Poietic symbiosis or algorithmic subjugation: generative AI technology in marketing communications education

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Abstract

This exploratory study investigates the convergence of marketing communications and AI-powered technology in higher education, adopting a perspective on student interactions with generative AI tools. Through a comprehensive content analysis of learners' responses, we employed a blend of manual scrutiny, Python-generated Word Cloud, and Latent Dirichlet Allocation (LDA) to expose the nature of interaction between learners and AI tools. Our findings indicate that learners predominantly adhere to the perception of AI as a tool resembling a 'brush' in the creative process, rather than as an active co-creator – the percaption that is aligned with the conventional tool-user dynamic. Students articulated a dual narrative regarding AI: they acknowledged its utility in enhancing creativity, yet expressed concerns about overreliance potentially eroding their own creative skills. Heidegger's exploration of different modes of 'revealing' and Deleuze and Guattari's notions of desiring machines and machinic enslavement suggest an alternative perspective where technology, and by extension AI-empowered technology, can contribute to a deeper existential understanding. This study points out the possibility of moving beyond a simple tool-user model, suggesting the emergence of more complex plausible scenarios of interaction: poietic symbiosis or algorithmic subjugation.

Keywords Advertising message · Applications · Artificial intelligence (AI) · Deleuze · Generative AI (GenAI), education · Heidegger · Lerner-facing · Marketing communications

1 Introduction

Artificial intelligence (AI) is a present reality quickly reshaping educational paradigms and practices (Chu et al., 2022). This transformation is not new; over the past three decades, Artificial Intelligence in Education (AIEd) has matured into a vibrant

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Extended author information available on the last page of the article

field of study, constantly evolving and expanding (Luckin et al., 2016; Chen et al., 2020).

Despite extensive research on AI in STEM fields, there are notable gaps in other domains. Firstly, there is a significant void in understanding the applications and implications of AI-enabled technology in marketing communications education. Secondly, when research does address AI technologies, it rarely focuses on generative AI tools (GenAI), although, the 2024 Educause Horizon Report emphasized the importance of GenAI, stating that the last "promises to change teaching and learning in ways many of us have yet to fully understand or prepare for" (Pelletier et al., 2024, p. 4). Lastly, incorporating the voices of stakeholders, including students, into the analysis represents a rarely used methodology.

Advances in marketing technology have influenced how courses are taught, leading to changes in marketing education (Ferrell & Ferrell, 2020). For instance, Lexus developed a commercial using data from award-winning advertising campaigns fed into an AI system (Medway, 2018), and Coca-Cola launched the 'Create Real Magic' contest, inviting users to combine ChatGPT, DALL-E, and historic Coca-Cola ad creatives for new artworks. BMW leveraged GenAI to create a new advertising campaign for the 8 Series Gran Coupé, projecting AI-generated art onto cars to connect emotionally with their audience (DataFeedWatch, 2023). However, marketing education has not fully incorporated AI despite its potential to develop skills for becoming better communication professionals (Luttrell et al., 2020).

This study aims to fill this gap by exploring how GenAI tools can be integrated into marketing education, focusing on student perceptions and experiences. This research looks at three essential dimensions. First, the study incorporates an experiential learning design where students develop an advertising campaign for a real client, Zoya Health and Wellbeing Resort. This real-world application allows students to engage in authentic marketing practices, connecting theoretical knowledge and practical implementation. Second, students are encouraged to specify creative techniques, such as metaphors, anthropomorphism, hyperbolization, antithesis, and wordplay, in their prompts to GenAI tools. Instead of merely asking the AI to "be creative," this approach guides students in integrating sophisticated rhetorical and literary devices into their content. Third, the study captures and analyzes the students' voices through their essays, employing a non-obtrusive research method that documents their experiences and insights while using GenAI, thus contributing meaningful qualitative data to the research on AI in marketing education.

To provide a deeper theoretical context, we draw on Martin Heidegger's and Gilles Deleuze and Félix Guattari's insights on technology. In the essay "The Question Concerning Technology," Heidegger (1977) proposes that technology is not just a collection of tools and devices but a way of understanding and interacting with the world. Heidegger (1977) differentiates between various modes of revealing: the technological and the poietic (p. 13).

The concept of 'desiring machines' advanced by Deleuze and Guattari (1983) in "Anti-Oedipus" resonates with the current AI development. They depict a scenario where machines are not solely tools but integral elements of society, linked and interdependent – a notion reflected in the phrase "machines driving other machines"

(Deleuze & Guattari, 1972, p. 1). AI systems embody human thought, desire, and collective consciousness. Humans become extensions of machines.

These philosophical perspectives offer a framework for comprehending the AI-driven epoch we are engineering, with the younger generation's use of AI tools being a major part of this new era.

The research question centres on how GenAI tools can enhance the learning experience in marketing communications. The objectives include: (1) advancing innovative pedagogical approaches for teaching persuasive promotional message creation using AI-enabled technology; (2) measuring student learning and experiences with GenAI tools; and (3) providing insights and recommendations for educators and AI technology developers.

The subsequent sections of this paper are structured to comprehensively address the research questions. The literature review section provides a brief examination of existing scholarship on AI in education and marketing communications, establishing the theoretical foundation for this study. Following this, the methodology section outlines the research design, elaborating on the qualitative content analysis approach, the context of the study, participant demographics, and the specific AI tools employed. The findings section then presents the outcomes of the content analysis, interpreting the themes identified in relation to AI's role in creativity and learning, and addressing its inherent limitations. In the discussion section, the findings are analyzed through the lens of established theories and literature, with a focus on their implications for educational practice and philosophical considerations. Finally, the conclusion synthesizes the key findings, acknowledges the study's limitations, and proposes avenues for future research.

2 Identifying the gap and setting objectives

2.1 Artificial intelligence in education (AIEd)

The corpus of scholarly work on the implementation of artificial intelligence within the learning environment is expanding (Contreras et al., 2024; Rahiman & Kodikal, 2024). A significant corpus of research thoroughly examines the role of chatbots (Ait Baha et al., 2023; Cingillioglu et al., 2024) and virtual tutoring (Hinojo-Lucena et al., 2019) in education. Based on the comprehensive analysis by Zawacki-Richter et al. (2019), research has been conducted on using AI applications for course content delivery, notably in computer science (Shen & Yang, 2011; Dobre, 2014; Hooshyar et al., 2015; Howard et al., 2017). Additional investigations have explored Intelligent Tutoring Systems (ITS) for mathematics instruction (Miwa et al., 2014; Hwang & Tu, 2021). Various studies have examined use of AI technologies in business statistics, accounting (Palocsay & Stevens, 2008; Jackson & Cossitt, 2015), medical education (Payne et al., 2009; Winkler-Schwartz et al., 2019), language learning (Crompton & Burke, 2023) as well as in enhancing writing and reading comprehension strategies among undergraduate psychology students (Ray & Belden, 2007; Weston-Sementelli et al., 2018).

While the majority of AI research is conducted predominantly in STEM domains (Zawacki-Richter et al., 2019), there is a shortage of educational perspectives in AIEd research within the marketing field. Additionally, the exploration of generative AI (GenAI) technologies in this context remains limited. Some studies have explored university students' assessments of GenAI technologies, such as ChatGPT, in higher education. For example, Chan and Hu (2023) reported a generally positive attitude towards GenAI in teaching and learning. Students acknowledged the potential for individualized learning support, enhancement in writing and ideation processes, and support in research tasks. Nonetheless, they also voiced apprehensions regarding the accuracy of AI tools, privacy and ethical considerations, and the potential effects on their personal growth, and future career opportunities. Research exploring AI applications in language education indicates that students perceive tools like chatbots and Plot Generator as beneficial for language learning (Sumakul et al., 2020; Bailey et al., 2021; Jeon & Lee, 2024).

Despite these insights, much of the existing research on tertiary students' perceptions primarily focuses on AI technology in general, often neglecting the use of GenAI technologies. Furthermore, image-generative AI models, such as Stable Diffusion, DALL-E, and Midjourney, have been relatively underexplored in educational settings. Despite their considerable potential benefits for educational applications (Dehouche et al., 2023; Lee et al., 2023; Vartiainen & Tedre, 2023), including creative arts and media education (Bender, 2023), these technologies remain underinvestigated.

Heidegger and Deleuze's philosophical musings offer an unconventional lens through which to analyze the interaction between these technologies and their users. These thinkers perceive technology as a transformative force that reshapes our relationship with the world. They contend that technology unveils new dimensions of reality, altering how we interact with and understand our environment and ourselves. By exploring how students perceive AI's role in their creative processes, we can deduce the specific mode of revealing that AI technology brings about in this context.

2.2 Research gap

There is a noticeable void in understanding students' specific views and experiences with GenAI tools, as this area remains comparatively less explored, especially in the field of marketing education. While AI research is predominantly conducted in STEM domains, there has been a critical gap in the literature on how AI technologies could be used to improve students' marketing communications skills and equip them with knowledge and experiences to be career-ready in a fast-changing technological environment and, inevitably, professional requirements in the labour market. Furthermore, the potential of image-generative AI models, such as Stable Diffusion, DALL-E, and Midjourney, has been underexplored in educational settings despite their considerable benefits for creative arts and media education. Addressing these gaps could significantly enhance our understanding of how GenAI can be used in marketing education.

2.3 Heidegger's philosophical insights on technology

Heidegger (1977) offers a profound philosophical framework for comprehending technology's role in society by arguing that technology is a way of revealing the world. He describes a shift in human interaction with technology from a more intimate, creative revealing (poiesis) to a calculative pertinent predominantly to the preindustrial era's craftsmanship, exploitative revealing (enframing) mainly manifested in the postindustrial technological era. He states that enframing (Gestell) depicts how technological thinking can reduce the world, including human beings, to a standing reserve – resources to be exploited (Heidegger, 1977).

In the preindustrial craftsmanship era, the relationship between craftsmen and their tools was characterized by a profound connectedness. Tools were perceived as extensions of human agency. This era was defined by tangible, direct contact with materials and tools, eliciting a sense of relatedness and closeness. The craftsmanship involved a relationship between the tool and the craftsman, where the creation process was tangled with the essence of both the material and the creator. Heidegger termed this as a 'poietical' form of revealing, where the tool and the material fused to bring forth something that was true to its nature.

With the advent of the postindustrial technological era, there was a significant shift in the human-tool relationship. This period witnessed the emergence of various systematic frameworks and methodologies designed to streamline and optimize processes. Examples include the ZAKMAN framework, among others, which was utilized to order and manage complex industrial and technological processes systematically. This era marked a departure from the direct, intimate contact of the preindustrial era to a more abstract, systematic engagement with technology. Tools and technologies were increasingly perceived as components within larger systems, losing the individualized essence they held in the craftsmanship era. This phenomenon was conceptualized by Heidegger as 'enframing' (Gestell) – treating technology primarily as a means to an end, a 'standing reserve' to be used for utilitarian purposes and exploited.

There is a profound disconnect between individuals of the post-industrial era and technology. Heidegger (1977) ponders on the nature of technology, "We will never experience our relationship to the essence of technology so long as we merely represent and pursue the technological" (p. 4). This type of revealing poses a challenge, as it puts humanity at risk of becoming a resource itself, losing the ability to interact with the world in a more authentic and meaningful way.

2.4 Deleuze and Guattari's philosophical insights on technology

Gilles Deleuze and Félix Guattari's perspective on technology, particularly in their seminal works "Anti-Oedipus" and "A Thousand Plateaus", offers an exploration of the relationship between humans and machines. Their concepts of desiring machines and machinic enslavement, along with other related ideas, may shed new light on the dynamics of technological interaction. Although, the notion of a machine in their work goes beyond the technical artefact, "there are some interesting references to machines in their technical–industrial sense" (Wellner, 2022, p. 3).

In Anti-Oedipus, Deleuze and Guattari introduce the concept of desiring machines, arguing that desire is a productive force rather than a lack. Desiring machines are assemblages that produce reality through their connections and interactions, encompassing a wide range of social, biological, and technical systems that work together in continuous production (Deleuze & Guattari, 1983). These machines function by breaking down and reassembling flows of energy and matter, creating new configurations and potentials, and challenging traditional notions of desire as something to be repressed or controlled.

In A Thousand Plateaus, Deleuze and Guattari explore the idea of machinic enslavement, differentiating between technical machines and social machines. Technical machines are physical devices that perform specific tasks, while social machines comprise broader networks of relationships and structures that organize society (Deleuze & Guattari, 1987). Machinic enslavement occurs when humans become subordinated to the operational logic of machines, particularly within capitalist systems. This form of enslavement involves the regulation and control of human behaviour through technological means. Individuals, absorbed into the functional requirements of technological systems, lose their autonomy and become simple cogs in a vast machine (Deleuze & Guattari, 1987).

2.5 Study objectives

As an effort to further advance AI technologies for education, this study intends to demonstrate to educators, AI technology creators, and other stakeholders how to incorporate AI applications in developing students' skills that are necessary for crafting persuasive messages in marketing communications, taking into account the voice of users. Specifically, this research aims to achieve the following goals through multiple methods: (1) an innovative approach that combines experiential learning design with the use of creative prompt techniques. This approach involves students developing advertising campaigns for a real client, Zoya Health and Wellbeing Resort, and encourages them to specify creative techniques (such as metaphors, anthropomorphism/personification, hyperbolization, antithesis, and wordplay) in their prompts to GenAI tools. This dual strategy enhances their practical skills and deepens their understanding of advanced rhetorical and literary devices in marketing communications; (2) to measure *how students learn* by gathering students' feedback about their experience using GenAI technology to produce promotional messages; (3) to adduce useful advice, inspiration, perspectives and other takeaways for both educators and AI technological specialists.

3 Methodology

3.1 Scope of the methodology

Three perspectives can be adapted to view educational AI technologies: learner-facing, teacher-facing, and system-facing (Baker & Smith, 2019). Learner-facing AI tools are software applications used by students to accelerate learning, such as adap-

tive or personalized learning management systems and intelligent tutoring systems (ITS). Teacher-facing technologies automate functions like administration, evaluation, feedback, and plagiarism detection, assisting supervisors with data at an institutional level, and helping them monitor attrition patterns across faculties or colleges.

In this study, a learner-facing angle is assumed, wherein participants are situated within a business milieu. The pedagogical design necessitates the application of AI-driven technologies by these participants, tasked with the development of promotional materials. Their objective is to serve a real-world client effectively simulating the role of an advertising agency. This experiential learning framework is designed to emulate the challenges of contemporary marketing practice, enriching the educational experience with a blend of theoretical knowledge and practical application. Such an approach is empirically proven to be effective for students learning (Karimova & Rutti, 2018; Dingus & Black, 2021).

In the realm of communications pedagogy, particularly within the disciplines of advertising, public relations, and integrated marketing communication, the suggested instructional paradigm offers significant benefits as it systematically prompts students to critically evaluate the functionalities of AI-powered tools. The art of crafting persuasive communications is an essential skill for aspiring specialists in the field, as it directly influences the efficiency of diverse media outputs including social media content, advertising campaigns, poster designs, press releases, and advertorials. AI-based technologies, while offering considerable support in these tasks, also bring inherent challenges, dropping our attention to the need for a careful balance between technological assistance and the preservation of authentic, creative expression. Do AI-powered applications reflect the values of their creators? Do the users have the power to create the message and, ultimately, how we perceive reality or do they relinquish some power to AI technology? Who will hold power eventually?

3.2 Research design and methods

In this educational exercise, conducted within the framework of the undergraduate course 'Advertising Practice and Creative Strategies' at a university in Dubai, students are encouraged to integrate classical media concepts with contemporary technological advancements. Dubai, as a rapidly growing global hub for innovation and technology, provides a fertile environment for exploring the intersection of traditional media and emergent AI-powered applications. The city has rapidly become a leader in the adoption of artificial intelligence (AI) across various sectors, including education and business. The United Arab Emirates (UAE) has shown significant progress in integrating AI technologies, with 65% of IT professionals in the UAE reporting a significant acceleration in AI rollout over the past two years. 42% of companies in the UAE have actively deployed AI in their operations (IBM, 2024). This setting offers a vibrant, multicultural context, making it ideal for examining how diverse perspectives influence the adoption and utilization of AI in marketing communications.

Researchers advocate for the integration of teaching as research and the experimentation with GenAI in academic courses (Pelletier et al., 2024, p. 23). For instance, Carnegie Mellon University offers instructors strategies, tools, and support to innovate with GenAI, as well as methods for collecting data from their courses (ibid.).

This study employed a qualitative research design to explore a cohort of sophomore students' experiences with GenAI tools. Qualitative research is particularly suited for understanding complex social phenomena from the participants' perspectives (Creswell & Creswell, 2017). By focusing on subjective experiences, this approach allows for an in-depth examination of individual perceptions and feelings (Merriam & Tisdell, 2015).

Furthermore, content analysis was conducted using a three-pronged approach: initially through manual examination of the texts, followed by the utilization of Python for generating a Word Cloud, and then applying Latent Dirichlet Allocation (LDA) for more in-depth thematic analysis.

3.3 Participants

The participants of this study comprised twenty-three students enrolled in the undergraduate course 'Advertising Practice and Creative Strategies. The study's participants were sophomore students from various nationalities living in the United Arab Emirates (Jordanian, Pakistani, Egyptian, Indian, Syrian, Lebanese, and Emirati), reflecting a wide range of experiences and perspectives. This diversity served as a catalyst for enriching the study's findings by incorporating a wide array of cultural and educational backgrounds. The educational context of our study, which involves reflective assignments from students, lends itself well to qualitative analysis. The participants provided extensive qualitative data through their essays and reflections, a non-obtrusive method, allowing for a robust analysis of the themes related to AI's role in education.

Qualitative research often aims to reach a saturation point (Glaser & Strauss, 2017), where no new themes or insights emerge from additional data. Data saturation can often be achieved with as few as twelve participants in homogenous groups (Guest et al., 2006). Our study involving twenty-three students surpasses this threshold, suggesting that we are likely to have captured a comprehensive range of perspectives relevant to the research question.

Similar studies in educational settings have utilized comparable sample sizes to explore in-depth student experiences and perceptions. For example, a study by Creswell and Poth (2018) suggests that 20–30 interviews are typically sufficient to uncover significant themes in qualitative research.

Our study employs purposeful sampling, focusing on obtaining rich data from participants who have direct experience with the GenAI tools being studied. This approach is well-supported in qualitative research methodologies, where the emphasis is on depth and detail rather than breadth (Patton, 2002).

The students were expected to utilize the knowledge they have acquired over the course period to complete assignments, in that way manifesting a concrete implementation of emerging technologies synergized with traditional marketing communications strategies.

3.4 Practical implementation of AI

In the traditions of Work Integrated Learning (WIL) – pursuits that combine the theoretical knowledge of a field with its real-world application in the workplace – students integrate their learning about advertising strategies, targeting, creativity, and persuasive techniques with emerging GenAI technology. With the help of applications powered by AI, students can practice the typical work of an advertising agency using such applications as (a) text-to-image generators like Leonardo, DALL-E, Midjourney, Dream by Wombo, and NightCafe Studio, and (b) AI content generator tools like ChatGPT, Claude, and Rytr. The students are tasked to explore (c) how the applications were used to enhance the advertising content, (d) whether the AI-powered app is considered the brush or the painter (i.e., whether students view it as a tool or a co-creator of the message), and (e) what was learned from this assignment.

3.5 Pedagogical framework

The project is structured into three critical stages designed to progressively produce the advertising campaign for a company. It introduces students to the capabilities of AI-powered tools and then encourages them to reflect upon their experiences.

3.5.1 Stage 1: creation of a creative brief

In the initial stage, students are tasked with crafting a comprehensive creative brief. This brief encapsulates integral elements such as the benefits of the product or service in focus, findings from research on target customers, the brand concept, and the positioning statement. This stage serves as a foundation, guiding students in forming a clear and informed perspective before building the advertising campaign and marketing communication activities.

3.5.2 Stage 2: production of promotional materials

Following the construction of the creative brief, students move to the second stage, where they are required to use AI content-generating tools – ChatGPT, Claude, Rytr, or other available tools – to develop an online advertorial and create the titles and slogans. Accompanying this written content with visual illustrations generated through text-to-image tools, such as Leonardo, DALL-E, Midjourney, Dream by Wombo, and NightCafe. This stage provides students with an opportunity to see the transformative capabilities of AI in enhancing advertising content.

3.5.3 Stage 3: reflection on the experience and refined report

The culminating phase of the project requires students to revisit their initial submissions – the creative brief and the advertising campaign materials – to make revisions based on the feedback provided. This iterative process is crucial in the learning process, as it aligns with the educational philosophy that reflection upon and correction

of one's work deepens understanding and enhances skill development (Winstone et al., 2017; Shute, 2008).

During this stage, students scrutinize their work critically, identifying areas where execution could be improved. Drawing from the notion that error correction is a powerful pedagogical tool (Hattie & Timperley, 2007), students are motivated to approach their revisions not merely as a task but as an opportunity for growth (Ericsson et al., 1993).

Students are also engaged in a reflective exercise where they contemplate their experiences in using AI-powered tools. This reflective paper is structured around a set of questions aimed to provoke critical thinking on various facets such as the role of AI applications in enhancing advertising messages, the perception of GenAI as a tool or a co-creator, and learning outcomes from the assignment.

3.6 Content analysis

The primary data collection method in this study involved the collation of written essays where students responded to the reflection questions outlined in Stage 3. These essays presented a rich repository of first-hand perceptions, offering deep insights into students' attitudes, concerns, and the perceived value of integrating GenAI tools in marketing communications.

In this study, the qualitative content analysis method was employed as defined by Mayring (2000), who describes it as "an approach of empirical, methodological controlled analysis of texts within the context of communication, following content analytical rules and step by step models, without rash quantification" (Sect. 1). Content analysis, as a scientific method, involves systematic procedures to investigate phenomena using specific coding schemes within a text-based environment.

In the context of content analysis, 'text' refers to a broad spectrum of communication media that can be archived in various formats (Drisko & Maschi, 2016, p. 7). Content analysis has been applied to diverse materials, including texts, audio recordings, television shows and movies, images, and phone calls, as well as a wide array of electronic data such as social media. In addition, content analysis can be employed to inspect text-based assessments, including online assignments, essays, documents, and blogs (Ahmad et al., 2022). In our case, the text referred to the students' essays, which were inspected to identify recurring themes, patterns, and insights regarding the utilization of GenAI in the assignment. This approach was chosen for its ability to capture the richness and complexity of participants' experiences. The analysis involved a systematic process of coding the data and categorizing codes into themes that represented the key aspects of students' experiences with AI tools.

3.7 Process

To detect the dominant themes from the twenty-three essays, a systematic content analysis approach was employed manually, involving several key steps. (1) The initial reading and familiarization phase required a systematic examination of each essay to understand the overarching ideas and perspectives. (2) During the second reading, specific phrases, sentences, or paragraphs were tagged with descriptive

labels or codes. These codes were generated iteratively, with new codes being added as new patterns emerged and existing ones refined. (3) The thematic categorization step involved grouping the identified codes into broader categories based on their underlying concepts. This required assessing the codes for commonalities and differences and organizing them into potential themes. (4) The preliminary themes were reviewed in the context of the entire data set to confirm they accurately represented the collected information. Some themes were merged, divided, or discarded based on their relevance and coherence. (5) Each theme was then clearly named, involving a detailed analysis to capture its essence. (6) Finally, representative quotes from the essays were selected for each theme, serving as evidence and providing concrete examples of how each theme manifested in the data.

This process of content analysis helped the identification of the four dominant themes:

AI as a creative tool/brush, AI's role in enhancing learning, concerns and limitations of AI, and human-AI collaboration.

4 Findings

4.1 Findings from the manual content analysis

The manual content analysis revealed several key themes that illustrate both converging and diverging perceptions among the participants regarding the role of AI in their learning experiences. Converging themes represent shared views and common occurrences while diverging themes reflect differing opinions and concerns. The following tables (Tables 1 and 2) present these identified themes in detail, with Table 1 showcasing the converging themes and Table 2 sketching the diverging themes.

The visual representation of the revealed themes is depicted in the diagram generated by DALL-E embedded in ChatGPT 4 (Fig. 3). These themes underline the multifaceted role of GenAI in creative processes, from being a time-efficient tool to a co-creator that enhances personalization and learning. While AI's potential in creative endeavours is widely acknowledged, there remains a need for careful consideration of its limitations, particularly in terms of creative control and emotional understanding. The diverging views on AI's role and reliability reflect an ongoing dialogue about the optimal integration of AI in creative and educational settings.

4.2 The word cloud
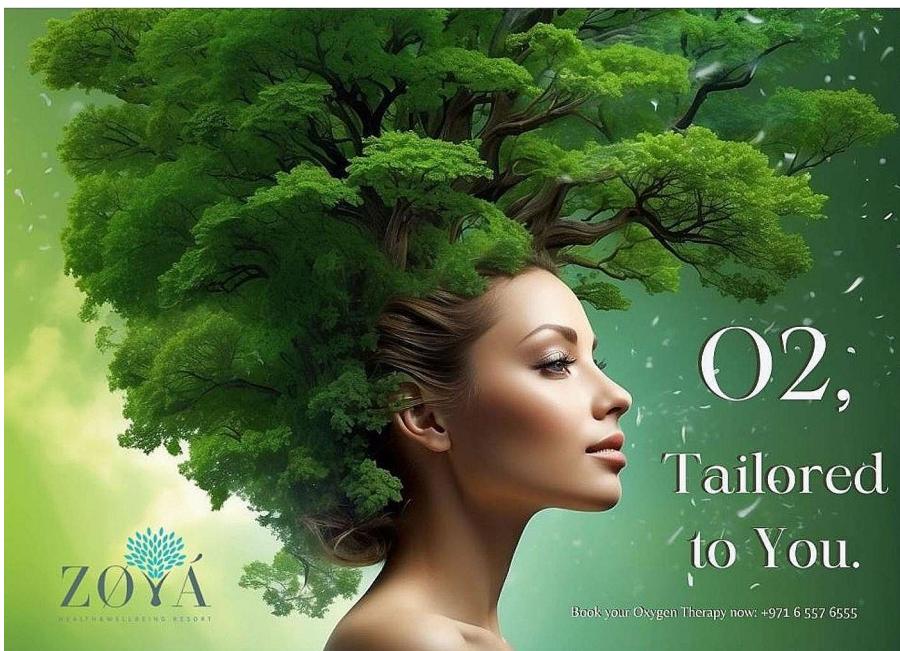
Word clouds serve as a graphical summary of text, providing a visually engaging depiction of the most prevalent words within a document. They offer a perception of the textual content by displaying the frequency of word occurrence. This visualisation technique is particularly useful for identifying the volume and variety of themes in a text. The relative importance of each term is visually encoded through variations in font size, with larger fonts indicating higher frequency. The font size shows how often the word occurs in the text collection, usually after having removed so-called stop words (Tessim et al., 2015). Word clouds "are used in various contexts as a

Table 1 Converging themes identified through content analysis

Identified Theme	Participants Quotations
AI as a creative tool/brush: Frequent mentions of AI applications like Chat GPT and Leonardo. It suggests a focus on how AI assists in creative processes, particularly in producing advertorial content and posters.	"Leonardo.AI generated, what I think, is a fantastic image personifying a tree into a woman." (S., Egyptian) (Fig. 2). "I consider myself to be the painter with the vision and creative flair, and AI being my high-tech sidekick for my imagination." (Y., Egyptian)
AI's role in enhancing learning: References to learning, skill development, and educational impact indicate a theme around AI's role in facilitating educational experiences and skill enhancement.	"I frequently struggle with writing because I am not the best at it and often dread harsh criticism. With the AI tools, the starting was already provided to me, making it much easier to begin with that and go to the advertorial. Because the material was practically finished and only required a little refining, I was able to create a better beginning, middle, and end using AI technologies." (S, Indian)
Concerns and limitations of AI: Mentions of concerns, limitations, and challenges with AI-powered applications suggest a theme of critical evaluation of AI's capabilities and its impact on creativity and originality.	"My group and I tried to come up with slogan ideas using AI, however, this failed due to ChatGPT using stereotypical slogan phrases such as 'journey' […] Therefore, we decided to just come up with our own slogan, 'O2 Tailored to You'" (S., Egyptian) (Fig. 1).
Human-AI collaboration: The discussion about AI being a tool or co-creator, and the interplay between human input and AI output, indicates a theme centered on the collaborative nature of AI in creative endeavours.	"The AI-powered application, no doubt, enhanced the written and visual messages of the campaigns as provided a tool to create professional work without me being an expert in photography or graphic design" (H, Syrian) (Fig. 2).

Table 2 Diverging themes identified through content analysis

Identified Theme	Participants Quotations
Precision and emotional understanding: There was a split in opinion on AI's precision and emotional understanding. Some participants found AI effective in resonating with audiences. Others viewed it as lacking in refined emotional comprehension	"These apps were quite effective at coming up with ideas, perfecting language, and making creative suggestions for written content. The AI apps showed their abilities in the context of visual messaging by producing visually captivating messages more quickly. They effectively analyzed incoming data, assisting in the creation of visually appealing designs, offering relevant pictures, and even perfecting details like color schemes." (M, Pakistani) "AI could have flaws if not used accurately and properly. This is why I did not use it in designing my poster because it did not understand the type of visual elements I wanted […] due to its lack of precision in anticipating ideas and emotions more correctly" (S, Jordanian).
AI's role in creativity: Varied interpretations of AI's role in the creative process emerged. Some saw AI strictly as a supporting tool, while others acknowledged it as a more integrated co-creator with a distinct influence on content creation.	"The AI-generated image as a base to improve upon for my final image, I decided to add design elements that depict confusion and stress to the generated image. AI helps in developing the message, but it does not make the message on its own. Human intervention is required to ensure the message is put across correctly" (D, Indian).
Reliance on AI: Concerns about excessive reliance on AI contrasted with views embracing AI's integration into future creative endeavours. This divergence highlights a debate on the balance between leveraging AI's capabilities and maintaining human-led creativity.	"[…] a broader concern I might have for the general public is the potential for increased laziness or excessive reliance on AI. There's a worry that, if overused, people might become dependent on AI to the extent that they struggle to create their own content effectively" (Y, Egyptian).
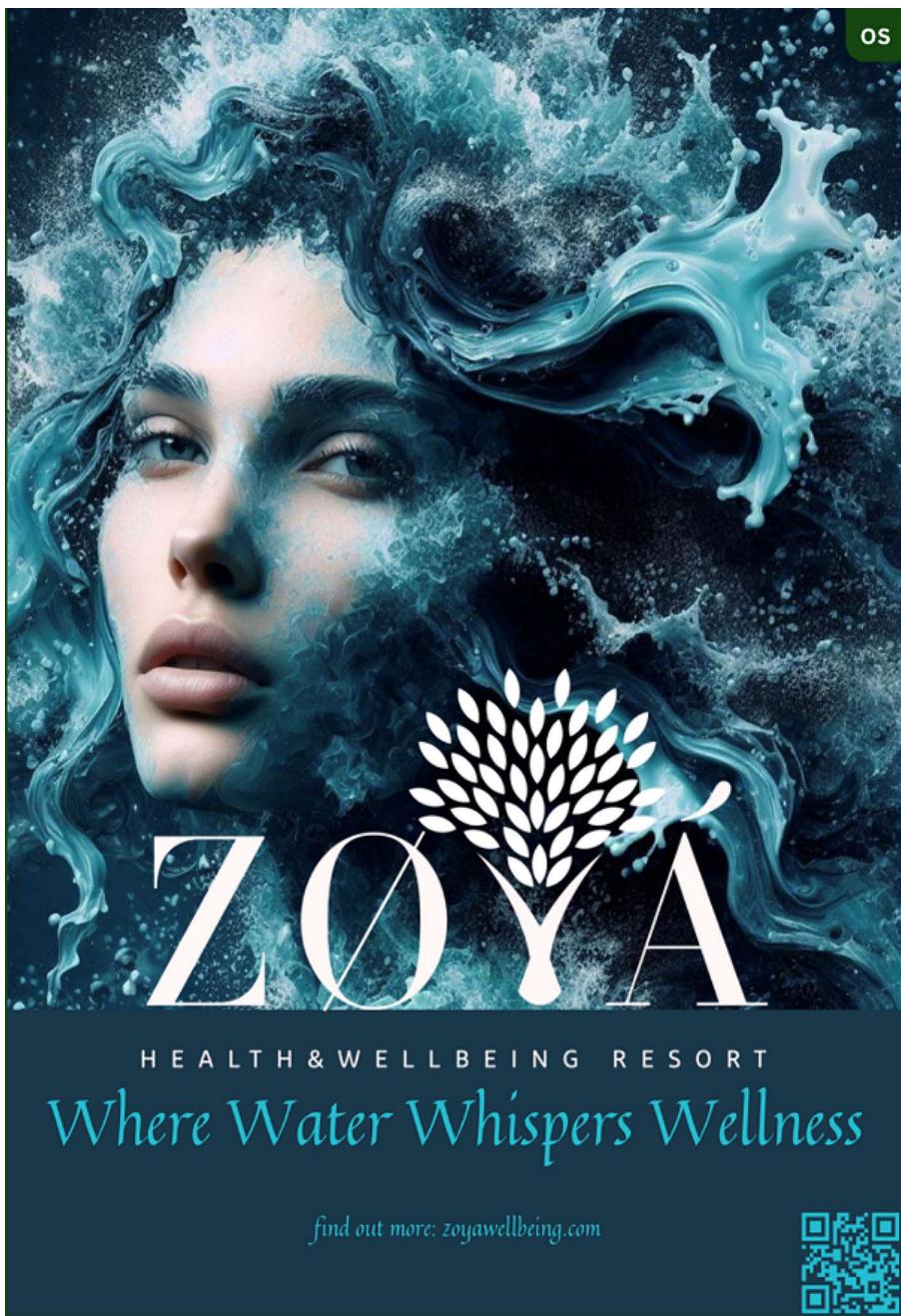
Fig. 1 Example 2 of the poster designed with the aid of GenAI

means to provide an overview by distilling text down to those words that appear with the highest frequency" (Heimerl et al., 2014). One limitation of this technique is that it offers only a numerical overview of individual words, disregarding any linguistic consideration of the words and their interconnections.

Python was employed to generate the Word Cloud chart. This chart was created by processing the text data from the essay responses using Python's libraries. The Word Cloud is a visual distillation of the most salient points from the students' answers concerning the use of GenAI tools (Fig. 4). The prominence of words like "creativity" and "tool" emphasizes the magnitude of these concepts in the participants' experiences. Words relating to the benefits of AI, such as "efficiency," "personalization," and "productivity" reflect a positive perception. Terms that may express worries or challenges, such as "reliability" and "control," appear smaller, suggesting these were discussed to a lesser extent, yet this finding coincides with the findings detected by other researchers (Essien et al., 2024). Overall, the Word Cloud provides a quick, interpretive snapshot of the collective sentiment and key themes surrounding the participants' interactions with GenAI in creative endeavours.
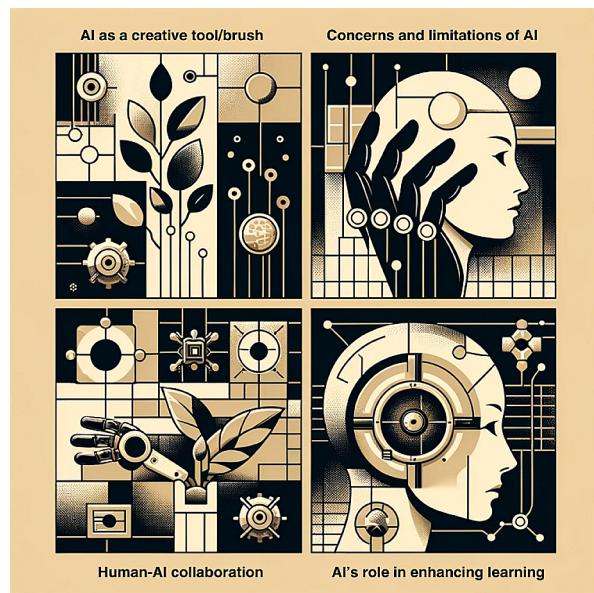
4.3 Latent Dirichlet Allocation (LDA)

Latent Dirichlet Allocation (LDA) is a powerful statistical technique for topic modelling, widely used in Natural Language Processing (NLP) and Machine Learning (ML). LDA is a generative probabilistic model that assumes documents are mixtures of topics, where a topic is observed as a distribution of words (Blei et al., 2003). This

Fig. 2 Example 1 of the poster designed with the aid of GenAI

Fig. 3 The visual representation of the four dominant themes (Identification Number of the file: JKOFMvjNbfpEcoo0i-KQ8Hr07)
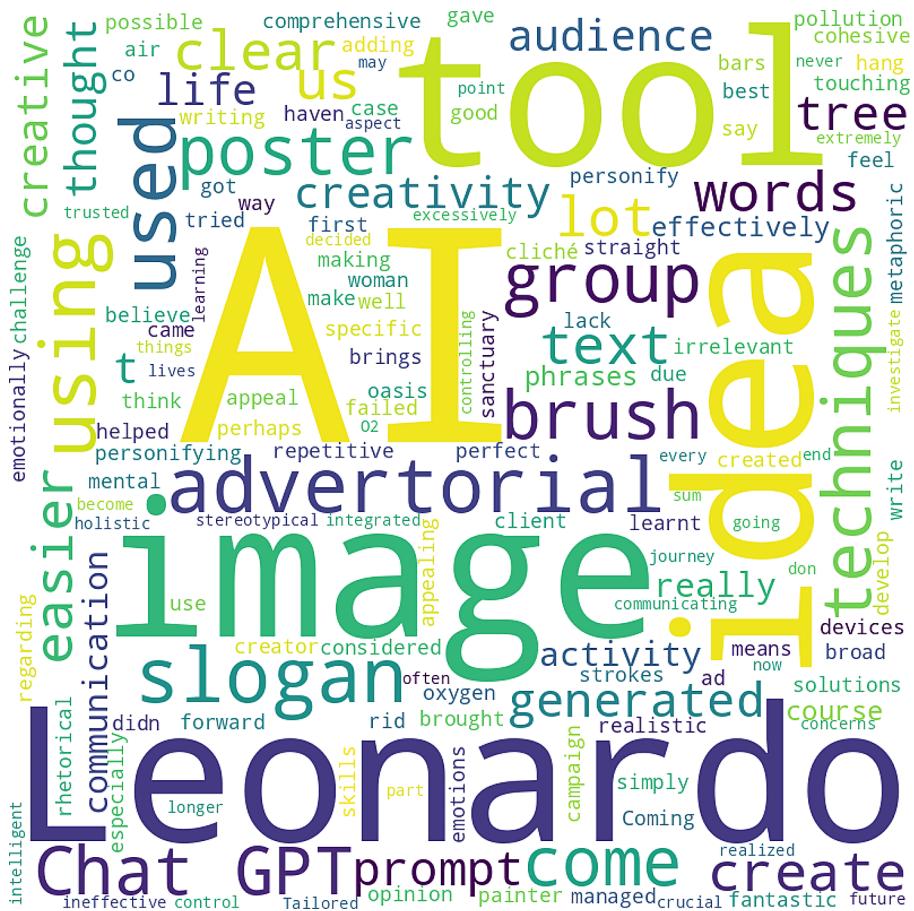
model allows for the uncovering of hidden thematic structures within large collections of textual data (Nanda et al., 2021) where the main topics are not immediately apparent.

There are a few considerations and methods typically employed in determining the dominating themes: iterative testing and model evaluation metrics. Iterative testing implies that the number of latent topics must be pre-determined before running the clustering algorithm because LDA topic modelling is incapable of assessing on its own how many latent topics are within a series of documents (Yun et al., 2020). Running the LDA model multiple times with different numbers of topics is a common approach. This helps in observing which number of topics yields the most distinct categories. Model evaluation metrics, such as perplexity and coherence scores, can help determine the optimal number of topics. A lower perplexity and higher coherence score generally indicate a better model fit.

Based on the analysis of the learners' responses to the open-ended questions using LDA, several dominant themes were identified. The first theme – applications and generation – shows how AI applications contribute to generating visual and written messages, accentuating creativity and production. The second theme – creative processes – focuses on the creative aspects of GenAI, including the generation of content and its influence on visual and written messages. The third theme - written and visual content – centres on how GenAI shapes written and visual messages, contributing to the creative process. The fourth theme – visualization and creativity – discusses the use of GenAI in visual content creation. Lastly, the sixth theme – utilization of applications – examines the practical use of GenAI in producing creative content.

In our methodology, we employed LDA alongside manual content analysis to examine the student responses, despite the relatively small sample size of twenty-three essays, to complement the depth of manual analysis with the breadth and objec-

Fig. 4 Word cloud chart

tivity of a quantitative approach. LDA, known for its efficacy in larger datasets, was utilized here under the premise that even in smaller datasets, it can provide valuable insights into thematic structures that may not be immediately apparent through manual analysis alone. This dual approach allowed us to use the strengths of both qualitative and quantitative methods.

Table 3 demonstrates that the LDA topics generally align well with the manually identified themes, corroborating the key areas of AI's impact on creativity and learning. Both methodologies seem to converge on AI's role in creative processes, its utility in education, and the practical aspects of using AI applications. This alignment reinforces the validity of the themes identified through both methods.

Table 3 Comparison of LDA analysis themes with manually extracted themes

LDA Analysis Themes	Manually Identified Themes	Comparison
Application and generation	AI as a creative tool/brush	Both feature GenAI's role in creative content creation.
Creative process	Human-AI collaboration	Focus on AI's integration in creative processes, reflecting collaboration between human and AI efforts.
Written and visual content	AI as a creative tool/brush	Emphasize AI's impact on content creation, particularly in visual and written forms.
Visualization and creativity	AI's role in enhancing learning	GenAI's contribution to creative visualization and learning is highlighted.
Utilization of creativity	Concerns and limitations of AI	Examines the practical use and implications of GenAI, including benefits and limitations.

5 Discussions

In the current study, we observed concerns among students that resonate with the challenges identified by Warschauer et al. (2023) regarding the use of GenAI tools. While Warschauer et al. discussed the difficulties second language learners face in creating prompts and the risk of overreliance on GenAI potentially hindering the development of writing skills, our study revealed similar apprehensions in the design of promotional materials. Students were wary of becoming overly dependent on AI for creative processes, fearing it might stifle their own skill development. However, an ever-changing environment may demand the development of new skill sets. As students adapt to an environment increasingly shaped by AI, they may need to acquire skills that harmonise with AI capabilities. Some researchers document that AI tools and human skills are "complementary, rather than substitutes" (Kim et al., 2024, p. 29). The focus gradually shifts from dependence to collaboration, co-creation (Fang et al., 2023), and co-evolution in a tech-enhanced ecosystem as "we have now arrived at a point of coexistence between human and machine creativity" (Bender, 2023, p. 363).

Our findings attest to the paradoxical perspective on the impact of GenAI on education disclosed by other researchers. While AI's potential in creative endeavours is widely acknowledged (Zhang & Gao, 2020; Wang et al., 2022; Malik et al., 2023), there remains a need for careful consideration of its limitations (Chan & Hu, 2023), particularly in terms of creative control and emotional understanding. This duality is not unique to our study. For example, Peters et al. (2023) point out that, on one hand, the architecture of Contextual Large Language Models (C-LLMs), which are designed to generate text based on the context provided, is deemed detrimental to education, as "It undermines some of the key epistemological bases of modern science and reliable knowledge systems" (Peters et al., 2023, p. 16). On the other hand, C-LLMs are attractive due to their coherent narrative responses. Despite their lack of genuine comprehension of facts, theories, and source credibility, and their often questionable ethical and critical outputs, C-LLMs serve as intriguing and thought-provoking interlocutors, even in their untrustworthiness (ibid.).

To shed light on these paradoxical relations between humans and AI-powered technology, we draw on Heidegger's profound reflections on the essence of technology. Heidegger's contemplation takes us beyond the painter-brush metaphor, where individuals view themselves as painters and GenAI as brushes – the traditional tool-user relationship that reflects the technological mode of revealing, which typically treats everything, including humans and tools, as a resource to be exploited, a means to an end, or as a "standing reserve" (Bestand) (Heidegger, 1977, p. 17).

The narrative of the relationship between AI and humans can unfold in at least two scenarios, each sketching a distinct mode of interaction. The first scenario, which we might term "poietic symbiosis," envisions a co-creative process where AI and humans engage in a harmonious, mutual enhancement. In this scenario, AI transcends its role as a simple tool and becomes an active collaborator in the creative process. This redefined poietic mode emphasizes a synergistic partnership, where the integration of AI into human creativity leads to novel expressions and innovations that neither can achieve alone. This collaborative interrelation echoes Heidegger's concept of poiesis with the adaptation to the contemporary digital scene.

On the other hand, a more dystopian scenario may be enacted, characterized by a technocratic turn that can be referred to as "algorithmic subjugation." In this paradigm, the relationship between AI and humans shifts towards exploitation and suppression. Humans are reduced to sheer data sources, and their contributions instrumentalized refining AI systems. Drawing on the critical theories of Deleuze and Guattari (1983), this scenario exemplifies "machinic enslavement", where individuals are harnessed for their data, effectively blurring the lines between tool and master. AI, while presumably serving human ends, begins to dictate the terms of engagement, raising profound ethical and existential questions. This mode is defined by a shift towards a system where human agency is subsumed under technological imperatives, reflecting a deeper entanglement and potential subjugation within the technocratic apparatus.

Heidegger's concept of 'ready-to-hand' in his work "Being and Time" (Heidegger, 1962) is useful for understanding the paradigms of poietic symbiosis and algorithmic subjugation, as it suggests that technology becomes extensions of our body and mind: "technologies are "prosthetic," so to speak – that is, they are extensions of the body" (Smith, 2018, p. 34). In the context of AI, this extends further; AI tools are not just passive but possess a form of agency due to their ability to 'make decisions' based on algorithms and data. This transcends the simplistic view of AI as a functional entity, directing us towards an understanding of AI as part of a larger existential framework within which it reveals new forms of knowledge. As the distinction between subject and object obliterates, we are connected to the surroundings as well as to the tools, being in the world. The world and the being cannot exist without each other. Humans should reconsider their instrumental attitude toward the other, toward human and non-human organisms.

This fuzzy line between the creator (user) and the tool (AI), leads to a state of simultaneous 'becoming' for both parties. The relationship between humans and AI is thus characterized not just by collaboration, but by a mutual transformation

and evolution. The so-called user-tool relations become confronting traditional notions of authorship and creative control. Both AI and humans are transforming and being transformed in a cyclical process of evolution of self/other relations.

This perplexing interrelation when humans see the AI-enabled technology as co-creators or collaborators (Bender, 2023; Fang et al., 2023) represents 'poietic symbiosis,' a new mode of revealing, where AI and humans are not distinct entities but parts of a continuous process of mutual evolution and adaptation. In this mode, AI and humans co-create and redefine the boundaries of creativity and knowledge, leading to profound implications for our understanding of human agency.

In the paradigm of 'poietic symbiosis', the relationship between humans and AI-enabled technology is no longer seen solely as a tool or system component but as an active participant in the creative processes. This transcends the traditional utilitarian view of technology, suggesting a deeper, more integrated form of interaction. AI's ability to learn, adapt, and even exhibit decision-making capabilities based on algorithms and data redefines its role from a passive instrument to an active collaborator. This co-evolution of AI and human capabilities hints at a future where the boundaries between technology and human agency blur, leading to a transformative impact on creativity, knowledge, and societal structures.

It should be noted that neither poetic symbiosis nor algorithmic subjugation spares humans from surveillance. In a poietic symbiosis, AI and humans engage in a collaborative process that, while enhancing creativity, also embeds mechanisms of continuous monitoring and data collection. This subtle form of surveillance that in the contemporary social media context possesses an "entertaining side," (Albrechtslund & Dubbeld, 2005) suggests that the appeal of AI might obscure its deeper surveillance implications. Equally, in a scenario of algorithmic subjugation, humans become subordinate to AI systems, and their actions are meticulously monitored to optimize AI performance. This sophisticated form of surveillance signifies a shift where human agency and creativity are constantly observed. Thus, the integration of AI tools across various domains not only represents a novel mode of interaction but also novel forms of surveillance (Galič et al., 2017).

These contrasting paradigms – poietic symbiosis and algorithmic subjugation – portray the different paths that the integration of AI in human endeavours might take, each with its implications for the future of creativity, agency, and autonomy in the age of advanced technology.

6 Conclusion

6.1 Summary

This study has explored the integration of GenAI tools in marketing communications education, focusing on student perceptions and experiences. Through qualitative content analysis of student essays and reflections, we draw together a few dominating themes related to the use of GenAI in the creative process: AI

as a creative tool, the role of AI in enhancing learning, concerns about AI, and human-AI collaboration. These themes are permeated with paradox manifested in the duality of AI's role in education, particularly in creative processes. On one hand, AI tools like generative AI are seen as enhancing creativity. On the other hand, there are significant concerns about overreliance on AI, which can potentially stifle students' own creative abilities.

The relationship between AI-powered technology and humans can follow at least two storylines, each drafting a discrete mode of interaction: "poietic symbiosis," when AI and humans are involved in a co-creative process with AI tools enhancing human resourcefulness while preserving individual creative autonomy and "algorithmic subjugation," when humans become increasingly dependent on AI, leading to a form of enslavement with AI tools dominating the creative process and reducing human input to sheer data points for AI development.

6.2 Theoretical implications

This study exposes AI's multidimensional role in creative processes. Drawing on Heidegger's concept of "enframing" and Deleuze's notion of "desiring machines," this research demonstrates that AI deeply influences human creativity and learning. The idea of "poietic symbiosis" signifies a shift from perceiving technology as purely supportive to viewing it as an essential component of the creative process. The scenario of "algorithmic subjugation" displays the risks of overdependence on AI, which can lead to diminished human agency. This perspective aligns with Deleuze and Guattari's critique of machinic enslavement, where humans are dominated by technological systems. These findings necessitate a reexamination of AI's integration into educational frameworks, stressing the importance of maintaining a balance that safeguards human creativity and autonomy. Furthermore, the study accentuates the ethical dimensions of AI in education, calling for responsible governance and regulations to ensure that AI enriches rather than undermines human potential.

6.3 Managerial contributions

For educators and curriculum designers, this study highlights the potential benefits and drawbacks of integrating GenAI tools into marketing communications curricula. The experiential learning design employed in this study, which involved real-world client projects and the use of AI prompts that enhance the creativity of the outcomes, can serve as a model for developing innovative pedagogical approaches. Educators are encouraged to balance using AI's capabilities with cultivating students' creative independence and critical thinking skills.

6.4 Limitations and future research perspectives

This study is limited by its small sample size and the specific cultural context of the UAE, potentially affecting the generalizability of the findings. Future research should involve larger, more diverse samples and longitudinal studies to assess the

long-term effects of AI integration on creative skill development. Other types of AI-enabled technology and their perception by students should be investigated, along with the perspectives of other stakeholders. Exploring the ethical implications of AI in education, particularly concerning surveillance and data privacy, remains a critical area for future inquiry.

Author contributions The development and realization of this study were a concerted effort with distinctive contributions from each author. Dr. Gulnara Z. Karimova initiated the project, conceptualized the study framework, analysed data, and prepared the initial draft of the manuscript. Amir Shirkhanbeik played a substantial role in adding critical insights discussion sections of the document, enhancing the depth of the proposed theory. The findings and theories presented in this research were enriched by joint discussions and brainstorming sessions involving all authors. Ms. Yevgeniya Kim contributed to the data collection, expertly managing the insertion of gathered data into spreadsheets and quantifying qualitative data, which solidified the empirical foundation of this study. Each author has reviewed and agreed upon the content of the final manuscript, signifying collective approval of the work undertaken and the findings presented.

Data availability It is not possible to share research data publicly as individual privacy could be compromised. The data are, however, available from the authors upon reasonable request.

Declarations

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