

The Development of Teacher Pedagogy in the Use of Artificial Intelligence for Language Learning of Pupils with Special Educational Needs in the Blind Category

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Abstract:

The integration of artificial intelligence (AI) in education has transformed pedagogical approaches, particularly for students with special educational needs (SEN), including those who are blind. This review article explores the development of teacher pedagogy in employing AI tools for language learning among blind pupils. By examining existing literature, it highlights effective strategies, challenges faced by educators, and potential solutions to enhance language acquisition through AI. The findings underscore the importance of teacher training and the need for adaptive instructional strategies to foster an inclusive learning environment.

Keywords: environment, instructional, acquisition, educational

1. Introduction

The advent of artificial intelligence has significantly influenced educational practices, particularly in language learning. For pupils with special educational needs, such as those who are blind, AI can offer tailored solutions to support language acquisition and enhance communication skills (Luckin et al., 2016). This article reviews the development of teacher pedagogy concerning AI utilization in language learning for blind students. By exploring effective teaching strategies, the challenges educators face, and the implications for practice, this review aims to contribute to the ongoing discourse on inclusive education.

2. Understanding Special Educational Needs and Blindness

2.1 Definition of Special Educational Needs

Special educational needs (SEN) refer to a range of difficulties that require additional support in the educational context (UNESCO, 2017). These needs can stem from physical, sensory,

cognitive, or emotional disabilities. Blind students, in particular, face unique challenges in accessing language learning materials and engaging with their peers.

2.2 The Impact of Blindness on Language Learning

Blindness can significantly affect language development, as visual input often plays a critical role in acquiring language skills (Lynch et al., 2020). Blind pupils may rely more on auditory and tactile modalities for learning, which necessitates the adaptation of teaching methods to meet their specific needs. Understanding these challenges is essential for developing effective pedagogical approaches that leverage AI technologies.

2.3 The Role of AI in Supporting Blind Pupils

AI technologies offer innovative solutions for enhancing language learning among blind students. Tools such as speech recognition software, text-to-speech applications, and interactive learning environments can provide personalized learning experiences (Dautenhahn et al., 2018). By integrating AI into the classroom, educators can create accessible and engaging language learning opportunities for blind pupils.

3. The Role of Teacher Pedagogy in AI Integration

3.1 Defining Teacher Pedagogy

Teacher pedagogy encompasses the methods and practices educators use to facilitate learning (Koehler & Mishra, 2009). In the context of AI, pedagogy must evolve to incorporate technology effectively, promoting an inclusive approach that addresses the needs of blind students.

3.2 Pedagogical Models for AI Integration

Several pedagogical models can guide educators in integrating AI into language learning. The Technological Pedagogical Content Knowledge (TPACK) framework emphasizes the intersection of technology, pedagogy, and content knowledge, encouraging teachers to design lessons that leverage AI tools to enhance learning outcomes (Mishra & Koehler, 2006).

3.3 Importance of Adaptability in Pedagogy

Adaptability in pedagogy is crucial for effectively integrating AI into language learning for blind students. Educators must be prepared to adjust their teaching strategies based on individual student needs, utilizing AI tools to provide personalized support and feedback (Luckin et al., 2016). This adaptability fosters a more inclusive learning environment.

4. Effective AI Tools for Language Learning

4.1 Speech Recognition Technologies

Speech recognition technologies enable blind students to interact with language learning applications through voice commands (Lynch et al., 2020). These tools can enhance vocabulary acquisition and facilitate pronunciation practice, providing immediate feedback that is essential for language development.

4.2 Text-to-Speech Applications

Text-to-speech applications convert written text into spoken language, allowing blind students to access reading materials and engage with language content (Dautenhahn et al., 2018). These applications can support comprehension and promote independent learning, as students can listen to texts and practice language skills at their own pace.

4.3 Interactive Learning Environments

AI-powered interactive learning environments can create immersive language experiences for blind students. These environments often incorporate gamification elements and adaptive learning pathways, fostering engagement and motivation in language learning (Kearney et al., 2019). Such environments can be particularly beneficial for promoting collaborative learning among peers.

5. Challenges Faced by Educators

5.1 Lack of Training and Professional Development

One of the primary challenges educators face in integrating AI into language learning for blind students is the lack of training and professional development opportunities (Luckin et al., 2016). Many teachers may not be familiar with AI technologies or their potential applications in special education, hindering effective implementation.

5.2 Resistance to Change

Resistance to change is another barrier educators may encounter when adopting new pedagogical approaches involving AI (Koehler & Mishra, 2009). Some educators may be hesitant to shift from traditional teaching methods, fearing the complexity of new technologies or doubting their effectiveness in supporting blind students.

5.3 Accessibility and Equity Concerns

Ensuring accessibility and equity in AI implementation is crucial for blind students (Dautenhahn et al., 2018). Educators must be vigilant in selecting AI tools that are designed with accessibility in mind, as some technologies may not fully accommodate the needs of blind learners, leading to further disparities in language learning outcomes.

6. Strategies for Effective Implementation

6.1 Professional Development Programs

Implementing robust professional development programs is essential for equipping educators with the knowledge and skills necessary to integrate AI effectively (Luckin et al., 2016). Training should focus on familiarizing teachers with AI tools, providing hands-on experience, and highlighting best practices for teaching blind students.

6.2 Collaborative Learning Approaches

Encouraging collaborative learning approaches can enhance the effectiveness of AI in language learning (Kearney et al., 2019). By promoting peer interactions and group activities, educators

can foster an inclusive environment where blind students can practice language skills with their sighted peers, benefiting from diverse perspectives and experiences.

6.3 Continuous Feedback and Assessment

Continuous feedback and assessment are vital for monitoring student progress and adapting instruction as needed (Dautenhahn et al., 2018). Educators should utilize AI tools that provide real-time feedback, enabling blind students to track their language development and set achievable goals.

7. Case Studies and Best Practices

7.1 Successful Implementation of AI Tools

Examining case studies of successful AI implementation in language learning can provide valuable insights for educators (Kearney et al., 2019). Programs that effectively integrate AI tools to support blind students can serve as models for best practices, showcasing innovative approaches to language education.

7.2 Teacher Experiences and Reflections

Gathering teacher experiences and reflections on using AI in the classroom can highlight the challenges and successes encountered in practice. These insights can inform professional development and guide future implementations of AI in language learning (Luckin et al., 2016).

7.3 Student Perspectives

Incorporating student perspectives on the use of AI tools can enhance understanding of their effectiveness and impact on language learning (Lynch et al., 2020). Gathering feedback from blind students can inform instructional practices and promote a more student-centered approach to language education.

8. Conclusion and Recommendations

In conclusion, the development of teacher pedagogy in the use of artificial intelligence for language learning among blind students is a critical area of exploration in special education. While AI presents significant opportunities for enhancing language acquisition, educators must address the challenges associated with its implementation. By investing in professional development, fostering collaborative learning environments, and ensuring accessibility, educators can create effective language learning experiences for blind pupils. Future research should continue to explore innovative pedagogical approaches and evaluate the impact of AI tools on language learning outcomes for students with special educational needs.

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