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Student Creativity in the Age of AI

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Abstract

As generative AI tools become more accessible in education, questions are being asked about how students engage with them, particularly in creative contexts. Drawing on data from an international Erasmus+/eTwinning project involving students aged 13–15 from three countries (Slovenia, Spain, and Germany), this paper explores how adolescents use AI in school-based creative tasks. Activities such as writing poems, designing logos, and creating short stories were often completed using AI tools with little prompting from teachers. The students' creative work has shown clear, uncritical use of AI — treating it as a shortcut rather than a creative partner. Similarly, students were unable to recognise AI-generated writing, mistaking it for human-written text. This observation aligns with emerging research suggesting that young learners tend to adopt AI for convenience, often without questioning authorship, originality or ethical use. The study highlights the motivational value of AI in creative tasks, as well as the need for explicit guidance to foster critical AI literacy. While students are eager to adopt generative technologies, the findings suggest that educators must play a key role in fostering reflective engagement and ethical awareness. Without pedagogical support, AI has the potential to reinforce passivity rather than empower creativity and digital agency in young learners.

Keywords: AI in Education, Digital Literacy, Creativity, Critical Thinking, Teenage Learners

1. Introduction

Generative artificial intelligence (GenAI) tools such as ChatGPT have rapidly entered classrooms, raising questions about creativity and authenticity in student work. While these systems can support brainstorming and scaffolding, studies show that adolescents often use them to bypass the most demanding phases of creative thinking. For example, Woo found that secondary students relied on AI to expand and shape stories, frequently blurring the line between their own ideas and machine-generated text. Similarly, observed that high-school EFL students engaged in "editing around AI," producing polished texts with little evidence of original ideation (Woo et al, 2025).

This pattern—outsourcing imagination while keeping surface features—illustrates the erosion of academic integrity through over-reliance on AI. Beyond plagiarism, the risk lies in finding creative shortcuts, doing creative work without the deeper cognitive work of idea generation,

iteration, and reflection. Left unchecked, such habits can weaken students' creative confidence, ownership of work, and long-term problem-solving skills (Habib et al., 2024).

This paper examines how 13–15-year-old students in an Erasmus+/eTwinning project used AI in creative tasks such as stories and poems. By analysing these outputs, we highlight patterns of shortcut use, discuss why such practices undermine authentic creativity, and suggest pedagogical strategies—such as process-focused assessment and critical AI literacy (OECD, 2025)—to ensure students learn to use AI as a support rather than a substitute for their own imagination.

2. Background and Theory

2.1. Student AI Use

The use of generative AI among teenagers has increased rapidly. In the United States, the proportion of 13–17-year-olds who reported using ChatGPT for schoolwork doubled from 13% in 2023 to 26% in 2024 (Pew Research Center, 2025). This trend shows how quickly such tools have become part of everyday learning.

This pattern is echoed in higher education. A recent study at the National University of Science and Technology POLITEHNICA Bucharest found that 95.6% of students reported using AI tools in their academic work, with virtual assistants like ChatGPT being the most frequently used (Vieriu & Petrea, 2025). While students appreciated AI for improving efficiency and access to resources, many also expressed concerns about over-reliance, weakened critical thinking, and loss of authorship. These findings reflect a growing tension between the potential benefits of AI and the cognitive risks associated with its uncritical use.

Another recent qualitative research by Martínez-Carrera et al. (2025) involving 69 Social Education students from Spain and Portugal demonstrates that the vast majority (88%) have already incorporated AI into their academic, work, and personal routines. Students predominantly used tools like ChatGPT to search for information, summarise content, and generate images. The perceived benefits included time efficiency, easier comprehension, and increased academic performance. However, participants also acknowledged risks such as losing skills and a growing dependency on technology to perform cognitive tasks.

A growing body of research argues that AI can function as a cognitive scaffold rather than a replacement for human creativity. For example, Bauer et al. (2025) found that AI writing tools can support learning when used in ways that augment rather than substitute student thinking. Their study showed that students who used AI to generate ideas, explore structure, and refine their arguments—while remaining actively involved in shaping the content—demonstrated stronger learning outcomes than those who simply accepted AI outputs without revision. This suggests that the effects of AI depend not just on the tool itself but on how students engage with it. Responsible, reflective use can promote deeper learning and creativity, while uncritical use tends to bypass the mental processes essential for cognitive development.

According to Habib et al. (2024), when students rely too much on AI for generating or improving their work, they risk losing confidence in their own creativity and ownership of learning. This overuse of AI limits the mental struggle that builds imagination and problem-solving skills, leading to short-term efficiency but long-term loss of creative growth. By letting AI generate the content and doing only minimal editing, students skip the very processes—idea generation, experimentation, and revision—that build authentic creative skills.

2.2. Creative Effort

Creativity is not only about producing an attractive final product; it is about training the mind through the process of generating and refining ideas. Research in cognitive neuroscience suggests that creative thinking involves cooperation between two major systems: the default mode network, which generates spontaneous ideas, and the executive control network, which evaluates and shapes them (Beaty et al., 2016). Stronger interplay between these systems has been associated with higher creative performance. Likewise, studies on divergent thinking indicate that when learners practice generating multiple solutions, they strengthen associative pathways that support flexible problem solving (Benedek & Fink, 2019). While this study does not investigate neural processes directly, these insights help explain why sustained creative engagement can foster deeper learning and self-regulation.

Creativity is not a single act but a process involving multiple, interrelated stages. Psychologists have studied this process for over a century, beginning with Graham Wallas's influential four-stage model: **preparation, incubation, illumination, and verification** (Wallas, 1926)**.** More recent models expand these stages but emphasize the same dynamic: creativity requires both spontaneous idea generation and deliberate critical evaluation.

Preparation
The process begins with preparation: collecting information, defining the problem, and exploring possible directions. At this stage, learners activate prior knowledge and gather raw material for future ideas. In education, this stage requires students to engage actively with a task, not simply hand it over to an external system. When AI generates this groundwork, students may never fully enter the preparation stage themselves.

Incubation
After preparation comes incubation—an often unconscious process where ideas are combined and reorganized in the background. Neuroscience connects incubation to activity in the **default mode network**, which supports associative thought and mental simulation (Beaty et al., 2016). Incubation benefits from struggle and delay; when solutions come too quickly from AI, this period of reorganization may be skipped.

Illumination
Illumination, sometimes called the "aha moment," is the stage where an idea suddenly emerges into awareness. Research shows that creative insights involve flexible switching between spontaneous and controlled modes of thought (Beaty et al., 2016). Students who overuse AI often receive ready-made solutions, bypassing the chance to experience these breakthroughs that train mental flexibility and resilience.

Verification
The final stage, verification, requires critical evaluation, refinement, and testing of the idea. This engages the **executive control network** and strengthens skills of judgment and metacognition (Benedek & Fink, 2019). If students allow AI not only to generate but also to polish the output, they may miss opportunities to practice verification and critical revision.

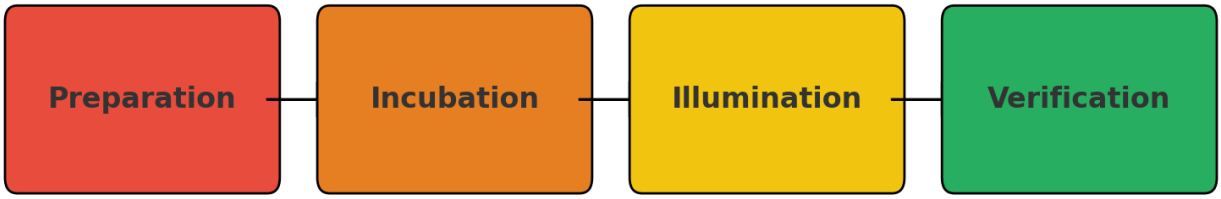

Figure 1: The four stages of the creative process. Based on Wallas (1926) and subsequent models (Beaty et al., 2016; Sawyer, 2012)

Note. From personal archive

Later theories have expanded Wallas's original model, recognizing that creativity doesn't unfold in a straight line. It's much more like a loop—ideas circle back, evolve, and build on one another. Instead of a single spark of inspiration, creativity often looks like a cycle of trial, reflection, and revision. It's both spontaneous and deliberate: coming up with fresh ideas while also refining and shaping them. In the end, real creativity grows out of a balance between free exploration and focused control—the dance between imagination and discipline. The common theme is balance: true creativity requires both exploration and control.

Generative AI can, in theory, contribute to every stage of the creative process. In **preparation**, it can quickly provide background information, summarize sources, or generate lists of possible directions. In **incubation**, it can simulate associative thinking by combining ideas rapidly, offering connections that a student might not have considered. During **illumination**, AI can produce surprising suggestions or alternative phrasings that feel like moments of insight. Finally, in **verification**, it can polish text, improve grammar, and even suggest revisions.

Used strategically, AI may provide valuable scaffolds for students who struggle to start, who lack confidence in their language skills, or who need models for structure and style. In these cases, AI can act as a creative partner. However, if students allow AI to dominate or replace these stages, they risk skipping the mental work that builds genuine creativity.

When external tools are available, people tend to shift cognitive effort away from internal processing—a phenomenon known as cognitive offloading (Risko & Gilbert, 2016). With AI, the risk is that students stop engaging in ideation and problem solving because the system can generate those steps for them. Sparrow et al. (2011) demonstrated the so-called Google effect: when participants expected information to be stored online, they remembered *where* to find it rather than the information itself. AI intensifies this effect by not only storing information but creating new content. Students may remember how to prompt ChatGPT but not how to build ideas independently.

Research shows that meaningful learning requires mental effort. When learners actively recall, reorganize, or reformulate information, they strengthen the connections in their brain and achieve deeper understanding. If students rely on AI to perform these steps for them, they lose valuable opportunities for cognitive struggle and growth. The work may appear fluent and sophisticated, but without personal effort, the underlying learning remains shallow.

Neuroscience underscores why this matters. Creativity requires cooperation between the **default mode network** (responsible for spontaneous associations) and the **executive control network** (responsible for evaluation and refinement). Stronger connectivity between these networks predicts higher creative performance (Beaty et al., 2016). Benedek and Fink (2019) further show that divergent thinking—generating multiple possible solutions—trains associative networks essential for flexible problem solving. By outsourcing idea generation

and refinement to AI, students deprive their brains of practice in precisely these integrative functions.

In short, heavy reliance on AI in the creative process trades short-term ease for long-term cost. The student's work may look polished, but their mind has skipped the struggle that builds creativity, memory, and resilience. Over time, this pattern may weaken not only originality but also the confidence to generate and refine ideas independently.

Without structured guidance and critical AI literacy education, students risk developing uncritical habits that prioritise output quality over cognitive engagement. Responsible integration of AI in education requires a dual focus: equipping students with practical AI skills and embedding reflective practices that maintain the value of human creativity, judgment, and empathy.

2.3. The Challenge of Detecting AI Use

One of the central problems schools face is that it is extremely difficult to prove whether a piece of writing was generated with AI. Current AI-detection tools are unreliable: they produce high rates of false positives (flagging human text as AI-written) and false negatives (failing to recognize AI-generated passages). This makes it nearly impossible for teachers to rely on them with confidence. A genuine student essay can be wrongly marked as machine-written, damaging trust and morale, while a perfectly polished AI-produced text can slip through undetected.

The problem is further complicated by how quickly AI models evolve. Each new version of a language model becomes more fluent, more natural, and better at imitating human imperfections—sentence variety, small grammar slips, even regional expressions. At the same time, many detectors lag behind, trained on older data that no longer reflects how current AI systems write. As a result, teachers are often left guessing, relying on their intuition or their familiarity with a student's usual writing style rather than any definitive evidence.

Another reason detection is difficult is that once a student edits even a small portion of AI-produced text, most traces of its machine origin disappear. Polished AI sentences blended with a few student phrases can create work that looks plausible but is effectively untraceable. Teachers often describe this as "editing around AI" (Woo, Yu, & Guo, 2025).

At the same time, younger students who produce work in English present a particular exception. In lower-secondary classrooms, especially in EFL classrooms, teachers are highly familiar with each learner's approximate level of English proficiency. When a 13- or 14-year-old suddenly submits a flawless essay at the level of C1, when they are normally at the level of A2, it is easier for teachers to suspect AI involvement. They may recognize discrepancies in vocabulary, grammar, or stylistic complexity compared with earlier work. This makes AI detection in foreign-language writing at younger ages somewhat easier than in higher education, where student proficiency levels are more advanced and varied.

Building on this theoretical foundation, the following case study explores how adolescents in a European school project engaged with AI in creative classroom tasks—providing a practical view into how these cognitive and ethical tensions manifest in real educational contexts.

Beyond classroom practice, recent international policy frameworks emphasize that preparing young people for life with AI requires both critical understanding and ethical awareness. The *European Commission's Digital Competence Framework 2.2 (DigComp 2.2)* identifies "interaction with AI systems" and "data and algorithmic awareness" as key competences that all citizens should develop (European Commission, 2022). In a similar vein, Miao and Holmes *(2023)*, writing for UNESCO, stress that schools should encourage transparent and creative

engagement with generative AI, rather than uncritical use or outright restriction. Their guidance calls for approaches that integrate reflection, collaboration, and ethical dialogue into AI-supported learning. Complementing these perspectives, the *OECD's Evolving AI Capabilities and the School Curriculum* (Fuster Rabella, 2025) highlights the need to redesign curricula and assessment practices so that students learn not only to use AI tools effectively, but also to question how these tools shape creativity, authorship, and learning outcomes. Together, these frameworks point to a shared educational priority: fostering AI literacy that empowers students to think critically and act responsibly, rather than simply to consume or reproduce AI-generated content.

3. Methodology

This paper adopts a qualitative case study approach, integrating classroom observations with artifact analysis to explore how adolescents engage with generative AI (GenAI) in school-based creative tasks. The research was embedded in the *Bridging Borders, Embracing Diversity* Erasmus+/eTwinning project, involving 75 students aged 13–15 from Slovenia, Spain, and Germany. The working language was English, and the students' CEFR proficiency levels ranged from A2 to B2, with occasional instances of C1-level competence.All students participated through blended or fully online activities and were enrolled in lower-secondary (Spain and Germany) or primary school (Slovenia). Parental consent was obtained in line with school policies, and student data were anonymised for analysis. Students worked on several open-ended creative tasks, including:

- designing project logos,
- writing poems on fair trade,
- writing short stories (the Monster of Lake Bled).

Data sources included:

- student outputs (poems, logos, stories, comments),
- teacher observations and reflective notes,
- classroom discussion documented informally.

In total, students produced thirty-nine logo designs (approximately one third from each partner country), five collaborative poems on fair trade, and nine short stories inspired by local legends. The logo activity was completed anonymously through online submission, so individual contributions could not be traced to specific students or national groups. The fair-trade poems were written by five mixed-nationality groups during mobility in Germany (8 students from Slovenia, 8 from Spain, and 16 from Germany), who later acknowledged in class discussions that they had relied on AI-generated text to support writing. The present paper focuses primarily on the short-story task, as it generated the clearest and most varied evidence of AI involvement, while the poems and logos serve as supplementary context for understanding broader patterns of creative engagement.

Collected artifacts were analysed using basic thematic coding. A coding frame was developed to distinguish levels of AI involvement:

1. Authentically student written,
2. Likely student written,
3. Likely AI-generated,
4. Highly likely AI-generated.

Four English language teachers independently reviewed samples to validate coding consistency, discussing discrepancies to ensure reliability. The teachers then collaboratively identified patterns of AI involvement, discussed discrepancies, and refined categories.

To ensure interpretive validity, AI involvement in student work was cross-verified through triangulation across multiple sources. For example, four English teachers independently reviewed all nine story samples for linguistic and stylistic indicators of AI-generated text, such as advanced lexical precision, uniform tone, and absence of common learner errors. The reviewers reached full consensus on which stories were likely AI-assisted. These judgments were later confirmed by student admissions during post-task reflection sessions, providing strong convergent evidence of AI use. This multi-perspective approach increased confidence in the accuracy of interpretation and mitigated researcher bias.

No personally identifiable data were collected. The project followed ethical guidelines for school-based projects, including parental permission and student consent. Teacher observations were anonymised, and student work was used with institutional consent.

Several limitations should be acknowledged. The study is observational in nature and does not include a control group. The sample size is relatively small, as it involves only 75 students. AI involvement was inferred through linguistic analysis and comparison to student proficiency levels, rather than on technical verification. Although this method proved useful in detecting inconsistencies, it remains interpretive and subject to human error. Quantitative summaries presented in the findings (e.g., proportions of AI-assisted stories) were calculated based on the total number of artifacts submitted for each task. For example, five of the nine short stories (≈56%) were identified as showing clear AI involvement. Percentages reflect relative frequencies rather than statistical generalizations. Because contributions such as logos were submitted anonymously and some written tasks were completed collaboratively, the data could not be fully disaggregated by individual student or national group. Missing or incomplete submissions were excluded from calculation. Given the qualitative design and small sample size, no inferential statistics or cross-country comparisons were conducted; instead, the quantitative indicators serve a descriptive and interpretive purpose, supporting thematic insights.

Despite these limitations, the study offers timely insight into the ways adolescents are incorporating AI into creative schoolwork and highlights pedagogical needs around critical AI literacy.

4. Case Study: Bridging Borders, Embracing Diversity

4.1. Context and Participants

This case study was carried out within the Erasmus+/eTwinning project *Bridging Borders, Embracing Diversity – Learning Through Travel* that lasted from early 2024 to June 2025. The project brought together lower-secondary students aged 13–15 from Slovenia, Spain, and Germany to explore themes of tourism, sustainability, intercultural understanding, and European identity. 75 students participated from the three partner schools in online activities. Of these 36 participated on mobility in Slovenia, 36 on mobility in Germany, and 32 on

mobility in Spain. All students participated in two mobilities. Because all working groups were international, combining students from different partner schools, it was not possible to compare AI use or language performance across national contexts. All of them worked on the common goal to create a pamphlet on the three countries on the following six topics: nature, sustainability, language, food, school, and people, exploring the topics in all three countries in international groups. Apart from the end goal of creating the pamphlet the students worked online throughout the year on different tasks on the topics of sustainability, language learning, tourism, etc.

Students' English proficiency ranged from A2 to B2, with some demonstrating occasional C1-level competence. None were native speakers, and all had studied English as a foreign language for over eight years.

4.2. Creative Tasks

As part of the project, students undertook a series of open-ended creative assignments. These included writing short stories inspired by cultural heritage and local legends (for example, *The Monster of Lake Bled*), composing poems on the theme of fair trade, designing logos and posters to represent the project, and producing texts on the six topics for the final pamphlet.

Students were free to choose their own approaches, tools, and formats for completing the creative tasks. The focus was on imagination, collaboration, and personal expression rather than on the specific methods or technologies used. As the projects unfolded, it became clear that digital tools played a significant role in shaping the final outcomes. The following sections describe how these technologies were reflected in students' work.

4.3. AI Use in Student Work

4.3.1 Short Stories

During the mobility in Slovenia, 36 students participated—8 from Germany, 10 from Spain, and 18 from Slovenia. They were organised into 9 international groups of 4 students each and tasked with collaboratively writing short stories inspired by the legend of *The Monster of Lake Bled*. The assignment did not mention AI use for the writing component. However, after the stories were completed, students were instructed to create accompanying illustrations using AI-based image generation tools.

The completed stories were published on a shared Padlet board and circulated for peer review. Feedback was invited not only from the participating mobility students but also from other students in the project who did not travel to Slovenia. In addition to commenting on the stories, students were asked whether they believed a particular story had been generated with the help of AI.

All participants were learners of English as a foreign language, with approximately seven to eight years of formal instruction. Their proficiency levels ranged from A2 to B1 on the CEFR scale, with only a few students occasionally reaching B2. In total, nine groups submitted nine stories. Of these, five exhibited clear indicators of AI involvement. Percentages reported here (e.g., five of nine stories ≈56%) follow the calculation approach described in the Methodology section, based on total task submissions rather than individual students. These five stories included advanced vocabulary typical of C1–C2 English and flawless grammar—features not consistent with the students' usual written output. Two stories showed partial signs of AI assistance, although these were less conclusive. The remaining two stories were shorter, less polished, and contained grammatical mistakes and simpler vocabulary, consistent with authentic A1–A2 level writing.

Table 1: CEFR Language Proficiency Levels

Level	Descriptor	Typical Ability
A1	Beginner	Can understand and use very simple expressions; can introduce themselves and interact if the other person speaks slowly and clearly.
A2	Elementary	Can communicate in simple and routine tasks; can describe aspects of their background and immediate environment.
B1	Intermediate	Can deal with most situations likely to arise while traveling; can produce simple connected text on familiar topics.
B2	Upper-Intermediate	Can produce clear, detailed text on a range of subjects and explain viewpoints on topical issues.
C1	Advanced	Can use language flexibly and effectively for social, academic, and professional purposes.
C2	Proficient	Can express themselves spontaneously, very fluently, and precisely, even in complex situations.

Source: Adapted from the Common European Framework of Reference for Languages (Council of Europe, 2020).

To illustrate the differences in language style and likely AI involvement, the following four stories were selected from the nine submitted. They represent four categories identified by teacher reviewers: one that appears to be fully AI-generated, one likely AI-generated, one likely student written, and one written without AI support.

Example 1: Authentically student-written

> *In the lake Bled lived a huge snake, that was eating people. The snake ate many people. But after a lot of dead people the fisherman came and killed snake with harpoon. The snake was so big it couln't desappear, but it turned into an island. And the village people builded a church on it.*

This story is clearly at the A1–A2 level. It contains multiple grammatical errors (“builded,” “couln't desappear”), awkward phrasing, and limited vocabulary. These features are typical of beginner-level EFL learners and strongly suggest the story was written without AI assistance. All four English teachers independently agreed that this text was authentically student-produced.

Example 2: Likely authentically student-written

> *Once upon a time there was a very scary, big monster in the lake of Bled. It was terrific, even the civilians were terrified of it. No one wanted to make the monster angry, because they all knew it would end bad. But some day some fearless students came to the lake, as obvious teenagers they wanted to swim in the lake Bled, they were loud, splashing water in every way they could, they were screaming from happiness. The monster tried to sleep because it was summer time, but because of the fearless students it couldn't. When it woke up it was so angry it swan underwater, under the ground to scare the kids away by coming up. It scared the kids by roaring loudly at them, they got so scared they ran away as fast as they could. The monster went back to its cave trying to rest, but the kids were back again, they were loud again so the beast swam back up but as it swam up with it came a piece of the underwater ground, and that's how to lake Bled got its island.*

This story shows a higher level of coherence and development but still includes numerous grammatical errors (“it would end bad,” “it swan underwater,” “to lake Bled”), run-on sentences, and unusual phrasing. The vocabulary and structure are consistent with A2–B1 level

writing, and the lack of fluency suggests it was student-written. Teachers considered this an authentic student product, though more polished than the first example.

Example 3: Likely AI-generated

> *In the heart of Slovenia, Lake Bled is renowned for its beauty, but beneath its serene surface lies a dark legend. Centuries ago, a small village thrived by the lake, living in harmony with its waters. However, a fierce, serpent like creature guarded the depths, punishing those who exploited the lake's resources.*
>
> *One summer, a group of greedy fishermen ignored the villagers' warnings and overfished the lake. One night, as they celebrated their haul, the waters erupted. The monster emerged, its glowing eyes piercing through the fog. "You have disturbed my home," it roared, capsizing their boat and dragging them into the depths. Only one fisherman escaped, spreading tales of the creature's fury. From that day on, the villagers revered the lake, ensuring harmony between humans and nature. While the monster became a part of local folklore, visitors still sense its presence, often claiming glimpses of scales beneath the surface. The legend of the Lake Bled monster serves as a reminder of the importance of respect for nature and its guardians.*

This story is well-structured, grammatically flawless, and stylistically mature, suggesting language proficiency well beyond that of typical 13–15-year-old EFL learners. The vocabulary ("serene surface," "glowing eyes piercing through the fog") and cohesive narrative style point strongly toward AI involvement. The teachers agreed that this story was most likely generated or heavily assisted by AI.

Example 4: Highly likely AI-generated

> *Once upon a time, in a village nestled deep within the ancient forests of Thalyria, there lived a creature of legend—the Bled Monster. This monster was said to haunt the woods at night, its presence marked by a chilling sound that echoed like a thousand whispers. The villagers called it "bled" because, wherever it went, the trees would bleed sap as if they had been wounded by its passing.*
>
> *The Bled Monster wasn't always a creature of darkness. Centuries before, it had been a man named Eirik, the village's most skilled hunter. Eirik was brave, and the forest had no secrets from him. One day, he ventured deeper into the forest than anyone ever had, determined to find the mythical Heart of the Woods, a powerful crystal said to give immortality to anyone who found it.*
>
> *Eirik searched for days, growing weak and desperate. As the moon reached its zenith, he stumbled upon a glowing cave. Inside, the Heart of the Woods pulsed with a soft, green light. It was more beautiful than any treasure he had ever seen, and without a second thought, he grasped it.*
>
> *But the moment his fingers touched the crystal, the forest grew deathly silent. The trees around him began to tremble, their bark splitting open, oozing red sap. The forest was alive, and it had chosen to punish Eirik for his greed. His body twisted, and his human form melted away. His skin became rough and bark-like, his bones crackled and elongated until he was no longer a man but a hulking creature made of vines and thorns. His eyes.*

This piece reads like fantasy fiction. It contains rich figurative language, internal consistency, sophisticated sentence structures, and advanced vocabulary (e.g., "pulsed with a soft, green light," "his human form melted away"). There are no grammatical or stylistic errors, and the level of narrative far exceeds the capabilities of the target age group. All teachers independently classified this story as highly likely to be AI-generated.

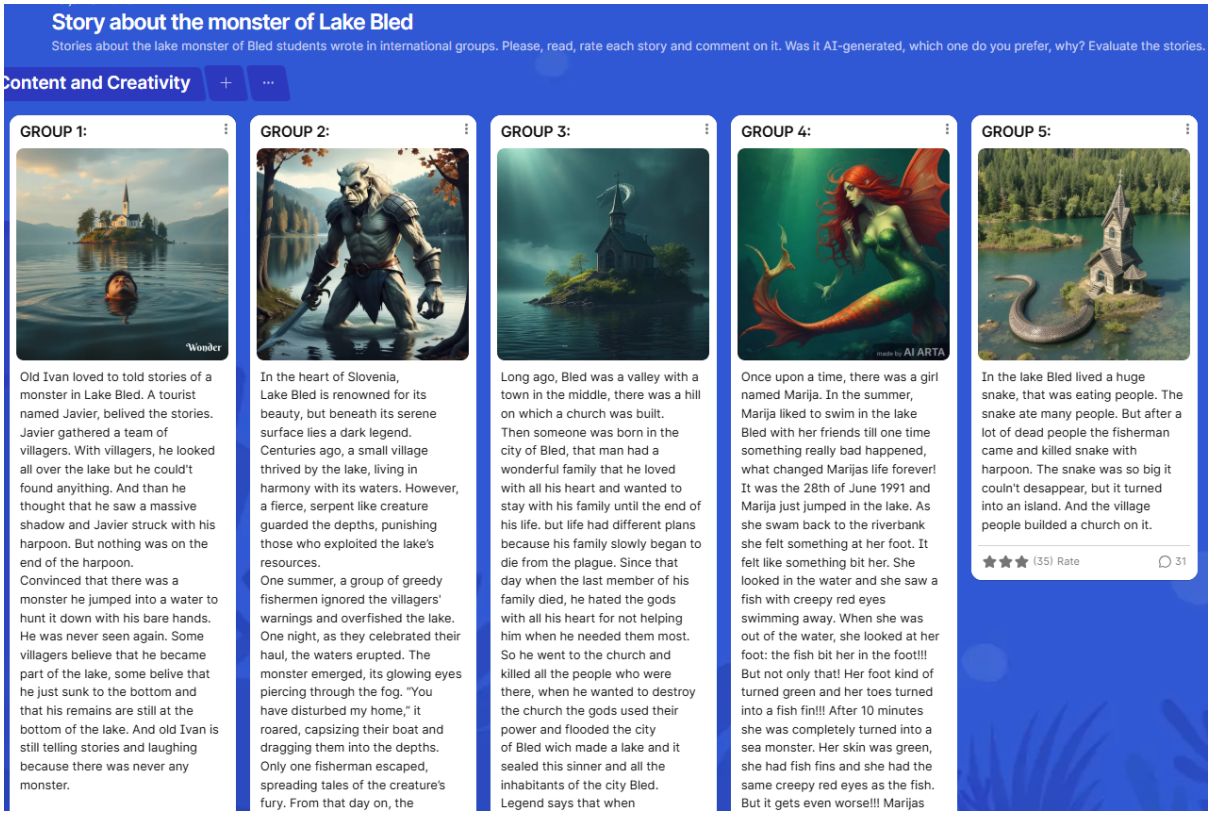

Figure 2: Padlet board where students posted collaborative stories

Source: Student submission, Bridging Borders, Embracing Diversity (2025).

Note. From personal archive

The evaluation of the stories was conducted collaboratively by four participating English teachers from Slovenia, Germany, and Spain, who independently reviewed the texts and agreed on the likelihood of AI use. These assessments were made based on linguistic markers such as vocabulary complexity, grammatical accuracy, and overall coherence, compared with the students' known proficiency levels. As in other studies, absolute proof of AI involvement remained elusive. All nine stories were published on a shared Padlet board, where students could read, comment on, and rate the work of other groups (Pipuš, 2025). The collection is available online: https://padlet.com/darjaps/story-about-the-monster-of-lake-bled-pv8jxnuk52d1siff While the stories themselves showed varying levels of AI influence, the peer comments written by students were often filled with grammatical mistakes and lower-level language, revealing a strong contrast between their natural proficiency and the polished quality of some group outputs. Moreover, the comments demonstrated that students were largely unable to critically distinguish between AI-generated and human-written texts. Many rated the AI-polished stories highly and did not question their authenticity, suggesting limited awareness of what AI-generated writing looks like and a general lack of critical engagement with the task.

Interestingly, when reviewing the stories, many students acknowledged that the texts were sometimes difficult to understand, yet they did not question their authenticity or attribute them to AI.

For example, one student wrote, *"I like the story and how it was written but there were a few words that I didn't understand. But still a very good story ;)"* (Student Comment, Group 2).

Another similarly observed, *"It's a nice story but some of the words are difficult"* (Student Comment, Group 3), while a third commented, *"The story is cool but sometimes it's hard to understand"* (Student Comment, Group 4).

These reactions show that while the vocabulary and phrasing were clearly above the typical level of A2–B1 learners, students did not interpret this as a sign of AI involvement. Instead, they assumed the difficulty reflected the complexity of the story. A number of reviewers even praised the advanced wording: *"Very nice and detailed, and I like the words used"* (Student Comment, Group 6).

Other comments highlighted enjoyment of content or illustrations rather than critical evaluation. For instance, *"I really liked the story and it had some good details"* (Student Comment, Group 5), *"I really like the picture"* (Student Comment, Group 7), or *"Very detailed story but the picture is scary"* (Student Comment, Group 9). Even when students noted that "some of the words in the story are difficult to read" (Student Comment, Group 8), their responses remained positive and uncritical.

Overall, the peer reviews demonstrated that students were not able to differentiate between human-written and AI-assisted texts. Instead, they accepted advanced vocabulary and error-free grammar as part of a "good story," without considering that such features were unusual for their age group.

4.3.2 Poems

On mobility in Germany, which was attended by 32 students (8 from Slovenia, 8 from Spain, and 16 from Germany), participants were assigned a creative task: to compose poems on the theme of fair trade and turn them into graffiti art using chalk on the pavement. The assignment emphasized originality and artistic expression, and at no point was the use of AI suggested, permitted, or discussed.

However, despite these intentions, all student groups independently chose to rely on generative AI tools. Instead of writing original verses, they used AI systems to generate poems or rhyming stanzas, which they then transcribed during the graffiti activity. The results appeared polished and stylistically rich—surprising given the students' typical writing levels.

Initially, the teacher leading the workshop did not suspect any AI involvement and praised the poems as authentic examples of student creativity. It was only when another teacher commented on the unusually sophisticated vocabulary and poetic devices that questions were raised. When asked directly, the students openly admitted that all of the poems had been generated with AI.

This incident highlighted several concerns: not only the ease with which AI tools can be used undetected, but also the students' willingness to outsource creative work without prompting. While the final products were visually engaging and thematically appropriate, the underlying creative process was largely bypassed—raising questions about authorship, engagement, and the value of unassisted expression.

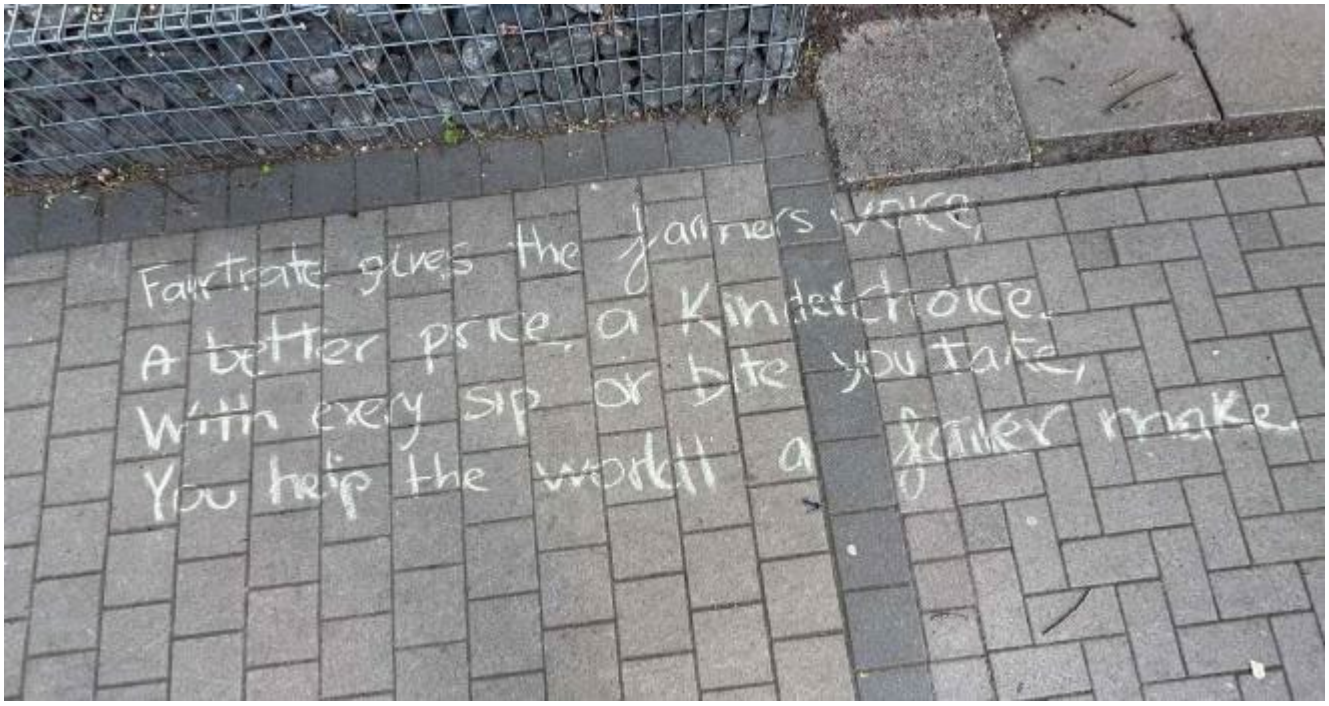

Figure 3: Fair-trade graffiti

Note. From personal archive

In practice, AI use proved to be widespread across the project. Teachers consistently observed that many students turned to tools such as ChatGPT or image generators to complete their assignments quickly and with minimal personal effort. While the instructions encouraged creativity and personal expression, the outputs suggested that students often preferred the efficiency and fluency offered by AI. This was particularly evident in the short stories, which frequently displayed a level of coherence, advanced vocabulary, and stylistic uniformity that was unusual for adolescents of this age and linguistic background. Where teachers expected to see traces of experimentation, drafts with errors, or the playful quirks typical of young writers, they were instead met with texts that read like polished literary products.

The poems on fair trade revealed a similar pattern. Instead of simple rhymes or straightforward phrasing consistent with A2–B1 proficiency, students produced verses containing sophisticated metaphors, idiomatic expressions, and rhetorical flourishes more characteristic of advanced learners or even adult writers. In some cases, the poems carried a moral or philosophical depth that would be difficult to expect from 13–15-year-old EFL students. At first glance, these polished products impressed teachers and peers alike. Yet, upon closer inspection, they raised concerns about authenticity and about how much of the creative process the students had actually engaged in themselves.

Visual products such as logos and posters also showed signs of AI involvement. Designs were sleek, balanced, and polished professionally rarely achievable with beginner-level skills in standard design software like Canva or PowerPoint. Instead of rough sketches, students often submitted final products that suggested a single, AI-generated output chosen and minimally adapted for the task. The uniform quality and absence of developmental stages highlighted how easily AI could bypass not only linguistic but also visual creativity.

What emerged from these examples was not the supportive role of AI as a creative partner but rather its use as a shortcut to bypass effort. Rather than extending or enriching creativity, AI largely substituted for it. Instead of building their own ideas and struggling through the small

but essential difficulties that foster creative growth, students allowed AI to do that work for them.

4.4. Limitations and Generalisability

This study is limited by its small, self-selected sample of 75 students from three partner schools participating in an Erasmus+/eTwinning project. Because activities were implemented within an existing pedagogical framework rather than an experimental design, findings cannot be generalized to other contexts. AI involvement was inferred from linguistic and stylistic indicators and confirmed through student admissions, but not verified through technical tracing tools or software detection, which limits precision. Additionally, the collaborative and anonymous nature of some outputs (e.g., logo designs) prevented analysis by individual or national group. Despite these constraints, the study provides valuable insight into how adolescents engage with generative AI in authentic classroom settings, highlighting patterns of creativity, critical literacy, and ethical reflection that may inform similar educational contexts rather than predict outcomes. These insights form the basis for the discussion of implications for teaching, assessment, and policy.

5. Discussion and Implications

The findings from the *Bridging Borders, Embracing Diversity* project as well as recent research highlight a growing dilemma in education: the use of AI as a support for student creativity versus its misuse as a shortcut that undermines learning. While generative AI has the potential to scaffold creative expression—especially for students with limited linguistic resources or confidence—the reality observed in this case study suggests a trend toward substitution rather than augmentation. Instead of enhancing creativity, AI was often used to bypass it.

This pattern aligns with concerns in cognitive psychology and learning sciences. Research on cognitive offloading (Risko & Gilbert, 2016) shows that when individuals rely on external tools to manage thinking tasks, they engage less deeply in ideation and problem solving. Similar patterns have been documented in studies on digital memory—the so-called "Google effect" (Sparrow et al., 2011)—where learners tend to remember information sources rather than the information itself. In this study, students produced visually and linguistically impressive work, yet the absence of drafts, iterations, and self-correction suggested reduced engagement with the creative process.

Another important finding relates to the difficulty of detecting AI use. Teachers with close knowledge of their students' abilities could recognize sudden leaps in proficiency, particularly in English-language tasks. Yet even experienced educators did not always notice when outputs were AI-generated, as the example of the fair-trade poems showed. This reflects a wider challenge identified in recent research: AI detectors are unreliable, and without process-based assessment, it is nearly impossible to determine with certainty whether a text or design was student- or AI-produced.

Equally revealing was students' own lack of critical engagement with AI-generated texts. When asked to review each other's work, many commented on advanced vocabulary or complex phrasing as a marker of quality but did not interpret these features as evidence of AI involvement. This suggests that adolescents are not yet equipped with the critical AI literacy needed to evaluate or question machine-generated content. If students view fluency and polish as the ultimate goal, they may fail to recognize the value of originality, personal expression, and the cognitive benefits of creative struggle.

Taken together, these findings underscore the urgency for schools to address AI literacy explicitly. Rather than attempting to "catch" students using AI—a nearly impossible task—educators may need to rethink assessment to emphasize process, creativity, and reflection. Collecting drafts, encouraging oral defences, integrating peer review, and assigning in-class creative tasks are strategies that could shift focus from the final product to the thinking behind it. Doing so would not only make AI misuse less appealing but also reinforce the essential skills of problem solving, memory, and creativity that students risk losing when they outsource imagination to machines. Instead of banning AI, teachers can design learning activities that foster responsible use. One such approach involves guided prompt engineering, where students experiment with different prompts to observe how changes affect AI-generated responses. Through comparison and refinement, they begin to understand how input shapes output, and can reflect on tone, structure, and creativity. Co-writing exercises, where students revise AI-generated drafts or blend their writing with machine suggestions, can also prompt valuable reflection on authorship and process.

Reflection protocols are essential to support metacognitive awareness. Students can be asked to explain how they used AI, which parts of the work were generated or adapted, and how the tool influenced their thinking. These reflections may take the form of short notes, video journals, or embedded commentaries. Authorship policies can reinforce accountability: students could be asked to declare the extent of AI involvement in a brief statement or citation, making clear distinctions between original and assisted content. This transparency aligns with broader academic integrity practices and helps students internalize ethical use norms.

Assessment also plays a crucial role. Teachers can shift emphasis from polished final products to the process behind them. By rewarding drafts, planning documents, and evidence of revision, educators can reduce the appeal of fully AI-generated work. Rubrics might value creativity, effort, iteration, and critical evaluation more than surface correctness. In-class, low-tech creativity tasks—such as spontaneous writing, group storytelling, or paper-based brainstorming—can further encourage originality and build confidence in students' own creative voices.

By embedding these kinds of scaffolds across assignments and subjects, schools can help students retain a sense of ownership over their ideas, even as they learn to use AI tools with growing sophistication.

This case study, while revealing, has several limitations. First, the sample size was small (75 students in total), with uneven representation across countries and tasks. The project was not structured as a controlled research study, and participation in mobility varied. AI use was inferred based on linguistic markers, student admissions, and teacher observations, but there was no systematic tracking or verification of tool usage. Thus, conclusions about AI involvement remain interpretive.

The evaluation relied heavily on teacher judgment, which, while informed, is not a substitute for empirical validation. No formal rubrics were used to assess the quality of creativity or the extent of AI influence, and no control group was available for comparison. Furthermore, as AI tools and students' fluency with them evolve rapidly, the findings reflect a moment in time and may not be generalizable.

Despite these limitations, the study offers valuable insights into how adolescents in multilingual, digitally connected classrooms approach creative work in the age of AI.

6. Conclusion

This study has shown that while generative AI offers unprecedented opportunities for support and inspiration, its misuse by students can undermine the very skills education seeks to develop. In the *Bridging Borders, Embracing Diversity* project, many learners turned to AI not as a partner in creativity but as a shortcut that replaced the essential stages of ideation, experimentation, and revision. The result was polished outputs that masked a lack of authentic engagement, reflecting what teachers aptly described as *"outsourcing imagination."*

The findings echo broader research on cognitive offloading and the risks of bypassing productive struggle in learning. They also highlight the difficulty of detecting AI use, even for experienced teachers, and the limited critical awareness students demonstrated when reviewing one another's work. Together, these challenges suggest that policing AI use is neither practical nor desirable.

Instead, educators need to foster AI literacy and redesign assessment to value process as much as product. By emphasizing drafting, reflection, and oral or in-class components, schools can ensure that students remain active participants in the creative process rather than passive consumers of machine-generated content. In doing so, AI can be positioned not as a replacement for imagination, but as a tool to extend and enrich it.

Ultimately, the challenge is not to keep AI out of the classroom, but to teach students how to use it wisely—without losing the deeper cognitive and creative benefits that come only from doing the work themselves.

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