

Article

AI-Generated, Personality-Tailored Cases in Teacher Education: A Feasibility Study of Student Experiences

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Abstract

Higher education faces increasing demands to address student diversity in engagement, learning preferences, and professional readiness. This study examined the feasibility of integrating personality-tailored case-based learning in teacher education. Building on the Big Five personality model and principles of differentiated, case-based pedagogy, we developed a prototype that generated individualized case descriptions using a personality inventory and generative AI. The intervention was implemented in a teacher education course, with 37 students ($\approx 79\%$) completing an anonymous evaluation survey. Quantitative measures included emotion-word selections and Likert-type ratings of case relevance and group discussions; qualitative data were collected through open-ended reflections. Findings indicated that students experienced the intervention as engaging, relevant, and appropriately challenging. Group discussions received the highest ratings, with students emphasizing the value of peer dialogue for gaining new perspectives and making sense of the cases. Qualitative themes highlighted the realism of personalized scenarios, opportunities for reflection, and the importance of scaffolding, while challenges included unclear instructions and limited diversity among cases. The study demonstrates the feasibility and perceived pedagogical value of personality-tailored cases as a scalable model of differentiation in higher education. Future research should adopt controlled designs to disentangle the effects of personality instruction, feedback, and personalization, and systematically evaluate the distinctiveness of generated cases. By integrating psychological self-insight with authentic practice scenarios, personality-informed case-based learning shows promise for enhancing student agency, reflective competence, and readiness for professional practice.



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1. Introduction

Higher education faces increasing demands to address student diversity in learning preferences, engagement, and professional readiness. In teacher education and health-related professional programs, students must learn to navigate emotionally demanding and interpersonally complex situations, which require both professional knowledge and reflective awareness of their own dispositions. Prior research has shown that personality traits are closely linked to teachers' instructional quality and relationships with students [1–3], and to burnout, conflict management, and well-being among health professionals [4–6].

These findings suggest that awareness of individual dispositions is not only important for understanding variation in professional functioning, but also for supporting resilience and adaptive strategies in demanding contexts. This suggests the need for pedagogical designs that help students connect their personal dispositions to professional practice. Case-based learning is a widely used pedagogical strategy to bridge theory and practice by engaging students in the analysis of realistic scenarios that mirror professional challenges [7,8]. However, most cases used in higher education are generic and do not reflect students' individual strengths, vulnerabilities, or dispositions, thereby limiting opportunities for personalized reflection and context-sensitive learning. As Korthagen [9] points out, teacher education has long struggled to create meaningful connections between theory and practice.

The COVID-19 pandemic accelerated digital transformation in higher education, revealing both opportunities and challenges for AI integration and institutional resilience. Research shows significant disparities in digital competence and resilience among students across different countries and socioeconomic backgrounds [10,11]. AI applications in higher education have grown rapidly, with publications increasing two to three times between 2021 and 2022, focusing primarily on assessment, prediction, AI assistants, intelligent tutoring systems, and managing student learning [12]. Extended reality and AI technologies have enhanced online education accessibility, engagement, and personalization [13]. Thus, these recent advances in artificial intelligence now make it possible to generate personality-tailored cases at scale, offering new ways of integrating psychological self-insight with authentic, practice-oriented learning. This paper presents the development of an innovative educational design that combines personality assessment based on the Big Five personality model [14] with case-based learning. The aim of the pilot study was to test the feasibility of this approach in teacher education, focusing on whether students perceived the intervention as engaging, relevant, and pedagogically valuable.

The initiative draws on research indicating that increased awareness of one's personality traits can enhance self-regulation and adaptive behavior in demanding contexts [15,16]. Grounded in these insights, we developed a prototype for a web-based learning tool that generates tailored case descriptions based on students' responses to a Big Five personality inventory. By integrating artificial intelligence (AI), the tool aims to support scalable personalization of learning content in a pedagogically meaningful way. By enabling students to explore professional dilemmas through the lens of their own traits and tendencies, the design may encourage students to take greater ownership of their learning, reflect on personal–professional dynamics, and develop context-sensitive strategies for action. In this way, the intervention illustrates the potential of personality-informed teaching to support reflective competence and agentic engagement, and contributes to ongoing Scholarship of Teaching and Learning (SoTL) efforts aimed at innovating higher education.

1.1. Theoretical and Pedagogical Framework

The intervention described in this article is grounded in two complementary frameworks: the Big Five personality model and pedagogical principles of differentiated, case-based learning. While the Big Five highlights how enduring dispositions shape behavior in demanding contexts, case-based pedagogy provides a structured way of linking theory to authentic practice dilemmas. In combination, they potentially offer a foundation for cultivating the reflective and context-sensitive judgment, often described in Aristotelian terms as *phronesis* or practical wisdom [9], that is essential in professional education.

The theory–practice gap has long been recognized as a perennial challenge in teacher education [9,17]. Traditional “theory-to-practice” models, rooted in technical rationality [18], have often failed to prepare novice teachers for the emotional complexity and unpredictability of classroom life, leading to what is frequently described as “transition

shock” [19,20]. Research emphasizes that meaningful teacher learning requires not only propositional knowledge (episteme) but also situated, action-guiding judgment (phronesis) that connects theory to the lived realities of professional practice [21]. Case-based and differentiated pedagogies can serve as mechanisms for fostering such judgment. By situating professional dilemmas within learners’ own dispositions and experiences, personality-tailored case-based learning aims to bridge the gap between formal knowledge and the practical wisdom required for professional growth. This approach aligns with broader calls to integrate teacher identity, reflection, and context-sensitive decision-making into higher education pedagogies [22,23].

1.1.1. The Big Five Personality Model in Education

The Big Five model conceptualizes personality across five broad domains, Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism, each comprising six more specific facets, resulting in 30 subscales in total [14,24]. Openness reflects curiosity, creativity, and willingness to engage with novel experiences; Conscientiousness describes self-discipline, reliability, and organization; Extraversion captures sociability and assertiveness; Agreeableness reflects empathy, cooperation, and trust; and Neuroticism (or low emotional stability) refers to tendencies toward emotional sensitivity and stress reactivity [25]. In the context of professional education, personality traits shape how students perceive and respond to social and emotional demands. For example, research has shown that teacher personality traits are associated with student motivation, classroom dynamics, and even student achievement [3,26]. In health professions, traits such as emotional stability and agreeableness are linked to psychological resilience and interpersonal functioning [4,6]. Personality also influences students’ readiness for practice. Many student teachers report “practice shock” when encountering emotionally charged or unpredictable classroom situations for the first time [9,27,28]. Similarly, students in nursing and social care programs face challenges when interacting with difficult patients, families, or team members [29,30]. Enhancing students’ awareness of their own personality profiles may help them anticipate and manage these situations more effectively. Awareness of one’s personality may also enhance student agency by enabling learners to better understand how their dispositions influence decision-making and interpersonal behavior. When students reflect on these patterns, they may be more likely to approach professional challenges with intentionality and autonomy.

1.1.2. Differentiated and Case-Based Learning

Differentiated instruction aims to meet individual student needs by varying content, process, or product based on student characteristics [31]. Research on differentiated and case-based learning in teacher education demonstrates positive effects on various outcomes. Case-based learning effectively bridges the theory-practice gap by helping pre-service teachers understand unique classroom situations and develop diagnostic judgment skills [32,33]. Media-based approaches show promise, with combined video and transcript cases proving most effective for developing classroom management expertise [34]. Problem-based learning enhances diagnostic competence, particularly knowledge and self-concept [35]. A meta-analysis reveals that problem-based, project-based, and case-based learning have small to moderate positive effects on student motivation, with larger effects observed in single courses versus curriculum-wide implementation [36].

While widely practiced in primary and secondary education, differentiated learning designs are less common in higher education, particularly in large-group instruction. By integrating personality profiles into the design of case-based exercises, the present intervention introduces a scalable model of differentiation that targets professional self-

awareness and decision-making. Case-based learning engages students in the analysis of realistic, often complex scenarios that require interpretation, perspective-taking, and applied knowledge [7,8]. It supports both content learning and the development of critical thinking, empathy, and interpersonal skills, core competencies in professions such as teaching and healthcare. By tailoring case narratives to individual profiles, of the students, the current approach seeks to strengthen the connection between the personal dispositions and the professional dilemmas presented. This theoretical and pedagogical foundation informs the development of an innovative tool that not only customizes learning materials to the individual but also addresses the deeper question of how personality awareness can be meaningfully integrated into professional education.

1.2. The Present Study

Building on this theoretical and pedagogical framework, the present study reports on the first pilot implementation of personality-tailored case-based learning in teacher education. The study had two primary aims: first, to introduce and describe an innovative interdisciplinary design that integrates personality assessment, generative AI, and case-based pedagogy; and second, to examine the feasibility of this approach by exploring how students perceived the intervention in terms of engagement, relevance, and pedagogical value. To this end, we developed a web-based tool that generated personalized case descriptions based on students' Big Five personality profiles and implemented it across three course sessions as part of regular teaching. Student experiences were assessed through an anonymous online evaluation survey that combined quantitative ratings and qualitative reflections. While the study is exploratory and not designed for causal inference, it provides systematic evidence of student perceptions and illustrates the potential of personality-informed, AI-supported case pedagogy as a model that could inspire future research, curriculum innovation, and broader professional applications.

2. Methods

2.1. Design, Participants and Procedure

This study adopted a feasibility design [37], focusing on process-oriented questions about whether and how a personality-tailored, AI-generated case-based learning activity can be implemented in practice. The intervention was examined within an undergraduate teacher education course, with the aim of assessing its acceptability, practicality, and perceived pedagogical value. A cross-sectional design was used with a convenience sample of student teachers who participated as part of regular course activities. To capture students' experiences, both quantitative and qualitative post-intervention measures were employed, including rating scales and open-ended reflections. The study was conducted in a teacher education course at the Norwegian School of Sport Sciences. Of the 47 students enrolled in the course, 37 ($\approx 79\%$) completed an online evaluation survey. Participation was entirely voluntary, and all responses were collected anonymously. The intervention was carried out across three sessions, where students engaged with the personality-tailored case design as part of regular course activities. After the third and final session, students were invited to complete the anonymous online survey.

2.2. Measures

The evaluation instrument combined closed- and open-ended items. To capture students' affective reactions to the activity, participants selected up to three emotion words (e.g., engaged, curious, inspired, frustrated). The emotion-word checklist was developed for this study and adapted to the context of teacher education. The selection of words was informed by research on academic emotions [38], but the specific terms were tailored

to capture the range of feelings that students might experience when working with personalized case descriptions and group discussions. They then rated their agreement with a series of Likert-type statements (1 = strongly disagree to 5 = strongly agree) covering two main domains: perceived relevance and meaningfulness of the personalized case, and perceived value of group discussions. Statements included, for example, “The case felt relevant for me as a student teacher”, “The personalized aspect made the case more meaningful”, and “The group discussions helped me understand how different personality traits may influence the teacher role.” The Likert-type items were formulated specifically for this study to capture students’ perceptions of relevance, meaningfulness, and reflective value in relation to the personalized case activity. Their content was informed by research on student motivation and perceived relevance in learning [39], as well as on collaborative learning and reflection in teacher education [40]. Items addressing self-insight were conceptually aligned with theories of transformative and reflective learning [9], but all statements were adapted and phrased to fit the specific context of this intervention. In addition, the survey invited qualitative elaboration. Open-ended prompts asked students to explain why they had chosen specific emotion words, describe how they would present the activity to a peer, reflect on what they found most valuable or challenging, and suggest improvements for future iterations of the intervention. These questions were designed to elicit reflective and meaning-oriented responses in line with theories of experiential and transformative learning, emphasizing how students make sense of their learning experiences and connect them to their developing professional identities [9,41].

2.3. Pedagogical Implementation

The intervention evaluated in this study was conducted as part of regular undergraduate course activities in teacher education, integrated into the existing curriculum rather than organized as a separate experiment. Prior to the course, students received a link to complete the International Personality Item Pool (IPIP-300) questionnaire, a 300-item measure assessing the five broad personality domains—Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism—and their thirty corresponding facets [24]. The IPIP-300 is a publicly available and psychometrically validated measure that has demonstrated high internal consistency and convergence with the NEO-PI-R and other established Big Five instruments [24,42]. The Big Five model has been extensively validated across cultures and applied contexts and is widely recognized as one of the most robust frameworks for describing human personality, with meta-analytic evidence showing that personality traits are strong and consistent predictors of academic and professional performance [43]. Upon completion of the personality inventory, each student was provided with a personalized PDF report summarizing their scores across the five domains and thirty facets, accompanied by brief textual descriptions of each trait. These individualized personality profiles served as the foundation for generating the personality-tailored case descriptions used during the course sessions.

The pedagogical model was scaffolded across three course sessions. In each session, students worked with a personality-tailored case in a structured format, beginning with a short theoretical lecture, followed by individual reflection and group discussion. Group discussions emphasized how personality dispositions may shape professional perceptions and how theoretical insights could inform practical responses. After the third session, students were invited to complete the anonymous online evaluation survey that forms the basis of the present study.

2.4. Technical Implementation

The development process followed a sequence that combined data collection, analysis, and AI-assisted text generation. First, students' personality data were collected and processed; second, individualized feedback reports were produced; third, interview-based and theoretical input was used to define realistic pedagogical challenges; and finally, anonymized profiles were integrated with these challenges to generate personality-tailored case descriptions.

The infrastructure for generating personality-tailored cases was developed in R and R Markdown, allowing for scalable, semi-automated production of individualized student reports and learning materials. Students completed a 300-item Big Five inventory [24] via Nettskjema.no, a secure digital data collection platform. Raw facet scores were cleaned and standardized against a Norwegian norm database of approximately 4000 respondents, using median and median absolute deviation for robustness. These scores were then transformed into Stanine values (1–9), providing interpretable trait profiles relative to the population. Based on these anonymized profiles, R Markdown generated individualized PDF reports. Each report included the student's Stanine scores across 30 facets (i.e., personality traits) and interpretative text highlighting possible implications for classroom practice (e.g., how low Assertiveness might influence boundary setting or how high Emotional Volatility could affect stress regulation), and descriptions of the personality traits (see Figure 1 for an example Big Five personality report, with all 30 facets). The report was provided to the students before the first lecture, so they could familiarize themselves with their scores. In addition to the personality assessment, students conducted short peer interviews about their practicum experiences, focusing on emotionally and pedagogically demanding situations. Recurrent themes from these interviews were distilled into pedagogical "triggers." These text descriptions were combined with relevant theoretical perspectives from the course to form the contextual backbone of each prompt. Thus, each AI-generated case drew on three inputs: personality data, a real-world practicum challenge, and a theoretical learning theme.

In addition to the general report, case descriptions were created through carefully designed prompts to the OpenAI GPT model. Prompts combined anonymized trait profiles with pedagogical triggers drawn from common practicum challenges. Outputs followed a standardized structure, consisting of a short scenario, a disruption or dilemma, and open-ended reflection questions. Generated cases were reviewed iteratively by the teaching team to ensure appropriateness, accuracy, and alignment with the intended personality dimensions. During early test runs, some outputs included overly explicit references to personality traits or used language that sounded evaluative rather than reflective. To address this, we refined the prompts to emphasize implicit expression of personality through tone, dialogue, and emotional reactions, and to ensure that each case remained pedagogically neutral and realistic.

We also adjusted model parameters (temperature and token limits) to improve coherence and reduce unnecessary narrative variation. Prompts were refined through multiple test runs until the outputs consistently reflected both the targeted traits and realistic classroom dilemmas. Further adjustments were made to keep the length, tone, and cognitive challenge comparable across cases, so that personality differences were conveyed through subtle emotional and behavioral cues rather than explicit labeling. Prompt design emphasized pedagogical coherence and alignment with themes identified through peer interviews. All data transmitted to the GPT model were fully anonymized, restricted to Stanine scores and trait labels, with no personally identifying information included. The process was therefore fully compliant with GDPR standards. The detailed R functions and prompt design used to generate personality-tailored cases are provided in the

Supplementary Materials (Supplementary File S1). An abbreviated example of an AI-generated, personality-tailored case description is presented below to illustrate the format and narrative structure. Full case examples representing contrasting personality profiles are provided in Supplementary File S2.

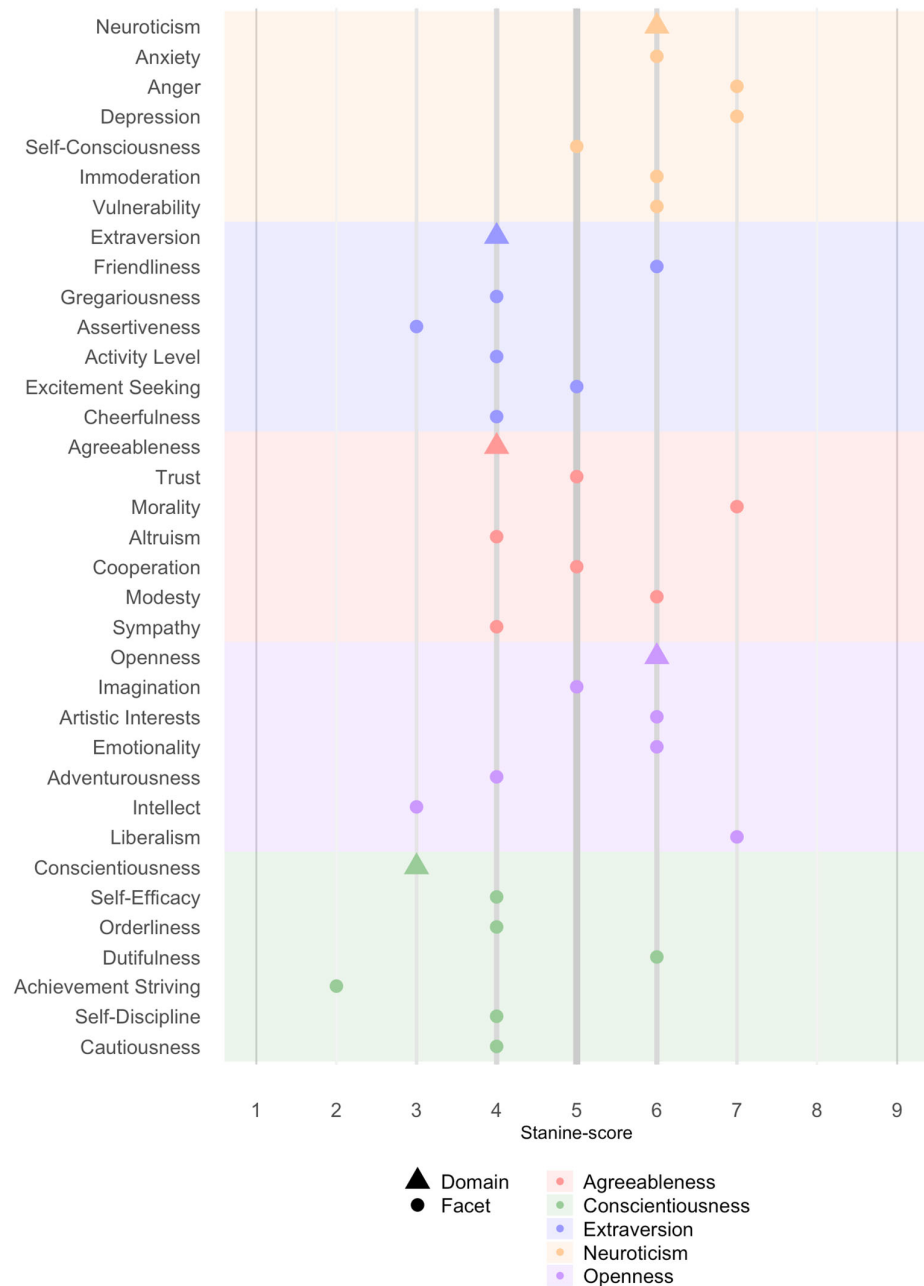


Figure 1. Example of a Personalized Big Five Facet Profile (30 Facets) Distributed to Students. Each bar represents a Stanine score (1–9), indicating how the individual’s facet score compares to a normative reference sample ($M = 5$, $SD \approx 2$). Scores of 1–3 represent relatively low levels on a facet, 4–6 indicate average levels, and 7–9 reflect relatively high levels. The profile was provided to students to support self-reflection and discussion prior to the case-based learning sessions.

Excerpt—Case 1: High Agreeableness and High Conscientiousness

Background: Maja is a newly qualified physical education teacher working with a class of 30 students aged 16–17. Many of the students have previously shown limited interest in physical education. Maja is known among colleagues for her friendly and caring

nature and her strong desire to support all her students. She strives to create a safe and positive classroom atmosphere.

Problem or challenge: During a Tuesday afternoon class, Maja notices that several students seem disengaged. One of them, Emma, sits quietly on the bench and tells Maja she feels exhausted and anxious. Maja faces a dilemma: should she interpret this as a genuine need for support or as an excuse to avoid participation? She wants to show empathy, but she is aware that other students are watching closely.

Reactions and emotions: Maja feels torn between empathy and fairness as she tries to maintain engagement in the group while supporting Emma.

Open reflection questions: (1) How could Maja balance her wish to show empathy with the need to maintain fairness and structure? (2) How might Maja's personality shape her response in this situation? (3) How can teachers be better equipped to identify and respond to students' mental health challenges?

2.5. Data Analysis

Quantitative data were analyzed descriptively using R (version 4.4.2). For each Likert-type item, distributions and frequencies were plotted. Emotion word selections were summarized as frequency counts to illustrate overall affective patterns. All open-text responses were first screened for potentially identifying information, such as names of individuals or schools, and no such information was detected. Open-ended responses were analyzed using a conventional content analysis approach [44], where categories were derived inductively from the data. Responses were read iteratively, and recurrent ideas were grouped into a small number of descriptive categories. To indicate relative salience, we quantified how many students mentioned each category and included representative quotations to illustrate the content of each. Attention was given to both convergent and divergent perspectives in the material. The categories are presented with descriptive counts of how often they appeared and illustrated with selected quotations, which were lightly edited for clarity and to preserve anonymity.

2.6. Ethical Considerations

The pedagogical activity was developed and implemented as part of regular course instruction. Students were informed in advance about the activity and how the personalized cases were generated using AI. Data collection was limited to a voluntary and anonymous evaluation survey conducted at the end of the module. Students were informed that participation was optional, and no course credit or incentives were linked to participation. All responses were anonymous, and open-text entries were screened for potentially identifying details (e.g., names of individuals or schools); no such information was found. The approach was reviewed with the institutional Data Protection Officer at the Norwegian School of Sport Sciences and discussed with the Student Council. The Big Five personality inventory was collected and processed solely for pedagogical purposes as part of ordinary teaching activities. These data were handled securely through institutional systems and anonymized before being used to generate personalized cases. No personality data were used in, or linked to, the voluntary evaluation survey that forms the basis of this study.

3. Results

The findings are presented in two parts. First, we report the quantitative results from the evaluation survey, including students' emotional reactions, ratings of case relevance, and perceptions of group work. Second, we present the qualitative themes that emerged from open-ended responses, which provide deeper insight into what students experienced as most valuable, most challenging, and in need of improvement.

3.1. Quantitative Results

Students reported a range of immediate emotional reactions to the personalized case activity (Figure 2). The most frequently selected descriptors were educational, engaged, and curious, while fewer students chose negative words such as frustrated, confused, or overwhelmed. Ratings of case relevance items indicated generally positive perceptions (Figure 3). Most students agreed that the case felt relevant ($M = 3.95$, $SD = 1.05$) and meaningful ($M = 3.81$, $SD = 1.08$), and that it provided a useful challenge ($M = 3.68$, $SD = 1.08$). Fewer students strongly endorsed the item “I learned something new about myself as a future teacher” ($M = 3.03$, $SD = 1.04$). Group work items received the highest ratings overall (Figure 4). Students particularly valued the opportunity to contribute their own reflections ($M = 4.30$, $SD = 1.00$) and reported that the discussions made the cases more educational ($M = 4.22$, $SD = 0.71$). Ratings were somewhat lower, though still positive, for items related to gaining new perspectives ($M = 3.62$, $SD = 0.95$) and understanding the influence of personality traits on the teacher role ($M = 3.57$, $SD = 1.12$).

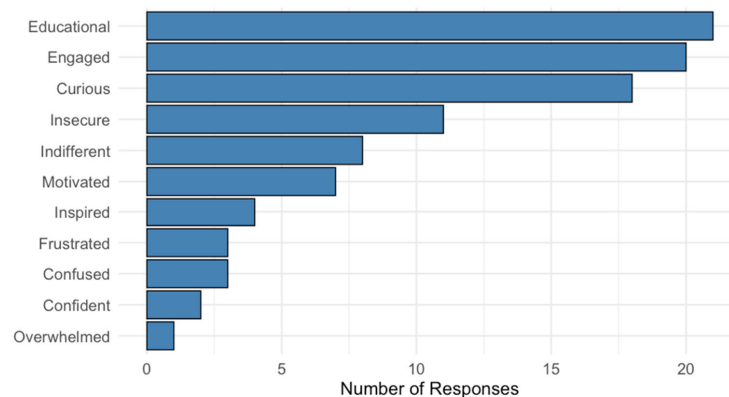


Figure 2. Frequency of Selected Emotion Words Describing Students’ Experience of the Personalized Case Activity. The figure shows how often different emotion words were chosen by students to describe their immediate reactions to working with the personalized case.

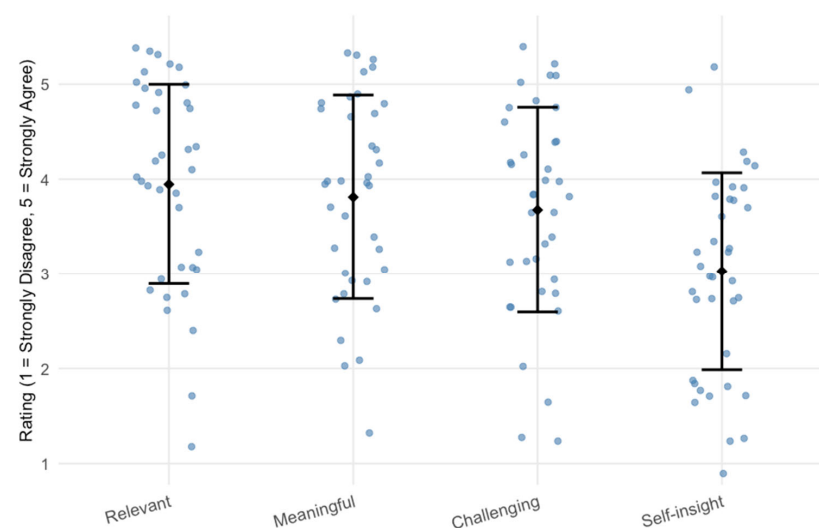


Figure 3. Student Ratings of Personalized Case Relevance Items. The figure displays student responses ($n = 37$) to four evaluation items: “The case felt relevant for me as a student teacher”, “The personalized aspect made the case more meaningful”, “The case challenged me in a useful way”, and “I learned something new about myself as a future teacher.” Each dot represents one student’s rating on a 1–5 scale, with horizontal jitter added to improve readability and ensure anonymity in the visualization. Black diamonds indicate mean values, and vertical lines represent ± 1 standard deviation.

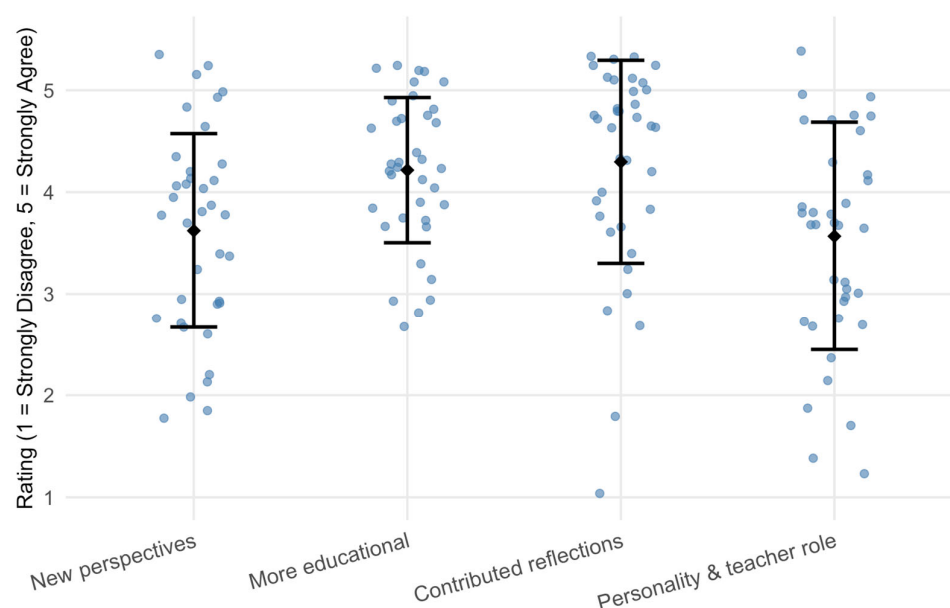


Figure 4. Student Ratings of Group Work Items. The figure displays student responses ($n = 37$) to four evaluation items: “Hearing about others’ personalized cases gave me new perspectives”, “The group discussions made the case more educational”, “I felt able to contribute my own reflections”, and “The discussions helped me understand how different personality traits may influence the teacher role.” Each dot represents one student’s rating on a 1–5 scale, with horizontal jitter added to improve readability and to ensure anonymity in the visualization. Black diamonds indicate mean values, and vertical lines represent ± 1 standard deviation.

3.2. Qualitative Results

Students provided written reflections across several open-ended prompts. As summarized in Table 1, many emphasized that the cases felt realistic and relevant, though some noted that the fit to their teacher role was less precise. Group discussions were most often described as valuable, with students reporting that dialogue with peers deepened their understanding and provided new perspectives. Challenges most frequently mentioned were unclear instructions and difficulty answering the open-ended questions individually. Suggestions for improvement included more diverse cases within groups, clearer scaffolding, and, for some, in-person rather than online sessions. Students most often recommended keeping the personalized case descriptions, the group reflections, and the introductory lecture.

Table 1. Categories from qualitative responses to open-ended questions ($n = 37$).

Category	No. of Students Mentioning	Example Quotation (Translated)
What did you like best?		
Group discussions and peer learning	18	“In the group it became easier to understand, and it was fun to discuss different solutions.”
Personalized case descriptions	9	“The personalized case description was very useful.”
Opportunity for reflection and realism	7	“I recognized myself in the case; it could have been me in that situation.”
What did you find most challenging?		
Open-ended questions difficult to answer alone	10	“The open questions were difficult to answer alone, but easier when we discussed them.”
Unclear task purpose or instructions	7	“It was a bit unclear in the beginning what we were supposed to learn.”
Linking theory to practice	5	“I was unsure how to connect the neuroscience lecture to the case.”

Table 1. Cont.

Category	No. of Students Mentioning	Example Quotation (Translated)
What should be improved?		
More diverse cases within groups	8	"The cases in my group were very similar; it would have been more useful if they were different."
Clearer instructions/more scaffolding	7	"It would help to have a longer introduction and more examples."
In-person sessions (instead of Zoom)	5	"Better to meet live for discussions, even if Zoom works as a backup."
What should be kept?		
Personalized case descriptions	10	"The personalized case description was very useful."
Group reflection and discussions	12	"The group discussions were the most valuable part."
Introductory lecture	6	"The short lecture in the beginning was helpful."

4. Discussion

The present pilot study examined the feasibility of integrating personality-tailored case-based learning in teacher education. Overall, students reported positive experiences with the intervention. Quantitative results showed that the cases were perceived as relevant, meaningful, and appropriately challenging, with group discussions rated especially highly in terms of pedagogical value. The most frequently chosen emotion words, educational, engaged, and curious, indicate that the activity was experienced as stimulating rather than overwhelming. Qualitative reflections highlighted the value of peer discussions, the realism of the personalized cases, and opportunities for professional reflection. At the same time, students noted challenges related to unclear task framing and difficulties in responding individually to open-ended questions related to the personalized cases, underscoring the importance of instructional scaffolding.

4.1. Pedagogical Value of Personality-Tailored Cases

The findings support the notion that personality-informed case descriptions has the potential to help bridge the longstanding gap between theory and practice in teacher education [9]. Students' positive ratings of case relevance and group work outcomes resonate with prior literature on the benefits of case-based learning for critical thinking, empathy, and applied problem-solving [7,8]. By aligning case narratives with individual dispositions, the intervention appeared to create engagement and recognition, as several students noted that they could "see themselves" in the cases. While self-insight ratings were somewhat lower than perceived relevance for teaching practice, this may reflect that students interpreted the cases primarily as pedagogical rather than psychological exercises. Still, the reflective and dialogical elements of the activity suggest that students were engaging with aspects of professional wisdom, or *phronesis* [9]. Through discussion of their personalized cases, they were encouraged to connect theoretical perspectives with their own experiences and situational judgments. Although this study did not examine such reflective capacities directly, students' qualitative responses suggested that the activity fostered perspective-taking, contextual awareness, and exploration of alternative actions, elements that resonate with the notion of professional wisdom in practice-oriented education.

4.2. Challenges and Areas for Improvement

Despite overall positive evaluations, several challenges were identified. First, students expressed difficulty in answering open-ended questions related to their personalized cases individually, pointing to a need for more structured prompts or stepwise guidance. Second, some students reported uncertainty about the purpose of the activity, indicating that the

link between the theoretical lecture, the personality profiles, and the case tasks should be made more explicit. Third, the homogeneity of case descriptions within groups was highlighted as a limitation; if all members receive similar scenarios, opportunities for perspective-taking are reduced. Addressing these issues may involve diversifying case generation within groups, clarifying task instructions, and integrating scaffolding strategies to support individual reflection before group work.

4.3. Implications for Higher Education Innovation

This feasibility study illustrates how artificial intelligence can be used to scale differentiated instruction in higher education. While differentiation has been a longstanding concern in professional education, most existing approaches rely on generic adaptations rather than systematic personalization [7,8]. Our findings suggest that AI-driven tailoring of learning materials can provide a scalable pathway for integrating learner attributes into pedagogical design in professional programs. By situating professional dilemmas within the lens of students' own dispositions, the intervention has the potential to encourage agentic engagement and to support the development of reflective competence. However, careful design choices are needed to balance personalization with collective learning. Group work emerged as the most valued element, indicating that the pedagogical strength lies not only in individual tailoring but in how personalization can serve as a catalyst for dialogue and shared meaning-making. While the findings are promising, much more systematic research is needed to establish the effectiveness, distinctiveness, and scalability of AI-generated personalized cases in higher education.

4.4. Limitations

This study has several limitations. First, the sample was relatively small and drawn from a single course, which limits generalizability across disciplines and institutional settings. Second, the evaluation emphasized feasibility and student perceptions rather than direct learning outcomes, making it unclear whether the intervention contributes to professional competence or long-term development. Third, the intervention relied on static, text-based cases. While this ensured feasibility, it does not fully capture the dynamic and unpredictable nature of professional practice. Another important limitation concerns the rationale and scope of personalization. Although our design assumed that tailoring cases to personality profiles would enhance engagement and self-reflection, the necessity of this level of personalization remains uncertain. Rich, well-designed generic cases can also support agency, perspective-taking, and critical reflection. Moreover, the extent of differentiation achieved through personalization was not systematically examined. The generated cases were adapted to reflect specific traits, but we did not catalogue or analyze how much they diverged from each other or from generic case materials. A further limitation is that the study design did not allow us to disentangle the specific contribution of different components—personality instruction, individualized feedback, and case personalization—nor did we systematically evaluate the quality of the GenAI outputs themselves. While all generated cases were reviewed by the teaching team for appropriateness, accuracy, and alignment with personality triggers, this evaluation was informal rather than systematic.

4.5. Future Directions

Future research should build on these limitations in several ways. First, more systematic and controlled designs are needed to separate the effects of different intervention components. Crossover or factorial studies could compare groups receiving only personality-informed instruction, inventory-based feedback without personalization, fully personalized cases, and rich generic cases. Simplified stepwise designs could also help

isolate effects while maintaining feasibility. Such approaches would provide stronger evidence of whether personalization adds pedagogical value beyond existing case-based methods. Second, systematic evaluation of the generated outputs themselves would be valuable. Cataloguing similarities and differences across tailored cases, and comparing them with generic case designs, could help establish the distinctiveness, coherence, and pedagogical potential of GenAI-generated materials. This type of analysis would also provide practical guidance for educators considering similar tools in their own contexts. Third, future studies should explore more dynamic and interactive implementations. Moving from static, text-based descriptions to multimodal or simulation-based cases could better reflect the complexity of professional dilemmas and test whether personalization remains effective in richer learning environments.

Finally, research should broaden the focus beyond personality to examine how tailored cases interact with other learner characteristics such as prior experience, motivation, or cultural background. A mixed-methods approach combining reflective frameworks, observational data, performance measures, and longitudinal follow-up would provide more robust evidence of the potential of personality-informed case-based learning to support professional development. In light of recent discussions on digital transformation [10], AI in education [12], and post-pandemic resilience [11], such studies could also clarify how personalization contributes not only to individual engagement but also to scalable, adaptable, and resilient pedagogical designs in higher education.

5. Conclusions

In sum, this study provides initial evidence that personality-tailored case-based learning is both feasible and valued by students in teacher education. The intervention was experienced as engaging, educational, and relevant, while group discussions emerged as a key arena for professional reflection. At the same time, challenges related to scaffolding and case diversity highlight the need for iterative refinement. By integrating psychological self-insight with authentic practice scenarios, the approach contributes to ongoing Scholarship of Teaching and Learning efforts to innovate higher education, and offers a promising avenue for supporting students' agency, reflective competence, and readiness for professional practice.

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