

Transformative Impact of Generative AI Tools on Information Creativity and AI Literacy in Higher Education: Case Studies

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Abstract

Background: Generative artificial intelligence (GenAI) tools can have a transformative impact on information creativity.

Objective: The objectives of this study are to explore the use of GenAI by doctoral and master students as part of information creativity, AI literacy and transformation of higher education. We ask the question: What is the impact of GenAI tools on information creativity?

Methods: Studies of information creativity, AI literacy, and creative writing of university students were analysed. We report on two qualitative case studies; including 17 doctoral students (a focus group, essays), and a qualitative experiment with 8 master students using ChatGPT for writing and interviews. For analyses, we applied qualitative data analyses and conceptual modelling.

Results: Findings are visualized in two tables of categories, quotations, and a conceptual model of the AI enhanced information co-creativity, composed of awareness, exploration, imagination, transformations, metacognition. We have identified the analytical and the surface styles of the AI enhanced creative writing. The transformative impact of GenAI tools is integrated by human control and metacognition, AI literacy and ethics of AI.

Conclusion: We have proved the transformative impact of GenAI on education, research and academic work. We recommend further research of AI literacy and information co-creativity. and propose courses on information creativity, AI literacy and design of innovative services of libraries and universities.

Index Terms

GenAI tools impact; Information creativity; AI literacy; Academic environment; Qualitative studies; Doctoral students.

1 INTRODUCTION

Human creativity is considered as an interactive process of producing new, original ideas or products. Information creativity can be explained as that part of human creativity, which is based on information seeking, use, processing and production of new information in different formats. In line with creativity research (Csikszentmihalyi, 2014, Amabile, 1983, Boden, 2018, Dacey & Lennon, 2000, Goldberg, 2018) and information creativity studies (Dahlquist, 2023), we regard information creativity as discovering new, original and socially acknowledged ideas, information, knowledge, or solutions. The main components of information creativity are a creative personality (actor), creative process, creative outcome, domain, space and tools.

New frameworks of human information behaviour and information literacy research introduced the concept of holistic human information experience applied to the use of artificial intelligence (AI) tools. The AI tools can transform information creativity and knowledge use in the academic and everyday contexts (Cox & Thelwall, 2025). That is why we ask the question: What is the transformative impact of GenAI tools on information creativity in the academic activities?

In this context, we present results of two qualitative studies as part of a larger research project focused on information creativity in digital environment and the use of AI tools in higher education. We consider information creativity as part of AI literacy and seek for conceptual explanation and empirical evidence. Artificial intelligence (AI) can be regarded as an area of knowledge, practice and design focused on the use of intelligent technologies for the enhancement of creative cognitive processes, such as perception, memory, reasoning, problem solving, decision-making, language processing, learning, content generation. Its applications cover large language models (LLM), such as ChatGPT, machine learning (based on neural networks), generative artificial networks (GAN), Retrieval augmented generation (RAG), knowledge-based systems, natural language processing, recommender systems, robotics, computer vision, knowledge representation, etc. In this study, we consider mainly the use of generative AI tools (GenAI tools) which produce texts based on conversation, language processing and prompts. Information creativity is represented by creative information processing (seeking, organization, use) and creation of information products, based on writing, drawing, analyses, syntheses, or visualization of information. The final creative outcome of GenAI tools is an information product which can add value to exploration, analyses, syntheses, transformations, and produce consolidated final presentation. Information creativity includes a cycle of inspiration, support, and distribution, embedded in planning and assessment (Dahlquist, 2023). AI literacy means knowledge, skills, and abilities in efficient use of GenAI tools and understanding of the impact of GenAI tools (Cox & Thelwall 2025, Ng et al. 2021 Chiu et al. 2024). Recent studies have focused on information creativity, AI literacy and information experience (Grant, 2024, Hirvonen, 2024, Gorichanaz, 2020).

In this paper, we focus on the use of GenAI tools as part of information creativity and AI literacy. In the first section, we examine related research on information creativity and the transformative impact of GenAI tools, and analyse related studies of doctoral students and early career researchers. Next sections report on two small-scale qualitative case studies of information creativity and GenAI tools. We studied perceptions and use of GenAI with 17 doctoral students in social sciences and humanities and a qualitative experiment of creative writing with 8 master students in information studies at Comenius University Bratislava, Slovakia. Based on qualitative methodology and design, we present findings in two tables supplemented by extracts from interviews and essays. We derived a conceptual ecological model of the AI enhanced information co-creativity and proposed courses of information co-creativity and AI literacy. The concept of information co-creativity represents ways of collaboration of people and GenAI tools in information use with implications for AI literacy.

2 RESEARCH BACKGROUND AND OBJECTIVES

The objectives of this study are to discover the potential of GenAI tools for information creativity and AI literacy, manifested by benefits and risks of the use of GenAI. We combine background analyses of models, studies of information creativity and studies on perceptions of GenAI tools in higher education. Selected studies of information literacy of doctoral students and early career academics were considered. The conceptual framework of the study was based on the concepts of information creativity, AI literacy and the impact of GenAI tools in higher education. We also considered the concept of information experience (Bruce et al., 2014, Gorichanaz, 2020) meaning holistic relationships of people and information, represented by information use, sharing and creation. Doctoral and master students were selected as academic communities working in an information intensive environment. Their creative work is manifested by studying, teaching, research, writing, publishing, conferences, presentations, collaborative methods and practices. Specific details of social sciences and humanities were considered, as they represent a less studied area of the use of GenAI. We supposed that we can find common processes and ways of use of GenAI across disciplines and that several creative information activities are discipline-specific.

In recent years, we have noted calls for more attention to creative and ethical issues in the information literacy research (Hirvonen 2024). That is why the main topics of our study emerged at the intersection of the concepts of information creativity, AI literacy, and the perception, use and impact of GenAI tools (Cox & Thelwall, 2025). Information literacy and digital literacy are taking a creative turn (Grant, 2024, Huvila & Gorichanaz, 2024).

Information creation as a process has been included in the ACRL framework of information literacy (ACRL, 2016), but the process of information creativity needs further research (Han & Zhang, 2025). Students and library users are regarded as knowledge creators in information ecosystems. Information creativity has been enhanced by the practice of developing new digital services of libraries, including creative maker spaces (Grant, 2024). A number of tasks of creative information processing is included in features of GenAI tools. Information creativity can be understood as ecological adaptations of GenAI tools and creative mind as part of AI literacy and information experience (Gorichanaz, 2020, Bruce et al. 2014, Steinerová, 2025c).

Following this background, we articulated the following research questions:

1. Which conceptual and theoretical frameworks can guide studies of human information creativity and AI literacy in higher education?
2. What is the perception of the GenAI tools by doctoral and master students in social sciences and humanities?
3. Which conceptual framework can best represent the relationships of information creativity, AI literacy, and the use GenAI tools for creative academic writing?

3 LITERATURE REVIEW

3.1 Information Creativity, Information Experience and AI Literacy

Information creativity is embedded in the human creativity research (Goldberg, 2018, Boden, 2018, Boden, 2004). Information creativity relates to creation of new information and production of original and useful information products. It is embedded in complex, holistic models of human creativity, information literacy, information experience or information creation (Huvila et al., 2022). They represent intertwined biological, cognitive, affective and social factors and emphasize the interplay of creative personality, creative process, creative product, environment and domain, and GenAI tools for knowledge (Cox & Thelwall, 2025). The first studies of creativity in information science connected cognitive processes with information seeking (Foster & Ford, 2003). Later, they were related to human information behaviour (Ford, 2015, Anderson, 2013, Bawden & Robinson, 2022), and theory building (Bates, 2016). Recently, information creativity has become a part of the concepts of information literacy, AI literacy, or information experience (Gorichanaz, 2020, Dahlquist, 2023). Information experience relates to use and production of information in personal perspectives.

Information experience emerges in situations when people re-shape their own personal and cognitive development and often use GenAI tools in creative ways. That is why information science seeks new methodologies for studies of information creativity (McKenzie & Dalmer, 2020). New methodologies consider contexts, interconnection of visual, textual, social and cultural components of information creativity. Socio-cognitive, socio-cultural and socio-technological frameworks and arts-based methods help examine the impact of GenAI tools (Gorichanaz, 2019, Huvila, 2021, Hartel 2019). An ecological perspective of information creativity is based on the ecology of creative mind (Bateson, 1972), and related to creative ecologies (Howkins, 2009) which represent changing information interactions in digital spaces and adaptations of people and GenAI tools. This helps consider metacognitive, motivational factors of human creativity (Amabile & Kramer, 2011); playfulness of human mind, emotions, intuition, imagination, joy, alongside with ethical contexts of creative human mind.

Boden (2004, 2018) emphasized holistic principles of creative mind supported by information technologies. She defines creativity as production of artifacts and ideas which are regarded as new, original and surprising. Creativity is embedded in the processes of perception, memory, decision-making and problem-solving. Human creativity can be divided into the personal and historical modes. Boden (2004) determined three types of human creativity; the combinatory, exploratory, and transformational. These types are reflected in information creativity and can be supported by GenAI. As examples, we can mention creative information strategies, conceptual guidance, orientation, knowledge discovery, analyses, structures, visualization. Although information creativity can be enhanced by GenAI tools, human creative mind is still pre-dominant, using personal experience, multiple perceptions, intuition, imagination, emotions, empathy, divergent thinking (e.g. associations, metaphors). Experts call for better understanding of GenAI tools for knowledge, in frameworks of socio-cultural background of information literacy and the impact of GenAI on social values, diversity and power structures (Hicks, Lloyd & Pilerot, 2024).

Earlier models of information literacy, such as informed learning and information experience (Bruce et al., 2014), ISP and Guided Learning (Kuhlthau, 2004, Kuhlthau et al., 2012) expressed creativity of information use by construction of meaning and informed learning experience. The ACRL Framework for information literacy in higher education (ACRL, 2016) emphasized the dialogic, processual and ethical factors of information creativity and knowledge creation. New models of information creativity as a process emerged in the context of new media (Anderson, 2013). This study presented the 4p model of creativity: plan, play, pressure, pause. Other studies focused on digital creativity of children (Spante, 2018), factors of serendipity and knowledge discovery in information seeking (Ford, 2004, Bawden, 1986), emotions and intuition (Suorsa, 2022). Cultural and social contexts were considered in studies of creative collaboration in information systems design (Ciriello et al., 2023), in creative writing (Dali & Risk, 2015), or visualizations (Hartel, 2019).

New types of related literacies have emerged, namely digital literacy, data literacy, and AI literacy (Cox, 2024a, Ng et al., 2024, Chiu et al., 2023, Varga & Koltay, 2025, Cox & Thelwall, 2025, Kaplan & Meylani, 2025). AI literacy is defined as a set of knowledge, skills and understanding of the use of AI technologies. It includes the abilities to recognize risks of GenAI and to use it efficiently, collaborate, evaluate and apply it to the right problem solving (Cox, 2024a, AI Act, 2024). Long & Magerko (2020) defined AI literacy in five categories asking what AI is, what it can do, how it works, how it can be used, and how people perceive it. Some studies proposed the concepts of responsible and critical GenAI literacies which cover theoretical knowledge (understanding principles and use of GenAI), ethical knowledge, pragmatic knowledge, reflective knowledge (Zhao et al., 2024). The context of the use of GenAI tools is important, as identified in a model of GenAI literacy by Cox (2024a). GenAI literacy became a subject of a number of models and frameworks (Kong et al. 2024, Kaplan & Meylani 2025). The AI literacy dimensions represent cognitive, affective, social, metacognitive dimensions, including attitudes, problem-solving, self-regulation. Metacognitive dimension relates to the model of metaliteracy (Mackey & Jacobson 2023). The models of AI literacy emphasize technological skills, critical AI literacy (analyses, evaluation, disinformation), collaboration and participation of people and AI (integrating professional knowledge and decision making), and practical use of AI in education and everyday life. Ethical principles suggest fairness and biases, trust and transparency, accountability, social benefits, privacy and security (Chiu et al. 2024). Self-reflection is added as a metacognitive component of AI literacy associated with affective and motivational engagement. Integration of knowledge, abilities, and reflection helps develop AI literacy related to creative and efficient use of AI tools, critical evaluation and verification, and understanding of its social impact.

Information creativity is closely related to information design of creative digital artefacts (Seidel et al., 2010, Gorichanaz, 2020) and to the impact of creative environments and spaces (Meusburger, 2009). Resulting models of information creativity are multidimensional. They reflect principles of creative thinking in information mapping (Whitworth, 2020), making and taking information (Huvila, 2021), information design and ethics of AI (Floridi, 2023). Qualitative studies of information literacy (Lloyd, 2021, Hicks & Lloyd, 2020) helped understand the context in human information behaviour (Agarwal, 2022) with new insights into the complexity of information creativity. Context can be determined as a set of factors related to qualities of a person, situations, tasks and goals of information use, influenced by organizations, information cultures, collaboration and shared meaning. The framework of information creativity (Dahlquist, 2023) emphasized such components of information creativity as interactivity, knowledge, skills, visualization, personal development, stories, new interpretations of objects, exploration. In the framework of information creativity and libraries, Dahlquist (2023) presents a model based on the processes of inspiration, support and distribution, embedded in planning and assessment. *'Information creativity involves the experience of encountering, employing, transforming, or making information objects for artistic, exploratory or communicatory purposes when creative originality or production is of primary concern'* (Dahlquist, 2023). Wingström et al. (2024) proposed a new conceptualization of information creativity as co-creativity based on a study of computer scientists and new media artists. Information creativity is defined as a *'mixed process of mutual inspirations'* in interactions of people and GenAI tools (Wingström et al., 2024). The authors suggested that co-creativity can explain the contemporary creative process in the era of GenAI tools.

3.2 GenAI Tools and the Enhancement of Information Creativity

AI is understood as a computer system with such behaviour, which can be considered as intelligent and similar to human creative mind (learning, problem-solving, analyses, syntheses, reasoning, etc.). AI systems include machine learning, machine translation, knowledge-based systems, pattern recognition. The most popular are large language

models (LLM) and conversation and generative AI agents, such as ChatGPT. Other AI systems are related to recommendation systems, robotics, natural language processing, decision-making, problem-solving systems, computer vision, planning, scheduling, etc. GenAI tools can generate content and can be used for information access (Chowdhury & Chowdhury, 2025), for development of AI literacy and creativity (Cox 2024a, Hirvonen, 2024), but also for work performance (Smutny & Sudzina, 2025). GenAI tools (e.g. ChatGPT, Gemini, Perplexity) can produce content, make revisions, offer structures of topics, visualize and simplify content. In this respect, collaboration of people and GenAI tools transformed information creativity. Information creativity can be enhanced by analyses of data, reviews of literature, revealing patterns, organizing information, guidance in topics, suggestions and recommendations, production of images, visual representations (Cardona et al., 2023). With regard to GenAI in education, students and teachers are placed into the centre of the creative process. Information creativity is related to visions of learning, innovative teaching responsibility, accountability, context-awareness, minimization of bias, and transparency of AI (Cardona et al., 2023). Recent studies of AI literacy and creative identity of students (Li et al. 2026) showed that AI literacy can enhance creativity of students. Students with higher AI literacy used the AI tools more efficiently and strengthened their creative abilities (Chen & Xiao, 2025). AI literacy of teachers can support the innovative teaching behaviour (Zhao & Huang 2025).

The wave of creativity and innovations has had an impact on communication and information access. The crisis of information (Haider & Sundin, 2019) lead to needs for regulating frameworks of ethics of AI (Floridi, 2023). Ecological and ethical principles of the AI enhanced information creativity are represented by principles of beneficence, privacy protection, non-maleficence, responsibility, justice and transparency (Floridi, 2023). Nefarious applications of GenAI tools and LLM are represented by disinformation, data privacy, biases, social engineering, information security, cyberattacks, deep fakes (Ferrara, 2024). The negative spaces of information creativity and AI literacy can be categorized into dishonesty, propaganda, deception, manipulations, socio-technical infrastructural damage (Ferrara, 2024). The negative spaces relate to social, ecological and epistemological values of information literacy (Hicks, 2024, Lloyd, 2024). The social impact is manifested by personalized experience, emerging cultures, re-shaping of the content creation (documents, films, music, stories etc.) (Floridi, 2024). In the academic environment, GenAI tools re-shaped traditional information creativity (Tubella et al., 2023). Some studies examined the use of GenAI tools with students and teachers and developed the AI enhanced education strategies for university teaching (Chan, 2023, Chowdhury & Chowdhury, 2025, Yan et al 2024).

Recent studies emphasized the concept of co-creativity. It means that GenAI tools become a collaborative partner of people in the information process. Based on interviews with computer scientists and new media artists in Finland, Wingström et al. (2024) re-defined creativity in the AI era as co-creativity. The authors confirmed that scientists used GenAI to produce trustworthy and accurate outcomes, while artists used GenAI to explore and play. Their model of creativity includes such elements as the actor, process, outcome, domain, space. However, humans remain central in the co-creativity tasks. Other studies proved that GenAI can enhance creativity, but reduce diversity of novel content in creative writing (Doshi & Hauser, 2024, Dali et al., 2015). Some authors argue that GenAI can only produce artificial creativity (Runco, 2023). In science, GenAI is diffused across fields, can enhance novelty and impact, but needs human control (Bianchini et al., 2025). GenAI tools can develop "Living Systematic Literature Reviews", enhance data processing, e.g. data transcripts of interviews, data analyses, writing, reviewing, revisions, publishing, project management (Cox & Thelwall 2025).

A number of other studies proposed co-creation and collaboration as ways of the use of GenAI in creative processes (Waardenburg & Huysman, 2022, Vinchon et al., 2023) and the interactive human AI co-creative design (Rezwana & Maher, 2025). Several authors confirmed that rethinking of entwinement between GenAI and human learning is needed (Markauskaite et al., 2023, Cardona et al., 2023) and addressed the ethical challenges (Agkun & Greenhow, 2022) and AI literacy (Semeler et al., 2024, Ng et al., 2021, Chiu et al., 2021). For library services, authors proposed a library strategic response to AI (Cox, 2024b, Chowdhury & Chowdhury, 2025, Cox & Mazumdar, 2022, Cox et al., 2018, Cox, 2022). AI literacy needs consider critical thinking, complex problem solving, creativity. AI literacy can be represented by the "fusion skills" which allow collaboration of people and GenAI and post-digital configurations (Rapanta et al., 2025, Cox, 2021). In the concept of AI literacy, the skills are combined with computational thinking, creativity and transformations. The dimensions of AI literacy related to creativity apply soft skills, coordination, cognitive flexibility, emotional intelligence, metaliteracy (Semeler et al., 2024, Cox, 2021, Mackey & Jacobson, 2019). Information professionals should apply GenAI tools for digital services. We need deeper research into the adoption of AI in knowledge, education, or libraries (Cox & Thelwall, 2025).

3.3 Studies of Doctoral Students and Early Career Academics Related to Information Creativity and Information Literacy

Doctoral students and early career researchers can be regarded as the most promising academic communities for studies of the use of GenAI tools in creative academic work. A number of studies analysed their information behaviour, information literacy and creativity. Qualitative studies focused on information experience and academic information management presented holistic pictures of information engagement of doctoral students as part of their personal information management (Conrad et al., 2020, Bruce et al., 2014). Some recent studies applied the methodology of early career researchers' assessment as harbingers of change (Świgoń, 2024, Nicholas et al., 2018). Young researchers from seven countries were interviewed with regard to their scholarly attitudes and activities (Nicholas et al., 2019). Most changes in scholarly activities of young researchers have occurred in collaboration and research impact using social media and academic networks. The studies confirmed their needs to obtain secure employment. The authors recommended that more attention should be paid to the quality of research of young researchers and more qualitative studies should be applied. The principle of co-creation was found in studies of academic information practices (Herman & Nicholas, 2019) and collaboration (Given & Willson, 2015). Students appreciated more interactive, creative and experiential methods (Taha et al. 2015). Other studies of creativity in research emphasized teamwork and organizational levels (Hemlin et al., 2013). Zhang et al. (2024) found that laypeople's engagement with AI paintings is influenced by social and contextual factors. Other studies followed different creative fields, such as photography, music, architecture.

Willson (2022) studied complex information practices of early career academics based on interviews with 20 academics. Findings suggested the advancing of bouncing ideas composed of information seeking, sharing and creation of information. Other studies explored information behaviour of academics related to social impact of their work (Cattlin & Given, 2024). Results pointed to relationships with partners (industry, government, community) and interplay of curiosity, reciprocity, trust and engagement. Contract academic staff in Canadian universities was studied by Willson et al. (2024) with relations to characteristics of isolated, individualized and marginalized conditions. Information experience of early academics' was studied in the framework of informed learning in Australian universities (Miller, 2015). Findings suggested that early career academics need building and maintaining their professional networks. Results were synthesized in a knowledge ecosystem model with the emphasis on informal learning related to creation of knowledge. A number of studies were focused on information literacy of doctoral students. Paul et al. (2024) studied information literacy of doctoral students in five Polish universities with regard to knowledge, attitudes, skills. The authors found that self-efficacy is an important factor in the information use and highlighted the discipline-specific differences of the use of online sources. They called for more IL training and cooperation with experts. Other studies confirmed the importance different contexts of information needs, competencies, activities of PhD. students (Pilerot & Limberg, 2015, Wiorogorska, 2015, Pinto et al., 2013). Changes of students' information behaviour in specific disciplines were identified, e.g. health sciences (Spezi, 2016, Nylander & Hjort, 2022), lifelong learning, information management (Webber & Johnston, 2014, Conrad et al., 2020).

4 DESIGN AND METHODOLOGY OF QUALITATIVE STUDIES OF GENAI TOOLS USE BY DOCTORAL AND MASTER STUDENTS

Following the analysed studies and theoretical background, we have designed two qualitative studies of information creativity and the use of GenAI tools by doctoral and master students in social sciences and humanities at the Faculty of Arts, Comenius University in Bratislava. The studies were a part of a wider research project on information creativity in digital academic environment. The objectives of the studies were to discover the potential of GenAI tools for information creativity and academic writing and risks of the use of GenAI tools. We applied qualitative exploratory analytical methodology, see also Appendix A. In the first study of doctoral students, we applied an online focus group (17 students), and written essays. In the second study, we applied a qualitative experiment with master students (8) focused on the use of GenAI tools (ChatGPT) for academic writing. The experiment was followed by written evaluations and semi-structured interviews. The inductive qualitative analyses were supported by conceptual modelling. First results were published elsewhere (Steinerová 2025 a,b,; Steinerová 2026).

The conceptual framework of studies was based on information creativity, creative writing with GenAI tools, and information experience (Bruce et al., 2014, Gorichanaz, 2020). Doctoral students were considered as an academic

community working in an information intensive environment. Their creative work is based on interconnected activities of studying, teaching, research, writing, publishing, collaborations. Participants were selected from those students in social sciences and humanities who attended the course on information management. We supposed that we can find common core practices across disciplines and that some creative information activities are discipline-specific. We also supposed that the principle of co-creativity with GenAI tools could represent the information creativity related to AI literacy.

4.1 Results of the Study of Doctoral Students: Analyses of Essays

In the first study of doctoral students, we articulated the following research question: What is the perception of information creativity related to the use of GenAI tools by doctoral students? We employed a qualitative methodology based on a focus group with 17 doctoral students and written essays with two questions. The sample was purposeful, with doctoral students in the 1st year of studies in social sciences and humanities. In a focus group (Nov. 2024), we have discussed the students' experience with the use of GenAI tools for creative work; writing, teaching, research. Then we asked them to reflect on their experience with GenAI tools and write a short essay considering benefits and risks of GenAI tools. The essays should respond to the two following questions: 1. What is your perception of GenAI tools in your creative information work? 2. Which experience do you have with GenAI tools in your studies and research? The essays were delivered in an electronic form. The texts were analysed with the use of qualitative data analysis, content analyses, categorization and conceptual modelling. Results were visualized in several tables and in a resulting model. Demographic data of the participants represented 17 participants, 9 men, 8 women; the average age was 28,5 years. Majority of students were in the first year of their study (14), three were in the second year. The disciplines of humanities, arts and social sciences were represented by history (4), archaeology (1), sociology (4), literary science (2), musicology (2), philology (2), arts studies (1), media and information studies (1).

Table 1. Resulting categories of content analyses of doctoral students' essays.

Benefits / advantages	Problems / risks
Speed	Misinformation, untrue, imprecise information, bias
Assistance in research	Issues of sensitivity of interpretation and personal experience
Big data – analyses, visualization	Privacy
	Verified, paid versions
	Too much trust in AI (“hype”)
Specific contexts	Personal Experience
Inspiration, brainstorming, brainstorming	Proposals of structures, themes
Seeking, topic proposal, orientation	Visualizations
Data analyses, visualizations	Analyses of visual elements (paintings)
Text proposals, structures, abstracts	Analyses of auditive elements (music, tunes)
Text checking, machine translations	Merging facts, synthesis, simulations (archaeology)
Popularization, summaries of texts	Spatial analyses: maps, models, sites
Building digital collections (visual, music, film, museums, archives, galleries)	Design of teaching (tasks, examples)
Proposals	Social impact (risks)
Education, information literacy	Environmental issues (ecology, electricity, water), AI industry
Information ethics	Ecological issues, plagiarism, authorship (artists)
AI literacy	Workplaces, humanoid robots
Development of critical thinking	Re-direction of workforce from admin. and ICT
Verification, caution	Revolution in education (policies, theses)
Social strategies, collaboration	Threats for creativity, logical thinking

Results of the study of doctoral students showed that majority of participants admitted the experience of the use of GenAI tools (15). All students confirmed a positive perception of the GenAI tools (17). Most frequent usage was related to ChatGPT (6 participants), other participants (7) named different tools, especially Gemini, Perplexity and Sibelius. They have been aware of risks of the use of GenAI tools. Resulting categories of the content analyses are presented in Table 1. These resulting categories include 6 categories composed of narrower concepts used by participants in their essays. The following concepts represent the categories: 1. benefits of GenAI tools, 2. risks of GenAI, 3. specific contexts of its use, 4. personal experience with GenAI, 5. proposals for AI literacy, 6. social impact of GenAI tools.

The Table 1 presents results of categorization of the discourse of doctoral students with regard to their perception and use of GenAI tools. Participants regarded GenAI tools as useful assistants. They appreciated its features for inspiration, topic structures, analyses of data, revisions, translations, modifications and proofreading. With regard to specific contexts, they pointed to needs of digital collections of visual arts, music, archives and historical digital objects. Further categories of creative use of GenAI tools emerged from content analyses of doctoral students' essays. In final syntheses, two main groups of topics were identified: common features (benefits) and specific characteristics of GenAI tools. Common features were grouped into four categories: 1. inspiration, brainstorming, seeking sources, strategies, orientation, proposals of topics, structures, contents, 2. revisions and checking texts, translations, text analyses, re-writing of texts, audio-recordings, music and tune records, 3. simplification of complex texts, popularization, summaries, abstracts, proposals of titles, 4. statistics, tables, graphs, visualizations, charts, figures. These categories are exemplified by the following extracts from doctoral students' essays.

Brainstorming and creative production in communication with AI is for me much easier (R8).

I regard AI in a positive way, it has great potential to support human creativity. I like even the imperfections of AI itself. One has to check the offered results, because they are often biased or untrue (R12).

I can see a lot of potential in these tools, especially how to make the work easier and more efficient. I can imagine the use of these tools for explanations of unknown topics (background), generation of contexts, machine translation (R16).

Specific characteristics of features of GenAI tools in the research process of special subjects were categorized into the following concepts: 1. spatial analyses, maps, geographic information systems (GIS), 2. support in planning of teaching, proposals of questions, tasks, design of interviews, 3. analyses of music, songs, creation and analyses of tunes and records, 4. analyses of visual structures and elements (visual arts), 5. analyses of historical archival documents and manuscripts. The following statements from essays support our findings:

In the archaeological research, AI can save a lot of time and work, it can be an efficient assistant. However, AI is a good servant, but bad master. It is necessary to rely on one's own reasoning, machine results should be subject to verification and critical evaluation (R7).

The concerns related to social risks of AI tools were also mentioned:

Among the risks, we can mention ethical issues and plagiarism...In the academic creativity it is important to determine the boundaries, what is the result of our own work, and what was generated by AI (R17).

In my opinion, AI revolution could lead to re-directing workforce from administration and ICT to underdeveloped sectors, which cannot be executed by AI (babysitting, social care and health care of seniors). More time can be devoted to creative activities and family (R14).

Students suggested more education and training in AI literacy focused on construction of prompts, evaluation of results, checking summaries, facts and sources.

We are getting into the era, when the use of AI will be an everyday routine and that is why the skills of using it should be taught as early as in elementary and secondary schools (R3).

4.2 Results of an Experiment: AI Enhanced Academic Writing

The second study was focused on the use of GenAI tools, namely ChatGPT, in the academic creative writing. The qualitative experiment included 8 master students who had a task of writing an essay with ChatGPT (ver. 4.0). Students were selected purposefully, they were participant of the 1st year of master studies at the Department of LIS,

Comenius University in Bratislava. The participants of this qualitative experiment included 7 women and 1 man, the average age was 22-25 years. Students had instructions for writing their essays in one session. The topic of the essays was information behaviour of seniors. After the session, they should write structured evaluations. In the last stage, we conducted semi-structured interviews with the following questions: What was your experience with the use of GenAI for writing an essay? Which other GenAI tools would you use? Which proposals do you have for the use of GenAI tools in academic creative writing?

In the analyses, we followed the transformative impact of AI tools on creative writing. We applied qualitative analyses of data, categorization and conceptual analyses. Theoretical concepts of creative writing and AI literacy were considered. The dimensions of GenAI literacy included cognitive, affective, creative, ethical, experiential, technological and metacognitive factors. A specific perspective was raised in relation to the role of GenAI tools in analyses, syntheses, and interpretations. The concept of creative writing with the use of GenAI tools comes from traditional cognitive models of creative writing (Flower & Hayes, 1981), transformed into strategies and models of creative writing with GenAI tools (Nguyen et al., 2024, Yan, 2024, Wan et al., 2024). These models emphasized planning, monitoring, revisions. Other authors examined collaboration of people and GenAI tools, human control, and re-writing (Vinchon et al., 2023, UNESCO, 2023). The inductive conceptual analyses of interviews, essays and evaluations resulted in seven main categories representing the experience of students with ChatGPT when writing an essay. These categories are illustrated in Table 2. Main categories are supplemented with subcategories in the second column, and with extracts of students' discourse in the third column.

Table 2. Seven resulting categories of the discourse of students on the use of GenAI creative writing.

Categories	Description, subcategories	Extracts, examples
Orientation	Structures, contents Navigation, planning	<i>I would use it for navigation in the topic, title production, and structure of the work...(S7)</i>
Seeking, revisions, translations	Quality information sources, data analyses, Verification, styles, genres, languages	<i>I use it sometimes for proposals of sources, inspiration for introduction and conclusions (S1) I asked to put it into „my style“ (S8)</i>
Affective and cognitive response	Frustration, uncertainty, stress, mixed emotions, motivation, (deadlines)	<i>I felt more under pressure (S6) The time limitation was (stressful)...I felt I need to do everything fast and at the same time (S4)</i>
Trust	Trust to sources (low) Trust to the system (low) Personal profiles (data) Privacy	<i>I do not trust (the system), I would use it for structures or concepts, but I do not regard the analyses as efficient...(S3) The system knows too much about us...it is still learning (S2) ...it is horrifying that it remembers everything... (S4)</i>
Quality of sources	Little rate of topical scientific sources, missing literature from scientific databases, More popular (media) sources, disinformation	<i>I would say it was non-professional (S2) It offers sometimes non-professional, made-up sources, the quality is low, the citations were bad (S1)</i>
Strategies of interactions	Traditional, linear (writing in paragraphs, deeper analyses, verifications) (more efficient results) Non-linear, interactive text generation (multiple interactions, surface analyses) Metacognition, planning, final human control and revisions	<i>I would say it is good for planning, translations... (S8) It is important to articulate the prompts...and use several procedures...Sometimes... it does not understand my requirements (S2) I usually need to return to previous paragraphs more times...it was a problem (S4)</i>
Proposals for improvement	Interactions, interfaces, understanding of requirements, prompt engineering, quality sources, AI literacy	<i>I would propose to improve the prompt engineering...trustworthy sources, interfaces (S3) ...quality of sources (S5) I would propose to educate students in working with the system (S1)</i>

The information experience of students with GenAI tools was mixed. Students appreciated fast response, inspiration, adaptability, but were unhappy with low quality of sources, interfaces, response, and lack of time for revisions. We have identified two main styles of integration of GenAI tools for creative writing, namely the traditional linear,

analytical style (multiple revisions, re-writing, structured adaptivity), and the non-linear, less analytical style (unstructured streamline), concentrated more on prompts and text generation. In line with similar studies (Nguyen et al., 2024, Yan, 2023), we can confirm that planning, monitoring, revisions and metacognition are essential for integration of GenAI tools into creative writing. The analytical style was more efficient in using GenAI tools for inspiration, imagination, combinations, transformations and revisions. Although students reported mixed emotions, they perceived GenAI tools in creative writing as beneficial. Negative emotions were uncertainty, frustration, low trust. Human control and metacognition are needed for efficient results of information co-creativity. Students and GenAI developed creative collaboration and adaptive creative cognition (Wan et al., 2024, Waardenburg & Huysman, 2022). GenAI tools can play a role of idea generator, collaborator, analytical tool. Creative academic writing was based on adaptive coordination with GenAI tools. We have found that it needs metacognitive skills, when GenAI becomes a strategic ally. We have confirmed not only co-creativity, but also the transformation of information work with GenAI tools. A number of ethical issues were raised, namely informational privacy, personal data, accountability (system), responsibility, beneficence, justice and transparency (Floridi, 2023). Creative and ethical factors of GenAI tools in research and creative writing are interconnected. We have confirmed the need of AI literacy support in various dimensions (Cox & Thelwall, 2025, Chowdhury & Chowdhury, 2025). Relations of information creativity to AI literacy and ethics of AI were found (Table 2).

4.3 Limitations of the used methodology

The qualitative methodology is bound by several limitations, namely the selection of participants. In our cases it was limited to doctoral student of 1st year of social sciences and humanities and to master students of information studies. The limitations of our studies relate to small-scale samples, focus on social sciences and humanities, self-selection and self-evaluation, subjectivity of interpretations and the focus on text-based Gen AI tools. In the experiment with writing, we have noticed the challenges of generalizability, variability of knowledge states. Based on interests and goals, different styles of integration of GenAI tools into writing and transformations were identified. However, we confirmed the co-creative process and common framework across disciplines. The data was analysed by a group of three researchers in order to avoid subjectivity of interpretations. Resulting analyses were integrated by the principal researcher.

Limitations of results are also related to qualitative inductive analyses with possible subjectivity, and to the selected and accessible GenAI tools (ChatGPT, version 4.0). Subjectivity of topic analyses of the discourse can lead to risks of inconsistency of terminology. This subjectivity and possible variations of concepts were balanced by independent analyses of three researchers, by cleaning of data of interviews, and final discussions of researchers. This led to the final syntheses, categories and the informed interpretations. The limitations of the study are also related to possible loss of meaning in tables and relations of general and specific concepts. Limitations of qualitative research are explained in major methodological works (Pickard, 2013, Given et al., 2008, Lloyd, 2021). In line with these limitations, we have used prior analyses of published works, concepts and models focused on information creativity, creativity research and AI literacy (Steinerová, 2025a,b,c).

5 A CONCEPTUAL MODEL OF THE GENAI ENHANCED INFORMATION CO-CREATIVITY

Our studies found that doctoral and master students perceived GenAI tools positively. Students' experience with creative writing was mixed, manifested by two styles, the analytical, and the surface styles. Students regarded GenAI tools as a big potential for support of information creativity, education and writing. Collaboration with GenAI tools is a part of the whole creative process, from developing information products to creative environment. Students expressed their concerns related to risks of GenAI at individual and social levels. Common categories were found in Tables 1 and 2 and confirmed the use of GenAI for inspiration, brainstorming, seeking, revisions, analyses and syntheses, translations, interpretations, visualization. Collaboration of GenAI and people was proved and the concept of co-creativity confirmed. Risks of GenAI tools pointed to the ethical issues of personal data and privacy, biases, personalization, disinformation, plagiarism. AI tools can help develop new ideas, but originality, emotions, imagination, intuition and expertise (best practices) remain as human control. Participants proposed various forms of education, AI literacy trainings, social regulations and the use of GenAI tools for students' theses. Utility and truth of information are the main values of information creativity, framed in the concept of social good and impact.

We have found that the concept of information co-creativity can be the most appropriate for understanding of the GenAI tools transformative impact on information creativity of students. It is based on complex information experience of students and the complex impact of GenAI in the complex information environment. The process of information co-creativity is based on ecological principles of information re-use, re-definition, adaptations, restructuring, co-evolution of creative mind and technological features. Social values of information co-creativity are embedded in collaboration and cooperation, e.g. brainstorming, shared seeking, organization, production. Ecological values of information co-creativity are related to the ethical factors of GenAI tools, such as privacy, responsibility, truth, social roles. The research of the ecology of creative mind can help build the ecological basis of information co-creativity. GenAI tools can enhance sensitivity, imagination, exploration, combinations, transformations, learning, presentations and metacognition. Academic information ecologies are a part of the creative environment of students, researchers and teachers, and enhance creative reasoning, communication, use of GenAI and production of creative outputs. Following findings from our studies, we can visualise a conceptual ecological model of the AI enhanced information co-creativity (Figure 1). The model is based on five dimensions of information co-creativity, namely sensitivity, inspiration, exploration, transformations and metacognition, intertwined in ecological, holistic contexts and adaptations of people and GenAI tools.

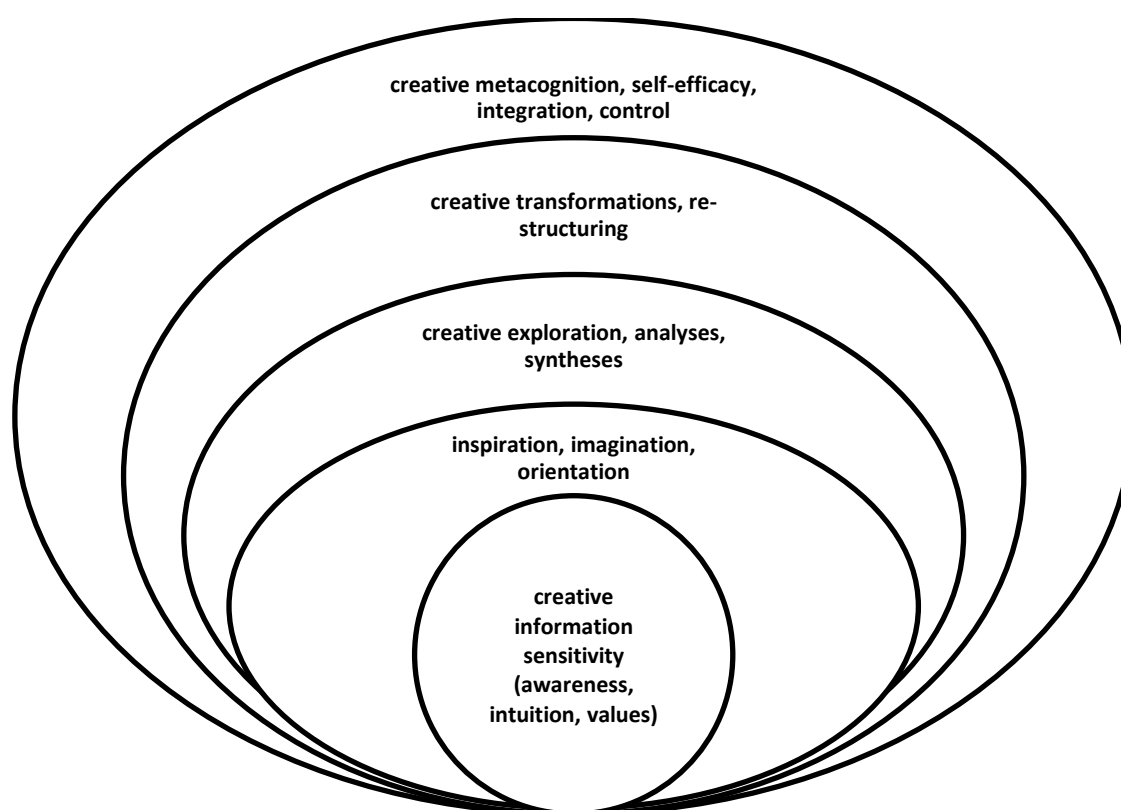


Figure 1 A conceptual ecological model of the GenAI enhanced information co-creativity.

The GenAI enhanced information co-creativity can be regarded as a part of wider contexts of AI literacy and information co-creativity. AI literacy develops as knowledge, skills, abilities, and attitudes of people in using the GenAI tools responsibly, ethically and in informed ways (Ng et al., 2021, Cox & Thelwall, 2025). The dimensions of AI literacy include the cognitive, affective, social, ethical, communicative, pragmatic, technological, and strategic dimensions. The creative use of AI tools can be interpreted as a series of dynamic, non-linear interactions, which includes processes of awareness, orientation, planning, monitoring, exploration, analyses, evaluation, and creation, transformations, revisions and human control. It is supported by emotions, intuition, imagination, and re-interpretation or re-organization of information. Human control uses creative metacognition and integration in the final creative product. Our model represents the processes of creative cognition and adaptive cooperative cognition in the contexts of information co-creativity enhanced by GenAI tools.

This model can help understand information creativity, AI literacy and its interconnections in information co-creativity. We have considered the perception and use of GenAI tools by our students, and experiments with other students with retrieval augmented generation (RAG) and knowledge discovery (Chowdhury & Chowdhury, 2025). As opposed to other models, our model integrated GenAI tools into the encapsulated stages of creative information work. GenAI tools are used mainly in the stages of planning, exploration (play, prompts), orientation and searching, organization, transformations, text revisions, and self-regulation. We recommend further research focused on social and professional roles related to AI literacy, human-centred AI, responsibility, and trust to GenAI tools. The model can be used for information design of innovative services related to creative factors of information work.

6 DISCUSSION

Findings of our studies have proved that there is a significant increase of interest in the topic of information creativity related to AI literacy in higher education. In response to our first research questions, we have found that the research and studies of information creativity and information literacy are connected with frameworks and models of AI literacy. Some models have been re-designed (e.g. the Framework for information literacy in higher education (ACRL, 2016) and new models of information creativity and AI literacy emerged (Steinerová, 2025c). We can argue that the trends are marked by significant multidisciplinary, dynamics and dimensions of information creativity and AI literacy, namely the cognitive, affective, technological, social and ethical dimensions. The closest related disciplines are social psychology, cognitive sciences, social informatics, artificial intelligence, information literacy, education, information management. When compared with traditional models of creativity, information creativity models integrate features and impact of GenAI tools on information processing. The most significant topics are represented by the AI enhanced access to knowledge (Cox & Thelwall, 2025), AI literacy (students, teachers, researchers), and information creativity as part of AI literacy and co-creativity. New perspectives of information creativity were found in contexts of information experience (Gorichanaz, 2023) and in the AI-enhanced academic creative writing (Nguyen et al., 2024). These perspectives can explain the role of metacognition, self-efficacy, creative cognition, and metaliteracy (Mackey and Jacobson, 2022). Metaliteracy emphasized generation of new information by participation and collaboration with digital tools, evaluation of content, biases, ethics, intellectual property and lifelong learning strategies. More experiments of the AI enhanced information retrieval with students are recommended (Chowdhury & Chowdhury, 2025). Five paradoxes of human and GenAI collaboration are originality versus remix, control versus serendipity, speed versus reflection, ambiguity versus precision, individual versus collective (Salma et al., 2025)

In the context of science and research, the AI enhanced co-creativity has been confirmed (Bianchini et al., 2025). This led to new concepts of digital services of academic libraries. Similar to higher education, the research process is influenced by GenAI tools, especially in data analyses and management. Our findings are in line with conclusions of other studies of GenAI in research which state that the human part remains crucial in asking right questions, articulating problems, interpretations and integration of results (Bianchini et al., 2025). The practical dimensions of creative digital services of libraries are involved in the model by Dahlquist (Inspire, Support, Distribute, Planning, Assessment) (Dahlquist, 2023). This model confirmed our findings in the context of response of libraries to GenAI tools (Cox, 2024b) and the use of GenAI in education (Tubella et al., 2023, AI Act, 2021).

In response to our second research question, we can state that perceptions of GenAI tools and AI literacy of students and doctoral students are mixed and have impact on changing higher education and research. The main concerns are the ethical issues, such as trust, responsibility, transparency, cognitive and technological bias. For future development, we recommend strengthening of the AI literacy of students, researchers, teachers. These findings follow the Manifesto of collaboration of AI and creativity (Vinchon et al., 2023). The authors outlined four scenarios of the future development. The first scenario is represented by the concept of co-creativity, collaboration of people and GenAI tools (Co-Cre-AI-tion). The second scenario describes the integration of GenAI tools into the working process with respect to human creativity and authenticity of works (Organic). The third scenario considered non-regulated use of GenAI, named as Plagiarism 3.0, without references to original sources. The last scenario supposed the decline of human creativity and motivation to create new knowledge, named as "Shut down". This can be a result of lack of trust to human creativity in contrast to GenAI tools. The Manifesto also proposed measures for protection from harmful content. The positive future is outlined as beneficial collaboration for creative production. More research is needed in order to understand the depth of transformative changes of the use of GenAI (Floridi,

2023). For example, access to special digital collections enhanced by visual design can support creative discovery of new information. Structures of topics in websites can be adapted to perception and values of communities.

Findings of our studies and the model of information co-creativity have common features with similar empirical studies of creativity and creative writing (Wingström et al., 2024, Nguyen et al., 2024). The studies applied similar methodologies (case studies, experiments), especially the concept of value-sensitive design (Friedman & Hendry, 2019). Examples of related findings include the quality of writing in colleges (Noy & Zhang, 2023), the role of GenAI in support of software developers (Peng et al., 2023), or the impact of Gen AI on cognitive abilities and creativity (Sternberg 2026). The concept of co-creativity means that GenAI tools are used as assistants for the quality of generated products with impact on cognitive abilities, social relations and creative professions. Cognitive abilities can be reduced by frequent use of GenAI, depending on the way of its use. GenAI can enhance efficiency of work, but might reduce creativity and cognitive engagement (Sternberg 2026).

In response to our third question, collaboration of GenAI tools and students was confirmed and framed in a new model of information co-creativity (Figure 1). We have found that human intentionality, problem statement, self-efficacy and human control are essential. These findings are in line with empirical studies of the impact of GenAI tools on creativity (Sternberg, 2026). GenAI can increase flexibility and fluency of information creativity but can produce only average results and cognitive fixation (positive attitudes). Depending on the efficiency of use, GenAI tools can be risks for critical, analytical and practical wisdom. Examples from science are the biased GenAI tools which can lead to manipulations and biased attitudes (Williams-Ceci et al. 2026). Participants mentioned mixed experience and risks of plagiarism, false information or references. Common factors of information co-creativity in our model are creative sensitivity, imagination, exploration, transformations, and metacognition. The model can be applied for strategies of the use of GenAI in higher education, for courses of information co-creativity and AI literacy. We propose to design the AI enhanced innovative digital services of libraries. The goal is to connect information creativity and GenAI tools in such information design of creative spaces and digital services, which could ease the cognitive load and support access and perception (e.g. visual access with metadata).

In summary, our studies and a growing mass of literature on GenAI and human creativity confirmed the need to explore changes of creative information work in different contexts, including the impact on higher education. Inclusion of GenAI into information work resulted in the concept of the AI enhanced information co-creativity with positive or negative impact. Students, teachers and researchers appreciated support of GenAI for creative activities and valued AI literacy and co-creativity. We can propose further research and empirical studies related to information co-creativity and AI literacy following the cognitive, affective, ethical, social, strategic or data dimensions. These topics are all complex concepts, that is why the collaboration of different disciplines, professionals and institutions is required. Theoretical implications of our studies are related to new models of information co-creativity with GenAI tools. Practical implications lead to recommendations for inclusion of information co-creativity into information design of digital services, digital libraries, recommender systems, and innovative creative spaces of libraries. Further recommendations for practice are design of courses on information co-creativity and AI literacy for students, doctoral students, researchers, teachers, librarians, managers. Our findings contributed to understanding of the transformative strength of GenAI tools for information co-creativity in education, research and academic services. Future research needs new methodologies and models in order to find new ways of creative education, research and information infrastructures in higher education. New models of AI literacy and information co-creativity can be applied to everyday information, health, banking, or social policies.

7 CONCLUSIONS

We have argued that different communities from higher education and other professional sectors have been interested in information co-creativity and AI literacy. Findings from our empirical studies and the proposed model can help understand creative interactions of GenAI tools and people in education and research. We have identified the concept of information co-creativity composed of sensitivity, inspiration, exploration, transformations, metacognition. The transformative impact of AI tools on information creativity was confirmed. Information co-creativity was specified as collaboration of students and researchers with GenAI tools, and findings new ways of its efficient use for academic activities. Related emerging topics are cognitive contribution and adaptive coordination in creative writing. GenAI tools are used mainly as assistants for inspiration, structures of topics, fast analyses of data, exploration, translations, revisions, visualizations, proofreading. The dark side of the impact of GenAI tools on

information creativity are ethical concerns, cognitive and technological biases, disinformation, plagiarism, and lower levels of critical analytical thinking and learning.

In future studies, researchers should consider the multidimensional composition of information co-creativity, creative cognition and adaptive coordination. Our studies confirmed that participants had mixed experience with GenAI tools, based on balance among positive effects of information co-creativity and damages to creative cognition or privacy. Findings of our studies pointed to a need of better understanding of information co-creativity and AI literacy and to transformation of creative information work and education. The impact of GenAI tools on information creativity needs to be considered in the context of deeper social changes and ethical contexts. Findings from the study of doctoral students proved that GenAI tools were perceived as beneficial for information creativity, and that its use is specific in disciplines (history, sociology, archaeology, musicology, visual arts). Information experience of students in creative writing was mixed and embedded in their ways of GenAI use. We have identified two information styles of creative writing with GenAI, namely the analytical and the surface styles. We have noted some different pathways of students, different stages and styles of integration of GenAI tools by students. At the beginning of information co-creation, the processes of inspiration, brainstorming, exploration were used. In the progress of the creative process, GenAI tools were used for analyses, syntheses, transformations, interpretations, and visualizations. In the end of the information co-creation, students used revisions, verification, and human control. Final revisions were related to references, summaries, and re-writing. Both studies resulted in the emphasis on the need of AI literacy interconnected with information co-creativity. AI literacy should include not only knowledge of tools, but also the efficient ways of its use, and awareness of ethical risks of GenAI focused on privacy, biases, damages to infrastructures, verification, authorship (plagiarism).

The contribution of our case studies is represented by better understanding of the transformative impact of GenAI for information co-creativity based on evidence from information experience of students. The proposed conceptual model of the GenAI enhanced information co-creativity visualized interconnected dimensions of information co-creativity and AI literacy. The five interconnected encapsulated dimensions in the model represent a new perspective on interplay of information creativity and AI literacy. Although we have clarified contexts of AI literacy and information co-creativity in higher education and research, many issues remain open for future, due to the complexity of the topic and further social contexts of the use of Gen AI in academia or workplaces (e.g. power relationships).

The quest for understanding of the transformative impact of GenAI tools for knowledge raised needs for more experiments with retrieval (RAG), exploration, AI literacy or ethics of AI. Information co-creativity could help develop adaptive strategies of universities and libraries to challenges of AI literacy and support information design. Our findings can contribute to best practices for the responsible, ethical and critical AI literacy, for building trust and social and professional roles. Students and researchers should be encouraged to use GenAI tools, in order to know what GenAI is, what are its limitations, and how to use it efficiently in education and research. Academic communities should know about a meaningful human control and management of the GenAI lifecycle, including librarians (Chowdhury & Chowdhury, 2025). This can be explained in the proposed courses of AI literacy and information co-creativity in universities and libraries. These courses can experiment with tasks of academic creative writing, production of visual, audio, video content, or design of digital services. Such courses can help better understand the transformative features of GenAI tools, its efficient use, and issues of safety, design, ethics, and social impact.

ADDITIONAL INFORMATION AND DECLARATIONS

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Author Contributions: The author confirms being the sole contributor of this work.

Statement on the Use of Artificial Intelligence Tools: The author declares that she didn't use artificial intelligence tools for text or other media generation in this article.

Data Availability: The data sets generated during this study are available from the author upon request with permission of the Comenius University in Bratislava and the project InCreDe.

APPENDIX A

Instructions, evaluations and semi-structured interviews with students in the qualitative experiment with GenAI enhanced creative writing

1. Instructions

Write a short essay with the use of ChatGPT-4 which explains the academic topic in an attractive manner for beginning university students. The topic: Information behavior of seniors. Extent: 5 pages. In the text, use the explanation of concepts, structure, and at least three metaphors. Supply the text with main references to scientific literature and a structured abstract (objectives, methods, results). Use mainly text generation, verification, text revisions, etc. Time: cca 40 min.

Deliver your final product, procedures summary, and evaluation form to the address of researchers.

Introductory data (name, age, topic of your thesis. (Date, time, place). Environment – laboratory (computer room). Storage of the history of the procedure (videorecord, Camtasia). Informed consent, anonymized processing. Objectives of the study (understand the use of AI tools by students, verify co-creativity).

2. Evaluation form

Evaluate your experience with the GenAI tool ChatGPT-4 during the experiment

Please, place yourself on the scale of the experience with Chat GPT

Scale for each question: 1 (*Unexperienced*) – 5 (*Experienced*)

Which GenAI tools have you tested?

Which were the positive sides of GenAI tools?

How do you find the collaboration with GenAI tools in text creation?

Was your procedure / process efficient?

Which emotions have you experienced (positive, negative)?

Which were the negative issues of GenAI tools?

What would you do in different way?

Which further features of GenAI do you use (e.g. analyses, revisions, visualizations, ethics, teaching)?

Which ideas were an inspiration from GenAI for you?

Which ethical issues of GenAI tools are important for you?

What would you propose for the improvement of GenAI tools for text creation?

Your comments or proposals to the study

3. Semi-structured interviews with students after the experiment

1. What was your experience with the use of GenAI tool for writing academic text?
2. How did you work with information sources and references? How do you find the quality of sources? Were you happy with metaphors, structure? Did you use it for inspiration, translation, revisions?
3. Which other GenAI tools and procedures would you use?
4. Do you trust to the used GenAI tool(s)?
5. What would you propose for the improvement of the interactions with the GenAI tool?

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