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## MODEL OF BLENDING VIRTUAL AND TRADITIONAL CLASSROOMS IN SCHOOLS (FROM PRESCHOOL TO HIGH SCHOOL)

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**Abstract:** We live in times of rapid development of information technologies. In recent months, the unexpected COVID-19 crisis has indisputably demonstrated the importance of information and communication technologies (ICT) in education. However, not only can technologies enable the continuation of learning when students are not together in a physical classroom, but they can also benefit learning, participation, creativity and communication when used in the traditional classroom. This paper will focus on the definition of blended learning and will present some recent findings that reveal why blended learning can be beneficial in the traditional classroom. The implementation of a blended learning model combining elements from traditional and virtual classrooms will be described and discussed. The model is applicable in all stages of school education – from preschool all the way through high school. It combines face-to-face, in-person communication and collaboration in the traditional classroom with remote video-conference live communication and interactive content. Usually, during traditional classes, the students interact from their physical classroom environment with a remote guest teacher online through a virtual classroom. They use videoconferencing to interact directly with the virtual teacher. Thus, they can ask and answer questions, participate in quizzes, etc. Moreover, the virtual teacher uses online tools to visualize and demonstrate learning content, which supports the perception and assimilation of new information. The entire interaction is facilitated by the students' main teacher on-site and usually continues with offline practical tasks or educational games to enhance and consolidate new knowledge and skills.

In the winter of 2018, 87 preschool- and schoolteachers from Europe and Asia were trained to apply this model in their classrooms. They were also involved as participants in similar interactions with a remote guest lecturer in the virtual classroom and a lecturer on-site. Afterwards, they completed a survey to share their opinions about the application, its benefits and the resources needed to implement the blended learning model. The results showed that the respondents find a great variety of options for application of the blended model in any subject area. They see its potential to support real-life learning, to increase student motivation and engagement, and to improve the students' communication skills not only in their native language but also in other languages. What respondents think they need most is equipment, connectivity and teacher training. The teachers acknowledge the importance of blended learning as they see school as one of the places where children should have opportunities to acquire skills on how to use technologies as well as how to avoid online risks.

**Keywords:** virtual classroom, blended learning, preschool, traditional school

### 1. INTRODUCTION

Online learning is one of the fastest growing sectors in the field of education (A National Primer on K-12 Online Learning, 2010). This is largely due to the ability of this type of training to overcome a number of geographical and demographic constraints of the physical environment, while providing options for improving the quality of educational content and pedagogical interaction. Due to the new opportunities they offer, technologies are increasingly proliferating the traditional learning environment through blended learning – a pedagogical approach that combines the effectiveness and socialization opportunities of the classroom with the technologically-enhanced active learning possibilities of the online environment. The right combination of the best elements of traditional and online learning in a new type of interaction is related to the implementation of appropriate instructional strategies, as well as the reformulation of the goals, roles of the participants in the learning process and the organization of the learning environment.

According to the International Association for K-12 Online Learning (iNACOL, now Aurora Institute), blended learning is described as a model that supports in-class activities for students in an actual classroom, whereas online learning occurs entirely outside of the classroom and entails no physical student presence at all (Transforming K-12 Rural Education through Blended Learning: Barriers and Promising Practices, 2013). Such practices began to appear in the United States in the late 1990s (Annual Review of Policy and Practice Keeping the Pace with K-12 Digital Learning, 2015). At this time, traditional schools began to create online content and use technology to support the learning process. In this context, online learning is emerging as a solution to specific problems related to providing learning opportunities to remote areas, supporting children at risk, etc.

Recent reports reveal that blended learning is one of the most effective learning models (Evaluation of Evidence-Based Practices in Online Learning, A Meta-Analysis and Review of Online Learning Studies, 2010). According to

a survey conducted in the United States in 2011, 76% of teacher respondents indicated that blended learning is beneficial for students, while 59% reported increased motivation to learn in a blended environment (Learning in the 21st Century, A 5 Year Retrospective on the Growth in Online Learning, 2011). 73% of teachers who participated in a study by the US Center for Digital Education (CDE) in 2013 reported that the application of blended learning leads to increased student engagement (Blended Learning and the K-12 Classroom, 2013). Another survey by CDE from 2015 found that 43% of teachers of preschool children up to the 12th grade applied mixed learning models, combining online and traditional learning (Effective Instructional Tools for an Evolving Learning Landscape Report, 2015).

This demonstrates that blended learning is entering the everyday life of the traditional classroom more and more successfully. It is applied in all types and stages of education, as well as in all subject areas. Blended learning has the potential to redesign the pedagogical interaction in the following areas:

- Building a learner-centered environment in which the student with their unique characteristics and needs is at the center of the interaction.
- A new role of the educator – the unlimited access to content offered by technology changes the function of the educator from a single source of knowledge to a facilitator who guides and supports the learners in developing their potential.
- Higher levels of interactivity.
- Creating conditions for increased motivation, personal expression, creativity and active participation in pedagogical interactions.

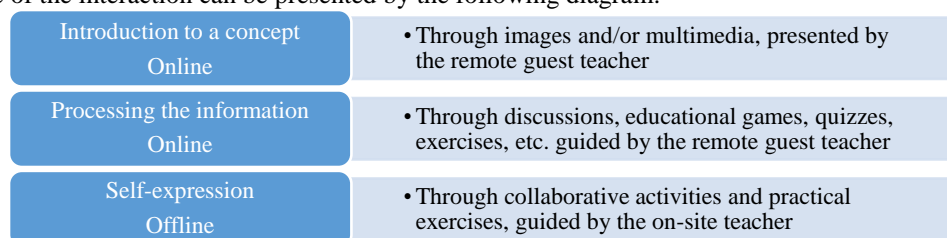
This article aims to present a blended learning model in which the virtual classroom is used in the traditional learning environment. The model is described in the next section. The virtual classroom is a synchronous virtual learning environment that allows for participation in real-time learning activities regardless of location. The learners and the instructor work together at the same time and in a shared online environment (Martin & Parker, 2014). The virtual classroom offers a number of advantages such as collaboration, communication, convenience, efficiency, ease of interaction management, individualization, and timely and constructive feedback (Strohmeier, 2011). The interaction between teacher and students takes place through videoconferencing. Additionally, these types of learning environments have tools for presenting learning content in various formats such as an interactive whiteboard for sharing images, documents, tables, schemes, etc.; a media player for audio and video files; and a screen sharing option to demonstrate additional programs and learning applications. Virtual classrooms also provide an opportunity for collaborative and individual activities, as well as for work in small groups. In this environment, the instructor has the important role of guiding and supporting the interaction. Some of these interactive elements are not available in asynchronous virtual learning environments (F. Martin, 2012).

## 2. MATERIALS AND METHODS

The blended learning model presented in the study combines elements of the traditional and the virtual classroom. The face-to-face in-person communication and collaboration in the traditional classroom is enhanced by remote video-conference live communication and interactive content representation in the virtual classroom. This approach can be successfully implemented in all stages of education.

The students interact from their traditional environment with a remote guest teacher online through a web-conferencing virtual classroom. The interaction lasts 15-20 minutes. The remote guest teacher uses the virtual classroom's whiteboard and media player to visually present the learning content. The students can interact directly with the remote guest teacher via the video-conference connection – they can ask and answer questions, participate in quizzes, etc. The interaction is facilitated by the main teacher on-site and usually continues with offline practical tasks or educational games prepared beforehand by the remote teacher/expert.

The structure of the interaction can be presented by the following diagram:



*Figure 1. Diagram of the structure of interaction in the presented blended learning model.*

The equipment needed to connect with the remote guest teacher through the virtual classroom is a device (laptop, personal computer, tablet), large screen (a multimedia player, TV or an interactive whiteboard), web-camera (preferably wide-angle) and wireless microphones.

Usually, the interaction with the remote guest teacher is planned as an additional activity on a certain topic from the curriculum. The close collaboration between the teacher and the online lecturer is crucial – they have to discuss in advance the students’ level and specifics, as well as the objectives and the expected outcomes of the virtual session. The remote guest teacher has to provide high interactivity as well as multiple representations of content during their presentation in order to ensure student engagement and active participation.

In the winter of 2018, 87 preschool- and schoolteachers from Europe and Asia were trained to apply this model in their classrooms. Following the training, they were involved as participants in this kind of interaction with a remote guest lecturer in the virtual classroom and a lecturer on-site in the traditional classroom. The teachers were gathered in a university lecture hall and supplied with the needed equipment. The connection with the remote teacher was conducted through VEDAMO’s virtual classroom<sup>1</sup>, which provided all of the required tools and functionalities. The interaction lasted 45 minutes – 25 minutes for the online session and 20 minutes for the offline activities.

After their participation in the training and the blended learning session, the teachers completed an online survey to share their opinions about the application, its benefits and the resources needed to implement the virtual classroom in their teaching practice. Thus we attempted to answer the question: “What are the views of preschool- and schoolteachers about the use of the blended learning model that combines the virtual and traditional classroom in their practice?”

The study combined elements of qualitative and quantitative data collection and analysis. A partly standardized questionnaire, consisting of closed, semi-closed and open-ended questions, was used. A total of 87 teachers completed the survey, 39% of which were male and 61% female. The distribution of the respondents is presented in the following table:

**Table 1. Distribution of respondents according to their age, location, professional experience, stage of education and subject area.**

Age Group		Subject Area	
21-30	27%	Preschool	20%
31-45	48%	Literacy	21%
46 and over	18%	Mathematics	14%
Location		Literature	6%
Asia	45%	Languages	17%
Europe	55%	History	3%
Stage of Education		Geography	1%
Preschool	20%	Science	6%
Primary School	32%	Social Studies	2%
Secondary School	48%	ICT	3%
Professional Experience		Art	1%
Less than 5 years	24%	Music	2%
6-15 years	59%	Physical Education	1%
More than 15 years	17%	Other	3%

The questions in the survey examined the views of the teachers about three key aspects – application of the blended learning model, its benefits and the resources needed for its implementation. The collected data is presented and analyzed in the next section.

### 3. RESULTS AND DISCUSSION

The data collected by the survey can be summarized as follows:

#### 3.1. Application of the synchronous virtual learning environment in the traditional classroom

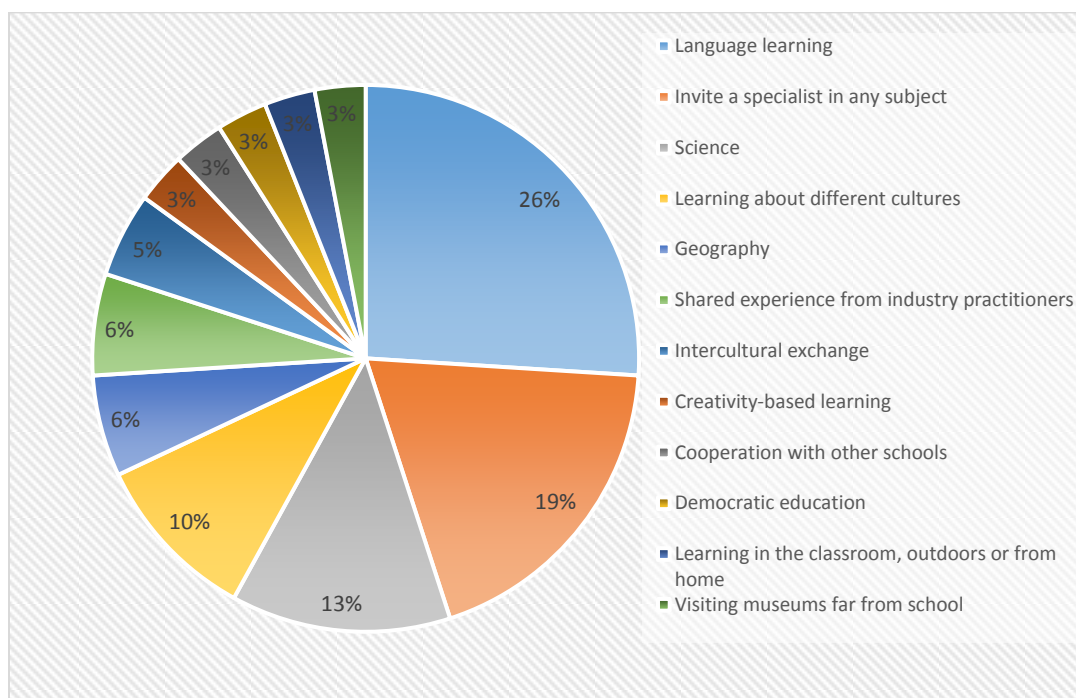
The first part of the questionnaire aimed to explore the participants’ views about the application of the presented blended learning model in their teaching practice. 67% of the respondents stated that the virtual classroom is applicable in their work. 26% of the participants answered that they would decide after they tested it with their students. Only 6% of the teachers responded that they did not think the virtual classroom was applicable in their classroom activities. Their answers could be partly explained with the subjects that these respondents teach – Physical Education, Music, Art and Chemistry, which typically requires hands-on activities, experiments or physical exercises and require a different approach when conducted online. As a whole, the results reveal that most of the

<sup>1</sup> More information about the virtual classroom’s functionalities can be found at <https://www.vedamo.com/virtual-classroom/>

teachers have a positive attitude about the use of the virtual classroom in their teaching practice and are willing to test the model with their students.

In the next single-choice, semi-closed questions the teachers were asked to specify which school subject and activities they think are most relevant to the presented blended learning model. Their answers are summarized in the following diagram:

*Figure 2. Application of the blended learning models according to the respondents*

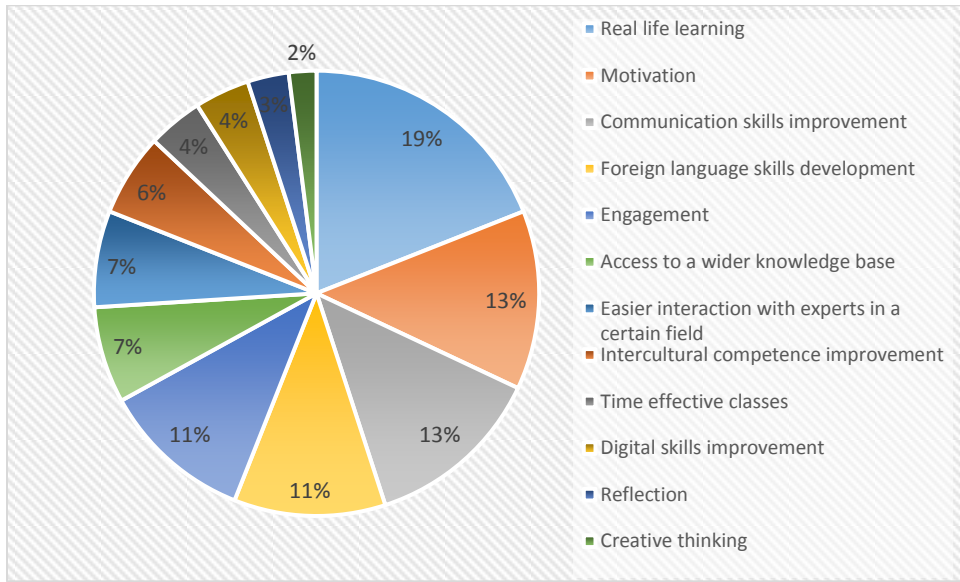


The respondents see a wide application of the model in various subjects and activities. Among the most common answers are language learning and intercultural education. This demonstrates that the participants understand the potential of the virtual classroom to provide new learning opportunities beyond the physical environment of the traditional classroom. Most of the answers are related to bringing activities from remote locations into the traditional classroom through the virtual one, such as experience with native speakers in language learning; inviting specialists/practitioners/experts from different fields; exchanges; cooperation with other classrooms; visiting museums online; etc. These results confirm some of the findings in a survey conducted by the Center for Digital Education, according to which some key benefits of blended learning are that it offers alternate learning opportunities (92%); offers distance learning to a broader base of individuals (85%); helps to increase classroom capacity (59%) (Realizing the Full Potential of Blended Learning, 2012). The benefits of blended learning are discussed in the next section.

### **3.2. Benefits of the blended learning model**

The next set of single-choice questions in the survey examined the opinion of the respondents about the benefits of the blended learning models in two aspects – benefits for the students and benefits for the teachers and schools. According to the participants in the survey the benefits for the students are as follows:

**Figure 3. Benefits of the blended learning model for the students.**



The most popular answers can be summarized based on the following key benefits – the use of the virtual classroom in the traditional one creates opportunities for real-life learning and access to a wider knowledge base; it improves the students’ communication skills and increases their motivation and engagement. Similar results can be found in other studies on blended learning. In the survey by CED cited above, the key benefits for the students are related to increased engagement, improved academic achievement and increased student retention (Realizing the Full Potential of Blended Learning, 2012). Blended learning is described as another way of engaging students and being able to connect to broader communities during the learning process (Hilliard, 2015).

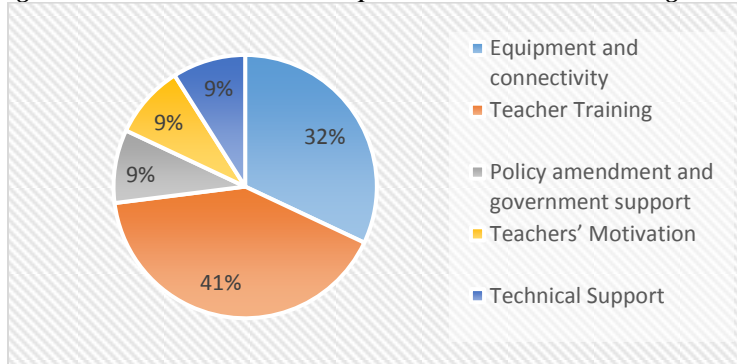
In the next part of the questionnaire the respondents shared their views about the benefits of the blended learning model for the teachers and schools. The participants found the most significant benefit to be the potential of blended learning to provide more flexible learning opportunities (82%) – it is an easier way to reach experts or content not otherwise accessible. It also has the capacity to scale a school’s ability to innovate, according to 75% of the respondents. 60% believed that blended learning could help schools decrease their costs. 49% of the teachers viewed the combination of the virtual and traditional classroom as a great way to involve parents in the learning process. Almost half of the respondents (47%) thought that blended learning could improve collaboration with other schools and classrooms.

Similar findings are shared in a report published by the Heritage Foundation in 2010 (Lips, 2010). Some of the key benefits of blended learning identified in the paper are increased access to high-quality teachers; improved productivity and a lower cost of education; collaborative and interactive learning opportunities; increased engagement; incentives to innovate and develop new learning tools and approaches.

**1. Resources needed to implement the blended learning model**

The last part of the questionnaire aims to investigate the resources needed to implement the blended learning model in preschool and school education. The responses of the teachers are summarized in the following diagram:

**Figure 4. Resources needed to implement the blended learning model.**



The results reveal that the respondents recognize the importance of technical equipment and support, but what they need most is training with practical guidelines. This means that the teachers realize the importance of their role for the successful implementation of the model and that training will give them confidence to introduce the virtual classroom into their teaching practice. Previous studies also outline teacher expertise as the most significant factor for the successful implementation of blended learning programs (Anh-Nguyet Diep, 2017). Their skills and experience working with specific technologies and web applications in an educational context are a significant predictor of their attitude towards online learning (Peytcheva-Forsyth, 2018). It is the teacher who has the responsible role of building digital competencies in students, which means that their professional and personal digital competencies are extremely important. However, it is not clear whether the teacher's competence to use ICT is age-related – younger teachers could be more competent just because they are part of the digital generation, but also older teachers could be much more successful in integrating technologies because of their pedagogical experience (Алексиева, 2019). Student perceptions of the quality of the virtual environment are mediated by the teacher's expertise; furthermore, the blended learning modalities imply that it is the teacher who decides how ICT should work.

#### 4. CONCLUSIONS

The main conclusions of the study may be systemized in the following aspects:

- Almost all preschool and primary school teachers demonstrated positive attitude toward the application of the blended learning model in their teaching practice. This means that the virtual classroom can be successfully implemented with younger learners.
- The application of the synchronous virtual learning environment in the traditional classroom is not limited to a certain subject. It could successfully enhance a wide range of classroom activities as long as the online interaction has clear objectives that support the curriculum.
- The most important factor for the successful implementation of the presented blended learning model in preschool and school education is the teacher's level of expertise and motivation. Generally, the results of the study demonstrate that the respondents have a positive attitude toward the application of the virtual classroom in their teaching practice, but they need to be equipped with guidelines and methodologies on how to combine traditional and online teaching. Teacher training is crucial and it should not only include the technical information, but also the pedagogical aspects of online and blended learning.
- The teachers acknowledge the importance of blended learning as they see the school as one of the places where children should have opportunities to acquire skills by using technologies. The virtual classroom has the potential to provide access to a wide range of experts and learning content, promote real-life learning, and improve student motivation and engagement.
- By utilizing the virtual classroom the schools can reduce a number of costs as it allows for more flexible learning opportunities with less resources. The cost savings could be used for teacher training and new learning tools.

Generally, the results of the study reveal that preschool and school teacher find the virtual classroom highly applicable to their teaching practice. In the last months, the unexpected lockdown due to the COVID-19 pandemic indisputably demonstrated the importance of ICT in education. The crisis required the immediate transition to distance education and ubiquitous application of synchronous teaching regardless of age. The teachers demonstrated a great potential to quickly adapt to the new technologies, teaching strategies and tools. At the same time, the situation brought to the fore the urgent need for teacher training for remote learning and teaching in virtual classrooms.

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