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THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN PREPARING FUTURE SPEECH THERAPISTS FOR PROFESSIONAL PRACTICE

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Annotation. This article examines the role of information and communication technologies (ICT) in preparing future speech therapists for professional practice. It explores the benefits of digital tools, including speech therapy software, virtual learning environments, and assistive communication technologies, in enhancing the training process. The study highlights how ICT improves the effectiveness of theoretical and practical education, facilitates interactive learning, and provides opportunities for real-time feedback. Additionally, the article discusses challenges associated with integrating ICT into speech therapy education and offers recommendations for optimizing digital resources. The findings contribute to the modernization of speech therapy training programs and the development of highly competent specialists.
Keywords: Information and communication technologies (ICT), speech therapy, professional training, digital tools, assistive communication technologies, virtual learning, interactive education, speech therapy software, competency development, inclusive education.

INTRODUCTION

In recent years, the integration of information and communication technologies (ICT) in education has significantly transformed the way professionals are trained, including in the field of speech therapy. As speech and language disorders become more complex, the demand for highly skilled and technologically proficient speech therapists continues to grow. Traditional training methods, while effective in providing theoretical foundations, often lack interactive and practice-oriented approaches necessary for real-world application. This has led to an increasing emphasis on digital tools and virtual learning environments to enhance the preparation of future speech therapists.

The use of ICT in speech therapy education offers numerous benefits. Digital platforms facilitate interactive learning, allowing students to engage in simulated therapy sessions, analyze speech patterns using specialized software, and gain exposure to assistive communication technologies used in real-life clinical settings. Additionally, virtual and augmented reality tools provide immersive experiences that improve practical skill development. These technologies not only enhance learning outcomes but also increase accessibility to training resources, making education more flexible and efficient.

Despite these advantages, challenges remain in effectively integrating ICT into speech therapy education. Many institutions face a lack of technological infrastructure, insufficient digital literacy among educators, and resistance to adopting new methodologies. Furthermore, while ICT can enhance learning, it cannot entirely replace the need for hands-on clinical practice and human interaction—key components of speech therapy training.

This article explores the role of ICT in preparing future speech therapists for professional practice, examining its benefits, challenges, and best practices for implementation. By analyzing current trends and research in the field, the study aims to provide recommendations for optimizing the use of digital tools in speech therapy education, ultimately contributing to the development of highly competent specialists in the field.

METHODOLOGY

This study employs a mixed-methods research approach to examine the role of information and communication technologies (ICT) in preparing future speech therapists for professional practice.

The methodology includes both qualitative and quantitative data collection techniques to ensure a comprehensive analysis of ICT integration in speech therapy education.
The study is designed as a descriptive and analytical investigation, focusing on:
The current state of ICT usage in speech therapy training programs.
The effectiveness of digital tools in enhancing professional competencies.
The challenges and opportunities associated with ICT implementation in speech therapy education.
A systematic review of peer-reviewed journals, books, and policy reports was conducted to analyze existing research on ICT applications in speech therapy education. Key sources include:
Academic databases (e.g., ScienceDirect, PubMed, ERIC)
Guidelines from professional organizations (e.g., American Speech-Language-Hearing Association (ASHA), World Health Organization (WHO))
Case studies from educational institutions implementing ICT-based speech therapy training.
Structured surveys were distributed to 100 speech therapy students and 30 educators across various institutions to gather insights into:
The extent of ICT usage in their training programs.
Perceived effectiveness of digital tools in improving learning outcomes.
Challenges faced in adopting and utilizing ICT-based learning methods.
Semi-structured interviews were conducted with 15 experienced speech therapists and educators to gain deeper insights into:
Best practices for integrating ICT in speech therapy training.
Limitations and barriers to effective implementation.
Recommendations for improving ICT-based learning strategies.
The study examined five institutions that have successfully integrated ICT into their speech therapy programs. These case studies provided real-world examples of:
The impact of speech therapy software, virtual simulations, and assistive communication technologies on student training.
The role of virtual reality (VR) and augmented reality (AR) in improving practical skills.
The effectiveness of online learning platforms in supplementing traditional education.
Statistical methods were used to analyze survey data, including descriptive statistics (percentages, means, and standard deviations) to assess trends in ICT adoption.
Comparative analysis was conducted to evaluate differences in ICT effectiveness across various institutions.
Thematic analysis was applied to interview transcripts and case study reports to identify common patterns and insights regarding ICT integration.
A SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) was used to evaluate the potential of ICT-based training methods in speech therapy education.
Informed consent was obtained from all participants.
Confidentiality was ensured by anonymizing survey responses and interview transcripts.
The study adhered to ethical guidelines set by ASHA and WHO regarding research involving speech therapy professionals and students.

RESULTS

The findings of this study provide valuable insights into the impact of information and communication technologies (ICT) on the training of future speech therapists, highlighting both the benefits and challenges of ICT integration in speech therapy education. The results are based on 100 survey responses from speech therapy students, 30 responses from educators, 15 in-depth interviews with professionals, and 5 case studies from institutions using ICT-based training methods.
1. Survey Findings

A structured survey was conducted among speech therapy students and educators to assess the use and effectiveness of ICT in their training programs. Key findings include:

a) Extent of ICT Usage in Speech Therapy Training

72% of students reported that they regularly use speech therapy software and digital tools in their coursework.

65% of students noted that virtual learning environments (e.g., online simulations, video tutorials) are integrated into their training.

Only 39% of students had experience with assistive communication technologies (e.g., Augmentative and Alternative Communication (AAC) devices), indicating a gap in practical training.

b) Effectiveness of ICT-Based Learning

78% of students agreed that ICT enhanced their understanding of speech therapy techniques.

69% of educators believed that ICT improved student engagement and learning outcomes.

60% of students felt that digital tools helped them gain practical skills before real-world application.

c) Challenges in ICT Integration

54% of students reported technical difficulties (e.g., lack of access to advanced software or poor internet connectivity).

47% of educators expressed concern about insufficient training for teachers on how to effectively use ICT in speech therapy education.

41% of students mentioned that traditional assessment methods do not fully align with ICT-based learning approaches.

2. Interview Findings

In-depth interviews with 15 experienced speech therapists and educators provided deeper insights into the real-world application of ICT in speech therapy education:

Practical Skill Development: Many professionals agreed that interactive and AI-based speech therapy software improved students' ability to diagnose and treat speech disorders.

Need for Digital Literacy: Several educators emphasized that both students and faculty require additional training on how to effectively integrate ICT into their professional practice.

Balancing Technology and Hands-On Experience: While ICT enhances learning, most interviewees agreed that real-life clinical practice remains irreplaceable and should be integrated alongside digital tools.

3. Case Study Findings

Five institutions that successfully implemented ICT-based training for speech therapy students were analyzed. Key observations include:

Institutions using VR-based speech therapy simulations reported a 23% increase in student confidence and competence in handling real-world therapy sessions.

Programs incorporating AAC device training saw a 19% improvement in students' ability to work with non-verbal clients.

Schools that adopted hybrid learning models (a combination of in-person and online training) experienced higher student engagement and flexibility in learning.

Summary of Results.

Key Aspect	Findings
ICT Usage	72% use speech therapy software; 65% engage in virtual learning
Effectiveness	78% reported improved understanding; 69% noted better engagement
Challenges	54% faced technical issues; 47% of educators lacked ICT training

Impact of VR & AAC Devices	VR training increased student confidence by 23%; AAC training improved competence by 19%
Hybrid Learning Benefits	Institutions with hybrid models reported higher engagement and flexibility

The findings suggest that ICT plays a crucial role in enhancing the professional training of future speech therapists, particularly in improving theoretical understanding, increasing engagement, and providing simulated practical experience. However, technical limitations, lack of digital literacy among educators, and insufficient hands-on practice opportunities remain significant challenges. These results underscore the need for more structured integration of ICT in speech therapy curricula, with a balanced approach that combines technology and real-world clinical practice.

These insights provide a foundation for further research on optimizing ICT-based speech therapy education, ensuring that future professionals are well-equipped for modern, technology-driven clinical environments..

Conclusion

This study highlights the significant role of information and communication technologies (ICT) in the training of future speech therapists, demonstrating how digital tools enhance learning, practical skill development, and engagement. The findings confirm that speech therapy software, virtual simulations, and assistive communication technologies (e.g., AAC devices) contribute to a more interactive and effective educational experience. However, several challenges, including technical limitations, lack of digital literacy among educators, and insufficient hands-on practice, must be addressed to maximize the potential of ICT in speech therapy education.

The key takeaways from the study include:

ICT Improves Learning Outcomes: Digital tools enhance theoretical understanding and practical skill acquisition, with 78% of students reporting increased comprehension due to ICT-based learning.

Practical Experience Remains Essential: While ICT provides valuable training simulations, real-world clinical practice is irreplaceable, requiring a balanced integration of technology and traditional hands-on experience.

Educators Need Digital Training: 47% of educators expressed concerns about their lack of ICT expertise, indicating the need for professional development programs to improve digital literacy in speech therapy education.

Hybrid Learning Models Enhance Flexibility: Institutions combining online and in-person training reported higher student engagement and better preparedness for real-world speech therapy practice.

To further improve the integration of ICT in speech therapy education, the following recommendations are proposed:

Expand access to digital tools and ensure students receive hands-on training with speech therapy software and AAC devices.

Develop specialized ICT training for educators to improve the effective implementation of digital learning methods.

Introduce hybrid learning models that combine interactive digital content with supervised practical experiences in clinical settings.

Increase institutional investment in ICT infrastructure, including high-speed internet access and up-to-date therapy software.

By addressing these areas, future speech therapists can be better equipped to utilize modern technologies, leading to more effective speech therapy interventions in both clinical and inclusive educational settings. The findings of this study contribute to the ongoing development of technology-enhanced speech therapy training programs, ensuring that the next generation of professionals is competent, adaptable, and well-prepared for evolving demands in the field.

Future research should focus on long-term assessments of ICT-based training models, evaluating their effectiveness in real-world speech therapy practice and identifying best practices for sustainable digital education in the field..

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