Inclusive Digital Education: The Case of North Macedonia

Milica Timchevska & Rozita Petrinska Labudovikj

Abstract

This contribution explores the current inclusive efforts of students with disabilities in the primary and secondary school systems in North Macedonia and how digital technology is being used in education to foster inclusion processes. It shows that the government has actively tried to implement legislation procedures to institutionalize inclusion. It also reveals that teachers could benefit from practical training and further professional development in this field. Within the DigIn project, several tools have been developed to guide the educators and assist them in their daily work in inclusive classrooms. In order to develop the Best-Practice-Example Toolkit, teachers from Skopje and Kumanovo were asked to provide examples of lessons in which digital technology was used to teach students with and without disabilities together.

Although inclusive education is relatively new in North Macedonia and it is still work in progress, this contribution shows that mainstream teachers are collaborating with special educators in their schools and are willing to bring about important changes. The examples of digital technology used to enhance the skills and help students with disabilities achieve the learning objectives are in line with the processes of setting differentiated and individualized goals, so as to make both learning and knowledge acquisition an immediate and individually tailored learning experience.

Bešić, Holzinger, Kopp-Sixt & Krammer (Hrsg.) (2023). Inklusive Bildung – regionale, nationale und internationale Forschung und Entwicklungslinien, S. 305–314
https://doi.org/10.56560/isbn.978-3-7011-0518-2_22

The school system and inclusive education in North Macedonia

Elementary and secondary education in North Macedonia

In North Macedonia (NMK), everyone has the right to education, and education should be accessible to everyone under equal conditions. The education system consists of preschool, elementary, secondary, and higher education. Elementary and secondary education are compulsory and free. Elementary education (encompassing primary and lower secondary schools) lasts nine years and is organized in nine grades for students aged six to 15. Secondary education lasts for four or three years, depending on the chosen education type. Students can either attend general secondary education (Gymnasium), which lasts four years, or vocational education, which lasts either three (vocational education for professions) or four years (vocational technical education). Within the vocational schools, there is also a possibility for a two-year education track preparing students for different professions. Secondary education is attended by students aged between 15 and 19, depending on the selected stream. Currently, there are 365 primary and 109 secondary schools registered in North Macedonia (Ministry of Education and Science, 2023). According to the State Statistical Office of the Republic of North Macedonia (2022), 186,649 students were enrolled in mainstream elementary education during the school year 2021/2022 and 71,018 students at mainstream secondary education.

Inclusive education in North Macedonia

Inclusive education has received more attention over the past several years. Recently, NMK has started to reform its disability assessment model to align it with Goal 4 of the UN 2030 Agenda for Sustainable Development and the UN's Convention on the Rights of Persons with Disabilities (United Nations Committee on the Rights of Persons with Disabilities, 2018). As a part of this reform process, a new Law on Primary Education was enacted in 2019. This legislation sets the framework for the inclusion of students with disabilities in mainstream primary schools and has several tenants.

First, it stipulates that elementary education needs to be organized in a way that enables inclusive education for all students. Inclusive education is defined as a process that considers individual needs for students' development, which enables equal opportunities for development and quality education as some of the basic human rights. To enable inclusion, it requires reasonable adjustment of the infrastructure be made, individualized support be developed, and individualized education plans (IEP) be enacted. Students with disabilities should also have access to the physical environment, modes of transportation, information and communication (technologies), and systems on an equal basis as other students.

Second, the law foresees a two-team approach to how inclusive teams and support for students with disabilities in mainstream schools should work. A School Inclusive Team

is set up by a school principal and consists of seven members: one school pedagogue/psychologist/social worker, two teachers, two parents/guardians, one special education teacher, and one principal. This team is responsible for implementing inclusive policies and practices at the school level. An Inclusive Team for a Student is formed for a student with an IEP or modified curriculum. The team is responsible for implementing support measures recommended upon student's functional assessment. Members of this team are the student's teachers, parent/guardian, school pedagogue/psychologist/social worker, and special education teacher.

Third, another aspect of the law explains how primary schools with a resource center are supposed to function, which were previously special education schools. Mainstream schools with inclusive settings can leverage these particular schools' resources, and these schools function as professional support networks for students with disabilities, their parents, and school staff. Schools with special education classes need to have a support center for students with disabilities. These support centers provide expert support to students, teachers, other school experts, the students' parents, and to the inclusive teams. The law even regulates the support for students with disabilities. Primary schools are obliged to provide an educational assistant, a personal assistant, expert support from the support center, an inclusive team, and appropriate assistive technology in accordance with the IEP. In January 2023, the Rulebook on Functional Assessment of Children and Youth with Disabilities was developed to help with these issues (Ministry of Labour and Social Policy, 2023).

These new legal developments notwithstanding, actually implementing inclusion in the manner envisioned by the government has been challenging. Most mainstream schools are largely unprepared for inclusion, both in terms of staff (lack of proper and practical skills, knowledge, and employees) and in terms of equipment and infrastructure. The COVID-19 pandemic added to these challenges: teachers taught mostly from home without prior training in how to prepare for digital teaching. Schools relied largely on teachers attending webinars on their own initiative. This led to younger and/or more ambitious teachers getting additional training on their own, and less motivated, technically unskilled, and/or older teachers – who found attending webinars and training programs difficult, primarily due to language barriers – not getting this training. This negatively influenced the teachers' self-confidence and motivation.

Skills for how to teach students with disabilities in a digital environment were also missing. The needs of this particular student group have been overlooked. Students with disabilities have often been neglected and cooperation with their parents has often been limited and sporadic, not because of the teachers' unwillingness, but as a result of lack of skills and poor organization. Implementing inclusion in this context has largely been unsuccessful.

Digital education in North Macedonia

Although NMK does not have a strict definition of the concept of "digital education," several strategic documents do address it. Some of them, such as the Strategy for Education 2018–2025 and Action Plan 2018 (Ministry of Education and Science, 2018), provide a broader education strategy. The goals are to intensify the application of digital technology use in education by establishing an e-platform, a learning management system (LMS), and continuous professional development of staff, building a system for recovery of computer equipment, and providing conditions for efficient maintenance of computer equipment and computer networks. Digital technology use and digital literacy are also priorities. Establishing a unified e-platform for teaching, learning, and methodological resources is a sub-priority. The aim of this platform for the elementary education sector is to set up a flexible system of distance education that is easy to use, adaptable to individual needs, and usable for learning in school.

Several indicators are set for the achievement monitoring of these priorities, such as:

- Approved standards for digital technology use at all education levels.
- Necessary ICT equipment provided to at least 50 % of the public educational institutions.
- Staff from the equipped institutions trained on digital technology use in the education process.
- Fully operational e-platform with up-to-date teaching and learning resources available to staff at all educational levels.

In NMK, digital competencies, according to the program documents, have been acquired through a school subject and as an interdisciplinary goal in all levels of education. Digital competences are described in the "National Standards for Achievements of Students at the End of Primary Education" as:

> These competencies include the use of ICT for access to information, efficient and effective use in problem solving, sharing of ideas, communication and collaboration in and out of school, creation of digital content, and ethical and safe use of digital technology in everyday life. (Ministry of Education and Science & Bureau of Education Development, 2021, p. 14).

This document also defines what digital competences students are supposed to develop by the end of primary education through a compulsory subject (Technical Education and Informatics) and electives (for example, Programming). Students should also use digital technology in the rest of their compulsory subjects such as languages, math, and natural science.

The "Concept Note on Primary Education", a document which was adopted in 2021 and will be implemented in the next six years, determines the following key areas of action in the elementary education sector: mastering basic skills (i. e., mathematics, language literacy) and digital competencies. Digital competence, technology, and entrepreneurship are listed as national standards to promote students' active participation in a technologically sophisticated modern society.

COVID-19 demonstrated the need for immediate, practical skills for online teaching and for teaching in an inclusive environment. Constant professional development of the school staff and adaptation of instructional and management skills to the possibilities of digitalization have become indispensable. It also brought to the surface the need for developing a national LMS, which would provide a solid basis for introducing, conducting, and upgrading distance learning. As for tackling the needs of students with disabilities, it has become clear that in order to achieve the desired outcomes, there is a serious need for a multilateral approach toward creating an IEP, assistance from another professional in the classroom as well as constant cooperation with and active involvement of parents, both in creating and conducting the educational process. The pandemic has also emphasized the need for multi-institutional cooperation and efficient networking in placing students with various disabilities in mainstream schools. Progress has been made in this direction, but the administrational and time-consuming procedures ahead of being appointed an assistant or being categorized for SEN are still aspects where improvement is needed.

Inclusive digital education in North Macedonian classrooms: Analysis of lessons

Method

The lesson setting

All lessons took place in a face-to-face inclusive classroom setting in primary schools (1st, 2nd and 8th grades). All examples come from teachers who have been working in a class with between 18 and 30 students where there is at least one student with a disability. The disability type referred to various expressions of autism spectrum disorder, attention deficit disorder, learning disabilities, cognitive disabilities, and epilepsy with severe intermittent mental absences. Three out of five teachers had assistance from either an educational assistant or a special education teacher during the described lesson. The lessons were in Mathematics (identifying numbers from 1 to 20, addition and subtraction to 20), English (prepositions and adverbs of place, spatial orientation and giving directions), Physics (influence of forces on motion), and Natural Sciences (origin, properties, and application of materials; senses and stimuli).

Participants

The lessons were collected from five female primary school teachers teaching in inclusive settings in three primary schools. Three examples were collected from one school in Kumanovo and one respectively from the other two schools in Skopje. As in the other case studies we have used purposive sampling and selected participants according to the same criteria.

Data collection procedure

Most schools had serious issues with online teaching due to a lack of proper infrastructure and equipment, which resulted in teachers teaching from home and having to use their own technical equipment. This led to a low response from NMK teachers, which made data collection challenging. In the DigIn partner school (Hristijan Karposh), 65 teachers were informed about this during a meeting at the beginning of May, 2022 and via email. Next, 14 emails with similar information were sent to 14 primary schools in Kumanovo and Skopje, first to those who took part in the SELFIE study, and later in May, 2022 to others. The response from teachers has been notably modest and low. We have received eight lesson examples. The ones that fulfilled the template according to the guidelines were chosen for the analysis.

Findings

Learning objectives in the competence areas

The five examples demonstrate clear learning objectives, generally related to identification and practical application of both already and newly acquired knowledge. Even though acquisition of target knowledge is predominant in the learning objectives, the four pillars of learning according to Delors (1996) can also be identified. "Learning to know" (learning to learn), the first and most prevalent pillar, can be identified in the aim to develop and further promote students' abilities to identify, name, apply, compare, and analyze knowledge, laws, principles and processes, and acquire specific skills such as: addition, subtraction, spatial orientation, and digital technology use. All five examples apply group work at some stage, which implies that "learning to do" is a component which is an integral part of the overall learning process. This was, however, not stated as an explicit learning objective in all the examples, even though all examples justified application of group work as an effective teaching strategy. According to the statements in the examples, group work contributes to a faster, easier, and more appealing process of knowledge acquisition. It also promotes mutual cooperation, facilitates communication, and ensures a positively competitive atmosphere. These components are closely connected to the remaining two pillars, "learning to live together" and "learning to be" since the lessons set objectives including activities to promote mutual understanding and support, acceptance of differences and interdependence, and respect for everyone's unique potential.

In only one of the collected examples, the teachers include digital competences in the lesson goals, even though digital competences are not formally included into the primary school curricula in NMK. In this case, the teachers stated "understanding and accepting digital literacy as necessary for functioning in everyday life", since "it facilitates learning, life and work, contributes to the expansion of communication, creativity and innovation, offers various opportunities for entertainment". In the same example, the teachers have also included collaboration through digital technologies as another lesson goal.

Didactic Adaptivity

All student groups consisted of students with various learning abilities; thus, differentiation of tasks and learning objectives is present in all five examples. The examples point out that individual objectives are set for the student with disability at the beginning of each school year. In addition to the IEP in each lesson description, active use of digital technology in achieving the learning objectives was emphasized as an important differentiation tool. The five teachers differentiated their lesson by adjusting the content, process, and product, whereby content and product differentiation were described in more depth.

Content differentiation

Differentiated learning objectives and activities were set for each student with disability. Audio, visual, and kinesthetic aids were used in order to achieve the learning objectives and facilitate the processes of learning, understanding, knowledge acquisition, and retention. Teachers made efforts to make instructions as simple and straightforward as possible, both on screen and in written documents. All five tried to visually present (or inspire students to do so on their own) targeted lesson content, which, according to the statements made in their examples, led to more effective, faster, and more positive learning outcomes for all students, not only for students with disabilities.

Process differentiation

Visual support proved to be particularly successful in the learning process for students with learning disabilities. Each step of the implemented activities was visually supported by all teachers. According to the teachers, this let the students understand the content and activities easier. One teacher stated that visual representation of results let students express their conclusions faster and more easily. Digital technology use enabled an alternative for speech expression. It also contributed to increasing all students' curiosity, which is the principal driving force for learning something new when facing challenges. One teacher pointed out that digital technology use has contributed to students being able to solve mathematical problems more easily and confidently. In addition, students were exposed to learning while having fun, supporting, and cooperating with each other to come to a solution of a math problem. Due to the process differentiation with digital technology, teachers concluded that students' social communication skills increased, evident in

both the teacher-student and student-student interactions. Students' general motivation and interest in digital technology use also increased. Independent learning, group work, and cooperative learning were also applied at various stages during the lessons.

Product differentiation

Students had the chance to use different products to demonstrate what they learned. Depending on the lesson, students were asked to create a video, choose an activity they felt comfortable doing, or to collect and interpret data from simple calculations.

Tool accessibility

All digital technology used was easily accessible. Depending on the student's disability, timed responses were avoided, and the student was allowed enough time to respond, or, in another case, to make as many alterations to the final version of the video as possible. Keyboard access was provided to all toolbars and menus. Voice-over, easy-to-read texts, and font enlargements were used in order to facilitate identifying mistakes in a text written in a foreign language. Both visual and audio support were used to help students construct sentences. Visual representation of different data contributed to an easier drawing of conclusions regarding a law in physics. Using digital tools that aligned with the students' particular needs helped increase their confidence and progress in communication with other students.

SAMR-Modell & 4Cs

Regarding the level of technology integration according to the SAMR model, the examples are at the "substitution" stage. The examples demonstrate that "[...] technology is directly substituted for a more traditional teaching tool or method. It is a simple, bare-bones, direct replacement" (PowerSchool, 2021, para. 5). Substitution, being at the bottom of the stages in this model, does not imply that technology is used at its simplest form, but rather that it was the best choice at a particular moment for achieving a set learning objective, regardless of the student's (dis)abilities. During an English lesson, for example, Flipgrid proved to be an excellent video platform to stimulate discussion. It was used as a substitution for oral/PowerPoint presentations as well as a replacement for uncomfortable public speaking tasks. It enabled new ways of learning and interaction and prompted students' speaking skills.

As for the 4Cs, the examples show ample evidence of creativity, communication, and collaboration, but the promotion of critical thinking was lacking. Out of the four 21st-century competencies, collaboration and communication were the most prevalent. Student creativity was encouraged through activities where teachers asked students to think outside the box. Teachers tried to create and maintain flexible learning environments and, at the same time, provide guidance to students searching for alternative solutions to prob-

lems and challenges. Using digital technology helped teachers promote these competencies. For instance, Flipgrid was used to promote students' presentation and speaking skills as well as their self-confidence, creativity, and active participation. C Board was used to facilitate pronunciation, sentence formation, and communication in general, and to further develop students' critical thinking and digital competences.

Conclusion

Both the outbreak of the COVID-19 pandemic and the lack of proper professional training of the teaching staff regarding online teaching and learning have left their mark on the NMK educational system. Most schools had serious issues with online teaching because, until the pandemic, most schools and teachers had no (or very limited) experience with digital technology use. For the teachers that did so, they gained their knowledge about digital technology through individual research, networking, sharing experiences with colleagues, and during webinars. However, it has largely been done at the individual-teacher level. This general lack of training could be the reason that the lesson examples examined in this chapter focused solely on specific knowledge acquisition. Developing students' critical skills through digital technology use is a more advanced step, and it is an area that could benefit from further improvement in the future.

On a more general level, it is clear that the infrastructure of schools needs to be modernized to enable a more effective process of digital education. Schools, moreover, need to design and implement their own digital strategies and actively work on promoting and upgrading digital competences of teachers and students.

When it comes to inclusion in the digital environment, success in NMK has been limited. The overall situation has seriously affected teachers' self-confidence and willingness to share their practice in the fields of inclusive digital education. There is a major need for continuous professional development and practical training of NMK teachers in the field of inclusive digital education. To put it simply: Teachers need to have access to effective professional development and training courses for how to use digital technologies in an inclusive way. This chapter can hopefully point the way forward in this regard.

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