







ORIGINAL

## Thematic analysis: exploring teacher and student perspectives on utilizing ChatGPT for content generation

### Análisis temático: exploración de las perspectivas de profesores y alumnos sobre la utilización de ChatGPT para la generación de contenidos

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#### ABSTRACT

**Introduction:** the research investigated the effects of ChatGPT, an AI-driven language model, on students and academic institutions. The analysis incorporated viewpoints from academics, research scholars, and graduate or postgraduate students. The increasing use of AI in education requires a comprehensive understanding of its potential benefits and drawbacks, especially within higher education and research.

**Method:** a thematic content analysis was used to investigate the viewpoints of 46 graduate and postgraduate students, 8 research scholars, and 4 educators. The investigation sought to find repeating themes and principal concepts concerning the influence of AI in educational environments.

**Results:** the research examined remarks regarding the function of ChatGPT for students, researchers, and educators, pinpointing eight major themes. The most prevalent were Content Writing (45 mentions), Creation of Thought (35 references), and Collection of Information (33 mentions), underscoring ChatGPT's influence on content development, ideation, and data organization. Additional themes encompassed Language Utilization, Innovation Generation, Model Development, Idea Formation, and Supportive Tools. The results demonstrated that ChatGPT is perceived as revolutionary for writing, cognitive processes, and information acquisition.

**Conclusions:** the research determined that ChatGPT has considerable ramifications for students and universities, as revealed by thematic content analysis. It emphasized eight primary themes: content, creativity, language, tools, models, information, generations, and ideas. It highlighted AI as an augmentation of the human intellect while acknowledging the significance of human traits. The results highlighted the necessity for additional research into privacy issues, ethical considerations, and optimal procedures for incorporating AI in education. The report emphasized the necessity of recognizing both the benefits and drawbacks of AI in current research and higher education.

**Keywords:** ChatGPT; Artificial Intelligence; Content Generation; Perceptions; Ethical Use of AI in Learning; Thematic Analysis.

#### RESUMEN

**Introducción:** la investigación analizó los efectos de ChatGPT, un modelo lingüístico basado en IA, en los estudiantes y las instituciones académicas. El análisis incorporó puntos de vista de académicos, becarios de investigación y estudiantes de grado o posgrado. El creciente uso de la IA en la educación requiere una

comprensión exhaustiva de sus posibles beneficios e inconvenientes, especialmente en el ámbito de la enseñanza superior y la investigación.

**Método:** se utilizó un análisis de contenido temático para investigar los puntos de vista de 46 estudiantes de grado y posgrado, 8 investigadores y 4 educadores. La investigación trató de encontrar temas recurrentes y conceptos principales relativos a la influencia de la IA en los entornos educativos.

**Resultados:** la investigación examinó las observaciones relativas a la función de ChatGPT para estudiantes, investigadores y educadores, señalando ocho temas principales. Los más frecuentes fueron la redacción de contenidos (45 menciones), la creación de pensamiento (35 referencias) y la recopilación de información (33 menciones), lo que subraya la influencia de ChatGPT en el desarrollo de contenidos, la ideación y la organización de datos. Otros temas fueron la utilización del lenguaje, la generación de innovaciones, el desarrollo de modelos, la formación de ideas y las herramientas de apoyo. Los resultados demostraron que ChatGPT se percibe como revolucionario para la escritura, los procesos cognitivos y la adquisición de información.

**Conclusiones:** la investigación determinó que ChatGPT tiene considerables ramificaciones para los estudiantes y las universidades, según reveló el análisis temático de contenido. Destacó ocho temas principales: contenido, creatividad, lenguaje, herramientas, modelos, información, generaciones e ideas. Destacaba la IA como un aumento del intelecto humano al tiempo que reconocía la importancia de los rasgos humanos. Los resultados pusieron de relieve la necesidad de seguir investigando sobre cuestiones de privacidad, consideraciones éticas y procedimientos óptimos para incorporar la IA a la educación. El informe subraya la necesidad de reconocer tanto las ventajas como los inconvenientes de la IA en la investigación actual y en la enseñanza superior.

**Palabras clave:** ChatGPT; Inteligencia Artificial; Generación de Contenidos; Percepciones; Uso Ético de la IA en el Aprendizaje; Análisis Temático.

INTRODUCTION

The business world, healthcare, farming, and schools have all been profoundly affected by the advent of new digital technology and developments in artificial intelligence.<sup>(1,2)</sup> Colleges and universities are not immune to the effects of the digital revolution. Given the current situation in the post-pandemic age, it is crucial to make some changes, such using mobile devices and virtual platforms for group interactions.<sup>(3,4,5)</sup> The introduction of AI into the field of education has opened new possibilities for the creation of effective learning environments and apps and the execution of real-world educational initiatives.<sup>(6,7)</sup> The development of AI has spurred progress in numerous industries. Chatbots, or computer programs that can imitate human speech, have been more popular in recent years. Their primary objective is to provide relevant information, assist with tasks, and answer inquiries. With the help of GPT (Generative Pre-trained Transformer) technology, Chat-GPT, an AI-powered chatbot, can comprehend human language and provide intelligible responses. Conversations between chatbot users are now more organic and interesting because to this cutting-edge innovation. Since then, though, Chat GPT has risen to the top of the chatbot popularity charts thanks to its outstanding results on several tests.

| Table 1. Exams Passed by Chat GPT |   |
|-----------------------------------|---|
| 1.                                | Four courses of University of Minnesota Law School                                    |
| 2.                                | MBA exam of Wharton School of Business  |
| 3.                                | US Medical Licensing Exam (USMLE)   |
| 4.                                | Common University Entrance Test (CUET UG Exam)  |
| 5.                                | Microbiology Quiz prepared by Alex Berezhov (Science Journalist and Executive Editor) |
| 6.                                | USA Biology Olympiad  |

Virtual lawyers, doctors, and business analysts are just a few of the many roles that <sup>(8,9,10)</sup> listed Chat-GPT playing. In contrast to earlier AI assistants and search engines, it generates original content from the data at its disposal. However, it has also been argued that it generates its own knowledge by speculatively connecting different experiences and that it manipulates diverse facts when it generates replies. Consequently, many establishments saw it as a danger and rigorously forbade its use in the classroom. The use of Chat GPT for any type of assistance has been forbidden at several institutions, including the University of France, the New York City Department of Education, RV University in Bangalore, the Indian Institute of Information Technology in Bangalore, Karnataka, India, and the International Conference on Machine Learning. When it comes to creative content creation with ChatGPT, students’ and researchers’ perspectives differ. Some see it to improve their writing and come up with new ideas, while others are worried about how it would affect their work’s credibility and academic honesty.<sup>(11,12,13)</sup> In a contentious move that has sparked concerns about academic dishonesty and plagiarism, ChatGPT has been named as a co-author on four separate scholarly articles.<sup>(14,15,16)</sup>

Students increasingly rely on ChatGPT as a writing tool, especially for their schoolwork and articles.<sup>(17)</sup> For students looking for writing help, ChatGPT is a great alternative because of how accessible and convenient it is. Nevertheless, educators are divided over ethical considerations raised by this broad usage. Worries that people would become too reliant on ChatGPT and see their creativity and originality eroded and their reliance on technology grow are understandable.<sup>(18,19)</sup>

Educators and academics have expressed significant concern on the likelihood of students use ChatGPT to fulfill their essay and assignment requirements, instead of presenting their own original compositions.<sup>(20,21,22)</sup>

Nonetheless, numerous scholars and practitioners have another perspective regarding the implications of AI tools. Professor Danny Oppenheimer (2023) from Times Higher Education stated, “ChatGPT may facilitate cheating for students, but the most effective methods to prevent cheating have never centered on surveillance and enforcement.” Similarly, Professor Kathy Hirsh-Pasek from Temple University in Philadelphia contended that the calculator was once a novel invention, and now we utilize it with ease. Therefore, our focus should be on how to augment critical thinking while embracing the capabilities of ChatGPT, rather than limiting its application. Consequently, it indicated that educational institutions must enhance their policy frameworks to address AI concerns and should integrate Chat-GPT by incorporating anti-plagiarism technologies and ensuring adequate source citations. Researchers advocated for instructing students in AI thinking collaboratively rather than substitutivity.<sup>(23,24)</sup> Chat GPT enables students to articulate their creativity, provides personalized tutoring, and enhances their readiness for future employment with AI systems. This technology can enhance students’ performance and grades by more effectively addressing their learning needs.<sup>(25,26)</sup> Consequently, the conflict between two distinct schools of thinking guided our research. The aim of our study is to address the curiosity of all users and professionals concerning the ramifications of Chat GPT. Research questions of our study are as follows:

RQ1: Identify the perception of students and researchers in creative content writing.

RQ2: Identify a thematic framework of opportunities and challenges in using Chat GPT for creative content creation.

RQ3: Identify whether to promote or restrain usage of Chat-GPT in education to maintain academic integrity.

### Literature review

In recent years, the domain of artificial intelligence has rapidly expanded, leading to the creation of robust language models like ChatGPT. ChatGPT has garnered attention as a prospective resource for researchers across various fields, including academic content writing, because to its ability to produce human-like language. This literature study aims to examine the advantages and disadvantages of utilizing ChatGPT as a content-writing instrument for researchers.<sup>(27)</sup> ChatGPT has the potential to transform the content-writing process for academics, particularly in academic publishing.<sup>(28)</sup> employed ChatGPT as an interview subject. ChatGPT’s utilization can aid educators in managing monotonous tasks such as grading, allowing them to focus on more intellectually demanding activities. Moreover, students can utilize ChatGPT as a resource for idea generation and participation in brainstorming activities. ChatGPT recognizes the risk of diminishing students’ critical thinking skills due to an overreliance on its capabilities, compounded by existing educational inequalities. ChatGPT recognizes that it cannot substitute for human creativity and intellectual ability in academic pursuits, as it lacks originality and inventiveness in its outputs. The application of ChatGPT in the tourist and hospitality industry may produce beneficial results in several areas, including personalized service delivery and content creation. The assessment of student results and the evaluation of assignment completion present a considerable challenge for educators. This matter requires the execution of an evaluation to measure students’ competence in written communication.<sup>(29,30)</sup> emphasizes the necessity of a mutual awareness that the learning process entails creating an environment conducive to active and creative student engagement.<sup>(29)</sup> asserts that communicative-based writing instruction focuses on the interaction between teachers and students, with the investigation of students’ ideas forming the basis for writing content. Furthermore, the teacher’s elucidations are employed to provide ways for articulating these concepts successfully in writing.<sup>(31)</sup> identify that ethical problems with GPT have multiple facets, including as authorship, accountability, transparency, and the potential for bias or the propagation of erroneous information. To maintain the integrity of health research publications, it is essential for publishers to establish explicit criteria for the inclusion of ChatGPT as a co-author. A journal editor asserts that the rising utilization of ChatGPT and analogous AI models presents a challenge in detecting and rejecting manuscripts authored by AI. The possible introduction of erroneous or plagiarized content into published literature via ChatGPT-generated publications exacerbates these concerns.<sup>(32,33)</sup>

### METHOD

This study sought to investigate the viewpoints of Graduate and Postgraduate students, research scholar and teachers on ChatGPT and AI integration inside university. To do this, a Questionary was initially disseminated to students and research Scholars and teachers on google form. The identical question was subsequently posed in a Google Form for data collection, with responses gathered from 46 students of graduate and Postgraduate

Programme of universities, 8 research Scholar and 4 teachers.

| Table 2. Demographic information of the participants |            |                |        |
|--|------------|----------------|--------|
| Particulars  | Field      | Place          | Number |
| Student  | Commerce   | Indore, India  | 18     |
|  | Management | Dabra, India   | 13     |
|  | Science    | Gwalior, India | 15     |
| Research Scholar                                     | Management | Gwalior, India | 8      |
| Teacher  | Management | Gwalior, India | 4      |

This study involved 46 students of graduate and Postgraduate Programme of universities, 8 research Scholar and 4 teachers from north region of India. All the participants have aware about the use of ChatGPT in content writing and they all are using it for their content writing. about the majority of participants are from education-related fields. There were 38 male participants and 20 female participants. This study utilized an open-ended question to gather data. The inquiry aimed to collect perspectives and analyses regarding the possible effects of ChatGPT on students, researcher and teacher. Participants were prompted to express their views on the topic, leading to a variety of responses. The responses were aggregated into one document. All personally identifiable information was eliminated to preserve participant anonymity. The resulting data set comprised 8 ideological keywords from 58 participants. The analysis employed thematic content analysis. This facilitated the identification of emerging themes and patterns in participants’ opinions.

Thematic Content Analysis

The below mentioned graph was made using NVivo where are the respondent’s responses were analysed and based on their responses, sentiments were coded.

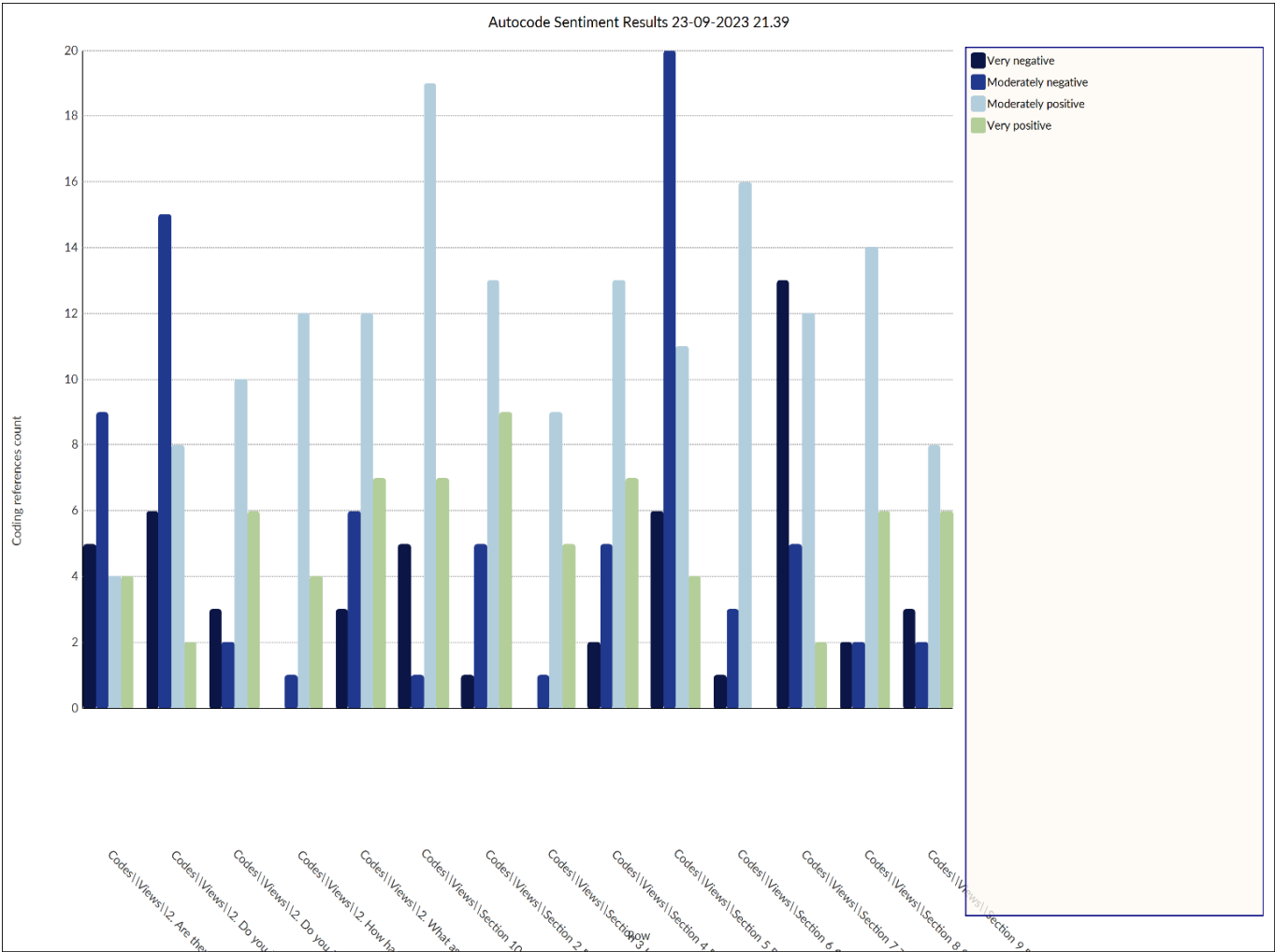


Figure 1. Respondent’s responses

In the sentimental analysis of the study, it was found that most of the respondents have a mildly positive attitude towards the perception of the AI and specifically chat GPT. The same could be better understood with the help of the graphs mentioned above.

When respondents were asked if they believe if they have encountered scenario where they believe ChatGPT struggles then it was revealed than 14 respondents have chosen the negative sentiment and only 8 have opted for positive one. It means they trust and believes that ChatGPT can do things without struggle.

For the ethical discussion while using AI for content, 21 respondents were with negative sentiment implying that most of them doesn't have any ethical concern while using AI for content create. Further could be understood by looking at the matrix below.

Table 3. Matrix Data

| Codes   | Very Negative | Moderately Negative | Moderately Positive | Very Positive |
|---|---------------|---------------------|---------------------|---------------|
| 1 : Codes\\Views\\2. Are there any specific scenarios or content types where you believe ChatGPT excels or struggles  | 5             | 9                   | 4                   | 4             |
| 2 : Codes\\Views\\2. Do you believe there are any ethical concerns associated with using AI language models like ChatGPT for content creation If yes, please elaborate on your concerns                           | 6             | 15                  | 8                   | 2             |
| 3 : Codes\\Views\\2. Do you think readers might perceive content generated by ChatGPT differently from content written by humans Why or why not   | 3             | 2                   | 10                  | 6             |
| 4 : Codes\\Views\\2. How has ChatGPT helped you in your writing tasks, if at all Please describe  | 0             | 1                   | 12                  | 4             |
| 5 : Codes\\Views\\2. What aspects of writing do you think ChatGPT excels at, and where does it fall short   | 3             | 6                   | 12                  | 7             |
| 6 : Codes\\Views\\<br>Section 10 Closing Remarks1. Is there anything else you would like to add or any comments you would like to share regarding your experience with ChatGPT for content writing                | 5             | 1                   | 19                  | 7             |
| 7 : Codes\\Views\\<br>Section 2 Familiarity with ChatGPT1. Have you heard about ChatGPT or similar AI-powered language models before If yes, please share your initial impressions or knowledge about it          | 1             | 5                   | 13                  | 9             |
| 8 : Codes\\Views\\<br>Section 3 Usage of ChatGPT1. Have you personally used ChatGPT for writing content or academic purposes If yes, please describe the specific use cases or projects where you utilized it     | 0             | 1                   | 9                   | 5             |
| 9 : Codes\\Views\\<br>Section 4 Perceived Benefits1. In your opinion, what are the potential benefits of using ChatGPT for writing content in an academic or research context                                     | 2             | 5                   | 13                  | 7             |
| 10 : Codes\\Views\\<br>Section 5 Perceived Limitations1. What limitations or challenges have you encountered while using ChatGPT for content writing  | 6             | 20                  | 11                  | 4             |
| 11 : Codes\\Views\\<br>Section 6 Comparison with Traditional Writing1. In comparison to traditional writing methods, how would you rate the efficiency and effectiveness of using ChatGPT for content creation    | 1             | 3                   | 16                  | 0             |
| 12 : Codes\\Views\\<br>Section 7 Trust and Credibility1. Do you trust the content generated by ChatGPT in terms of accuracy and reliability   | 13            | 5                   | 12                  | 2             |
| 13 : Codes\\Views\\<br>Section 8 Suggestions and Improvements1. Based on your experience, what improvements or additional features would you like to see in ChatGPT to make it more effective for content writing | 2             | 2                   | 14                  | 6             |
| 14 : Codes\\Views\\<br>Section 9 Future Adoption1. Do you think ChatGPT, or similar AI-powered writing tools will become a regular part of content creation in the future Why or why not                          | 3             | 2                   | 8                   | 6             |



It is pretty much clear from the above matrix that respondents have a positive attitude towards the usage of the ChatGPT for content creation and even for the tasks and assignments. It was also found that they do not find it ethically wrong while using the ChatGPT as a mode to generate content.

It should be note that while comparing the traditional method with the new method of ChatGPT, 26 respondents have responded in favour of ChatGPT as a better tool than the traditional methods. In general, 19 respondents have showed their positive attitude toward the use of ChatGPT.

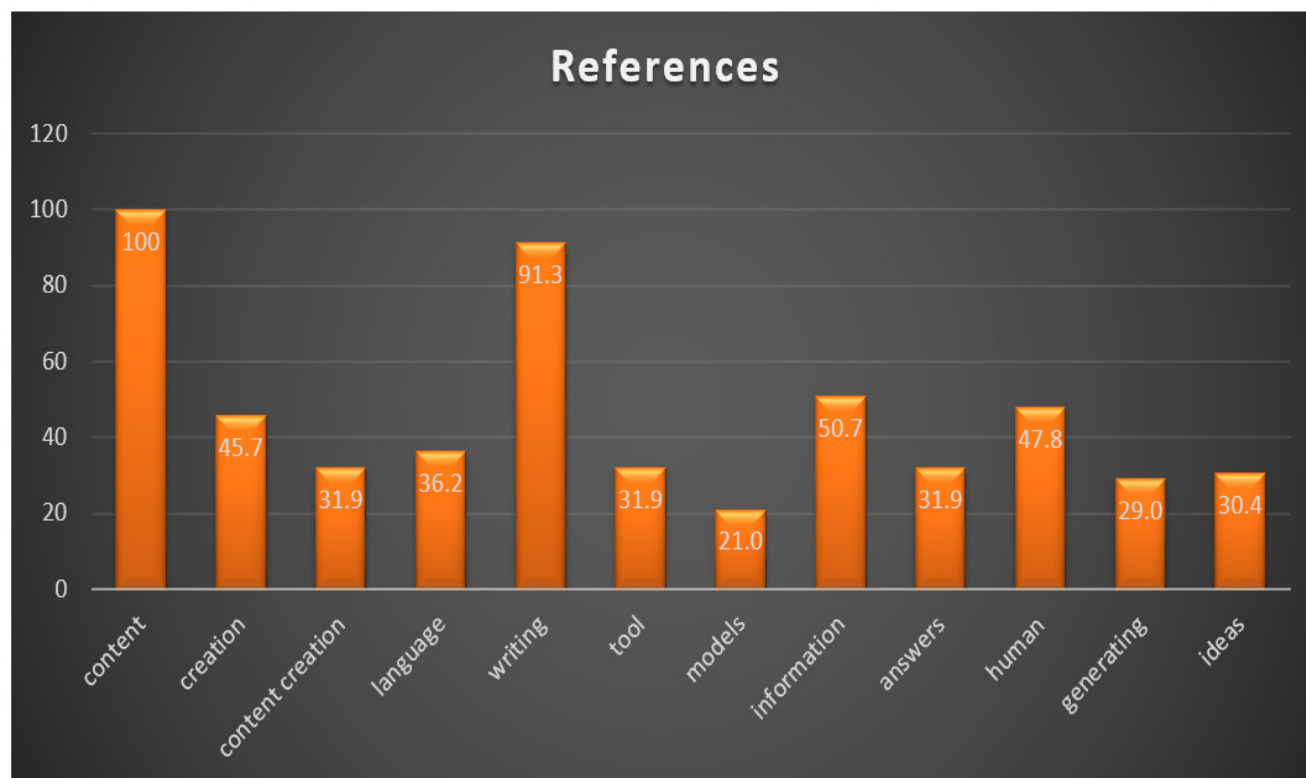


Figure 2. Distribution of themes as per the frequencies

The above-mentioned frequencies were made using the NVivo and were coded to themes, the frequencies were then converted to percentage for the better understanding of the data.

During the study following important themes emerged:

1. Content
2. Creation
3. Language
4. Tool
5. Models
6. Information
7. Generation
8. Ideas

From the frequencies distribution most of the nodes were made related to content and content creation. It must be noted that content generated 146 frequencies and is then converted to 100 % for measuring in percentages.

The highest frequencies are being generated to content and writings. Now this can be understood from the data that most of the respondents are using the ChatGPT for content and writing.

Another highlight that can be revealed from the chart is respondent are using ChatGPT also to generated information as 50 % of respondents have used ChatGPT to generate information.

This figure 3 also focusses on the weightage scored by each theme that occurred during the analysis. It can be seen from the pie chart that most of the area is covered by content tab that is highlighted in orange. That implies that most of the respondents have used the ChatGPT specifically for the content and content creation.

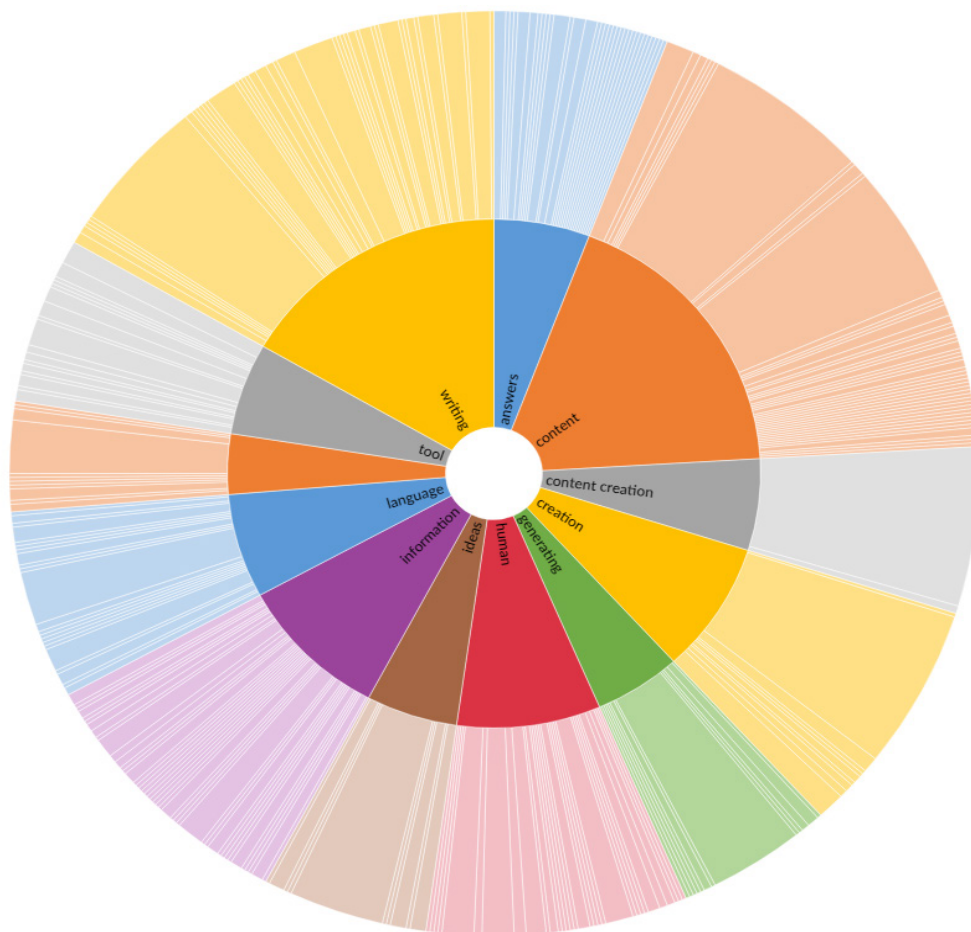


Figure 3. Intersecting codes and their presence as per themes

The second highlighted tab is of writing followed by information and creation. When these themes are linked in a row it can be found that most of the respondents have ChatGPT for generating information and to create new ideas.

Ethical Considerations

This research primarily focused on ethical considerations such as voluntary participation and the safeguarding of participants’ privacy and well-being. Participants were informed of their voluntary participation and their right to withdraw from the study at any time. The information shared by participants with the researchers was not disclosed to other participants. Furthermore, the names of participants were omitted from the text of this article. The use of online platforms for data collection enabled participants to articulate their views while maintaining anonymity.

RESULTS

Eight themes were identified from the analysis of comments regarding the question, “What does ChatGPT signify for students, researchers and teachers?” Table 4 presents the primary themes identified through thematic content analysis of the comments, along with the frequency of each theme. The frequencies indicate the frequency of theme mentions or discussions within the total analysed comments.

| Table 4. Themes Description and its Frequency |  |           |
|---|--|-----------|
| Themes  | Description of the Theme   | Frequency |
| Content Writing                               | Content writing via ChatGPT involves utilizing this AI tool to assist in or generate content for diverse applications. ChatGPT can facilitate and improve the content creation process in numerous ways. | 45        |
| Creation of Thought                           | The generation of thought via ChatGPT involves utilizing the AI’s functionalities to produce, enhance, and formulate ideas, concepts, or solutions.  | 35        |
| Uses of Language                              | Language utilization in ChatGPT is essential for its interaction, information processing, and response generation.   | 24        |

|                           |   |    |
|---------------------------|---|----|
| Models Creation           | Creating models through ChatGPT can refer to a range of activities that involve using the capabilities of ChatGPT to generate, simulate, or support the development of various models | 17 |
| Collection of Information | Collection of information through ChatGPT refers to the process of using ChatGPT to gather, summarize, and organize data or insights on a specific topic                              | 33 |
| Generation of New ideas   | Generation of new ideas through ChatGPT involves leveraging its ability to think creatively and synthesize information in novel ways.   | 21 |
| Ideas Creation            | idea creation through ChatGPT involves using its capabilities to generate fresh and innovative ideas across various domains.  | 12 |
| Supporting Tools          | Supporting tools are helping to do some analysis part   | 8  |

As can be seen in table 4, the most repeated themes were “Content Writing” with 45 frequencies, “creation of thought” with 35 frequencies, “Collection of Information” with 33 frequencies. These three themes show that scholars, students and teachers think that AI technologies will change our habits regarding the Content Writing, Creation of thoughts and collection of information by looking at the capabilities of ChatGPT, one of the leading AI applications

DISCUSSION AND CONCLUSION

The findings from the thematic content analysis correspond with existing literature, highlighting the potential benefits and challenges of utilizing artificial intelligence, particularly ChatGPT, in the educational sector. Research by <sup>(34,35,36)</sup> indicate that the incorporation of AI tools in educational environments may improve student engagement and satisfaction. This is accomplished by relieving educators of routine tasks, allowing them to focus on developing higher-order cognitive skills and offering guidance to students. The study by <sup>(37)</sup> demonstrated that the use of chatbots can improve student performance and support information retention. This finding corresponds with the broader concept of personalized learning, as indicated in the analysis of the previously mentioned study.

The field of artificial intelligence has witnessed notable progress in recent times, exemplified by the development of advanced models like GPT-3.5 and GPT-4. These breakthroughs hold significant implications for the domain of education, as these models continue to enhance their capacity to comprehend and produce writing that closely resembles human language.<sup>(38)</sup> This advancement aligns with the concept of “artificial intelligence as a supplement to human cognition” and the possibility of profound alterations in the educational experience. Nonetheless, the incorporation of artificial intelligence (AI) in the field of education gives rise to apprehensions regarding the process of assessment and evaluation. This is due to the potential obsolescence of conventional approaches when confronted with AI-generated responses.

Limitations

This study provides essential insights; however, it is important to acknowledge certain limitations. This study is limited by a sample size of 58 individuals, comprising scholars, students, and teachers. The data collection process was exclusively based on an open-ended inquiry. PhD programmes require adequate proficiency in English, leading to the assumption that students and academics have a proper understanding of the language when interpreting the question posed. The inclusion of individuals from diverse backgrounds and nations can enhance the understanding of the implications related to the integration of ChatGPT and artificial intelligence in academic institutions. Future research would benefit from including researchers and students from a wider range of academic disciplines, thereby fostering a more thorough understanding of the implications related to the integration of artificial intelligence in higher education.

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## CONFLICT OF INTEREST

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