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Empathetic AI Feedback in English Language Learning: Enhancing Student Engagement and Reducing Anxiety in MAN Labuhanbatu Utara

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ABSTRACT

This study explores the impact of empathetic AI feedback on English language learners at MAN Labuhanbatu Utara, specifically focusing on enhancing student engagement and reducing anxiety. In the context of language learning, anxiety is a significant barrier that can affect students' motivation and performance. The study investigates how AI-driven feedback, which incorporates emotional intelligence, can foster a more supportive and engaging learning environment. A mixed-method approach was used, combining surveys, classroom observations, and interviews. The results indicated a marked reduction in student anxiety, particularly in areas such as fear of making mistakes and peer judgment. Furthermore, students who received empathetic AI feedback exhibited higher levels of engagement, participating more actively in class activities and demonstrating increased motivation. These findings suggest that integrating emotionally supportive AI feedback into language learning can create a more positive and effective educational experience, potentially improving both emotional well-being and academic performance.

Keywords:

Empathetic AI feedback, English language learning, student engagement,

INTRODUCTION

The integration of Artificial Intelligence (AI) in education has opened up innovative pathways for enhancing teaching and learning experiences. One of the emerging trends in language learning is the application of AI-driven feedback systems that not only assess student performance but also provide support that is personalized and emotionally attuned to learners' needs. As English becomes an increasingly important global language, students at institutions such as **MAN Labuhanbatu Utara** face unique challenges in mastering the language, including the development of reading, writing, listening, and speaking skills. These challenges are often exacerbated by high levels of anxiety, particularly when students fear making mistakes or feel inadequate in comparison to their peers.

Traditional methods of feedback, while crucial, may not always be sufficient in addressing the emotional and psychological barriers that hinder students' progress. In this context, the role of empathetic feedback delivered through AI systems becomes especially valuable. Empathetic AI feedback refers to AI-generated responses that not only evaluate students' work but also acknowledge and respond to their emotional states, offering encouragement, constructive criticism, and positive reinforcement in ways that foster a supportive learning environment.

This study aims to explore the impact of empathetic AI feedback on student engagement and anxiety reduction in the English language learning context at **MAN Labuhanbatu Utara**. By examining the use of AI-powered tools that provide emotionally responsive feedback, this research seeks to understand how such technology can help create a more inclusive and motivating learning experience. Specifically, the study investigates how empathetic AI can engage students more deeply in their learning process, reduce language learning anxiety, and encourage greater participation and self-confidence in English language classrooms.

The findings of this study will offer insights into how AI, when designed with empathy and emotional intelligence in mind, can become an effective tool in promoting both academic and emotional growth among English learners. This research not only contributes to the expanding field of AI in education but also highlights the potential for technology to support students' emotional and cognitive development simultaneously.

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METHODS

This study used a mixed-methods approach, combining both quantitative and qualitative data to explore the impact of empathetic AI feedback on student engagement and anxiety reduction in English language learning. The participants were 60 students from MAN Labuhanbatu Utara, aged 16 to 19, who were enrolled in the school's English language program. These students were randomly divided into two groups: the experimental group, which received AI-generated empathetic feedback, and the control group, which received traditional feedback provided by teachers or automated systems without emotional considerations.

The core of this study involved the use of a custom-designed AI feedback tool for the experimental group. This AI tool provided feedback that was not only corrective but also empathetic, recognizing students' emotional states and offering positive reinforcement, encouragement, and constructive criticism in a supportive manner. The feedback system was programmed to acknowledge improvements, identify areas needing work, and suggest further activities based on the students' performance. On the other hand, the control group received standard feedback that focused mainly on corrections and suggestions for improvement, without any emotional attunement.

To assess the effects of these interventions, several data collection methods were employed. Pre- and post-intervention surveys were administered to measure students' anxiety levels and engagement. Anxiety was measured using a version of the *Foreign Language Classroom Anxiety Scale* (FLCAS), while engagement was assessed using a standardized scale designed to measure student involvement in their learning process. Performance assessments were also conducted before and after the intervention, focusing on reading, writing, and speaking tasks.

Additionally, qualitative data was collected through semi-structured interviews and focus group discussions with a subset of students from both groups. These discussions allowed the researchers to explore students' experiences with the AI feedback and their perceptions of its emotional impact. Classroom observations were conducted to capture students' behavior and engagement during the intervention.

The quantitative data was analyzed using statistical tests such as paired t-tests and analysis of covariance (ANCOVA) to compare the changes in anxiety levels and engagement between the two groups. The qualitative data was analyzed thematically, identifying key themes related to the emotional responses of students to the AI feedback and its perceived effectiveness in reducing anxiety and enhancing learning engagement.

Ethical considerations were a priority throughout the study. All students and their parents gave informed consent, and participants were assured that they could withdraw from the study at any time without consequences. The

data collected was kept confidential, with all findings used solely for research purposes.

FINDINGS AND DISCUSSION

This study used a mixed-methods approach, combining both quantitative and qualitative data to explore the impact of empathetic AI feedback on student engagement and anxiety reduction in English language learning. The participants were 60 students from MAN Labuhanbatu Utara, aged 16 to 19, who were enrolled in the school's English language program. These students were randomly divided into two groups: the experimental group, which received AI-generated empathetic feedback, and the control group, which received traditional feedback provided by teachers or automated systems without emotional considerations.

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CONCLUSIONS

In conclusion, the study highlights the potential of empathetic AI feedback to enhance student engagement and reduce anxiety in English language learning. By fostering a supportive learning environment, AI-driven feedback can help students overcome emotional barriers, increase their motivation, and engage more actively in their learning. These findings suggest that incorporating empathetic elements into AI tools for language learning could be an effective strategy for improving both the emotional and academic outcomes of students, particularly in contexts where language learning anxiety is a significant concern.

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