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# EDUCATIONAL TRANSFORMATION, AIMED AT ESTABLISHING NEW E-DISTANCE LEARNING MODELS (THE FLIPPED CLASSROOM)

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**ABSTRACT**

*In the context of a pandemic, the physical closure of educational institutions in most countries became swift and unexpected. Governments have introduced measures to continue distance learning, and the education community in the country concerned has implemented these measures to switch to distance learning for a period of two days to one week. Thus, "crisis learning" from home has become a daily occurrence for hundreds of millions of students, students, teachers, university professors and parents.*

*What educational models were implemented during distance learning in an electronic environment? How does the pattern of the inverted classroom fit into learning during a pandemic? These questions are part of a survey conducted with 30 teachers, 81 students and 196 parents.*

*More than the number of persons cited took part in the survey, but due to the lack of information to which group they belonged, their responses were not included in this analysis. This also applies to those who have indicated contradictory and mutually exclusive responses, which compromises the data received.*

**KEYWORDS**

*Educational institutions, distance learning, the educational community, crisis training, educational models, the flipped classroom model*

## INTRODUCTION

The last two academic years (2020/2021 and 2021/2022) will remain in the history of world education with the unprecedented physical closure of educational institutions in over 190 educational systems and the rapid transition of educational activities of training organizations to virtual online mode. This unexpected change is implemented as a crisis measure to control the spread of the Covid-19 virus in pandemic conditions [1].

Today, the major challenges facing education systems and national governments defining education policies are twofold:

The *first*, how to safely reopen educational institutions, after the period of strict measures, so that learning returns to its "normal" parameters, but at the same time the health of students and teachers is guaranteed.

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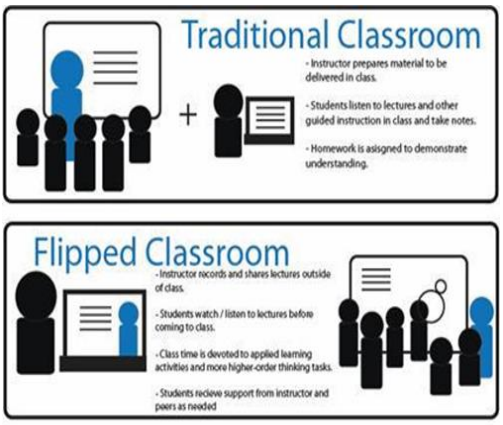
The *second* challenge is even more important and strategically significant. It is related to how the new opportunities created during the crisis by the physical closing of schools can be used for the transformation of organizational and pedagogical models in modern education [2].

How the conclusions of the analyzes in each educational institution, taking into account the specifics of learning, pedagogic specialists, students, attitudes of parents, geographical features, outline a strategic framework of the necessary changes in learning models, including models of distance learning in an electronic environment, for today's education to respond to future challenges and dynamic changes. These current problems and challenges facing modern education determined the direction of the present study.

**Theoretical background: The FC-OPBL model**

The Flipped Classroom model is deployed in a ready-to-use algorithm specifying: pre-organization with team structuring, lesson duration and introduction of instructional design; setting goals with a focus on the competence approach; posing questions formulated by students with a focus on active learning; project activities in the course of which students think and act as experts; products of the project activity - students to present, publish and present what they have learned; as well as formative assessment as a continuous cycle of assessment and self-assessment in school. The flipped classroom is based on the constructivist model. Learning is an active process. Learners can use their prior experience and existing knowledge to build understanding of new material. There are two main factors that promote the implementation of the flipped classroom method: - prevalent distribution of online videos, materials and information; - poor academic results from traditional classrooms. For many teachers around the world, the Flipped Classroom method is no longer a novelty, but a well-functioning practice. The "flipped classroom" is a pedagogical model in which – unlike traditional learning – students explore new learning material outside of class. This usually occurs as students self-examine learning content from multiple sources, including videos that are selected by the teacher [1]. What's more, activities traditionally completed in class are now completed by students at their own convenience. Many models begin with face-to-face contact, followed by various extracurricular activities. The next day's class time is used to better absorb new knowledge through various strategies such as discussions, additional exercises, solving cases, making presentations and projects, etc. according to V. Honeycutt [8], the Flipped Classroom model can be described as a transition from a teacher-focused learning environment to a learner-focused environment. It can also be defined as a shift from individual to collaborative strategies.

**Figure 1: Traditional and flipped classroom**



While it is also possible to flip a class through the use of individual activities such as quizzes, worksheets, reflective writing prompts, and problem-solving assignments. The main thing is that they are completed during the class. The turnaround may or may not involve modern technology. Videos and other technological tools can be effective, but in the flipped classroom they are optional (Fig. 1).

Jeremy F. Strayer, PhD [20] of Ohio University created the framework for the flipped classroom.

He points out that the extensive use of educational technology to deliver learning content outside of class is central to the idea of a flipped classroom. Active learning during the lesson is the second necessary part of the method. These two parts change the basic learning process (Fig. 2).

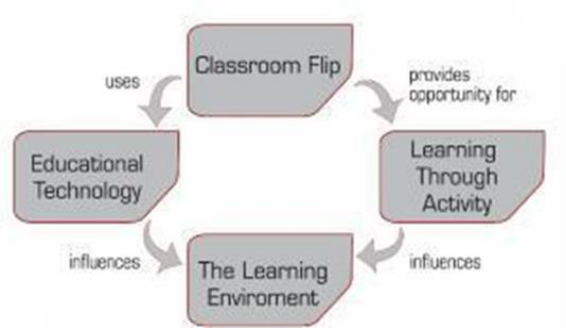



**Figure 2: Framework of the flipped classroom**

An overview of flipped learning [7] presents the four pillars of this model. Just as no two traditional classrooms are alike, no two flipped classrooms are alike. Flipped learning focuses on meeting the student's individual knowledge needs through a clear set of rules, in a way that differs from established methodology. The four pillars of F-L-I-P are: flexible learning environment, learning culture, planned content and professional trainer.

***1. Flexible learning environment.*** Teachers should expect that classes will be "somewhat chaotic and noisy", that deadlines and assessments during instruction will also be flexible. The flipped classroom method allows for a varied mode of learning; teachers often rearrange learning content to include group work, independent study, presentation, and assessment. They create a flexible environment where students choose when and where to study.

***2. Learning culture***. The classroom becomes student-centered. The role of learners is changing – instead of being a product of learning, they are at the center of learning, where they can actively accumulate knowledge, participate in their own assessment. Students can accelerate their learning by reviewing content on their own, and teachers can take advantage of face-to-face meetings to explain, reinforce, and summarize material.

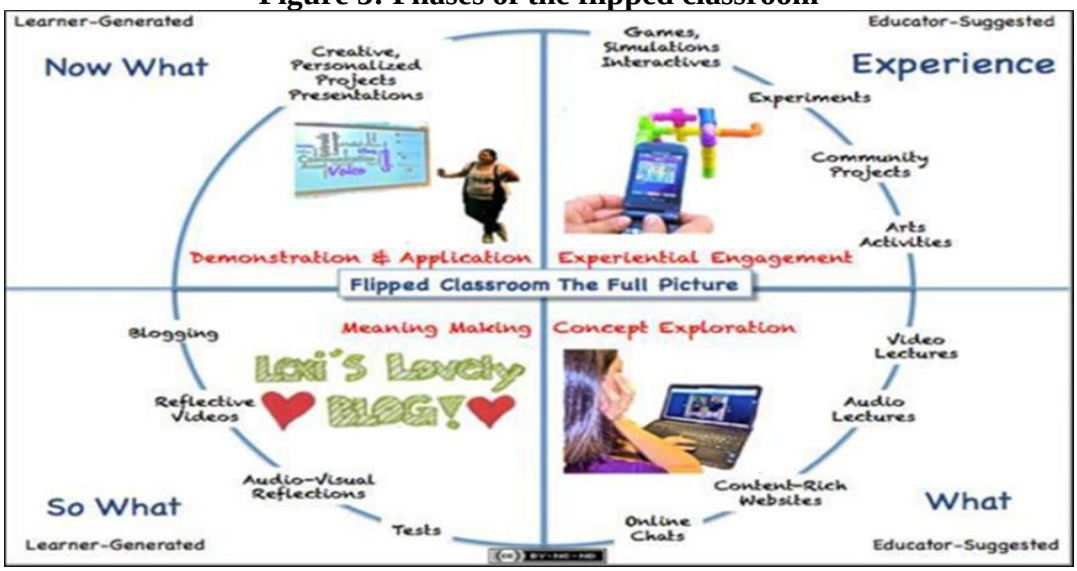
***3. Planned Content.*** Teachers are required to plan content in advance and consider what they need to teach directly so that classroom time can be used for other methods such as: active learning strategies, peer learning, learning problems, leadership depending on level and subject matter.

***4. Professional trainer***. Instructional videos used for the flipped classroom cannot replace professional teachers. In the flipped classroom model, professional trainers are more important than ever and are often more demanding than traditional ones. They must be able to

determine when and how to modify their group instruction to meet the individual needs of students and how to conduct face-to-face lectures.

The flipped classroom has four phases [6] (Fig.3).

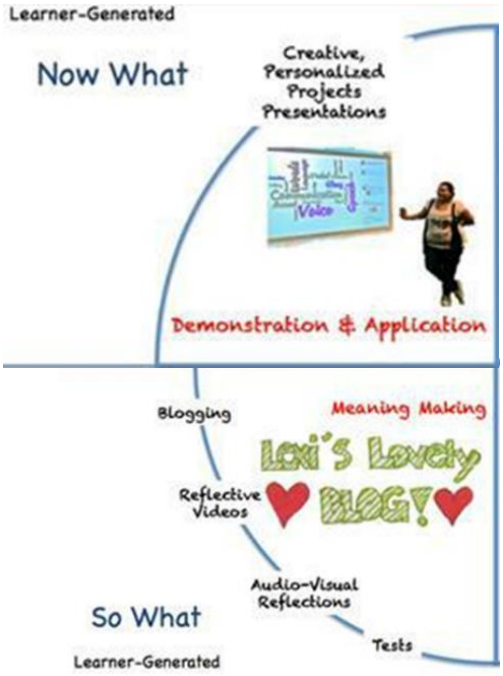
**Figure 3: Phases of the flipped classroom**




1. ***First phase***. The cycle (Fig 4.) often begins with a trial exercise. This authentic, often hands-on learning activity fully engages the learner. It is a concrete experience that requires attention from most, if not all, senses. Learners become "fired up" as a result of their personal involvement and are willing to give meaning to these activities. Familiarize themselves with concepts and terms included in the trial exercise. They study the opinion of experts on the subject. Information is presented through video lectures, content-rich websites (YouTube) and/or online tests and assignments (Educaplay).

**Figure 4: First phase of the flipped classroom**

**Figure 5: Second phase of the flipped classroom**




2. ***Second phase*** (Fig.5). In the flipped classroom method, this is when learners watch content-rich instructional videos. Concepts should be presented in an accessible form. Learners can use online resources, can download them and thus learn at their own pace, independent of their trainers. This is one of the valuable advantages of the flipped classroom method. These materials are used by learners in self-directed learning. They can review anything they found interesting or didn't understand, unlimitedly. It is asynchronous learning and as such allows the learner to arrange their study time according to their needs.
3. ***Third phase*** *(Fig. 6).* Learners reflect on what they learned during the previous phases. This is a phase of making sense of everything read and learned during self-study and in-person lessons. Learners can articulate and construct the acquired knowledge obtained from the online texts and learning videos. Within the standard school system, this would be the phase where learning outcomes are tested.
4. ***Fourth phase*** *(Fig. 7).* During this phase, learners demonstrate a logical application of the material they have learned. These new knowledge and skills, refracted through the prism of individual understanding, can be used in real life. This phase of the cycle is best done in the form of a face-to-face lecture, such as group work. The reasons for such a recommendation are as follows:

**Figure 6: Phase three of the flipped classroom**

**Figure 7: Fourth phase of the flipped classroom**

- the trainer can advise the trainee on the types of projects and tools that are most suitable for him;
- working in a group composed of trainees and trainers increases motivation and provides an opportunity for feedback.

The flipped classroom requires preparation and flexibility. There are different models, and depending on the class and its needs, the most suitable one is chosen (*see 7 Unique Flipped Classroom Models - Which is Right for You?*).

A *standard flipped classroom*

Students are assigned "homework" - watching video lectures and reading material related to the next day's lesson.

*During class*

Students put into practice what they have learned through traditional classrooms, with teachers having the opportunity to give individual attention to each of them. Discussion Oriented Flipped Classroom Teachers recommend watching lecture videos as well as any other videos or texts, YouTube videos and various resources related to the topic. Time is then set aside for discussion and exploration of the topic. This can be a particularly useful approach in subjects where context is everything - history, art or English. In my own teaching practice, I apply this flipped classroom model in the 8th grade to learn past tenses in English.

*Demonstration Oriented Flipped Classroom*

Especially for those subjects that require students to remember and repeat actions accurately - chemistry, physics and mathematics - it is most useful to have a video demonstration available that can be paused, rewinded and watched many times. In this model, the instructor uses screen recording software to detail their actions in a way that allows learners to follow their own pace.

*A "fake" flipped classroom*

This idea is perfect for younger students for whom real homework isn't quite right yet. Instead, they watch the instructional video in class, allowing them to review the material at their own pace. During this time, the teacher can focus on each individual, offer individual support.

*Flipped classroom by groups*

This model adds a new utility that encourages students to learn from each other. Learning begins the same way with instructional videos and other resources shared before class. The change occurs in the attended lectures, when the task of the day must be completed in a group. This format motivates students to learn from each other and helps them explain their answers and choices.

*Virtual Flipped Classroom*

For educated adults and in certain courses, the need for face-to-face lectures may disappear completely. Some college or university instructors provide access to course videos and texts, set assignments and assignments, comment and grade grades using online learning platforms. Individual consultation with a trainee is allowed after a pre-arranged meeting.

*Role reversal*

An instructional video created for the purposes of the flipped classroom does not have to begin and end with the teacher. Students can also use the video to better demonstrate their skills. Task students with engaging in various role-plays to demonstrate competence, or ask

them to record their own videos related to a favorite subject or a simple guide such as "teach the teacher" [14].

The flipped classroom changes the role of the teacher, he becomes more of an advisor and mentor to the students, motivating them to be active and work in groups. The role of the students is also changing, since a large part of them until now are passive participants in the educational process and expect ready-made instructions. The flipped classroom model allows students to take more responsibility for their education and encourages experimentation. A change of priorities is seen as the most successful – from simply covering the learning material to working on its mastery.

The Flipped Classroom model is comprehensive, suitable for a variety of classrooms. Because every classroom is different—with different levels of access to technology, different levels of motivation on the part of students, and different specific knowledge on the part of teachers—learning also changes. Also, teachers have a different role. They should be more advisors than managers, which means adjustment time.

Within the framework of project work ..., we used the time of face-to-face learning in an electronic environment and made a short study related to the application of the flipped classroom method and the satisfaction of learning through it.

**Methods of the research**

The object of the study are three groups of researched persons - 30 teachers, 81 students and 196 parents of students in different age groups and educational institutions on the territory of the city of Burgas.

**The research question** is whether the use of the flipped classroom method leads to higher satisfaction from the educational process than traditional education methods.

The questionnaire is structured by 4 (four) questions, and the results are presented in a table. The same questions were used for the three groups – teachers, students and parents, with some differences in a fourth question regarding the parent group.

**Results of the research**

The first question is related to the overall satisfaction with learning in an electronic environment through the flipped classroom method.

It can be seen (Table 1) how in all three cases the leading answer is: "Yes, but not completely", in second place: "Yes, completely", while the third is "I am not satisfied".

An identity of judgments is observed, which is an indicator of the reliability of the data obtained.

At the same time, such a match testifies to a similarity in the ideas, requirements and evaluation criteria of the three groups. They may have drawn conclusions about a high quality of pedagogical interaction, feedback, partnership with parents, as well as clearly set goals and expectations for students.

**Table 1: Overall satisfaction with learning in an electronic environment using the flipped classroom method**

| Answers | Teachers | | Students | | Parents | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| Yes, completely | 9 | 30% | 28 | 34.57% | 42 | 21.4% |
| Yes, but not quite | 18 | 60% | 35 | 43.21% | 101 | 51.5% |
| I am not satisfied | 3 | 10% | 11 | 13.58% | 39 | 19.9% |
| I can not decide | 0 | 0% | 7 | 8.65% | 15 | 7.7% |

The answer "Yes, completely" is undoubtedly an indicator of an excellent rating, which in this case takes the second place. On this basis, recommendations can be made for future detailed studies with a view to improving the quality of training.

The second question is aimed at evaluating the quality of the educational process during learning in an electronic environment using the flipped classroom method.

**Table 2: Evaluation of the quality of the educational process during learning in an electronic environment using the flipped classroom method**

| **Answers** | Teachers | | Students | | **Parents** | |
|---|---|---|---|---|---|---|
| | N | % | N | % | N | % |
| At an excellent level | 0 | 0% | 10 | 12.35% | 7 | 3.6% |
| **At a very good level** | 6 | 20% | 13 | 16.05% | 37 | 18.9% |
| **At a good level** | 14 | 46,67% | 24 | 29.63% | 60 | 30.6% |
| **At a satisfactory level** | 6 | 20% | 13 | 16.05% | 42 | 21.4% |
| **On a weak level** | 4 | 13.33% | 20 | 24.69% | 44 | 22.4% |
| **I can not decide** | 0 | 0 | 1 | 1.23% | 6 | 3.1% |

In the results of the answers to the second question, we observe (Table 2) the same correspondence. Leading among all three groups is the answer: "At a good level."

Remarkable is the coincidence of teachers and students in the responses "At a good level" and "At a satisfactory level", which are the same for each of the two groups.

The answer "At an excellent level" ranks fourth in all three groups, which confirms the recommendation for more detailed research. The special thing is that none of the teachers gave this answer. For students, it marks 12.35%, which is normal given the weaker criticality and the lack of objective evaluation criteria, since it is about children, while for teachers we are talking not just about adults, but about professionals. In both the first and second questions, the answers mark an average position in the assessment gradation, which also testifies to the reliability of the data obtained.

It is important to consider the variation in responses regarding training in OPES and in attendance form, which will determine possible conditions having an unfavorable role on the quality of training. In the event that there is a match in the gradation of assessments, the

reasons for dissatisfaction are likely to be determined not by the environment in which the training takes place, but by other factors influencing its quality.

In case of higher evaluations of face-to-face training, the reasons for non-performance should be sought in the electronic environment.

As we indicated, it is also good to consider the results of the evaluation of the quality of the educational process during the present form of learning, where teachers do not apply the flipped classroom model to a low degree and prefer the established traditional methods of learning.

**Table 3: Evaluation of the quality of the educational process in the present form of education**

| Answers | Teachers | | Students | | Parents | |
|---|---|---|---|---|---|---|
| | N. | % | N | % | N | % |
| **At an excellent level** | 2 | 6.67% | 21 | 25.92% | 50 | 25.5% |
| **At a very good level** | 16 | 53.33% | 18 | 22.22% | 68 | 34.7% |
| **At a good level** | 11 | 36.67% | 25 | 30.86% | 54 | 27.6% |
| **At a satisfactory level** | 1 | 3.33% | 10 | 12.35% | 19 | 9.7% |
| **On a weak level** | 0 | 0% | 7 | 8.64% | 0 | 0% |
| **I can not decide** | 0 | 0% | 0 | 0% | 7 | 3.6% |

For the third question (Table 3), there is consistency in the first three rating categories: "Excellent level", "Very good level", "Good level" in the groups of teachers and parents.

We accept as normal that there is some inconsistency with student grades, as the educational environment of face-to-face learning is much more complex. It has a much richer system of factors, objects, relationships, processes, influences, etc. Again, we must remember that we are talking about children and it is normal for their ideas and understandings to be different from those of adults. There is a very slight improvement in the learning assessment compared to the previous question.

The leader here is "Very good level" in the groups of teachers and parents. It is obvious that learning in an electronic environment contains more factors that lower the overall quality of learning, but at the same time, in face-to-face learning conditions there are circumstances that prevent an excellent level of satisfaction.

The special thing is that this assessment is given by people who are directly a subject in this process, which is of interest for a deeper analysis of the possible reason why these same people do not do what is necessary to deal with the problem. Some clarity could be brought by a fourth question.

We believe that the reasons are not of a subjective nature and that further studies should consider all factors directly related to the quality of the educational process as a whole.

The last question is related to difficulties that accompanied the educational process during the e-learning during the studied period (Table 4).

**Table 4: Evaluation of the difficulties that accompanied the educational process during the e-learning in the studied period**

| Answers | Teachers | | Students | |
|---|---|---|---|---|
| | N | % | N | % |
| Providing support to lagging students through counseling by teachers | 1 | 3.33% | 3 | 3.70% |
| Technical issues | 10 | 33.33% | 35 | 43.21% |
| Interaction between teachers, students, parents | 6 | 20% | 11 | 13.58% |
| Quality of acquired knowledge | 10 | 33.33% | 20 | 24.69% |
| The lack of live connection during school hours | 16 | 53.33% | 41 | 50.62% |
| Lack of interest on the part of students during classes | 21 | 70% | 21 | 25.93% |
| Lack of technical devices | 11 | 36.67% | 1 | 1.23% |
| Comprehension of the learning material by the students | 5 | 16.67% | 25 | 30.86% |
| Difficulties in presenting the learning material | 2 | 6.67 | 16 | 19.75% |

For question 4, there are discrepancies in the evaluations, which is explained by the different roles of teachers, students and parents in the learning process. The answers can be traced in the tables above.

## DISCUSSION

In continuation of the analysis of the previous question, more attention should be paid to the judgment of the teachers. First of all, they point to "Lack of interest on the part of students during class time." The rest of the factors they point out refer more to the training in ORES, which does not, however, answer the question why, when we talk about face-to-face training, satisfaction does not is at an excellent level. This fact confirms the recommendation made to look for the reasons comprehensively in all factors affecting the educational process, which in turn implies a much deeper and large-scale study.

One of the goals of the present study is comparability with data obtained through other methods of pedagogical diagnostics such as observation, study of learning outcomes and upbringing; research of written sources and documents; conversation, as well as those obtained through other surveys, incl. during the previous school year. Some of the leading findings from previous studies are:

1. for the majority of students, the transition to distance learning led to a significant change in the way of learning and in the organization of the school day, but the majority of these students were able to adapt relatively easily to the new learning conditions - established on the basis of a conversation , observation and work experience; It is confirmed by the present study on the basis of the identical evaluation that the learners place on the learning in an electronic environment and in person.

2. it was easier for girls than for boys - established on the basis of discussion, observation and work experience;

3. more than two-thirds of the students were able to independently cope with the majority of tasks for independent work - established on the basis of talks, a questionnaire survey during the previous school year and study of school documentation;

4. about half of the learners indicated that they had more difficulty understanding the learning material when applying the flipped classroom model and spent more time learning compared to face-to-face learning - established based on discussions and previous surveys ;

5. believe that they were given more homework and spent a relatively long time in front of the screen of the electronic device - established on the basis of previous surveys and discussions;

6. about two-thirds of the trainees are looking forward to returning to the educational institution - based on surveys and talks;

7. boys with low behavioral engagement are significantly more than girls - according to the descriptions contained in various sources and documents;

8. learners with higher emotional commitment took a more active part in the distance education process and were more attentive during class - according to the descriptions contained in various sources and documents;

9. learners with higher emotional commitment received consultations from their teachers, were satisfied with the way the learning process was organized and conducted, and believed that they had the opportunity to learn to the fullest. In the classrooms of these learners, the teachers applied the principles of structured teaching to a greater extent. For example, students with high emotional engagement indicated that their teachers set clear learning goals; if necessary, they have adapted the learning content to their needs; they encouraged independent preparation and discussions among learners and asked questions that contributed to a better understanding of the studied material. Similar to behavioral engagement, students in smaller classes have a higher emotional engagement than students in larger classes - the conclusions are based on a large-scale study carried out during the previous school year, also at the end of the first term, as well as on base of talks, observation, study of documentation, practical experience, etc.

Through the present study, this analysis stood out with:

- the low relative share of those who indicated "Providing support by teachers to lagging students through consultations" - an indicator of structured teaching;

- the identical satisfaction between teachers, students and parents with the training, which is an interesting psychological-pedagogical phenomenon in itself, and as already mentioned above, this testifies to clear goal setting, a high level of feedback, partnership, etc. – indicator of structured teaching;

- a low relative total of those who indicated "Difficulties in presenting the learning content" - speaks of a good adaptation of the learning content to the needs of the learners - also an indicator of structured teaching.

- a high relative share answered "Lack of live connection during classroom hours" - evidence of emotional commitment on both sides.

- a high relative share of "Disinterest on the part of students during academic hours" in the answers of the students themselves testifies to a high emotional commitment and motivation of the persons who took part in the survey from the group of students themselves.

- the identical evaluation that the learners place on learning in an electronic environment and on-site learning confirms that for the majority of learners, the transition to distance learning has led to a significant change in the way of learning and in the organization of the school day, but the majority of these learners has managed to adapt relatively easily to the new learning conditions.

A shortcoming of the present study is the failure to indicate the gender of the respondents among the group of students, which is a common practice in similar studies. For this reason, data on the fact that it was easier for girls than for boys - established on the basis

of conversation, observation and work experience - are left out of the comparative analysis. Conducting distance learning in an electronic environment is associated with three groups of challenges that make it difficult for the psychological-pedagogical processes to take place effectively.

The *first group* are those related to electronic infrastructure: lack of office devices, problems resulting from students' limited access to technology and the Internet; lack of a defined and verified unified platform for e-learning, as well as regulated rules for its use.

The *second main group* of challenges complicating the research process are those related to discipline, self-control and lack of motivation among students.

The *third group* are those related to the excessive workload (overload) of the teachers and the lack of sufficient time for self-training, for studying educational models to support and diversify the work of the students, to motivate them and increase their awareness.

The main advantages and strengths of the studied model, according to the respondents, are the following: a high degree of autonomy and increasing opportunities for innovation in the work of teachers, a more flexible design of the learning process related to: interdisciplinarity and project-based learning, personalized learning , practice-oriented learning, changed role of the teacher - designer and creator of learning content, teamwork of teachers and co-teaching, parents are more interested and have direct observations of the learning process of their children, flexibility - can learn at any time and in every place.

## CONCLUSION

The results of the research show that for the successful return of students and teachers to the classrooms, specific changes in the organization and management of learning are needed. These changes are primarily related to the introduction of blended learning, such as combining physically present learning with electronic distance learning. When designing blended learning, it is necessary to achieve an optimal balance between face-to-face and distance learning in an electronic environment, which balance is different for students of different stages and levels of education (up to 20%-30 for a high school stage). Other planned organizational changes are: the widespread introduction of the "1:1" model - that every learner has an electronic device in the classroom, introduction of individual types of study plans and programs - for learners, according to their interests and educational achievements, implementation of the present learning outside the classroom - contact with nature (outdoor classrooms), application of the "flipped classroom" model.

The opinion of the respondents in the research is that after the forced long-term distance learning in an electronic environment, for the successful running of an educational process in educational institutions after the pandemic period, specific changes in the design of the learning process are necessary. In general, these proposed changes are aimed at transforming the educational paradigm in the classroom and introducing innovative learning models. Specifically, these changes are related to greater use of the project method, greater use of the "flipped classroom" model, more gamification in learning, greater use of hands-on learning, personalization of learning, virtual classroom, and video tutorials; group training.

Distance learning in an electronic environment is becoming a current and promising trend in education. Pandemic conditions have forced an educational reform that has led educational institutions, teachers, students and parents to new models of communication, learning and professional engagement.

In this context, there is a need for new models and designs of training; from a new organization and from a new model of education management; from new models of pedagogical interactions of the educational with the family and with other communities interested in education; from new socio-pedagogical and psychological models for mental and physical health and well-being, related to providing conditions for self-determination and self-actualization of the personality of trainers and trainees.

The proposed analyzes and training models reflect the real reality; scientific research and interpretation; the possibilities of creating a learning, positive, inclusive and supportive educational environment.

For learners, for educators and for parents, the educational and social worlds are no longer the same as before. A leap has also been made in education, and it, in turn, must not just meet the new requirements, but something more. Education has always had and will have a leading role in the development of humanity.

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