on (1) answer keys for the theoretical questions and (2) essay writing, business writing, and communication rubrics for the prompts.

The similarity index and the grading of ChatGPT responses based on answer keys and rubrics shall provide us insights into the nature of responses generated by the OpenAI artificial intelligence tool and its implications on teaching these courses at the university level.

IV. RESULTS AND FINDINGS

As mentioned in the methodology, ChatGPT was asked a couple of questions for every single discipline (composition, business writing, and communication): a theoretical question and a prompt. The theoretical questions require theory-based answers and the prompt required putting some discipline-specific knowledge into practice to provide the answer.

For communication, ChatGPT was asked a couple of questions on information overload. The theoretical question was what is information overload? There is no definite answer to this question. However, students are expected to highlight that information overload is about dealing with a lot of information that one cannot process effectively. Information overload has negative physical (i.e., tiredness) and psychological (i.e., stress) effects on the overloaded person. [18] defined information overload as a situation where ‘the flow of information associated with work tasks is greater than can be managed effectively, and a perception that overload in this sense creates a degree of stress for which his or her coping strategies are ineffective’ (p. 34). Table I provides the similarity

Table I. Similarity index and grading outcome for the theoretical communication question

Test number	Turnitin similarity index (%)	Grade given	Additional notes
Test 1	50	93/100	This answer entails misconduct as it is heavily plagiarized.
Test 2	13	90/100	Comprehensive answer but conversational.
Test 3	0	95/100	Well written and well structured.
Test 4	20	89/100	A comprehensive answer, but conversational. The student may lose more grades on originality.
Test 5	19	89/100	This answer is an obvious paraphrase of test 4. Even though Turnitin did not detect the similarity, the similarity is obvious. The student may lose more grades on originality.

index and the grading outcome of the 5 re(generated) answers for the above question.

As Table I shows, the similarity index for the first test includes 50% similarity (plagiarism), which entails a zero on the answer or misconduct based on the university’s/school’s policy. The second, third, fourth, and fifth answers (tests), however, have less similarity or no similarity at all. The answers were given relatively high grades as the flow of the ideas is smooth, and the answers are comprehensive. However, it is noticed that the sentences have more spoken language (i.e., ellipsis, substitution) than written language elements (i.e., repetition). Even though the answer is relatively short, it could have been noticed that we have a couple of answers that are paraphrased by substituting words (see example 1 and example 2). The sentences in example 1 and example 2 were not highlighted as similar by Turnitin, even though the paraphrasing is obvious. This may show that ChatGPT is designed in a way to escape the similarity check by Turnitin in the case of regenerating answers. This may also show that when requesting to regenerate the answer a number of times, ChatGPT starts paraphrasing previously provided answers.

Example 1 [test 4]: . . . such as an overwhelming number of emails, an excess of news articles, or an abundance of social media posts.

Example 2 [test 5]: . . . such as an excessive amount of email, text messages, social media updates, or news articles.

The second communication question was an information overload case-based question. ChatGPT was given a case for a person who faces information overload for a number of factors that are described in the case and was asked what the person shall do to overcome information overload. The word limit for the answer was 500 words. Table II provides the similarity index of the answers and the grading based on a rubric that has five categories that are: understanding the information, exploration, and elaboration, providing reliable information, synthetization, and language use. Students shall summarize the case, identify issues, suggest

Table II. Similarity index and grading outcome for the case-based communication question

Test number	Turnitin similarity index (%)	Grade given	Additional notes
Test 6	3	83/100	A comprehensive analysis that synthesizes the situation but lacks summary and support (incorporating additional resources)
Test 7	0	81/100	A comprehensive analysis of the situation. However, the suggestions are almost the same as in test 6. ChatGPT paraphrased the answer of test 6.
Test 8	9	82/100	A comprehensive analysis of the case. The paraphrase is also obvious.
Test 9	0	81/100	A comprehensive analysis of the case. The paraphrase is also obvious.
Test 10	0	83/100	A comprehensive analysis of the case. The paraphrase is also obvious.

solutions, decide on the best solution and provide persuasive support to back their stand with evidence or resources.

As Table II shows, the similarity index for the answers to the case-based communication question and either zero or low. ChatGPT managed to answer the case study-based question comprehensively by identifying the problem, suggesting possible solutions, and providing recommendations. The answers received a relatively high grade based on an established case-study rubric. The only grade deduction was on the lack of summary and lack of support (incorporating additional resources). However, as example 3, example 4, and example 5 show, the (re)generated responses were very similar in terms of ideas, word use, and sentence structure. It is obvious that the regenerated responses are paraphrases of the original. Interestingly, these paraphrased responses, even though they are very similar, were not detected by Turnitin.

Example 3 (test 6): it is important to communicate with your professors and group members about your situation. Let them know about your great-grandmother's hospitalization and the need for you to provide her with immediate assistance.

Example 4 (test 7): it is important for me to communicate with my professors and group members about my situation and see if there are any accommodations that can be made for the due dates and assessments.

Example 5 (test 8): it may be necessary to communicate with your professors and group members about your situation and see if there are any accommodations that can be made for the due dates and assessments.

For business writing, ChatGPT was also asked a couple of questions: a question that is based on business writing theory in which students need to recall information and a business writing question in which students need to put their understanding of theory into practice to produce/ create a business writing correspondence. The theoretical question is what are the differences between solicited and unsolicited proposals? To answer this question, students shall list the differences including that solicited proposals are prepared based on what the clients want but unsolicited proposals are sent to clients without requesting them. Table III

Table III. Similarity index and grading outcome for the theoretical business writing question

Test number	Turnitin similarity index (%)	Grade given	Additional notes
Test 11	7	92/100	The answer is correct. It only lacks organization for clarity. Elements of copying without referencing the original.
Test 12	15	90/100	The answer is correct. It only lacks organization for clarity. Elements of copying without referencing the original.
Test 13	0	95/100	The answer is correct. It only lacks organization for clarity.
Test 14	0	95/100	The answer is correct. It only lacks organization for clarity.
Test 15	0	95/100	The answer is correct. It only lacks organization for clarity.

provides the similarity index and the grades given for the answers provided by ChatGPT.

As Table III shows, the answers/responses to the theory-based question were correct and they received high grades. The three main differences between solicited and unsolicited proposals were listed. However, it is noticed that in response 11 and response 12, we had minor elements of copying from a source without making a reference. Unlike the responses to previous questions, the answers/responses to this question were reworded entirely. The reader of the five answers/responses does not feel that the source is the same but paraphrased. Even though the last three answers were correct and they did not have elements of plagiarism, the given grade was 95% as the answers lacked organization. This shows that ChatGPT has the ability to provide a number of accurate answers without paraphrasing the same answer.

For the produce/create business writing question, ChatGPT was given a real business-related scenario and was asked to write 150 words email. The prompt requested writing a reply email to an angry customer (details were given) who did not receive his order on time. The email responses were graded based on a well-established email writing rubric that included the following categories: word count, starting with the salutation, thanking the customer, giving details, addressing the issue, requesting follow-up/finishing with good well, using appropriate tone, and using appropriate words, grammar, and punctuation. Table IV provides the similarity index for the responses and the grades that are given based on the rubric.

As Table IV shows, the emails included clear elements of copying from online resources without providing references. This copying is on the sentence level and does not include deictic expressions that are unusually used in emails [19,20]. The copying is on the task accomplishment level as you can see in examples, 6, 7, and 8. Even though the three sentences in these examples are hardly paraphrased, they, strangely, do not add to the similarity index in the emails. In addition to these three sentences, the emails also included another couple of sentences that are also hardly paraphrased and were included in all emails (If you have any further concerns or questions, please do not hesitate to reach out to us). This sentence, however, is neither included as part of the Turnitin similarity nor the possible paraphrase as it is considered as a deictic concluding sentence in almost all email customer-complain business emails [20].

Example 6 (test 16): We understand how important timely delivery is to our customers, and we regret that we were not able to meet your expectations.

Table IV. Similarity index and grading outcome for the case-based business writing question

Test number	Turnitin similarity index (%)	Grade given	Additional notes
Test 16	13	71/100	Lack of details, lack of follow-up, and originality.
Test 17	36	74/100	Inappropriate salutation, language tone.
Test 18	15	75/100	Lack of details, lack of follow-up, and originality.
Test 19	40	70/100	Lack of proper salutation, inappropriate tone, and originality.
Test 20	20	76/100	Lack of details, lack of follow-up, and originality.

Example 7 (test 18): We understand how important timely delivery is to our customers and we regret that we have fallen short of meeting your expectations.

Example 8 (test 19): We understand how important timely delivery is to our customers and we regret that we have fallen short of your expectations.

In regards, to grading the answers/responses, as Table IV shows, the emails received average grades. In addition to originality, the emails lost grades on inappropriate salutation, inappropriate tone, lack of details, and lack of providing follow-up mechanisms. In business writing questions (i.e., emails, letters, reports, proposals), students are asked to come up with their own details to solve the issue. The given answers/responses did not come up with a follow-up plan or mechanism, which led to losing grades. In addition, the emails did not provide details on what could have possibly gone wrong. Students are taught that customers need to be fully informed, and they need to provide details on what could have possibly gone wrong. In these situations, students shall come up with these details themselves. It can be noticed that the written emails did not include these details. They used the direct approach of (1) salutation, (2) apologizing for the delay, (3) assuring the customer that this will not happen in the future, (4) thanking the customer for his patience and choosing the company, and (5) closing the email. The provided emails/responses are more of a template that can be used by customer service officers in similar situations than a personalized email with a personalized touch.

In regard to composition, ChatGPT was also asked a couple of questions: a theoretical question about the parts of thesis statements and a produce/create a question to write a 500-word well-organized essay on the prompt of electric cars. The question on the parts of thesis statements is a bookish question that can be answered by stating that thesis statements have two parts that are the topic (what are you writing about?) and the angle (what your main idea is about the main topic). Table V summarizes the similarity index and the given grades on marking the answers provided by ChatGPT.

As Table V shows, the similarity index for all answers is zero and the grade is very high. ChatGPT managed to provide five different original answers for the question on the parts of the thesis statements. The only missing part in almost five answers is that the

'plan of development' in the thesis statements is not mentioned. However, this can be implicitly understood in stating that 'a good thesis statement should clearly state the topic and the claim in one sentence or two, and be able to guide the rest of the paper'. The answers to this question were relatively direct to the point and short, but this is guided by the nature of the question that asked about the parts of thesis statements. The answers in all five tests repeat some keywords' like 'topic', 'argument', 'evidence', and 'support' without creating a feeling that the answers are paraphrased. The repetition here is natural as it is instigated by the nature of the correct answer to the question. The answers to this question support the initial observation regarding ChatGPT's ability to generate multiple original answers to theory-based questions.

For the applied composition question, ChatGPT was asked to write a 500 well-organized essay on the prompt of electric cars. The essays were graded based on a general essay rubric that included the following categories: structure and organization, introduction paragraph, body paragraphs, concluding paragraph, and sentence skills. The introductory paragraph category examined the inclusion of attention-getting, thesis statement, and essay preview. The body paragraphs category included main ideas, supporting details, and support for the thesis. The concluding paragraph category included restating the thesis, summarizing ideas and details in the body paragraphs, and leaving the reader with a sense of finality. The sentence skills category looked at grammar, punctuation, and capitalization. Table VI provides the Turnitin similarity index for the five essays and the outcome of grading the essays based on the essay writing rubric.

As Table VI shows, the similarity index for all essays is high without any reference to the original. The essays in the grading exercise were graded without deducting any grade on similarity. If the similarity is considered in these essays, all essays, except test 29, would have been given zeros or at least reported for academic misconduct as the similarity is spread all over the essays from different resources. In test 26, the 29% similarity comes from six different resources all of which are universities and colleges. In test 27, the 49% similarity comes from 11 different resources all of which are universities and colleges. In test 28, the 38% similarity comes from seven different resources all of which are universities and colleges. In test 29, the 16% similarity comes from two different resources and both are universities and colleges. In test 30, the 55% similarity comes from nine different resources all of which are universities and colleges. The relatively high similarity in the essay writing answers may cause relief to composition instructors as submitting essays that are written by ChatGPT will lead to a high similarity index that can be detected by Turnitin. In this case, essay writing exercises or assessments shall be submitted on a plagiarism detection tool to detect similarity.

The high similarity in the essays that are generated by ChatGPT is not the only challenge. As Table VI shows, essays generated by ChatGPT also suffer from relatively major structuring and organization issues. Even though ChatGPT managed to provide comprehensive answers to the question on parts of thesis statements, it failed to construct accurate thesis statements in all generated essays. The thesis statements in the generated essays were either announcements or inadequate as they did not include all major points discussed in the essay. In addition, almost all essays lacked support in terms of minor points in the body paragraphs of the essays. The body paragraphs either did not include enough support to back the stand of the writer/generator (ChatGPT). It was also noticed that the paragraphs did not have 'unity' as not all sentences in a paragraph supported the topic sentence. As

Table V. Similarity index and grading outcome for the theoretical composition question

Test number	Turnitin similarity index (%)	Grade given	Additional notes
Test 21	0	97/100	Did not mention that "supporting evidence" or a plan of development should be parallel.
Test 22	0	90/100	The thesis has a topic and claim. Facts examples and data are too specific (not arguable).
Test 23	0	98/100	Did not mention that the "supporting evidence" plan of development should be parallel.
Test 24	0	97/100	Did not mention that the "supporting evidence" plan of development should be parallel.
Test 25	0	97/100	Clear, concise, and parallel

Table VI. Similarity index and grading outcome for the essay writing question

Test number	Turnitin similarity index (%)	Grade given	Additional notes
Test 26	29	89/100	Inadequate thesis statement (no mention of challenges or disadvantages). Few minors are missing Topic sentence paragraph 4 works well for both paragraph 4 and paragraph 5.
Test 27	49	86/100	Thesis is an announcement Most of the major ideas are not well supported by examples and facts. The essay lacks unity.
Test 28	38	84/100	Not all paragraphs are connected to the thesis. Thesis does not cover all the points in the essay. No minors in paragraphs 1,2, and 3.
Test 29	16	84/100	Very short introduction Thesis is inadequate. Main ideas in Body paragraph 2 are not connected to the thesis (no unity). Some paragraphs are too short.
Test 30	55	87/100	Not all paragraphs are connected to the thesis. Thesis should cover all points in the essay including challenges. Some body paragraphs lack minors.

mentioned earlier, the given grades in Table VI excluded the fact that big portions of the essays were copied from a number of sources. The essays were dealt with as if they are the original work of the generator. If the similarity index was included, four out of the five essays would have been rejected and the fifth (test 29) would have lost a lot of grades on not citing resources. Based on the above, it can be concluded that ChatGPT lacks writing well-organized academic essay skills and it, in its current form, does not present a relatively big challenge to composition instructors.

V. DISCUSSION

Artificial intelligence has developed quite drastically in the last 30 years up to a stage that is used for educational purposes. A number of technologies were created and used to help students develop and learn. Good (1966) developed what is commonly known as predictive analysis to predict a future event. Deep learning is also created and used to help in face recognition [21] and in creating music [22]. Machine learning, according to Samuel [23], was developed to carry out tasks without instructions. Neural networks were also developed to emulate human brains [24]. Expert systems or digital tutors, according to Gray [25], are developed and used to help in decision-making mainly in online tutoring [26]. Social robotics or digital classroom assistance, according to Gray [25], is also developed to possibly help in administrative work in schools or assessments [27]. Artificial intelligence has further developed after the introduction of ChatGPT.

ChatGPT chatbot, as an artificial intelligence chat tool, is open to answering any question after creating an account on OpenAI. This new chatbot, introduced in November 2022, created mixed reactions among writers and journalists. A number of them depicted it as among the best artificial intelligence tools as it provides

human-like responses. Another group of journalists saw it as a challenge to independent decision-making. This study examines ChatGPT chatbot as a learning and educational artificial intelligence tool for communication, business writing, and composition courses and students focusing on its opportunities and challenges from an educational perspective. This study also strives to provide recommendations to instructors and professors teaching these courses to maximize benefits and minimize challenges. The opportunities, challenges, and recommendations are discussed based on the outcome of more than 30 ChatGPT chatbot comprehensive theory-based and application-based tests.

In terms of opportunities, it is obvious, based on the conducted tests, that ChatGPT provides, students and instructors alike, the chance to find accurate answers to theory-based questions, at least for communication, business writing, and composition courses. The answers/responses provided by ChatGPT are precise and to the point. Students, if they want direct answers regarding a point, shall consider ChatGPT as a reliable option. Unlike search engines that provide billions of results that, at times, lack accuracy and/or relevance, ChatGPT provides answers based on the word limit that is set by the user. These responses can give users enough information without the need to screen a long list of sources and decide on the credibility and reliability of sources. ChatGPT also has the potential to provide students with applied responses on analyzing case studies, writing business correspondence, and essays. These responses can give students insights into how to approach the case study and construct the business correspondence or essay. It can be used as a preliminary step to write their assignments as the Chatbot can assist them in generating ideas and putting them into a template. The responses provided by ChatGPT, however, shall not be copiously used by students as their official assessments' submissions or answers as it is unethical. From communication, business writing, and composition instructor perspective, ChatGPT provides the opportunity to integrate

technology into classroom teaching and learning. The use of ChatGPT in classrooms provides instructors the platform to show students writing as a process. The ChatGPT-generated responses on prompts, scenarios, or case studies can be discussed and evaluated in classrooms. They can be used as examples of possible answers and discussed in terms of strengths and weaknesses. After these discussions, which stand as hands-on learning grounds, students can be asked to write their own responses. The speed in generating responses by ChatGPT is an added advantage as it saves time on generating authentic workshop or discussion material.

The opportunities listed above may also carry a lot of challenges for students and professors. The use of ChatGPT can be encouraged by professors as part of formal and informal learning in case students need a definition of a concept or insights or information regarding a term, but its use shall be discouraged for writing assessments or official submissions. It can be tempting for students, especially those who do not work on their assessments in a duly manner, to seek ChatGPT's assistance in writing their assessments. ChatGPT has the ability to construct highly accurate theory-based answers, relatively precise application-based answers, and organized essays or business correspondence based on a detailed prompt or scenario. Judiciously, ChatGPT is designed in a way to escape the similarity check by Turnitin in the case of regenerating answers. This facilitates the regeneration of an answer for a question, prompt, or case a number of times by a number of students without having the answers detected for plagiarism. From a student perspective, this can be seen as an opportunity to complete last-minute submissions before due dates. In the short term, students may see this as an opportunity to avoid a late submission penalty or a zero grade on submissions. In the medium and long terms, this practice definitely presents a challenge to students learning and development. The dependency on artificial intelligence to complete students' assignments and submissions lead to students' human unintelligence, unlearning, and deficiencies in students' academic and professional development. From instructors' perspective, the abilities of ChatGPT also present a number of challenges. As the results and the findings section showed, ChatGPT can provide human-like textual answers/responses. These answers/responses can be submitted by students as a part of the course assessment requirements. The grading of these responses, as the tables in this study showed, received from average to excellent grades based on answer keys and established assessment-specific rubrics. Instructors may find themselves in situations grading submissions that are generated by artificial intelligence tools, in general, and ChatGPT Chatbot, in particular. This presents a huge challenge to the entire process of teaching and learning as it provides a challenge to instructors' ability to evaluate the achievement of courses' learning outcomes. Fairness in grading can also be defined as instructors' objective mechanisms of differentiating between students' work, and robotically generated work are also challenged. Instructors' dependency on plagiarism detection software is no longer a 100% reliable option to detect copying as ChatGPT has the ability to hop unnoticed by the similarity check by skillfully paraphrasing multiple answers for the same question.

As ChatGPT presents a number of challenges to instructors, instructors shall change their techniques and mechanism to maximize the benefits of the latest developments in artificial intelligence and minimize or overcome the challenges. As mentioned earlier, ChatGPT has the ability to generate human-like text. To reduce the possibility of submitting Chatbot-generated responses, instructors are encouraged to use plagiarism detection software as a platform

to receive take-home assessments. This shall also be the case for in-class assessments in which students are allowed to use gadgets and online resources. Even though ChatGPT is skillful in paraphrasing answers, it also makes use of online resources, mainly from university and college submissions, to provide answers. For paraphrasing, plagiarism detection software providers shall work on a mechanism to detect paraphrased input. As results and findings showed, we have very similar input that was not detected by Turnitin even though it is clearly paraphrased. These submissions were not uploaded on Turnitin; therefore, Turnitin should have added these newly uploaded submissions to their database, and eventually, the paraphrased sentences should have popped up as similarity. For online resources, these resources are not properly cited and add to the similarity index. This was noticed in almost all business writing correspondence and composition essay writing tests. In addition, as ChatGPT paraphrases answers if the same question is asked a number of times, the use of plagiarism detection software eventually helps in detecting similar answers if a big number of students asked the same prompt, scenario, or case to the Chatbot. For theory-based questions, instructors are advised to avoid asking this type of question in take-home assessments, as ChatGPT's ability to generate a number of different answers for the same theoretical question is high. The only exception to this is the theory-based question in communication as ChatGPT used online resources to answer the question. It is believed that ChatGPT relied on online resources to answer the question that required specific answers.

Communication, business writing, and composition instructors are also advised to rework their application-based submission-based assessment rubrics to counter-battle ChatGPT-generated submissions. The grading of application-based ChatGPT responses showed that even though the answers are natural and human-like generated texts, they lacked synthetization, especially in the communication and business writing case-based questions. In the communication question, the responses managed to outline the case, identify the challenges, and provide solutions. The solutions were not fully supported based on the given information in the case. In addition, the case was not summarized. To avoid giving ChatGPT responses high grades, the communication instructor shall create a detailed assessment document for their submission-based assessments. They shall also work on a detailed rubric in which they emphasize adding personalized elements and alternatives as part of the answer. In the business writing email, the provided ChatGPT responses seemed more like templates that can be used in response to the given scenario. The responses did not include personal touches as providing additional information about the problem (this should have been created by the student-it is available in the scenario) and follow-up mechanisms. Therefore, business writing instructors shall also prepare detailed assignment documents that emphasize that students shall come up with any additional information needed to effectively write the business correspondence as per the guidelines discussed in class. The creation and use of this additional information shall be added to the grading criteria (rubric) and given a reasonable weight as it will reflect students' understanding of proper guidelines for creating effective business correspondence, on the one hand, and minimize the possibilities of grading a robotically generated correspondence and giving it a high grade, on the other hand. For composition courses, it is suggested to also come up with a detailed rubric that focuses and gives a big portion of the grade on the thesis statement, unity, support, and originality. The grading of essays showed that GPT is not very skillful in writing well-organized academic essays as per the academic guidelines. The originality shall also be observed

as ChatGPT has a tendency of copying portions of essays from online resources without citations and any reference to the original.

This study examined ChatGPT opportunities and challenges and provided recommendations for communication, business writing, and composition courses. Other research may look into the possible effects of ChatGPT on other courses.

The topic of ChatGPT is still an infant and public opinions are extremely polarized over the effectiveness of this new app. It seems technology is and will always be part of our life. As progressive researchers, we cannot but embrace this human innovative tool and adapt it to our day-to-day practice while keeping in mind the ethical concerns of our mission as educators. As this study examined ChatGPT opportunities and challenges and provided recommendations for communication, business writing, and composition courses, let us hope that future research may look into the possible effects of ChatGPT on other courses.

VI. CONCLUSION

This study examined the opportunities and challenges of the newly introduced ChatGPT. Based on the outcome of the analysis, it also provided recommendations to communication, business writing, and composition students and instructors. After conducting more than 30 tests, it was obvious that ChatGPT provides a number of opportunities for students and instructors alike. For students, ChatGPT provides a potential replacement for search engines that provide billions of results. Scanning through these results takes a very long time to find accurate a reliable information. ChatGPT provides the alternative of providing a simple result that can be generated as many times as wished by the user. ChatGPT also provides a platform for students to prepare for submissions and examine different examples. For instructors, ChatGPT may provide an opportunity to integrate technology in classrooms and provide students with examples to discuss and evaluate as part of workshops.

As ChatGPT provides opportunities, it also presents challenges to students and instructors. Students might find it tempting to use ChatGPT to generate assignment submissions, which would neither help them learn nor develop academically and professionally. This would, eventually, reduce their interest in classes as they become dependent on artificial intelligence. Instructors, on the other hand, might find themselves grading robotically generated submissions. Based on the outcome of the analysis, instructors are advised to change the nature of their take-home assessments and rubrics by providing detailed guidelines and integrating elements that require students to add information and details based on a given scenario to make the case complete. As ChatGPT is still new, more research on the use of this Chatbot is recommended to have a fuller understanding of its opportunities and challenges to students and instructors.

References

- [1] K. Roose. (2022, December 5). The brilliance and weirdness of ChatGPT. *The New York Times*. Retrieved December 18, 2022.
- [2] S. Lock. (2022, December 5). What is AI chatbot phenomenon ChatGPT and could it replace humans? *The Guardian*. Retrieved December 5, 2022.
- [3] P. Krugman. (2022, December 6). Does ChatGPT mean robots are coming for the skilled jobs? (HTML). *The New York Times*. Retrieved December 6, 2022.
- [4] T. Cowen. (2022, December 6). ChatGPT could make democracy even more messy. *Bloomberg News*. Retrieved December 6, 2022.
- [5] R. I. Mukhamediev et al., “Review of artificial intelligence and machine learning technologies: classification, restrictions, opportunities and challenges,” *Mathematics*, vol. 10, no. 2552, pp. 1–25, 2022. <https://doi.org/10.3390/math10152552>
- [6] J. Loeffler, *Personalized Learning: Artificial Intelligence and Education in the Future*, 2018. Available: <https://interestingengineering.com/personalized-learning-artificial-intelligence-and-education-in-the-future>
- [7] I. A. P. Wogu, S. Misra, P. A. Assibong, E. F. Olu-Owolabi, R. Maskeliūnas, and R. Damasevicius, “Artificial intelligence, smart classrooms and online education in the 21st century: implications for human development,” *J. Cases Inf. Technol.*, vol. 21, no. 3, pp. 66–79, 2019.
- [8] J. Beck, M. Stern, and E. Haugsjaa, “Applications of AI in education,” *Crossroads*, vol. 3, no. 1, pp. 11–15, 1996. Doi:10.1145/332148.332153.
- [9] F. Hollands and D. Tirthali, *MOOCs: Expectations and Reality*. Center for Benefit-Cost Studies of Education, Teachers College, New York: Columbia University, 2014.
- [10] S. A. D. Popenici and S. Kerr, “Exploring the impact of artificial intelligence on teaching and learning in higher education,” *Res. Pract. Technol. Enhanc. Learn.*, vol. 12, no. 1, p. 22, 2017. Doi:10.1186/s41039-017-0062-8. PMID:
- [11] J. Kay, “AI and education: grand challenges,” *IEEE Intell. Syst.*, vol. 27, no. 5, pp. 66–69, 2012. doi:10.1109/MIS.2012.92
- [12] S. Bayne, “Teacherbot: interventions in automated teaching,” *Teach. High. Educ. Crit. Perspect.*, vol. 20, no. 4, pp. 455–467, 2015.
- [13] L. Botrel, E. M. Holz, and A. Kübler, “Brain Painting V2: evaluation of P300-based brain-computer interface for creative expression by an end-user following the user-centered design,” *Brain-Comput. Interf.*, vol. 2, no. 2–3, pp. 135–149, 2015.
- [14] A. Johnson, *5 ways AI Is Changing the Education Industry*, 2019. Available: <https://elearningindustry.com/ai-is-changing-the-education-industry-5-way>
- [15] N. Singh, N. J. Ahuja, and A. Kumar, “A novel architecture for learner-centric curriculum sequencing in adaptive intelligent tutoring system,” *J. Cases Inf. Technol.*, vol. 20, no. 3, pp. 1–20, 2018. doi:10.4018/JCIT.2018070101.
- [16] D. Faggella, *Examples of Artificial Intelligence in Education*, 2019. Available: <https://emerj.com/ai-sector-overviews/>
- [17] J. C. Greene, V. J. Caracelli, and W. F. Graham, “Toward a conceptual framework for mixed method evaluation designs,” *Educ. Eval. Policy Anal.*, vol. 11, no. 3, pp. 255–274, 1989.
- [18] A. David and T. D. Wilson, “Information overload: context and causes,” *New Rev. Inf. Behav. Res.*, vol. 4, no. 1, pp. 31–44, 2010. doi: 10.1080/14716310310001631426.
- [19] M. A. AlAfnan, “The influences of corporate cultures on business communication: an ethnographic and textual analysis,” *J. Govern. Regulat.*, vol. 10, no. 2, pp. 34–43, 2021. doi: 10.22495/jgrv10i2art3.
- [20] M. A. AlAfnan and L. D. Cruz-Rudio, “Student-teacher email requests: comparative analysis of politeness strategies used by Malaysian and Filipino university students,” *World J. English Lang.*, vol. 13, no. 1, pp. 353–361, 2023. doi: 10.5430/wjel.v13n1p353.
- [21] J. Buolamwini and T. Gebru, “Gender shades: intersectional accuracy disparities in commercial gender classification,” *Proc. Mach. Learn. Res.*, vol. 81, pp. 1–15, 2018.
- [22] A. Elgammal, “AI is blurring the definition of artist: advanced algorithms are using machine learning to create art autonomously,” *Am. Scientist*, vol. 107, no. 1, pp. 18–21, 2019.
- [23] A. L. Samuel, “Some studies in machine learning using the game of checkers,” *IBM J. Res. Develop.*, vol. 3, no. 3, pp. 210–229, 1959.

- [24] P. Lehr, "Undemocratic means: the rise of the surveillance state," in *Counter-Terrorism Technologies: A Critical Assessment*, P. Lehr, Ed. Cham: Springer, 2019, pp. 169–179.
- [25] S. L. Gray, "Artificial intelligence in schools: towards a democratic future," *London Rev. Educ.*, vol. 18, no. 2, pp. 163–177, 2020. doi: [10.14324/LRE.18.2.02](https://doi.org/10.14324/LRE.18.2.02).
- [26] J. Yang and B. Zhang, *Artificial Intelligence in Intelligent Tutoring Robots: A Systematic Review and Design Guidelines*, 2019. Available: <https://tinyurl.com/y7kqgojg>
- [27] B. Kehoe, S. Patil, P. Abbeel, and K. Goldberg, "A survey of research on cloud robotics and automation," *IEEE Trans. Autom. Sci. Eng.*, vol. 12, no. 2, pp. 398–409, 2015.