EAI Endorsed Transactions
on Creative Technologies
Research Article EAI.EU

Assessment of the Impact of Artificial Intelligence on Creative Storytelling for Enhancing the Ideation Process at the Individual Level

Vasiliki Kollia[1], Dimosthenis Manias[1]

[1]Hellenic Open University, 26335, Patras, Greece

Abstract

The emergence of Artificial Intelligence dramatically changes the creative process of generating new ideas, which is called "ideation." The objective of this research is to study its impact on the "ideation" phase at the individual level. Ten students from Polytechnic schools participated in two activities that measured the characteristics of divergent-creative thinking: "fluency," "flexibility," and "originality." The first activity was Guilford's Alternative Uses Test, and the second was a creative storytelling technique. The students were divided into two groups, and one of the groups collaborated with ChatGPT. From the data analysis, it was found that in Guilford's test, Artificial Intelligence significantly enhances "fluency" and "flexibility" and considerably improves "originality." However, in the production of a creative text, the research showed no enhancement of the above characteristics. A possible cause is identified in the different degree of experience in creative writing among the students who collaborated with ChatGPT, and consequently in the different way they provided prompts. In conclusion, Artificial Intelligence can prove to be a valuable collaborator in the "ideation" phase, but its effectiveness depends on users' experience in prompting techniques.

Keywords: Artificial Intelligence, Ideation, Creativity, Creative storytelling

Received on 13 November 2024, accepted on 04 November 2025, published on 11 November 2025

doi: 10.4108/eetct.10417

Abbreviations & Acronyms: AI - Artificial Intelligence Guilford's, AUT - Guilford's Alternate Uses Test, GenAI - Generative Artificial Intelligence / Generative AI GPT - Generative Pre-trained Transformer

*Corresponding author. Email: dimosthenis.manias@ac.eap.gr

1. Introduction

In the contemporary era, there is a need, particularly in the fields of engineering and business, to encourage and enhance employee creativity in every possible way. There is a variety of definitions for creativity, and in all definitions we observe the existence of a common characteristic: the ability to produce "new" ideas or the different correlation of elements to create something "new." The creative process of generating new ideas is called "ideation" and constitutes a phase of design thinking, a human-centered approach to problem-solving [1,2]. In the "ideation" phase, the design team focuses on creating a broad spectrum of ideas, with the goal of selecting the best solution. During "ideation," designers seek inspiration from various sources and apply different techniques. One of the ideation techniques is Creative storytelling [3], which presupposes some stimulus that will create the need for expression, producing and inventing ideas. The development of machine learning systems capable of

creating original digital content by identifying patterns and analyzing large amounts of data [4,5] reinforces the view that the participation of an AI system in the "ideation" process will help, through collaboration, problem-solving, creative thinking-expression of an individual, and innovation [6, 7].

- To study the creative capabilities of AI within the framework of the creative process of generating "new" ideas, we formulate the following research hypothesis: "The integration of AI into the Creative storytelling technique enhances the ideation process at the individual level." The hypothesis will be tested through conducting an experiment, where the level of basic characteristics of creative-divergent thinking [8, 9] will be assessed with and without AI support:
- "Fluency," which is the number of ideas and solutions produced by someone when given a stimulus.
- "Flexibility," which is the production of many responses related to different domains in approaching the problem.
- "Originality," which is the production of new ideas and solutions.

1.1 Creative storytelling as an ideation technique

The creative storytelling technique called "Pattern Modification and Subversion Technique" that we used during the experiment is an idea generation technique with considerable freedom in creation. The intervention on the elements of a story using the question "What would happen if..." helps manifest a person's divergent-creative stance through linguistic subversions, unexpected developments, and original extensions. Common elements of the alternative stories created using the above question are: the "point of divergence," which is the basic modification between the original story and its alternative, the subversions, and the examination of the consequences these subversions have. With this technique and starting from the "point of divergence," the characters and decisions of the heroes, the course of events in the narrative, the plot, or the ending can be changed, providing the opportunity for many different and original versions of a story to emerge [10, 11].

1.2 Artificial Intelligence and Creativity

The generation of new ideas by humans is often explained through the vague concepts of "inspiration" and "intuition." These ideas spring from representations already existing in our minds, that is, from our knowledge and experience, and the establishment of new relationships between pre-existing pieces of knowledge is called creativity. With this assumption—that creativity is an advanced form of problem-solving that includes previous experiences, analogies, learning, and reasoning—we cannot reject that this process of creating new ideas can also be reproduced by AI [12].

In recent years, AI has dramatically changed the creative process. GenAI capabilities can help various organizations and businesses overcome various problems concerning the ideation process in the following ways:

- Support divergent thinking by correlating unrelated concepts and generating ideas from them.
- Inspire designers in the early stages of product development, beyond their preconceptions about what is feasible to implement and what is considered desirable in form and function.
- Assist in evaluating and improving generated ideas.
- Facilitate collaborations between designers and users of a candidate product.

In this way, AI can prove to be a real ally that complements and enhances employee creativity in their individual and collective efforts to create new and innovative proposals [6, 7].

2. Literature Review

To investigate the impact of AI on Creative storytelling and the way it helps, through collaboration, the creative-divergent thinking and expression of an individual, we conducted a literature review of studies and published articles. The studies were evaluated based on inclusion criteria:

- They use Artificial Intelligence for creative storytelling
- They conduct an experiment with a control group
- They have methods for evaluating creativity.

The review resulted in 10 studies that met the above criteria. In these works, the experimental methods and their results were studied thoroughly. The studies examined concerned the fields of arts and education, and the impact of AI in these fields was positive. This led us to consider that in other fields as well, the integration of AI into the Creative storytelling technique would enhance the creative process of "ideation," supporting divergent thinking and innovation.

3. Methodology

3.1 Sample

Ten students from Polytechnic schools participated in the research. Initially, information was provided about the purpose of the research and its procedures, and then participants were given a questionnaire to record characteristics important to the research. After studying their questionnaire responses, the process of assigning students to 2 groups began. Experience in Creative

storytelling was considered as the basic characteristic for creating the groups, and for this reason, the four students who answered that they had some experience were randomly distributed between the 2 groups—two in Group 1 (which collaborates with AI) and two in Group 2 (which does not collaborate with AI).

3.2 Data Collection Tools

The experiment was conducted remotely using the WebEx videoconferencing service, at different times for the two groups. Two activities were carried out during the experiment.

The first activity used Guilford's "Alternative Uses Test" by authors J.P. Guilford, Paul R. Christensen, Philip R. Merrifield, & Robert C. Wilson. The activity had two phases, and the duration of each phase was 4 minutes. The participants' responses to Guilford's test were collected in a response collection form (Google forms).

In the second activity, a creative storytelling technique called "Pattern Modification and Subversion Technique" was used, with the question "What would happen if...". In a Google form, "the myth of Perseus and Andromeda" was given as a stimulus, and participants were asked to write an alternative version of the myth using the above technique in the same form. The duration of this activity was 20 minutes.

After completing the experiment, participants were given a questionnaire (Google forms), different for each group, to record their views on their collaboration with AI and their degree of satisfaction from participating in the experiment.

3.3 Data Collection Procedure

To conduct the experiment, Group 1 used the above material (Guilford's "Alternative Uses Test" and the "Pattern Modification and Subversion Technique") in collaboration with ChatGPT (OpenAI's GPT-3 language model), engaging in dialogue and providing appropriate prompts, while Group 2 used the material without ChatGPT's help.

During the experiment, and during the use of Guilford's AUT, participants in Group 1 who collaborated with ChatGPT were asked to disable "chat history and model training" to protect the intellectual property rights of the Guilford test, as well as to keep screenshots of their interaction with ChatGPT, so that conclusions could be drawn about the success of their collaboration with AI in the experiment's activities.

In the first activity, participants were given, in 2 phases, a total of 6 familiar objects used in our daily life along with a statement of their usual use. Participants, within the 4-minute timeframe for each phase, had to think of what other ways and for what other purposes these objects are used and record up to six alternative uses for them. All participants in Group 1 used English for their conversation with ChatGPT. From the interaction data we collected, it was found that only one of the five participants wrote his own answers along with ChatGPT's answers in the response form. Most, to avoid losing time, wrote only the answers that ChatGPT gave for the objects. The time constraint did not allow for good collaboration between participants and AI. In Group 2, time pressure was evident in the number of responses. Almost none of the 5 participants managed to provide 6 alternative uses for the given objects.

In the second activity, the creative storytelling technique called "Pattern Modification and Subversion Technique" was used, with the question "What would happen if...". The technique required participants to write the myth of Perseus and Andromeda by giving an alternative version of it. The intervention on the narrative elements helps activate participants' divergent thinking, and from applying the technique, using an analytical evaluation rubric, conclusions emerged about the "fluency," "flexibility," and "originality" of the narrative text. Appendix A presents the table with Group 1 participants' interaction with ChatGPT for the creative text. We observe greater effort at collaboration with AI from participants S2 and S3, with varied prompts and exchange of ideas.

3.4 Reliability and validity of measurement tools

To determine the validity of the results of our experimental study, it is necessary to use research tools that have been tested for their reliability and validity.

The manual that accompanied Guilford's AUT contained details regarding its reliability and validity. To test the validity of the evaluation rubric presented in Appendix B, the content validity approach was followed. Content validity presents the degree to which the content of the measurement tool conceptually covers the variable it investigates [13, 14] and must precede data collection. The rubric was developed with the help of a secondary education Philologist with a graduate degree in Creative Writing, who was considered an "expert," and the creative characteristics to be measured were defined along with their evaluation criteria. To test the reliability of the rubric, inter-rater reliability between 2 evaluators was studied, as well as the reliability of measurements by the same evaluator at two different time points (intra-rater reliability) [13, 14]. Specifically, in Table 1, "absolute" and "relative" agreement between 2 evaluators were calculated, while in Table 2 they were calculated between 2 measurements by the same evaluator, conducted 2 weeks apart to exclude memory-based repetition of scoring. The Intraclass Correlation Coefficient (ICC) was also used for assessment reliability, which gives us an estimate of the percentage of score variance attributable to their actual differences

Table 1. "Absolute," "Relative" agreement and ICC coefficient of agreement between measurements by 2 different evaluators

Criteria	Absolute Agreement	Relative Agreement	ICC	ICC Coefficient Interpretation
Fluency	70%	100%	0.724	Moderate agreement
Flexibility	100%	100%	1.000	Excellent agreement
Originality	80%	100%	0.886	Good agreement

Table 2. "Absolute," "Relative" agreement and ICC coefficient of agreement between measurements by the same evaluator at different time points

Criteria	Absolute Agreement	Relative Agreement	ICC	ICC Coefficient Interpretation
Fluency	80%	100%	0.815	Good agreement
Flexibility	80%	100%	0.852	Good agreement
Originality	100%	100%	1.000	Excellent agreement

From the above, we have indications that support the reliability of the results from the rubric we used in the experiment.

3.5 Data evaluation method

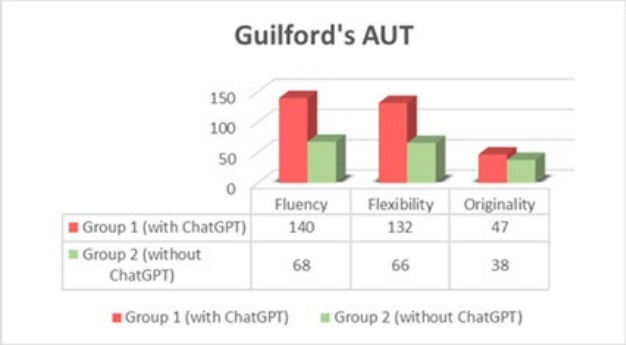
For scoring Guilford's AUT, the test manual instructions were used, while for scoring the narrative text, the evaluation rubric from Appendix B was used.

3.5.1 Scoring of Guilford's AUT

In the acceptable responses of participants, the components of divergent thinking were scored:

- "Fluency": Number of acceptable responses
- "Flexibility": Different categories of responses
- "Originality": Responses given that are different from the responses of other participants in the group.

Graph 1 compares the scores of the groups in Guilford's AUT on the characteristics of "fluency," "flexibility," and "originality."

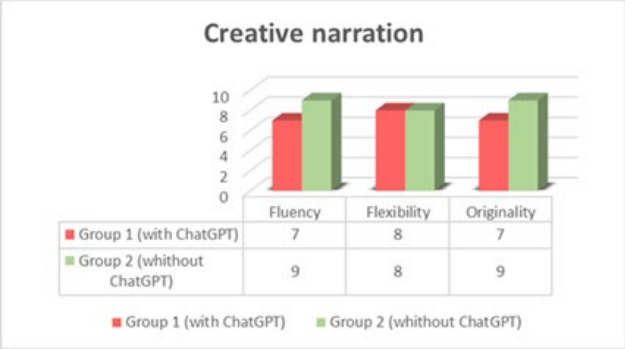


Graph 1. Comparison of Group Scores(Guilford's AUT)

We observe that Group 1, which collaborated with AI, excels. This superiority is greater in the indicators of "fluency" and "flexibility" and smaller in the indicator of "originality." Many similar responses were observed in Group 1, and as a consequence, the originality score was low. Group 2 could not, in the limited time available to them, provide many responses, and this is reflected in the indicator scores.

3.5.2 Scoring of creative texts

Graph 2 compares the groups' scores in Creative storytelling.



Graph 2. Comparison of Group Scores (Creative Storytelling)

We observe that Group 2 has higher scores in the indicators of "fluency" and "originality" than Group 1, which collaborated with AI, while in the indicator of "flexibility," the two groups are equal

4. Results

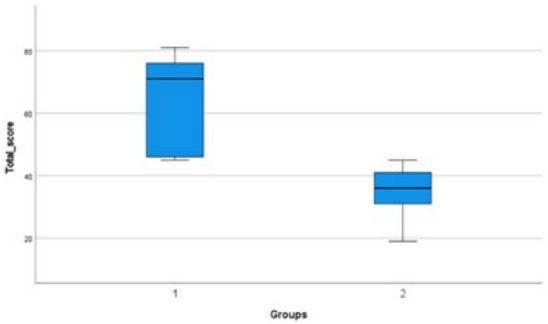
4.1 Descriptive statistical analysis of Guilford's AUT scores

With the descriptive statistical analysis of the total scores of the two groups in Guilford's AUT shown in Table 3, we find that the mean value of Group 1 (Mean=63.80) is almost double the mean value of Group 2 (Mean=34.40). We also o bserve that the maximum score in Group 2 (Maximum=45) is equal to the minimum score in Group 1 (Minimum=45). From observing the box plot of the groups in Graph 3, we have indications of a non-symmetric distribution

Table 3. Descriptive statistical analysis of group scores (Guilford's AUT)

Descriptive Statistics (Guilford's AUT)

		Group_1	Group_2
N	Valid	5	5
	Missing	0	0
Mean		63,80	34,40
Median		71,00	36,00
Std. Deviation		17,079	10,090
Minimum		45	19
Maximum		81	45



Graph 3. Box plot of group scores (Guilford's AUT)

To determine whether there is a statistically significant difference between the two groups, we resort to a non-parametric test because we have a very small sample that does not follow normal distribution, performing the Mann Whitney (U) test with the statistical significance level setat 0.05 [15, 16]. In Table 4, we see that the Mann-Whitney (U) criterion value equals 0.500 and the probability corresponding to this value (Asymp. Sig. 2-tailed) is p=0.012 (p-value = 0.012 < 0.05). Therefore, we can support that there is a statistically significant difference in the mean score of creative divergent thinking characteristics in Guilford's AUT between the two groups.

Table 4. Non-parametric Mann-Witney (U) test

Test Statistics[a]

	Total_score
Mann-Whitney U	,500
Wilcoxon W	15,500
Z	-2,514
Asymp. Sig. (2-tailed)	,012
Exact Sig. [2*(1-tailed Sig.)]	,008[b]

a. Grouping Variable: Groups

b. Not corrected for ties.

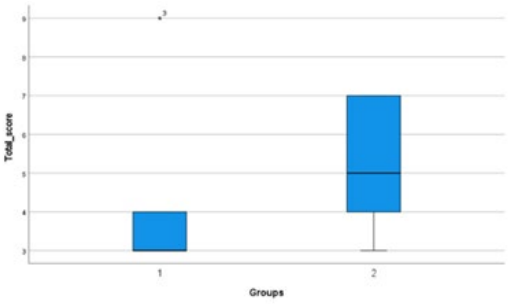
4.2 Descriptive statistical analysis of Creative storytelling scores

With the descriptive statistical analysis of the total scores of the two groups in Creative storytelling, shown in Table 5, we find that the mean value of Group 2 (Mean=5.20) is greater than the mean value of Group 1 (Mean=4.40). We also observe that the minimum score of the two groups is the same (Minimum=3) while Group 1 shows a higher maximum score (Maximum=9). From observing the box plot of the groups in Graph 4, we have indications of a non-symmetric distribution.

Table 5. Descriptive statical analysis of group scores (Creative Storytelling)

Descriptive Statistics (Creative narration)

		Group_1	Group_2
N	Valid	5	5
	Missing	0	0
Mean		4,40	5,20
Median		3,00	5,00
Std. Deviation		2,608	1,789
Minimum		3	3
Maximum		9	7



Graph 4. Boxplot of group scores (Creative storytelling)

To determine whether there is a statistically significant difference between the two groups in creative narration, we employ a non-parametric test, as we did in the Guilford test, since the sample is very small and does not follow a normal distribution. Specifiaclly we conducted the Mann-Whitney (U) test, the results of which are presented in Table 6. The value of the Mann-Whitney (U) statistic equals 8.000, and the corresponding probability (Asymp. Sig. 2-tailed) is $p = 0.329$ (p-value $= 0.329 > 0.05$).

Therefore, we may conclude that there is no statistically significant difference in the mean score of the characteristics of creative divergent thinking in Creative Narration between the two groups

Table 6. Non-parametric Mann-Witney (U) test (Creative storytelling)

Test Statistics[a]

	Total_score
Mann-Whitney U	8,000
Wilcoxon W	23,000
Z	-,976
Asymp. Sig. (2-tailed)	,329
Exact Sig. [2*(1-tailed Sig.)]	,421[b]

a. Grouping Variable: Groups

b. Not corrected for ties.

5. Discussion

5.1 Interpretation of results in Guilford's AUT

The findings of the study showed that in Guilford's AUT, Group 1, which was supported by AI, outperformed Group 2. This advantage was greater in the indicators of fluency and flexibility, and smaller in the indicator of originality. The non-parametric Mann-Whitney (U) test indicated that there was a statistically significant difference in the mean overall score between the groups. A possible interpretation of this difference relates to the capacities in which AI excels. The rapid generation, by ChatGPT, of many, diverse, and fairly original alternative uses for the objects requested in the test was to be expected.

The time constraint of the test proved to be a critical factor for both groups. In Group 1, it hindered effective collaboration between participants and AI, as the interaction data collected revealed that only one of the five participants combined his own ideas with ChatGPT's responses. In Group 2, time pressure was also evident, as most participants were unable to produce six alternative uses for the given objects.

5.2 Interpretation of results in Creative Narration

In Creative Narration, the results indicated a slight advantage for Group 2 (which did not collaborate with AI) in the characteristics of fluency and originality,

while in flexibility the two groups performed equally. The non-parametric Mann-Whitney (U) test showed no statistically significant difference in the mean overall score between the groups. A possible explanation for this outcome—which also accounts for why Group 1's success in the Guilford's AUT activity was not replicated—relates to participants' prior experience in creative writing and, consequently, to the prompts they provided to AI in order to shape a creative text according to their intentions. This interpretation is supported by the case of Participant 3 (from Group 1, which collaborated with AI), who received the highest score among both groups. Participant 3 had reported in the initial background questionnaire that he had prior experience with both ChatGPT and creative writing. His prompts to ChatGPT were clear and targeted: he specified the narrative style and the distinctive characteristics he wanted in his text. These crucial elements, which contributed to making his story unique, were not utilized by the other members of his group.

Similar findings have been reported in the studies reviewed in the literature: Exploring an AI-supported approach to creative writing: Effects on secondary school students' creativity [17] and Writing, creativity, and artificial intelligence. ChatGPT in the university Context [18, 19], which examined the same dimensions of creativity.

5.3 Limitations of the study and suggestions

A limitation of the methodology employed in this study is the small sample size and the subjectivity in scoring, particularly with regard to the characteristic of originality in a creative text. To overcome these limitations, it is advisable for future research to use a larger sample and to involve multiple evaluators from diverse backgrounds. Furthermore, the process of designing and refining prompts for language models (prompt engineering) should be investigated more thoroughly, as suggested by the findings of this study.

6. Conclusions

The aim of this experimental study was to examine the impact of AI on Creative Narration as a means ofenhancing idea generation at the individual level. In essence, it sought to explore the creative potential of AI within the process of generating new ideas.

The results indicated that AI significantly enhances the characteristics of creative-divergent thinking assessed through Guilford's AUT—particularly fluency and flexibility, and to a lesser extent originality. However, when these same characteristics were assessed in the context of producing a creative text, the study revealed no enhancement of idea generation in any of the three creative dimensions.

This discrepancy is explained by the different ways in which AI's contribution was requested in the two activities. In Guilford's AUT, where participants had to generate alternative uses for everyday objects within a limited timeframe, the prompts were, more or less, similar across all participants collaborating with AI. ChatGPT, trained on a vast corpus of data and capable of rapid responses, proved to be a valuable assistant in this activity. In contrast, in the creative narration task, where participants were asked to intervene in a given story to produce an alternative narrative, the prompts varied considerably among participants working with AI. The way AI's assistance was solicited depended largely on the participants' prior experience in creative writing and their familiarity with ChatGPT. The contrasting results of the two activities suggest that while AI has the capacity to generate numerous, diverse, and fairly innovative ideas, the extent to which this capacity is realized depends greatly on users' expertise in prompt engineering. The findings highlight the importance of developing effective prompts when interacting with AI models and the need for training in these techniques. Prompting strategies differ depending on the task at hand, and their success depends on principles such as clarity, logical coherence, and conciseness in the information provided to the model [19, 20, 21, 22]. The development of a standardized prompt protocol for AI is of great significance in organizations and enterprises, as it enables the combined intelligence of humans and AI to be leveraged, leading to optimal decision-making, innovative solutions, and increased productivity [23, 24].

In recent years, AI has been radically transforming the creative process, and there is no reason for humans to feel that AI is competing against them. Education and the cultivation of skills are vital assets for humans, strengthening their position alongside AI. By considering AI as a collaborator that complements and enhances creativity, humans can achieve innovation at all levels

Appendix A: Interaction of Group 1 with ChatGPT (Creative narration)

P1	- "Do you know the myth of Perseus and Andromeda?" - "What would have happened if Cassiopeia had not offended the gods with her arrogant behavior?" - "What would have happened if Perseus had not killed Medusa?" - Chooses the first "What would have happened if...". ChatGPT suggests 3 alternative versions of the myth's development. Uses all 3 simultaneously in his text.
P2	- "Do you know the myth of Perseus and Andromeda?" - "I want to change the story a little. 'What would have happened if...' Give me some ideas." ChatGPT proposes 10. - "I like the 7th idea: 'Unforeseen consequences of the actions of Perseus and Andromeda in the battle with the sea monster after their victory.' Give me some suggestions for unforeseen consequences." ChatGPT proposes 10. - "I like the 2nd option: 'ecological disaster caused by the removal of the monster from its natural habitat.' Write the myth with this unforeseen consequence. Also, say something about the mythical creature, whose body, after death, rots and pollutes the sea." ChatGPT writes the myth accordingly. - "Good, I like the story, but I want the resolution to be closer to a 'myth-like' solution. For example, Andromeda and Perseus need to sacrifice their daughter to the toxic sea." ChatGPT rewrites the story following this prompt. - "Give the child a name and rewrite the story."
P3	- Provides the myth by copy-paste into ChatGPT. - "Considering the story I gave you, provide me with 5 hypothetical questions beginning with 'What would have happened if...'." ChatGPT proposes options. - Chooses one of these hypothetical scenarios: "With this 'What would have happened if Perseus did not have he courage to face the sea monster...' write a long, clever, imaginative, and funny story with a completely different ending from the original version." - Unsatisfied with the result, gives a new prompt asking that the alternative narration begin from a specific point: "I want you to continue the story from the moment when Perseus needs to face the monster but lacks the courage that a hero should have (again, use a clever, imaginative, and humorous perspective)."
P4	- Provides the myth by copy-paste into ChatGPT. - "What would have happened if the girl was not the king's daughter?" - "What would have happened if the girl was not the king's daughter and did not care about traditions and social expectations?" - Chooses the example "If the oracle had foretold that the King himself, rather than Andromeda, was to be sacrificed, then..." which was given in the assignment instructions. - With an additional prompt, requests the mention of internal turmoil in the development of the myth.
P5	- "Write five 'What would have happened if...' questions about the myth of Perseus and Andromeda that change the ending." - "Write 3 more, assuming that Perseus possesses Medusa's head." - Chooses the question: "What if Andromeda had refused to be sacrificed to the sea monster...?" and, through a prompt, requests the continuation of the story.

Appendix B: Evaluation rubric

Category	(3) Excellent	(2) Satisfactory	(1) Poor
Fluency	The text demonstrates: • Ideational fluency (a wealth of well-developed ideas), • Associative fluency (relationships such as analogies, differences, metaphors, etc. are produced from a given idea), • Expressive fluency (the meaning is conveyed accurately, with divergent use of language and unusual verbal combinations).	There is limited production of ideas, or ideas are repeated within the text, or ideas are inadequately developed (with gaps or unnecessary elements). Associative and expressive fluency are limited.	There is poor production of ideas in the text, or irrelevant ideas, or ideas that are not developed at all. The text lacks associative and expressive fluency.
Flexibility	The text departs from the initial way of thinking and provides innovative extensions of events and actions, with shifts in meaning, interpretation, use of objects, and problem-solving strategies.	The text does not fully depart from the initial way of thinking, and shifts in meaning, interpretation, use of objects, and problem-solving strategies are limited.	The text remains bound to the initial way of thinking and follows a conventional course in the development of the story.
Originality	The text is unique and unusual, with many (5 or more) of the following features: • unconventional plot, • different setting or multiple scenes, • plot twists, • unexpected/surprise resolution, • humor, • transformations in the development of characters, setting, or plot, • depth in the heroes' emotions, • personal involvement in the story, • intertextual elements, • shifts in narrative time, • variety of narrative techniques, • engaging for the reader.	The text has only some (3 or more) unique and unusual features of originality.	The text has none or very few of the unique and unusual features that characterize an original story.

References

[1] Hasso Plattner Institute. *An Introduction to Design Thinking Process Guide* [Internet]. 2019 [cited 2025 Nov 5]. Available from: https://s3-eu-west-1.amazonaws.com/ih-materials/uploads/Introduction-to-design-thinking.pdf

[2] Knight J, Fitton D, Phillips C, Price D, Fitton D, Phillips C. Design Thinking for Innovation. Stress Testing Human Factors in Ideation Sessions. *The Design Journal*. 2019;22:10–12. https://doi.org/10.1080/14606925.2019.1594950

[3] Manias D, Mavrommati I. Creative Narration as a Design Technique. *Information*. 2022;13(6). https://doi.org/10.3390/info13060266

[4] Feuerriegel S, Hartmann J, Janiesch C, Zschech P. Generative AI. *Business and Information Systems Engineering*. 2024;66(1):111–126. https://doi.org/10.1007/s12599-023-00834-7

[5] Jovanovic M, Campbell M. Generative Artificial Intelligence: Trends and Prospects. *Computer*. 2022;55(10):107–112. https://doi.org/10.1109/MC.2022.3192720

[6] Eapen T, Finkenstadt DJ, Folk J, Venkataswamy L. How Generative AI Can Augment Human Creativity. *SSRN Electronic Journal [Internet]*. 2023 [cited 2025 Nov 5]. Available from: https://doi.org/10.2139/ssrn.4759930

[7] Haase J, Hanel PHP. Artificial muses: Generative artificial intelligence chatbots have risen to human-level creativity. *Journal of Creativity*. 2023;33(3):100066. https://doi.org/10.1016/j.yjoc.2023.100066

[8] Runco MA, Acar S. Divergent Thinking as an Indicator of Creative Potential. *Creativity Research Journal*. 2012;24(1):66–75. https://doi.org/10.1080/10400419.2012.652929

[9] Seddon GM. The measurement and properties of divergent thinking ability as a single compound entity. *Journal of Educational Measurement*. 1983;20(4):393–402. https://doi.org/10.1111/j.1745-3984.1983.tb00216.x

[10] Fletcher A, Benveniste M. A new method for training creativity: narrative as an alternative to divergent thinking. *Ann N Y Acad Sci*. 2022. https://doi.org/10.1111/nyas.14763

[11] Grosdos S. *Δημιουργικότητα και Δημιουργική Γραφή στην Εκπαίδευση: από το παιδί γραμματέα στο παιδί δημιουργό κειμένων [Creativity and Creative Writing in Education: from the child as scribe to the child as creator of texts]. Στρατηγικές δημιουργικής γραφής.* Θεσσαλονίκη: Εκδόσεις Πανεπιστημίου Μακεδονίας; 2014.

[12] Boden MA. *The creative mind: myths and mechanisms.* 2nd ed. London: Routledge; 2003.

[13] Heale R, Twycross A. Validity and reliability in quantitative studies. *Evidence-Based Nursing* [Internet]. [cited 2025 Nov 5]. Available from: https://doi.org/10.1136/eb-2015-102129

[14] Moskal BM, Leydens JA. Scoring Rubric Development: Validity and Reliability. *Practical Assessment, Research, and Evaluation*. 2000;7(1). https://doi.org/10.7275/q7rm-gg74

[15] McKnight PE, Najab J. Mann–Whitney U Test. In: *The SAGE Encyclopedia of Research Design.* Thousand Oaks (CA): Sage; 2022. https://doi.org/10.4135/9781412961288.n228

[16] Milenović Ž. Application of Mann-Whitney U test in research of professional training of primary school teachers. *Metodički Obzori (Methodological Horizons)*. 2011;6(1):73–79. https://doi.org/10.32728/mo.06.1.2011.06

[17] Guo K. Exploring an AI-supported approach to creative writing: Effects on secondary school students' creativity. *ResearchGate* [Internet]. [cited 2025 Nov 5]. Available from: https://doi.org/10.13140/RG.2.2.24489.06247

[18] Vicente-Yagüe-Jara MI, López-Martínez O, Navarro-Navarro V, Cuéllar-Santiago F. Writing, creativity, and artificial intelligence. ChatGPT in the university context. *Comunicar*. 2023;31(77). https://doi.org/10.3916/c77-2023-04

[19] Chen B, Zhang Z, Langrené N, Zhu S. Unleashing the potential of prompt engineering in Large Language Models: a comprehensive review. *arXiv preprint* [Internet]. 2023 [cited 2025 Nov 5]. Available from: https://arxiv.org/abs/2310.14735v4

[20] Lo LS. The Art and Science of Prompt Engineering: A New Literacy in the Information Age. *Internet Reference Services Quarterly*. 2023;27(4):203–210. https://doi.org/10.1080/10875301.2023.2227621

[21] Lo LS. The CLEAR path: A framework for enhancing information literacy through prompt engineering. *The Journal of Academic Librarianship*. 2023;49(4):102720. https://doi.org/10.1016/j.acalib.2023.102720

[22] Velásquez-Henao JD, Franco-Cardona CJ, Cadavid-Higuita L. Prompt Engineering: a methodology for optimizing interactions with AI-Language Models in the field of engineering. *DYNA*. 2023;90(230). https://doi.org/10.15446/dyna.v90n230.111700

[23] Han Y, Qiu Z, Cheng J, LC R. When Teams Embrace AI: Human Collaboration Strategies in Generative Prompting in a Creative Design Task. *Proceedings of the ACM CHI Conference on Human Factors in Computing Systems*. 2024:1–14. https://doi.org/10.1145/3613904.3642133

[24] Robertson J, Ferreira C, Botha E, Oosthuizen K. Game changers: A generative AI prompt protocol to enhance human-AI knowledge co-construction. *Business Horizons*. 2024. https://doi.org/10.1016/j.bushor.2024.04.008