
FROM READY-MADE ANSWERS TO LEARNING SUPPORT: EXPLORING GENERATIVE AI USE IN A RURAL PRIMARY SCHOOL

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Abstract: The rapid development and increasing accessibility of generative artificial intelligence (GenAI) are changing the ways in which students search for information, complete school tasks and interact with learning content. However, the educational significance of GenAI cannot be determined solely by whether students use it or how frequently they do so. An equally important question is what students ask AI to do and how much of the learning process remains their own intellectual activity. This study explores the use of GenAI among students in a small rural primary school in North Macedonia, focusing on the distinction between obtaining ready-made solutions and using AI as support for understanding, practice, revision and the development of independent work. The research was designed as a small-scale exploratory case study employing a mixed-methods approach with a predominantly qualitative orientation. Data were collected through anonymous questionnaires completed by 34 students in Grades 6–9 and 19 teachers. Closed-ended responses were analysed using descriptive statistics, while open-ended responses were examined through thematic content analysis. Explanation was the most frequently reported purpose of students' AI use (63.6%), followed by idea generation (45.5%) and checking their own answers (30.3%), whereas only 9.1% explicitly selected obtaining ready-made answers. More than half of the students reported frequently checking AI-generated information and asking follow-up questions. Homework practices also indicated different levels of learner involvement, ranging from limited modification of AI-generated material to attempting tasks independently before consulting AI. The qualitative responses revealed an even more complex continuum of practices. Across Mathematics, Macedonian language and History, AI was described both as a provider of solutions or completed texts and as an explainer, source of ideas, practice partner and revision tool. Particularly significant was the finding that different forms of AI use occurred even within the same school subject. Teachers expressed a comparable distinction, recognising the potential of AI to support learning while identifying risks related to unverified information, copying and reduced independent thinking. The findings suggest that the educational value of GenAI depends less on its mere presence in students' work than on the way it is integrated into the learning process and the extent to which learners retain responsibility for understanding, evaluating and developing the final outcome. The study therefore highlights the importance of guided, transparent and critically engaged GenAI use in primary education.

Keywords: generative artificial intelligence, AI-assisted learning, learner involvement, primary education, rural school

1. INTRODUCTION

The emergence of generative artificial intelligence (GenAI) has introduced a new dimension to education, creating both opportunities and uncertainties as it can produce texts, solve problems, explain concepts, and interactively respond to learners' questions. However, the central educational question is not simply whether GenAI is used, but what learners actually do with it and whether it replaces or supports intellectual effort. Rather than a simple division between using and not using AI, GenAI engagement is better understood as a continuum of practices with varying levels of learner involvement.

International policy frameworks increasingly emphasize this distinction: the *OECD Digital Education Outlook 2026* notes that delegating cognitive tasks to AI may improve immediate work quality without producing corresponding learning gains, whereas pedagogically guided use fosters active engagement. Similarly, UNESCO guidance stresses preserving human agency and ensuring ethical, age-sensitive AI integration (Miao & Holmes, 2023). While GenAI supports explanation, feedback, and idea generation, its use raises concerns regarding accuracy, overreliance, academic integrity, and reduced independent thinking. Addressing these

concerns in North Macedonia, Zdravkova (2026) highlights the difficulty of determining independent authorship and calls for transparent assessment. Further local evidence from Neshkovska et al. (2025) revealed that university students recognised ChatGPT's utility for language tasks but expressed reservations regarding its contribution to critical thinking and creativity.

However, most existing research in North Macedonia and internationally focuses on higher education, leaving the everyday practices of younger primary-school learners understudied. Primary students warrant dedicated attention because they are still forming habits related to independent learning, information evaluation, authorship, and responsible digital resource use. To address this gap, this small-scale exploratory case study examines how students and teachers in a rural primary school in North Macedonia describe GenAI use across concrete learning situations. Combining quantitative questionnaire data with qualitative open-ended responses, the study explores whether AI functions primarily as a source of ready-made answers or as support for explanation, practice, revision, and independent work.

Accordingly, the study addresses the following research questions:

For what purposes do students use generative AI in school-related learning?

How do students describe the role of generative AI in concrete learning situations, particularly in relation to ready-made answers, explanation, practice, and the development of their own work?

How do teachers perceive the benefits and risks of students' use of generative AI for learning and independent thinking?

2. MATERIALS AND METHODS

2.1. Research design

The study was designed as a small-scale exploratory case study employing a mixed-methods approach with a predominantly qualitative orientation. The case-study approach was considered appropriate because the research focused on the experiences and reported practices of students and teachers within one specific educational setting rather than seeking statistical generalisation to the wider population.

Two forms of data were used. Closed-ended questionnaire items provided quantitative information about the frequency, purposes and reported patterns of generative AI use. Open-ended responses provided qualitative accounts of how participants understood and experienced AI-supported learning. The quantitative findings were therefore used primarily to establish the broader context within which the qualitative responses were interpreted. This design also allowed the study to move beyond the question of how frequently AI was used and to examine how students positioned themselves in relation to the AI-generated output: as recipients of completed answers, as users seeking explanation and practice, or as active contributors who used AI-generated material as one element in producing their own response.

2.2. Participants and research context

The study was conducted in a small rural primary school in North Macedonia. The intended participant group consisted of teachers working at the school and students attending Grades 6–9. A total of 53 valid questionnaires were obtained: 34 from students and 19 from teachers.

Among the student respondents, 20 (58.8%) were female and 14 (41.2%) were male. Students from all four upper-primary grades participated. Among respondents for whom grade information was available, eight attended Grade 6, seven Grade 7, six Grade 8 and twelve Grade 9.

The teacher sample consisted of 14 female (73.7%) and 5 male (26.3%) respondents representing different subject areas and levels of professional experience.

The relatively small sample constitutes an intentional characteristic of the case-study design rather than a basis for population-level generalisation. The purpose was to obtain a close view of AI-related practices within a particular school environment and to identify patterns that could inform further research in comparable educational contexts.

2.3. Research instruments

Data were collected through two anonymous questionnaires developed for the purposes of the study: one for students and one for teachers.

The student questionnaire contained nine closed-ended questions addressing the frequency and purposes of AI use, verification of AI-generated information, responses to unclear or conflicting answers, homework practices, follow-up questioning and perceived effects on learning. Several items allowed multiple responses.

Of particular importance to the qualitative component was the final open-ended question:

“Describe a situation in which AI genuinely helped you understand or learn something better. What did you do, and what did the AI do?”

The formulation was deliberately focused not only on what AI provided but also on the student's own contribution. This enabled the analysis to examine different degrees and forms of learner involvement in AI-assisted activities.

The teacher questionnaire similarly contained nine closed-ended items examining teachers' AI use, verification practices, perceived usefulness for individualisation, attitudes towards students' AI use, expectations regarding appropriate use, concerns and self-perceived competence.

The final open-ended question asked teachers to explain how AI could contribute to better learning and in which situations its use could negatively affect students' independent and critical thinking.

2.4. Data analysis

The quantitative component was analysed using descriptive statistics, primarily frequencies and percentages. Considering the size and exploratory nature of the sample, the statistical analysis was not intended to test causal relationships or produce generalisable claims. Instead, it was used to identify broad patterns of AI use against which the qualitative findings could be interpreted.

The open-ended responses were examined using thematic content analysis. Student responses were read repeatedly and coded according to the function attributed to AI within the described learning situation. Initial categories included obtaining a solution or completed product, receiving explanations, generating ideas, practising through additional tasks, organising or simplifying learning material, revising for assessment, translating or clarifying unfamiliar language, and checking information or one's own work.

Attention was also given to the subject context in which AI use occurred. Rather than defining subject categories in advance, these were identified from the students' own responses. Mathematics, Macedonian language and History emerged particularly visibly, alongside examples related to foreign-language learning and presentation preparation.

A further interpretative distinction concerned the student's own role in the activity. Responses were considered in terms of whether AI appeared to replace, partially support, or extend the student's intellectual activity. This distinction was used as an interpretative framework rather than as a numerical measure of learning or critical thinking.

Teacher responses were analysed separately for recurring themes concerning educational support, access to information, practice, verification, independent thinking, copying and responsible use. The two sets of qualitative findings were subsequently compared to identify areas of convergence and divergence between students' reported experiences and teachers' perceptions.

Because the data were self-reported, the analysis does not claim to measure actual learning gains or students' critical-thinking ability. Rather, it examines the ways participants described and understood their interaction with generative AI.

3. RESULTS

3.1. General Patterns of Students' Use of Generative AI

Generative AI was integrated into the learning practices of most surveyed students (N=34), although daily intensive use was rare. Specifically, 44.1% of students reported using AI sometimes, 14.7% used it often, and 5.9% used it almost every day, whereas 26.5% used it rarely and 8.8% reported no use at all.

Rather than seeking completed schoolwork, students primarily accessed GenAI for learning support. When asked about their reasons for using AI, the majority selected obtaining explanations (63.6%), followed by generating ideas (45.5%) and checking their own answers (30.3%). In contrast, only 9.1% explicitly indicated obtaining a ready-made answer, and 3.0% reported faster completion of schoolwork.

Verification practices among respondents were variable: while 51.5% reported checking AI-generated information often or always, one third (33.3%) did so rarely or never. However, students exhibited interactive learning habits. When encountering an unclear AI response, no students reported copying it without understanding. Instead, 50.0% attempted the problem independently, 41.2% asked AI for a simpler explanation, and 51.6% reported asking follow-up questions often or almost always.

Homework practices further demonstrated distinct levels of engagement. Only one respondent reported submitting an AI-generated answer unchanged. Conversely, 40.6% used AI as assistance while writing the final response themselves, and 37.5% attempted the task independently before consulting AI. These findings highlight that frequency of use alone provides an incomplete picture, making the nature of learner involvement the key analytical distinction.

3.2. From “Solve It for Me” to “Help Me Understand”: Students' Accounts of AI-Assisted Learning

Analysis of 25 substantive open-ended student accounts revealed a nuanced continuum of practices rather than a single model of AI use. Notably, contrasting forms of interaction occurred within the same school subjects:

Mathematics (Solution Provider vs. Personal Tutor): Interactions ranged from passive task delegation—where students asked AI to solve a problem and focused primarily on accuracy—to active tutoring, where AI clarified unmanaged homework concepts, explained underlying solution steps, and generated similar practice problems for test preparation.

Macedonian Language (Completed Text vs. Idea Generator): Student practices spanned from transferring substantial authorship by requesting a complete composition to using AI as an initial catalyst for brainstorming ideas while independently writing the final text.

History (Organizing Knowledge and Supporting Revision): Students utilized AI as a scaffold for managing extensive material by summarizing textbook content, facilitating game-based learning, generating self-testing revision questions, and supplying supplementary information when answers were missing from textbooks.

Other Learning Contexts: Students also reported using GenAI for foreign language learning (such as translating English vocabulary and receiving learning strategies for Turkish), as well as generating ideas and visual concepts for presentations.

Across these accounts, follow-up questioning frequently shaped the ongoing interaction. Rather than falling into rigid categories, student experiences reflected a five-point continuum of learner involvement: AI as Answer Provider, Partial Task Support, Explainer, Practice/Revision Partner, Support for Independent Work

3.3. The Teacher Perspective: Support Without Replacing Student Thinking

Fourteen teachers provided open-ended responses that strongly converged with student descriptions. Teachers recognized several educational benefits, describing GenAI as useful for organizing information, generating initial ideas, creating practice exercises, structuring content, and deepening knowledge.

However, teachers repeatedly attached pedagogical conditions to these benefits. They expressed concerns regarding uncritical acceptance of unverified information, direct copying of homework or essays, and a potential reduction in independent student reasoning. Teachers concluded that the educational value of GenAI depends not on the technology itself, but on the purpose for which it is used and the extent to which learners retain responsibility for their own thinking.

4. DISCUSSION

The findings of this small-scale case study suggest that the educational significance of generative AI cannot be understood simply by asking whether students use it or how frequently they do so. A more informative distinction concerns the role assigned to AI within the learning activity and the degree of intellectual involvement retained by the learner. This became particularly visible when the quantitative questionnaire responses were considered alongside students' descriptions of concrete AI-assisted learning experiences.

At first glance, the quantitative findings present a relatively positive picture. Explanation was the most frequently reported reason for using AI, while comparatively few students explicitly identified obtaining ready-made answers as their purpose. Students also reported practices such as asking follow-up questions, attempting tasks independently and checking information through other sources.

The qualitative responses, however, revealed a more complex picture. Students' descriptions ranged from asking AI to solve a mathematics problem or produce a composition to using it for clarification, additional practice, revision, self-testing and idea generation. In Mathematics, for example, AI could function as a provider of a completed solution, but it could also explain a difficult task and generate similar problems for further practice. In Macedonian language, it could generate an entire composition or merely provide an idea that the student subsequently developed. In History, students described AI as helping them organise extensive material, explain topics and generate questions for revision.

This variation supports the view that AI use should be considered as a continuum of learner involvement rather than as a binary distinction between use and non-use. At one end, substantial cognitive or creative responsibility may be transferred to the AI system; at the other, AI becomes a scaffold through which the learner continues to question, practise, evaluate and produce independent work.

This interpretation is consistent with the broader concern raised in the OECD Digital Education Outlook 2026 that successful task completion with generative AI should not automatically be equated with learning. The OECD distinguishes between using AI in ways that substitute cognitive effort and using it within pedagogically meaningful activities that preserve or stimulate learner engagement.

The findings are also broadly compatible with UNESCO's human-centred approach to generative AI in education, which places emphasis on preserving human agency and ensuring that AI supports rather than displaces human intellectual development (Miao & Holmes, 2023). From this perspective, the relevant pedagogical question is not necessarily whether AI was involved in an activity, but whether the student remained an active participant in constructing the final outcome.

4.1. A revealing difference between selected and described behaviour

One particularly interesting finding emerged from the relationship between the closed and open-ended responses. Only a small proportion of students explicitly selected obtaining a ready-made answer as a reason for using AI. Nevertheless, several open-ended accounts described asking AI to solve a mathematics problem or generate a written composition.

This apparent discrepancy should be interpreted cautiously. It does not establish that students intentionally misreported their behaviour. Instead, it may indicate that students do not necessarily categorise such activities in the same way researchers or teachers do. A student who asks AI to generate a composition and then uses that text as an example of how to write more effectively may perceive the interaction as learning assistance rather than simply as obtaining a ready-made answer.

This observation is particularly relevant to research relying on self-reported AI practices. What students select in a predefined questionnaire category and how they describe an actual experience may reveal different dimensions of the same behaviour. In the present study, the open-ended question therefore contributed information that would have remained largely invisible if the analysis had relied exclusively on quantitative response categories.

4.2. Authorship, verification and independent contribution

The qualitative findings also raise questions concerning authorship and academic integrity. The distinction between AI generating a completed product and AI contributing to a product subsequently developed by the learner was particularly visible in writing-related responses. This does not imply that every use of AI-generated text constitutes academic misconduct. Rather, it demonstrates that conventional ideas of authorship become more difficult to apply when human and AI contributions are combined.

Zdravkova (2026) discusses the ambiguity created by generative AI for academic integrity and authorship, particularly when AI-generated material may be presented as independently produced human work. Although the present study concerns younger students and cannot be directly compared with higher-education assessment, its findings suggest that questions about what the learner contributed should begin well before students enter university. Although many students reported checking AI-generated information, a substantial minority did so rarely or never. Teachers' open-ended responses similarly identified unverified information as a concern. Responsible educational use of generative AI therefore involves more than knowing how to formulate a prompt. It requires learners to evaluate output, compare information and recognise that fluent AI-generated responses are not necessarily accurate.

4.3. Students and teachers: more agreement than opposition

An important feature of the findings is the considerable convergence between student experiences and teacher perceptions. Teachers did not generally reject generative AI as an educational tool. They identified potential value in explanation, access to information, practice, organisation and the development of learning materials. Their concerns emerged primarily when AI replaced students' own reasoning, when generated work was copied without meaningful contribution, or when information was accepted without verification.

Students' accounts provide concrete examples of both sides of this concern. Some described delegating tasks to AI, while others described precisely the forms of interaction teachers considered desirable: asking for explanations, practising, revising, comparing and developing their own responses.

The relationship between teachers and students may therefore be more productive if framed around guidance rather than prohibition. Instead of focusing exclusively on detecting whether AI has been used, teachers could ask students to explain how it was used, which parts were generated, what was checked, what was changed and what the student learned through the process.

This interpretation also connects with findings from North Macedonia. Neshkovska et al. (2025), studying university students, found that learners recognised practical benefits of ChatGPT while expressing more reserved views regarding its contribution to areas such as critical thinking and creativity. Although the age groups and educational settings differ, both studies point towards a more nuanced interpretation of GenAI than either unconditional acceptance or rejection.

4.4. Implications of the case study

The findings suggest that schools may benefit from moving beyond rules that focus solely on whether students are permitted to use AI. Students also need guidance concerning how to use it without surrendering ownership of the learning process.

This may involve encouraging students to ask AI for explanations rather than only answers, request additional examples or exercises, compare AI output with textbooks and other sources, identify and correct inaccuracies, and use generated ideas as starting points rather than completed products. For written work, asking students to explain what AI contributed and what they developed themselves could also support greater transparency concerning authorship.

The present study therefore suggests that developing AI literacy in primary education should include not only technical competence but also habits of verification, reflection, transparency and intellectual ownership.

5. CONCLUSIONS

The present case study explored how students in a small rural primary school in North Macedonia reported using generative AI for school-related learning and how teachers perceived the educational opportunities and risks associated with such use. The findings indicate that generative AI cannot be characterised simply as either a learning tool or a shortcut. Its educational role appears to depend substantially on what students ask it to do and what they themselves do with the resulting output.

Students described AI functioning as a solution provider, explainer, source of ideas, practice partner, revision tool and additional source of information. Particularly significant was the variation found within individual school subjects: the same technology could replace part of a student's work in one situation while stimulating explanation, practice or independent development in another. Teachers' responses reflected a similar distinction,

recognising the usefulness of AI while expressing concern about copying, unverified information and the replacement of independent thinking.

The study therefore supports an approach to generative AI education based on guided and transparent use rather than a simple opposition between permission and prohibition. Helping students learn to question AI output, verify information, distinguish between assistance and substitution, and remain responsible for their final work may be more educationally meaningful than focusing exclusively on whether AI was used.

Because this was a small, single-school case study based primarily on self-reported data, its findings should not be generalised to students in North Macedonia as a whole. The study did not directly measure learning outcomes or critical-thinking ability. Nevertheless, the qualitative accounts provide insight into forms of AI-assisted learning that may be difficult to capture through closed questionnaires alone. Future research involving larger and more diverse samples could examine whether the patterns identified here occur across different schools, age groups and subject areas.

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