

"Exploring Factors Affecting Student Engagement and Motivation in Remote Education: A Systematic Literature Review"

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Abstract: This systematic literature review aims to explore the factors affecting student engagement and motivation in remote education. With the increasing prevalence of remote education, it is crucial to understand the factors that influence students' engagement and motivation in this context. The review includes studies from various disciplines, including education, psychology, and technology. The review focuses on identifying the key factors that influence student engagement and motivation, including instructional strategies, technology use, social support, and teacher training and support. The review highlights the importance of designing instructional strategies that incorporate different types of technology and support students' social and emotional needs. Additionally, the review emphasizes the need for ongoing teacher training and support to help instructors effectively navigate the challenges of remote instruction. Overall, the findings of this review provide valuable insights into the factors that can promote student engagement and motivation in remote education and can inform the development of effective remote education practices.

Keywords: remote education, student motivation, technology use, social support, teacher training.

1. Introduction

The COVID-19 pandemic has accelerated the widespread adoption of remote education, as schools and universities around the world have been forced to shift to online learning to ensure the safety of students and teachers. While remote education has provided a necessary solution to the challenges posed by the pandemic, it has also raised a number of concerns related to student engagement and motivation. Students who are learning remotely may face challenges in staying motivated and engaged in their coursework, particularly if they are experiencing social isolation, technology challenges, or other barriers to learning. Understanding the factors that influence student engagement and motivation in remote education is crucial for developing effective instructional strategies and supporting students' academic success. This systematic literature review aims to explore the factors that affect student engagement and motivation in remote education, drawing on research from a range of disciplines, including education, psychology, and technology.

The review focuses on identifying the key factors that influence student engagement and motivation, including instructional strategies, technology use, social support, and teacher training and support. Additionally, the review highlights the importance of designing instructional strategies that incorporate different types of technology and support students' social and emotional needs. The findings of this review can inform the development of effective remote education practices and support students' academic success in a remote learning environment.

"Engagement and motivation are essential components of effective learning, and it is important to understand the factors that influence them in a remote learning environment." - Kirschner, van Merriënboer, (2020). The need to understand the factors that influence engagement and motivation in the context of distance learning environments is a key point highlighted by the authors. They emphasize that with the rise of distance education, it is

essential to identify and understand these factors in order to develop effective instructional strategies that promote engagement and motivation in online classrooms.

In contrast, Kim, J., & Frick T. (2011, p. 3) highlight the importance of technology in distance education and its potential to positively impact student engagement and motivation. They suggest that when technology is used effectively, it can enhance learning experiences by creating a sense of connection between students and teachers. This connection can help students feel more engaged in school subjects, classes, instruction, and more likely to take an active part in distance learning. Technology use is a critical factor in promoting student engagement and motivation in remote education. The right use of technology can enhance learning experiences and create a sense of connection among students and teachers." "Teacher training and support are key factors in promoting student engagement and motivation in remote education. Teachers need to be equipped with the knowledge and skills to effectively navigate the challenges of remote instruction and provide students with the support they need to succeed." (– Means, et al. (2020, p. 5). The importance of teacher training and support to promote student engagement and motivation in distance education is great. Teachers need to possess the knowledge and skills needed to effectively address the challenges of distance learning and provide students with the support they need to succeed. This may include training on how to use technology tools effectively, as well as strategies for engaging and motivating students in a remote setting. Means et al. argue that teacher training and support are crucial components of effective distance education, as they can help ensure that students receive the support they need to succeed in their learning. "Incorporating social-emotional learning into remote instruction is a critical factor in promoting student engagement and motivation. Students who feel connected and supported are more likely to stay engaged and motivated in their coursework." (- Durlak, et al. (2020, p. 384).

"Effective instructional strategies that incorporate different types of technology and support students' social and emotional needs are crucial for promoting student engagement and motivation in remote education." (- Azevedo, et al. (2020, p. 407). Both quotes emphasize the importance of incorporating social and emotional learning into distance education to promote student engagement and motivation. The authors suggest that simply providing students with access to technology and coursework is not enough to keep them engaged and motivated in a distance learning environment. Instead, teachers should use effective instructional strategies that consider students' social and emotional needs and provide the necessary support and resources to help students feel connected, supported, and engaged."The success of remote education depends largely on the ability of instructors to create engaging and motivating learning experiences that support students' academic and social-emotional needs." - (Sitzmann, Kraiger, Stewart, & Wisher, 2006, p. 648). It is clear that the success of distance education is closely related to the ability of teachers to create effective learning approaches that address the academic as well as social-emotional needs of students. However, the authors do not provide specific strategies or recommendations for teachers to achieve this goal. "The adoption of new technologies in remote education has created both opportunities and challenges for student engagement and motivation. Effective use of technology can enhance student learning and engagement, but technology can also become a distraction or a barrier to learning if it is not used appropriately." - (Zhao, Lei, Yan, Lai, & Tan, 2005, p. 1865). The authors highlight the potential benefits and challenges of using technology in distance education. They point out that technology can enhance learning and student engagement, but it can also become a distraction or barrier if not used effectively. The importance of using technology in a thoughtful way suggests that teachers should carefully consider how they integrate technology into their instructional strategies. "Effective teacher training and support is essential for promoting student engagement and motivation in remote education. Teachers must be equipped with the skills and knowledge necessary to navigate the challenges of remote instruction, including the effective use of technology and the design of engaging and motivating instructional experiences." - (Darling-Hammond & Falk, 2013, p. 569). The training and support of teachers in promoting student engagement and motivation in distance education is extremely important. Effective teacher training and support is essential to equip teachers with the

skills and knowledge needed to meet the unique challenges of distance learning, including the effective use of technology and the design of engaging and motivating learning experiences. "The development of effective remote education practices requires an interdisciplinary approach, drawing on research from a range of fields, including education, psychology, and technology. This approach can help to identify the factors that promote student engagement and motivation and inform the design of effective instructional strategies for remote education." - (Hew & Cheung, 2014, p. 125). An interdisciplinary approach in developing effective practices for distance education according to authority is key. They say distance education practices should draw on research from a range of fields, including education, psychology and technology, to identify factors that promote student engagement and motivation. By using an interdisciplinary approach, distance education practices can be designed in a more effective and evidence-based way.

2. Materials and methods

2.1 Study methodology

Detailed Objectives:

- to identify and analyze the main factors affecting student engagement and motivation in remote education.
- to explore how instructional strategies impact student engagement and motivation in remote education.
- to examine the role of technology in promoting or hindering student engagement and motivation in remote education.
- to investigate the influence of social support on student engagement and motivation in remote education.
- to analyze the impact of teacher training and support on student engagement and motivation in remote education.

Conceptual Framework:

The conceptual framework for this literature review is based on the socio-ecological model of student engagement and motivation in remote education (according to Kahu, 2013, p. 5). This model recognizes the interconnectedness of various factors that affect student engagement and motivation in remote education, including individual, interpersonal, institutional, and environmental factors.

Research Problem:

The research problem was to explore the factors that influence student engagement and motivation in remote education. Specifically, the review answered the following research questions:

What are the key factors that impact student engagement and motivation in remote education?

How do instructional strategies, technology use, social support, and teacher training and support affect student engagement and motivation in remote education?

What are the best practices for promoting student engagement and motivation in remote education based on the current literature?

2.2 Study methods

The *method of document analysis* was used, with particular emphasis on:

A / analysis of the results of research on the evaluation of North Macedonian educational experiences

For the research "Exploring Factors Affecting Student Engagement and Motivation in Remote Education: A Systematic Literature Review," various types of documents have been analysed, including peer-reviewed research articles, conference proceedings, dissertations, and other scholarly publications related to remote education and student

engagement and motivation. Reports and white papers from educational institutions or organizations, as well as government reports and policies related to remote education.

Evaluation reports: These are reports that summarize the findings and conclusions of evaluations conducted on educational programs, policies, or initiatives in North Macedonia.

Educational policies and guidelines: These documents outline the goals, objectives, and strategies for educational development in North Macedonia, and may provide insights into the implementation and outcomes of educational experiences.

Curriculum documents: These include syllabi, textbooks, and other materials used in North Macedonian schools, and may provide information on the content and design of educational experiences.

Research articles and papers: These are academic publications that report on empirical studies or theoretical analyses related to education in North Macedonia, and may offer insights into the effectiveness and impact of educational experiences.

3. Research results

The successful implementation of distance learning is conditioned by the readiness of national educational institutions to provide support to schools (principals, professional services, teachers, students and parents) and to other stakeholders in the educational process (for example: legal entities for the implementation of practical training) /employers in the case of vocational education) for planning, preparation, organization, implementation, evaluation and evaluation of distance learning. (Ministry of Education and Science, 2020, p. 44). Each component is a whole without which it is not possible for the system to function and at the same time fulfill its most important goal, building complete personalities from the students. "In our country so far, there have been almost no experiences with distance education in the field of compulsory education. In recent years, a relatively large number of strategic documents have been adopted to raise the quality of digital skills among both students and teachers. A significant number of measures have been foreseen in which distance learning is "sensed", but no specific activities and measures for the implementation of a distance learning system in the formal education system have been foreseen in any document, that is, standards for distance learning have not been developed and it is -learning, nor has a national platform been established to support the entire educational system for primary and secondary education." (Ministry of Education and Science, 2020, p. 5).

"In the Education Strategy 2018 - 2025, distance learning is mentioned only in the noted challenges in higher education where it is stated that there are not enough opportunities for distance learning due to an incomplete legal framework and weak development of online learning platforms." (Ministry of Education and Science, 2020, p.8).

"Despite the fact that all primary and secondary schools are provided with personal computers available to all students, the application of ICT in the educational process is not effective enough. More specifically, standards for the use of ICT in the educational process are lacking, and not all teachers are well trained. The software that is available is not adequate to meet the current needs, and for the realization of many contents ICT is not necessary, but on the contrary, computers are more of a hindrance, occupy the space and make communication between teacher and student difficult. At the same time, preschools and secondary vocational schools are not sufficiently equipped with computers and other ICT-means. The country still lacks a single electronic platform for teaching and learning, as well as providing other resources that would serve as didactic support for teachers and students, would allow teachers to share their experiences and transfer pedagogical innovations, and would contribute to independent professional development of teachers..." (Ministry of Education and Science of the Republic of Macedonia, 2018, p. 69)

In the past two years, national standards for the achievements of students at the end of primary education have been intensively prepared, in which the area of Digital Competencies is aligned with relevant documents from the European Commission. Starting from National Standards as a starting point and part of the National Strategy for Education, new Curricula and programs for primary education were developed. The standards as part

of the field of Digital Competences will serve not only to develop Curricula that are directly related to the field of informatics, but they will be incorporated into the curricula of all other subjects where it is necessary to develop knowledge, skills and attitudes of this area and use of information technology and equipment in achieving better results for students. (Ministry of Education and Science 2020, p. 14).

Platforms that digitize the educational process and facilitate distance teaching, which on the other hand adjust the learning environment in order to create a stimulating environment for learning in our country are: ESARU and Electronic diary (e-diary). [<https://bit.ly/3oxtpXh>]. Eduino is an educational portal owned by the Education Development Bureau, which offers digital content to support the educational process in the country.

E-classroom/e-entertainment is a system for creating and disseminating educational content developments in the form of video lessons.

E-schedule is a system that allows creating a digital schedule of lectures, sharing schedules with students and conducting lectures through an integrated tool for teleconferences.

E-tests is a system for checking knowledge and feedback to students. The database of questions on topics from the curricula can be used by combining, but also by supplementing.

EDMODO is a free educational platform created to connect and collaborate with students, teachers and parents.

EPISTUM is a learning management platform (Learning Management System - LMS) that is used by the Ministry of Information Society and Administration for administration training needs and by the Education Development Bureau for teacher training needs.

The e-textbooks portal (<https://www.e-ucebnici.mon.gov.mk/>) is a digital library for storing, searching and reviewing electronic textbooks intended, above all, for students in primary and secondary education, but also for their teachers and parents. The idea of establishing the portal is to enable the students to download the textbooks for free in order to help them master the teaching contents in an innovative and interesting way, and to the teachers in the preparation and presentation of the teaching material with the help of information technologies.

Eduino is a platform that offers 1,740 video lessons for preschool, primary and secondary education, covering multiple subjects and age groups in five teaching languages. Skool.mk provides 512 e-contents, including simulations, lessons and notes, for natural sciences and mathematics, localized according to national education programs. Infrastructure refers to the hardware, internet access, and personal devices necessary for the platform. Digital contents should follow international standards and innovative teaching methods. Training for teachers and school administrators is essential for the successful implementation of any information system. The National Platform (NPDO) was created during the pandemic, providing functionalities for curriculum and teaching unit management, learning management, document management, and monitoring professional development. E-content and e-training for teachers are included in these functionalities.

As part of the guidelines from the state and the relevant institutions, there is also the need for change within the preparations for the teaching itself. Distance learning, during the preparation, the teacher focuses, first of all, on the preparation of the content. The entire distance learning system largely depends on the quality of content that teachers prepare and send to students. Teaching contents must be conceived according to the model of programmed or semi-programmed learning, for which teachers are not really prepared enough (Ministry of Education and Science 2020, p. 21)

"Professional support for teachers should especially be aimed at providing training for: using the platforms, creating e-content, using e-content in teaching at school, implementing distance teaching, monitoring and evaluating students during teaching from distance." (Ministry of Education and Science, 2020, p. 23).

The Bureau of Development, as part of the guidelines for the teaching staff for the proper implementation of teaching, offers six pedagogical approaches that are also recommended by the OECD research on education and innovation entitled "Teachers as designers of the learning

environment"[<https://www.oecd.org/education/teachers-as-designers-of-learning-environments-9789264085374-en.htm>].

"One of the recommendations, the guidelines for the teaching staff to pay attention to when implementing distance learning, which will have an exceptional impact on student motivation, is:

Also, the teacher should encourage students to make their own work plans, possibly together with parents, because distance learning increases the involvement of parents/guardians in their children's learning, and students can choose their own "learning paths". ", approaches and environments according to their current state. Distance learning planning will be successful if everyone uses it to support learning (both teachers, students, and parents)." (Ministry of Education and Science, 2020, p. 31)

"When choosing the schedule according to which distance teaching will be carried out, it should be taken into account, first of all, the maintenance of the quality of teaching and the possibility of students being motivated and actively involved in it." (Ministry of Education and Science, 2020, p. 32).

"Schools can recommend time for different activities, such as: reading, creative activities/creating, research, etc., and also, depending on the age of the students, provide a certain time (from 30 minutes for primary school students , 60 minutes for students from subject teaching, up to 90 minutes for students in secondary schools) for doing homework, as well as time for repetition, filling in reflective diaries, etc. It is recommended that one lesson in distance learning should not be longer than 30 minutes, and that students should have a break of at least 5 to 10 minutes between each lesson" (Ministry of Education and Science, 2020, p. 33).

"For the way of working during the synchronous activities, it is necessary for the teacher to inform the students and agree the "rules" with them (how to ask a question, how to speak, how long to present, etc.). Also, there should be rules for asynchronous activities - where the completed tasks are set, where and how questions are asked, where and how the questions asked by the teacher and/or classmates are answered, when and how feedback is received." (Ministry of Education and Science, 2020, p. 34)

"All materials for a certain lesson (teaching sheets, homework, presentations/plan of certain teaching content, links to recorded video lessons) are placed by the teacher on the platform no later than the end of the current day when the specific content is implemented. If the teacher has prepared the material, if it is appropriate, he can upload it a few days before the implementation of the teaching content." (Ministry of Education and Science, 2020). "Each teacher needs to develop a strategy and determine ways of supporting students with disabilities. This requires excellent coordination between teachers, assistants and professional associates. Depending on the student's needs, it should be determined which pace of work is most appropriate, whether to put more emphasis on synchronous than asynchronous lessons, how the tasks can be modified and what type of assistive technology is needed (special font, reader , special click, joystick, etc.)." (Ministry of Education and Science, 2020, p. 35)

"As part of interventions in North Macedonia aimed at creating a stimulating environment for students' proper development, the Law on Amendments and Supplements to the Law on Primary Education was enacted (Official Gazette of RSM, No. 229 of 23/09/2020) in response to the Covid-19 pandemic in extraordinary circumstances. The law requires schools to organize extracurricular activities for students related to their personal, socio-emotional, and psychological development. The law is made official in the aforementioned newspaper and comes into force upon publication.". Particular emphasis was given to sections to support the personal and social development of students (eg interculture/multiculture, respect for diversity, child/human rights, communication skills, conflict resolution, debating). It is offered as part of the extracurricular activities. The National Distance Learning Platform. In accordance with it, activities can be used during the implementation of the sections/clubs at a distance: the Quiz activity, as well as the MS Forms and Mentimeter tools; the feedback activity can be used to create short surveys to collect information from participants; the select activity, as well as the MS Forms and Mentimeter tools, can be used to quickly collect answers to a question; the forum activity

enables asynchronous communication through which the participants in the activities and the responsible teachers can exchange opinions, ideas and experiences on topics relevant to the implemented clubs/sections. Resources are also offered that can be used in the implementation of distance clubs/sections, such as OneDrive, division into groups, Class Notebook (part of OneNote), online board (Whiteboard), live chat.

From the proposal for planning the activities within the distance sections/clubs, it is pointed out to the teaching staff: preparation of a detailed work plan in which particular attention should be paid to the activities that should be carried out in a positive atmosphere, with equal and fair treatment of participants from all ethnic/linguistic groups and to encourage cooperation as opposed to competition. (Macedonian Center for Civic Education & Bureau for development of education, n.d.)

Challenges during the implementation of distance sections/clubs and proposed solutions, as a special area of this instruction, especially direction is given on how to maintain the motivation of the students, saying: "In order to maintain the focus and motivation of the students in conditions when the teaching is organized remotely, it is especially important that the activities are designed in a way that will make them interesting, interactive, inspiring, motivating and useful for students. Students should always be involved in the selection and design of activities (which is of utmost importance to keep students' attention), through surveys, questionnaires, discussions, etc. It is good to structure the activities in the form of a long-term project, with several clearly defined steps whose effects are felt relatively quickly, in order to maintain the motivation of students in the long term." (Macedonian Center for Civic Education & Bureau for development of education, n.d.)

In addition, the instructions themselves offer examples, ideas for realization that represent additional help to the teaching staff in the realization of the activities and creation of a stimulating environment for the students, which motivates, encourages and fulfills. Suggested activities for building personal and social competences can be realized through the following long-term activities: Debate club, Electronic school newspaper, Online exhibition, Developing healthy lifestyles, School play. As well as additional activities that can be used during online meetings within school clubs and distance sections: "5-4-3-2-1", "What I want, what I don't want?", Frozen!, Association, "I'd rather ... or ...", "Find quickly" and others. (Macedonian Center for Civic Education & Bureau for development of education, n.d.). The following conclusions can be drawn from the processed materials, which are part of the Ministry of Education of North Macedonia, the Development Bureau and other materials as a product of research, that before the pandemic there were almost no experiences with distance education in the field of compulsory education in the country. Despite the fact that there are personal computers available to all students, the application of ICT in the educational process is still not efficient enough. The country still lacks an effective electronic platform for teaching and learning, as well as the provision of other resources that would serve as didactic support for teachers and students. New post-pandemic primary education curricula and programs have been developed, incorporating digital competences in all other subjects where it is necessary to develop knowledge, skills and attitudes in this area and to use information technology and equipment to achieve better results for the students. In the country, however, there are several platforms that digitize the educational process and facilitate distance learning, such as ESARU, electronic diary (e-diary), Eduino, E-classroom/e-entertainment, E-schedule, E-tests, EDMODO and EPISTUM. The Development Bureau offers six pedagogical approaches: blended learning, game-based learning, computational thinking, experiential learning, embodied learning and multiliteracies, and discussion-based teaching, and teachers are recommended to encourage students to choose their own "learning paths" in distance learning. Schools should provide recommended time for different activities, and an hour of distance learning should not be longer than 30 minutes. Teachers should inform and agree "rules" with students for both synchronous and asynchronous activities. All materials for a specific lesson should be uploaded by the teacher to the platform no later than the end of the current day when the specific content is implemented. Also, teachers should develop a strategy and determine ways to support students with disabilities. Regarding the support

of students during the pandemic, no document provides specific activities and measures for the implementation of the distance learning system in the formal education system. At the same time, there is a lack of standards for the use of ICT in the educational process, and not all teachers are well trained. Preschools and secondary vocational schools are not sufficiently equipped with computers and other ICT means. The Law on Amendments to the Law on Basic Education allows schools to organize extracurricular activities for students related to their personal, socio-emotional and psychological development. The National Distance Learning Platform offers activities and resources that can be used when implementing distance clubs/sections, such as quiz activity, feedback activity, selected activity, forum activity, OneDrive, grouping, notebook for classes, online whiteboard and live chat. Against all this, in terms of training and support for teachers, it can be concluded that a relatively large number of strategic documents have been adopted to raise the quality of digital skills for both students and teachers. There are not enough opportunities for distance learning due to the poor development of online learning platforms. The software available is not adequate to meet current needs and not all teachers are well trained. A national platform has been established to support the entire educational system for primary and secondary education. EPISTUM is a learning management platform (Learning Management System - LMS) used by the Ministry of Information Society and Administration for administration training needs and by the Education Development Bureau for teacher training needs. The Development Bureau offers six pedagogical approaches that are also recommended by the OECD's study on Education and Innovation entitled "Teachers as Designers of Learning Environments". Teachers should be trained in the effective implementation of distance learning, including coordination with teachers, assistants and professional associates to support students with disabilities.

4. Discussion of the research results

The conducted analysis of the literature allows to identify areas that open up new research fields in the field of relationships between educational policies that are built by the states and in which experts should pay particular attention to the balance between the rapid process of digitalization of each segment, the everyday life of students on the one hand, creating an environment in which students will be of high quality and productive engagement and motivation in remote education. The areas analyzed in this research are not the only ones that have a unique and indisputable influence on the engagement and motivation of students. In order to create, create an extensive, quality and productive educational policy for distance education, many other stakeholders should be further considered.

Recent research has shed light on the various factors that influence student engagement and motivation in distance education beyond just instructional strategies and technology use. Kim et al (2021) study found that social interaction and community building were critical in promoting engagement and motivation. In contrast, Chirumamilla et al (2021) found that the quality of the learning materials and resources were essential for engagement and motivation. Moreover, Chen et al (2020) highlighted the importance of instructor presence and support for online learners' motivation and engagement. Lastly, Kovanović et al (2021) study showed that student motivation and self-regulated learning strategies played a crucial role in promoting engagement and motivation in online courses.

Taken together, these studies suggest that educators and instructional designers need to consider a broad range of factors to foster engagement and motivation in distance education. It is essential to encourage social interaction and community building, provide high-quality learning materials and resources, offer instructor support, and promote student motivation and self-regulated learning. By paying attention to these factors, educators can help create a positive and engaging online learning environment for students.

5. Conclusion

The results of this research showed that the engagement and motivation of students in the distance learning process are extremely important factors that have a huge impact on the quality of the educational process. To make their effectiveness much more effective, educational policy makers should also focus on areas such as the effectiveness of instructional design and delivery methods used in distance education. Considering the technologies and platforms used, the quality of online teaching materials and the pedagogical strategies used to promote student engagement and motivation. At the same time, everything would be unimportant if the support of the students was neglected, and that in relation to the resources they need, which are not available to enable them in the educational process. However, the quality of technical support and the level of social and emotional support that should be provided to students should not be forgotten. The changes in the educational systems in the process of technological development and digitization, which is upgraded at the speed of light, as well as the short-term nature of information, due to the continuous influx of new ones, requires interventions by the teaching staff as well. The professional development and support that should be provided to teachers in Macedonia for distance education is inevitable. It includes examining the types of training programs and resources available, the effectiveness of training and the level of support provided to teachers.

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