VIEWS AND EXPERIENCES OF SPECIAL EDUCATORS AND REHABILITATORS ON THE INTEGRATION OF MEDIA IN THE EDUCATIONAL PROCESS

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Abstract

In the modern educational environment, media play an increasingly important role in supporting students with disabilities, especially through increased communication, motivation and social inclusion. The research aims to examine the attitudes and experiences of special educators and rehabilitators in the Republic of North Macedonia regarding the use of media in their professional practice. A methodology was applied that included a quantitative survey with 56 participants and qualitative semi-structured interviews. The research focuses on the perceived benefits of media, the frequency and type of their use, as well as the barriers faced by professionals, such as technological limitations, lack of adapted content and insufficient training. The results show that media are generally perceived as a useful tool, especially in the context of visual support and multisensory learning. However, there are significant differences in their use, depending on the level of digital literacy, the type of disability they work with, as well as institutional support. Additionally, differences in approaches to media use were recorded between urban and rural areas, as well as among different generational groups of professionals. The interviews revealed different adaptation strategies and creative approaches to media integration, including the use of visual cues, auditory resources, and interactive applications. The research has implications for improving training, developing localized resources, and systemic support for digital inclusion in special education. The development of comprehensive digital literacy programs, regular technical support, and the inclusion of media in national strategies for inclusive education are particularly recommended. The findings open up space for future research that will examine the long-term impact of media on the academic and social development of students with disabilities.

Keywords: special educator, media, digital literacy.

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1. Introduction

Modern trends in education place increasing emphasis on the development of digital competencies and the integration of media as a support for the teaching process. The use of digital media: visual, auditory, tactile or interactive is particularly important in special education, where a multisensory approach is required to meet the individual needs of students with different types of disabilities. Media can provide structure, visual routine, support for communication and increased motivation. There are proven positive effects on working memory, attention, executive functions and social interaction in students. Although media are present in the education system, their application in special education is often contextually determined and dependent on the institution, technical equipment, digital culture, as well as the personal motivation and digital literacy of professionals. This paper aims to explore the views and experiences of special educators and rehabilitators in the Republic of North Macedonia, with a focus on how media are used, what benefits professionals recognize, and what barriers they face in real practice.

2. Literature Review

The integration of media in education is grounded in several theoretical approaches. Learners process information more effectively when it is presented through multiple sensory channels. Visual cues (images, pictograms, videos), auditory materials (spoken instructions, music), tactile resources, and interactive digital applications create a rich learning environment that stimulates cognitive processes. Universal Design for Learning (UDL) recommends flexible forms of representation, expression, and engagement to ensure that the educational process is inclusive for all students. Media serves as a tool that enables adaptation to individual learning styles and functional abilities.

Vygotsky's sociocultural theory highlights the importance of mediation (tools, symbols, media) in cognitive development. Media can act as an intermediary between the teacher and the learner, allowing for greater autonomy, communication, and comparison of outcomes. Research conducted in Europe and the United States shows that the use of media among students with intellectual disabilities, autism, learning disabilities, and motor impairments contributes to improved academic performance and social skills. However, the degree of success depends on the quality of adaptation.

3. Research Methodology

The methodology of this study was carefully designed to provide a comprehensive understanding of the attitudes, practices, and experiences of special educators and rehabilitators in the Republic of North Macedonia regarding the integration of media in the educational process. To capture both the quantitative aspects (frequency, types of media, perceived effectiveness, barriers) and the qualitative dimensions (individual experiences, creative strategies, professional challenges), a mixed-methods approach was applied, combining a quantitative survey with qualitative semi-structured interviews. The study was conceived as a descriptive and exploratory investigation. The descriptive component enabled an assessment of the current state of media use in special education practice, while the exploratory component provided an in-depth insight into professional perspectives and personal experiences of the specialists. The combination of the two data types allowed for more robust conclusions and a richer interpretation of the findings, as quantitative data were complemented by detailed qualitative descriptions.

In the quantitative phase, 56 special educators and rehabilitators participated, all employed in various institutions across North Macedonia: primary schools, resource centers, kindergartens, and day centers. The sample reflected diversity in terms of professional experience, geographical distribution (urban and rural areas), institutional type, and the types of disabilities with which the professionals work. Data were collected using an online questionnaire containing 28 questions structured into several thematic areas:

1. Types of media used (visual materials, videos, audio resources, applications, multimedia devices).
2. Frequency and context of use (teaching, individual sessions, social skills, routines, communication tools).
3. Perceived benefits of media use (motivation, attention, communication, acquisition of content).
4. Barriers and challenges (technical limitations, lack of digital competencies, insufficient adapted materials).
5. Digital literacy and training (self-assessment, previous professional training, needs for additional training).
6. General demographic and professional data (years of experience, type of institution, geographical context).

The survey was anonymous and voluntary, distributed electronically through professional groups, networks, and associations of special educators. The estimated completion time was approximately 12 minutes. The questionnaire included various types of items: Likert scales, multiple-choice questions, dichotomous questions, and open-ended responses.

For the qualitative component, 12 special educators and rehabilitators were interviewed, strategically selected to reflect diversity in the types of disabilities they work with (autism, intellectual disabilities, multiple disabilities, motor and sensory difficulties), institutional contexts, professional experience, and regional representation. Interviews lasted between 25 and 40 minutes and were conducted either in person or online, depending on participant availability. Quantitative data were analyzed using descriptive statistics (frequencies, percentages, mean values). Additionally, comparisons were made between urban and rural contexts, generational differences were examined, and correlations were explored between digital literacy and frequency of media use. Results were visualized through tables and charts. Qualitative data were analyzed using thematic analysis.

The study adhered to fundamental principles of research ethics: voluntary participation and the right to withdraw, anonymity and confidentiality, written consent for both the survey and interviews, protection of institutional and participant identities, and the use of data exclusively for scientific purposes.

4. Findings/Results

The results indicate that more than 85% of participants believe that media significantly enhance learning among students with disabilities. The most frequently used media are visual materials (96%), followed by videos (74%), audio tools (52%), and interactive digital applications (41%). The main benefits identified include improved communication, increased motivation, easier attention and focus, better comprehension of instructions, and facilitated learning through routines. The primary barriers reported are insufficient technical equipment (63%), a lack of adapted materials (58%), inadequate training (51%), notable disparities between urban and rural environments, and generational differences in digital literacy.

Qualitative interviews reveal that professionals frequently create their own visual prompts, routines, social stories, PowerPoint presentations, and adapted videos. Survey results show that professionals rated the impact of media on motivation and attention with mean scores ranging from 4.0 to 4.1. This aligns with contemporary research demonstrating that multisensory learning and visual support enhances student engagement, reduces cognitive load, and facilitates the assimilation of new information. Interview data further confirm this trend: professionals emphasize that interactive applications and visual prompts simplify the process of individualizing instruction and make learning more engaging and accessible for students with different types of disabilities.

Among the most frequent barriers are the lack of technical equipment and training (mean score 3.9), limited time for preparing materials (3.7), poor internet connection (3.5), and resistance to technology (3.5). These constraints limit the potential effectiveness of media and create unequal opportunities across educational settings. Notably, there is a significant difference between urban and rural contexts: professionals in urban areas tend to use interactive and combined media, whereas those in rural areas rely more heavily on visual and printed materials. This highlights the need for systemic support, such as investments in technical infrastructure and nationwide access to digital resources.

According to the survey, 46% of participants assessed their digital literacy as high or very high. While this is encouraging, the remaining 54% indicate a need for additional training. The lack of regular, practical training reduces professionals' confidence in using media, which may affect the quality of instruction. Interviews reveal that successful professionals employ various strategies to overcome these barriers: personalized materials, combining audio and visual resources, internal training sessions for colleagues, and planning media integration as part of everyday teaching routines.

Interview findings also point to numerous innovative approaches: visual prompts for students with autism and intellectual disabilities, audio recordings for students with ADHD and attention difficulties, interactive applications for developing speech and social skills, and multisensory materials that enable individualized learning. These strategies demonstrate that media are not merely technical tools, but an integral component of the instructional process one that requires creativity, adaptation, and continuous professional development. Effective media integration requires systemic support, including the development of localized and adapted digital resources, regular technical support and professional training, institutional time for preparing and implementing media-based instruction, and the inclusion of media in national strategies for inclusive education. Without such measures, disparities between urban and rural settings, as well as generational gaps among professionals, will persist and restrict the potential of media as a tool for inclusive education.

Overall, the findings suggest that media are not simply a form of technology, but a means of optimizing teaching and supporting social inclusion. Media use can increase student motivation and attention, facilitate individualized instruction, support communication and social interaction, and enhance inclusiveness and learning quality. However, achieving these outcomes requires regular training, infrastructural investment, and systemic support. Teachers' digital literacy, creative approaches, and the combination of diverse media are crucial for successful implementation.

SURVEY RESULTS (N = 56)

Section 1: Demographic Data

Category	N	%
Gender		
Male	20	36%
Female	36	64%
Age		
Up to 30 years	12	21%
31–40 years	18	32%
41–50 years	16	29%
Above 50 years	10	18%
Work Experience		
< 5 years	8	14%
5–10 years	20	36%
11–20 years	18	32%
> 20 years	10	18%
Geographical Context		
Urban	38	68%
Rural	18	32%
Type of Institution		
Primary school	28	50%
Primary school with resource center	16	29%
Day center	12	21%

Section 2: Types of Media and Frequency of Use

Media Type	Usage (%)
Visual	85%
Auditory	60%
Interactive	40%
Combined	72%

Frequency	Usage (%)
Daily	30%
Several times per week	45%
Several times per month	20%
Rarely	5%

Section 3: Attitudes Toward Media (Likert Scale 1–5)

Statement	1	2	3	4	5	Mean
Media improve students' attention	0	2	8	25	21	4.1
Media increase motivation	0	1	10	28	17	4.0
Useful for students with intellectual disabilities	1	3	12	25	15	3.9
Useful for students with autism	2	5	15	20	14	3.7
Useful for students with ADHD	1	4	18	20	13	3.7
Facilitate individualization of instruction	0	2	12	28	14	4.0

Section 4: Barriers to Media Use (Likert Scale 1–5)

Barrier	1	2	3	4	5	Mean
Lack of technical equipment	2	3	10	25	16	3.9
Lack of technical support	3	5	12	20	16	3.7
Lack of adapted digital content	1	2	15	23	15	3.8
Lack of training	1	3	12	25	15	3.9
Limited preparation time	0	2	15	28	11	3.7
Poor internet connection	3	5	20	18	10	3.5
Resistance / distrust of technology among colleagues	4	6	18	15	13	3.5

Section 5: Digital Literacy and Training

Parameter	N	%
Digital Literacy		
Very low	2	4%
Low	8	14%
Medium	20	36%
High	18	32%
Very high	8	14%
Frequency of Training		
Never	10	18%
Once per year	20	36%
Several times per year	18	32%
Monthly	8	14%

Section 6: Open-Ended Responses (Examples)

27. Positive Experiences:

- "Using visual prompts to teach new tasks to children with autism."
- "Interactive applications for the development of speech and communication."
- "Combining video and audio materials for students with attention difficulties resulted in improved sustained attention."

28. Recommendations:

- "More adapted digital content for different types of disabilities."
- "Regular training and support for the use of new technologies."
- "Improved internet infrastructure and institutional support."

SAMPLE RESULTS FROM SEMI-STRUCTURED INTERVIEWS (N = 12)

Interview 1

Examples from practice: "I often use visual prompts and video materials for students with autism. These help them follow the sequence of activities." Challenges: Lack of tablets and interactive applications. Strategies: Creating personalized cards and combining audio–visual resources.

Interview 2

Examples from practice: "Interactive applications support speech development in children with intellectual disabilities." Challenges: Limited time available for preparing materials. Strategies: Planning activities in advance and using ready-made digital resources.

Interview 3

Examples from practice: "Audio recordings are used to support the acquisition of instructions among students with ADHD." Challenges: Insufficient digital training. Strategies: Organizing brief exercises and training sessions for colleagues.

Interview 4

Examples from practice: "A combination of images, videos, and audio is integrated into individualized education plans." Challenges: Poor internet connectivity in rural areas. Strategies: Downloading materials in advance and using offline resources.

Interview 5

Examples from practice: "Interactive games are used to support the development of social skills." Challenges: Lack of adapted content for different types of disabilities. Strategies: Creating personalized visuals and games.

Interview 6

Examples from practice: “Video instructions support learning of hygiene and everyday activities.” Challenges: Resistance from some teachers toward digital methods. Strategies: Demonstrating effectiveness through practical outcomes.

Interview 7

Examples from practice: “Visual worksheets and cards for students with dyslexia.” Challenges: Insufficient funding for purchasing tablets. Strategies: Producing printed materials and using mobile phones.

Interview 8

Examples from practice: “Interactive presentations for mixed groups of students.” Challenges: Limited preparation time. Strategies: Preparing materials in advance and collaborating with colleagues.

Interview 9

Examples from practice: “Audio and visual support for students with speech impairments.” Challenges: Poor technical support. Strategies: Training and coordination with the IT department.

Interview 10

Examples from practice: “Virtual stories and applications to develop social skills.” Challenges: Lack of localized resources. Strategies: Translating and adapting foreign materials.

Interview 11

Examples from practice: “Video demonstrations of sequences for everyday tasks.” Challenges: Insufficient digital literacy among some colleagues. Strategies: Internal training and mentoring.

Interview 12

Examples from practice: “Interactive quizzes to improve concentration.” Challenges: Lack of adaptive tools for different types of disabilities. Strategies: Combining physical and digital tools for each student.

5. Discussion and Conclusions (Academic English Translation)

The study highlights the significant role of media as a key tool for supporting the educational process of students with disabilities in the Republic of North Macedonia. The results from both the survey and the interviews clearly demonstrate that media particularly visual and combined resources facilitate the learning process, increase motivation, enhance attention, and support the individualization of instruction. Multisensory learning and interactive applications proved to be especially effective, providing diverse pathways for knowledge acquisition and for the development of social skills.

Nevertheless, the research also reveals a number of barriers that limit the potential effectiveness of media use. The most frequently mentioned challenges include the lack of technical equipment, limited time for preparing materials, insufficient training and technical support, and the unavailability of adapted and localized digital resources. Differences between urban and rural environments, as well as variations in digital literacy across generations of professionals, further emphasize the need for systemic and institutional support.

The interviews illustrate the importance of creativity and adaptive approaches among professionals. Commonly employed strategies include personalized visual and audio cues, combined multisensory materials, interactive applications, and internal training for colleagues. These practices underscore the fact that media are not merely technical tools, but rather instruments for fostering high-quality learning, social inclusion, and the development of skills essential for broader societal integration.

Based on the findings of this research, several key conclusions can be drawn:

1. Media integration is essential for contemporary special education, with particular emphasis on individualized support and multisensory learning.
2. Digital literacy and professional training are critical components for the effective use of media. Continuous training and technical support are prerequisites for successful implementation.
3. Systemic and institutional support is crucial for overcoming infrastructural and technological barriers, thereby ensuring equitable learning environments for all students, regardless of geographic location or type of disability.
4. The creativity and adaptability of professionals are fundamental for maximizing the impact of media in instruction, including the development of individualized materials, combined resources, and interactive activities.
5. There is a clear need for national strategies and localized resources that will ensure availability and practical applicability of media in every institution working with students with disabilities.

6. Limitations and Directions for Future Research

The study underscores the need for a systemic approach to digital inclusion and demonstrates that media are not merely tools, but an essential component of high-quality inclusive education. In the long term, the use of media can contribute to enhancing students' academic and social competencies, improving self-confidence, and enabling active participation in educational and community life.

Regarding future research, it is recommended to examine the long-term impact of media on students' academic outcomes, social inclusion, and cognitive skill development. Furthermore, it is necessary to explore interdisciplinary approaches, including speech and language therapy, psychomotor therapy, and other therapeutic methods to provide comprehensive support to students.

For the effective integration of media into teaching practice, the development and implementation of systemic national digital-training programs for special educators and rehabilitation professionals is essential. Such programs should provide continuous professional development, with an emphasis on the practical application of digital resources and multisensory methods in daily practice. Training should encompass all aspects of digital literacy, including the selection and adaptation of media content, the creation of interactive materials, the use of pictographic and visual systems, and the inclusion of applications designed to support social and cognitive skill development. In addition, national programs should include regular certification training, which will enhance teacher motivation and professional confidence.

The availability of localized and adapted digital resources is crucial for the successful use of media, particularly in institutions working with students with diverse types of disabilities. Resources should be adapted to the local language, cultural context, and the specific needs of students. The integration of pictogram systems, multisensory activities, and visual cues will ensure individualized support and facilitate the seamless incorporation of digital media into everyday teaching. This will contribute to greater autonomy among professionals and to improved instructional quality, especially for students with autism, intellectual disabilities, or behavioral challenges.

The study reveals significant disparities between urban and rural institutions, particularly regarding access to interactive applications and digital resources. Strengthening technical infrastructure in rural settings is therefore critical. This includes providing computers, tablets, interactive screens, stable internet connectivity, and access to multimedia applications. Additionally, institutions should establish systems for regular technical support to minimize barriers and ensure equitable access to innovative resources for all students, regardless of geographic location.

Effective use of media depends not only on the availability of equipment but also on consistent technical support. Schools should ensure the presence of technical coordinators and internal or external experts who can assist teachers in using applications, creating multisensory materials, and resolving technical issues. Regular technical support increases educators' confidence reduces stress associated with implementing new technologies and enables greater flexibility in individualizing instruction.

For media to become an integral part of teaching, they must be formally incorporated into curricula, with clearly defined goals and methods of implementation. This implies that each subject and instructional activity should include possibilities for using visual, auditory, and interactive resources adapted to the needs of students with disabilities. Embedding media within curricular frameworks will ensure consistency and systematic use, while simultaneously support inclusiveness and enhance learning quality for all students.

These recommendations are directed toward establishing a systemic and sustainable long-term approach to digital inclusion, with a specific focus on students' individual needs, the professional development of educational staff, and equitable access to innovative instructional resources.

7. References

1. Pacheco, E. (2023) ***Digital technologies in the context of university transition and disability: Theoretical and empirical advances***.
2. Ojeda-Castelo, J. J., Piedra-Fernandez, J. A., & Iribarne, L. (2022) ***A device-interaction model for users with special needs***..
3. Creed, C., Al-Kalbani, M., Theil, A., Sarcar, S., & Williams, I. (2023) ***Inclusive AR/VR: Accessibility Barriers for Immersive Technologies***.
4. Kochov, S., & Ajdinski, G. (2023) ***The impact of multimedia and modern technology on the development of children with autism spectrum disorder.*** In 6th International Scientific Conference "30 Years of Studies in Special Education and Rehabilitation". Skopje: Ss. Cyril and Methodius University.

8. Appendices

Appendix 1. SURVEY QUESTIONNAIRE

Purpose of the survey: To examine the use of media, attitudes, experiences, perceived barriers, and digital literacy among special educators and rehabilitators in North Macedonia.

Ethical note: The survey is anonymous and voluntary. All responses will be used exclusively for scientific and research purposes.

SECTION 1: Demographic Information

Gender:
☐ Male
☐ Female
☐ Other

Age:
☐ Up to 30 years
☐ 31–40 years
☐ 41–50 years
☐ Over 50 years

Work experience as a special educator/rehabilitator:
☐ Less than 5 years
☐ 5–10 years
☐ 11–20 years
☐ Over 20 years

Work location:
☐ Urban area
☐ Rural area

Type of institution:
☐ Primary school
☐ Secondary school
☐ Resource center
☐ Other: ____________

Section 2: Types of Media and Frequency of Use

Which types of media do you most frequently use in your work? (Select all that apply)
☐ Visual (cards, charts, images, videos)
☐ Auditory (audio recordings, music, guided tasks)
☐ Interactive (digital applications, tablets, smart boards)
☐ Combined multimedia materials

How often do you use media in the teaching process?
☐ Daily
☐ Several times per week
☐ Several times per month
☐ Rarely

Which digital devices do you most frequently use?
☐ Computer
☐ Tablet
☐ Smartphone
☐ Smart board
☐ Other: ____________

For which purposes do you most often use media? (Select up to 3)
☐ Visual support
☐ Multisensory learning
☐ Motivation
☐ Improving communication
☐ Play and interaction
☐ Social skills

SECTION 3: Attitudes Towards Media

Media improves students' attention.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Media increases students' motivation.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Media is useful for students with intellectual disabilities.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Media is useful for students on the autism spectrum.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Media is useful for students with attention disorders (ADHD).
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Media significantly facilitates the individualization of instruction.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

SECTION 4: Barriers to Media Use

Lack of technical equipment.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Lack of technical support (IT services).
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Lack of adapted digital content.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Lack of professional training in digital competencies.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Limited time for preparing materials.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Poor internet connection.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Resistance or distrust of technology among certain colleagues.
1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

SECTION 5: Digital Literacy and Professional Training

23. How would you rate your digital literacy?
☐ Very low
☐ Low
☐ Average
☐ High
☐ Very high

How often do you attend training sessions on digital tools?
- ☐ Never
- ☐ Once a year
- ☐ Several times a year
- ☐ Monthly

Does your institution provide opportunities for digital training?
- ☐ Yes
- ☐ Partially
- ☐ No

Does your institution provide modern technological equipment?
- ☐ Yes
- ☐ Partially
- ☐ No

SECTION 6: Open-Ended Questions

Describe a positive experience in which media significantly contributed to a student's success.
(Open-ended response)

What recommendations would you provide to improve the integration of media in the educational process?
(Open-ended response)

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Marija Davchevska is a special educator and teacher-mentor who has participated in more than sixty seminars, congresses, symposiums, and conferences in the country and abroad in the field of special education, inclusive education, and supporting schools to create an inclusive learning environment. She is the author of more than 30 papers in domestic and foreign periodicals in the field of special and inclusive education. She has experience in implementing development projects in the field of inclusion, social inclusion, and discrimination, as well as organizing and preparing workshops, training, and events for teaching, professional and support staff, students, and professional services from primary and secondary schools in the field of inclusion and inclusion in society. , as well as experience in working with representatives of the civil sector. She is also the winner of the recognition „November 9" of the city of Veles in 2022 for special engagement and contribution to the advancement of educational activity for students with disabilities.

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