Supplementary distance education in primary education. An action research at primary school students with the use of the digital platform "e-me"

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Abstract:
Background:Supplementary distance education is a form of distance learning that can be implemented in addition to the traditional learning system, providing students with the educational material they need in order to practice more or fulfill their educational needs. The aim of this paper is to evaluate the implementation of a supplementary distance education program that was conducted through an action research which was designed and carried out in an elementary school.
Materials and Methods: 38 students who attended fifth grade of primary school during the school year of 2019-2020 and three teachers took part in the research. Using the self-blend model of blended learning, students had access to the educational material via the educational platform e-me.edu.gron three school subjects: Mathematics, Language and Geography. The research used both quantitative and qualitative data, gathered from a questionnaire which was given to the students, interviews with the teachers and the researcher's diary which was kept throughout the study.
Results: The results showed that both the students and the teachers were satisfied with the program, the e-me platform is suitable for the implementation of distance learning in primary school students and that students benefited from their participation in the program.
Conclusion:Achieved goals - Research questions answered. The findings converge with those of related research. The implementation of the school supplementary open and distance education was positively evaluated by both students and teachers. It can be applied effectively to primary school students. The e-me platform can be utilized for the implementation of the school supplementary school. The factors that complicate the open and distance education include the lack of available time, technological equipment, lack of knowledge of teachers. The factors that generally impact on open and distance education's effectiveness include the appropriate educational material, teacher knowledge, communication of participants, ability of students to manage their own time and the way / pace of study. The benefits that emerged include practice, consolidation, available material, coverage of interests and needs, active participation of students, participation of more introverted students, development of relationships & communication, familiarity with social networks and computers.
Key Words:supplementary distance learning, e-me, school distance education, blended learning
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I. Introduction

The current Greek educational system is dominated by the diversity of the student population and the overpopulation of the classrooms. In the primary school in particular, the maximum number of students per class ranges between 22 and 25 under certain conditions (article 74, Law 4589/19) while in each class there are more than 10 courses, such as e.g. in the 5th class of primary education in which students are taught 13 lessons in 30 hours. The schools are attended by students of different nationalities, socio-economic background but also with different learning needs or difficulties. Some students need more practice in some subjects, others want to enrich their knowledge in a subject that interests them, and some of them have the opportunity to be given additional help by either parents or a teacher in the afternoons. As a result, under these conditions the possibilities of teachers to deal individually and separately with the special needs, the level of knowledge and interests of each student in the conventional school system are limited and the margins of flexibility are also missing. The time available during the lesson within the classroom is specific, with the result that the responsibility for solving questions in sections that were not understood or in case of the student's absence but

also the search for material for further practice and engagement is usually taken in the afternoons, if the parents have the needed time and knowledge. A solution to the above issue can be the distance education, which can complement the morning teaching in primary education (Papafilippou, Tsiatsos, Manousou&Lionarakis, 2016), while ensuring access to learning for every student, removing barriers of the conventional school and providing educational opportunities to those who are interested, regardless of any socio-cultural or other peculiarities they face (Vergou, Koutsoumbas, &Mouzakis, 2016).The positive contribution of the supplementary distance education has been highlighted by the findings of related studies with positive results. Examples of positive results are the change of students' attitudes in a lesson (Papafilippou et al., 2016), the improvement of students' performance (Skoularidou&Mavroidi, 2016), the consolidation of concepts in students (Anastasiou, Androutsou&Georgala, 2010, 2015) the improvement of knowledge, skills and attitudes towards the lesson (Doukaki&Michalopoulou, 2016), the differences in the learning experiences of infants (Vergou et al., 2016), the new knowledge and skills developed in students (Psallida&Manousou, 2011).

The present research aims to explore the possibility of applying supplementary distance education to primary education through its evaluation by students and teachers. In particular, an attempt was made to highlight the factors that make it difficult to implement distance education in primary school students, both from students and teachers, the factors that cause its effective implementation, but also the benefits that students derive from attending an additional distance learning program. So, the purpose of the research is to investigate the possibility of applying supplementary distance education to primary school students by utilizing the digital educational platform "e-me" as well as its evaluation by students and teachers. More specifically, the sub-objectives of the research are the following:

1. The investigation of the degree of satisfaction of the students from their participation in the school supplementary distance education program.
2. The investigation of the benefits that emerged for students and teachers from the implementation of the program.
3. The detection of factors that made it difficult for students and teachers during the program.
4. The creation of digital educational material on the e-me platform suitable for distance education for primary school students.
5. The application of the knowledge and skills acquired by students in ICT in the environment of a digital platform within a distance education program.
6. Drawing conclusions that will benefit the school for the future implementation of distance education.

The research questions that arise through the objectives of the research are:
1. How do teachers and students evaluate the implementation of supplementary distance education?
2. How do teachers and students evaluate the e-me digital education platform as a tool for complementary distance education?
3. Which factors impede the success or shape the effective implementation of school supplementary distance education to primary school students?
4. What are the benefits for primary school students from the implementation of school supplementary distance education?

The relevant global research mainly concerns the application in a course, in secondary school students, while those carried out in primary school students mainly concerned the application of the inverted class model or the case of isolated geographical areas. Supplementary distance education in some cases was applied as supportive teaching (Papafilippou, etc., 2016 • Doukakis&Michalopoulou, 2016), as an introduction to a new subject (Vergou et al., 2016), as teaching a specific unit course (AnastasiouKsyn., 2010, 2015 • Skoularidou&Mavroidis, 2016) as a method of further engagement with a subject (Psallidas&Manousou, 2011). A common element of all the research was the positive results in relation to how the students dealt with the unknown method of distance education, the contribution it had to the students' performance, to the understanding of concepts, to the satisfaction that the students felt, to the advantages that exist when distance education is combined with traditional teaching.

Given the familiarity that students with elementary school have with mobile phones and computers, the present research attempted to use this familiarity for the benefit of the educational process. The e-me platform was chosen, a relatively new platform that had not been tested in another similar study as a tool to support supplementary distance education. An element that was considered an advantage in terms of choosing the platform was the fact that it supports access via mobile and tablet, in order to further expand the number of students who will be able to benefit from the distance education program.

II. Material And Methods

In the present study it was chosen to apply a practical action research and to adopt the mixed approach, with a combination of quantitative and qualitative methods. Action research is a research process that can be carried out by teachers in order to improve or solve practical issues they face daily in teaching and to reflect on their own practices (Creswell, 2011). The main feature of action research is its participatory and reflective character, while one of the most well-known models of action research on which the present research was based, is that of Lewin which was developed in the 1940s and includes four stages in a spiral shape (plan - act - observe - reflect) to which Kemmis (1981) added the repetition - superimposition of stages (Figure 1)

Figure 1.Kemmis' action research model (Katsarou&Tsafos, 2003:57)
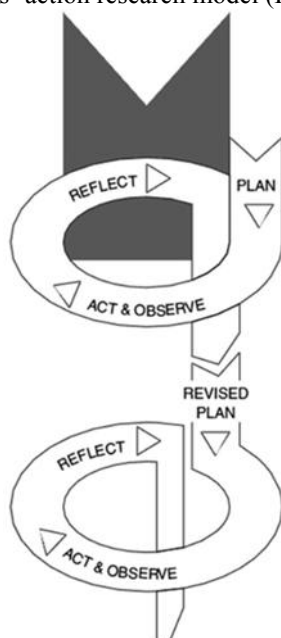
The research was carried out during the second quarter of the school year 2019-2020, to the students of the two departments of the 5th grade of a Primary School of Thessaloniki in which a total of 50 students attend. A sample of the present research was 38 students of the 5th grade of a primary school at Thessaloniki (Greece), who expressed the desire to participate in the program of additional distance education and whose parents consented in writing to participate in the research. All three teachers participated in the semi-structured interviews that were conducted at the end of the action research. The research design is summarized in Figure 2 below.

Figure 2. The research design

Planning: 2nd quarter of the school year 2019-2020 38 primary school students Courses: Mathematics, Language, Geography Selection of e-me platform after research on similar platforms Creating a lesson plan & corresponding activities Create student accounts in Greek School Network and the e-me	**Action**: Presentation of the platform to students Pupil familiarization period before the start of the action At the beginning of the action - at the end of each lesson or unit in the classroom the teachers informed the students that relevant material would be uploaded on the platform
Observation: The comments, problems, reactions of the participants were recorded throughout. Completion of questionnaires & interviews	**Reflection**: data collection from questionnaires & analysis of teacher interviews.

The courses in which it was applied are Language, Mathematics and Geography for each of which a plan of activities and exercises was posted on the e-me platform. Quantitative and qualitative means were used for the collection and analysis of data, such as the research diary, where the actions were recorded, the comments of the stakeholders, the problems that arose, which were evaluated through observation and where required, the actions were redefined. The students also completed questionnaires with closed and open-ended

questions in order to evaluate the intervention as well as interviews with the three teachers. The action research carried out was based on the mixed approach, combining quantitative and qualitative data. Specifically, for the collection of data and based on the research questions that were asked, the following tools were used:

- *For the collection of quantitative data*, a questionnaire with a combination of closed and open type questions. It was chosen as the most suitable for students, as it can be answered anonymously and in a short way while the answers can be analyzed with relative ease. Created in Google form and given electronically to students to complete. It consisted of thirty-one (31) questions in total, of which twenty-nine (29) were closed-ended, with dichotomous questions and questions on a four-point Likert scale, and two (2) were open-ended so that students could develop their views on to questions freely.

- *Semi-structured interviews* conducted with the three teachers who participated in the action research. King (1994, cited in Robson, 2010) suggests using the interview as a complementary tool when a quantitative study has been conducted and qualitative data is required to validate measurements or to explain the meaning of the findings. The semi-structured interview was chosen as a more flexible type of interview, with closed descriptive questions but also open-ended opinion questions so that there is the possibility of delving into important topics. In our case, the interviews with the three teachers aim to reinforce the data that emerged from the students' answers to the questionnaire but also to deepen the issues of the other research questions.

- *The researcher's observation diary*, where the daily live comments, problems, reports and observations of both the students and the teachers who participated in the action research were recorded. Also, the participation of the students in the e-me platform was recorded through their activity in the educational material that was provided to them, but also from their presence in the cell of their department and their comments.

Both the completion of the questionnaire by the students and the conduct of the interviews with the teachers were carried out electronically due to special pandemic circumstances that occurred during the period immediately after the end of the action research. In order to carry out the research, the ethical rules that must govern it were observed. Initially, the permission of the Principal of the School was given and then the Teachers' Association of the school was informed, while the three teachers participated voluntarily after being informed about all the stages of the research. This was followed by the written notification of the parents and guardians of the students of the fifth grade of primary school in order to give their written consent, as well as the choice they had to withdraw at any point of the action. Finally, the anonymity of the participants was ensured, both of the students whose details were not mentioned at any point in the research. In order to ensure the reliability and validity of the data, after an extensive review of the domestic and international literature, the method of triangulation was used. Different methods were used for data collection while combining the quantitative and qualitative approach. Thus, the questionnaire, the teachers' interviews and the researcher's diary were used, achieving the triple cross-checking of the data (Katsarou&Tsafos, 2003). The questions of the questionnaire were clear in order to accurately capture the views of the students and to give answers to the research questions, but also the interviews of the teachers with the combination of closed and open type questions, gave the possibility of free expression without bias. However, as this is a qualitative action research, the results of the research cannot be generalized.
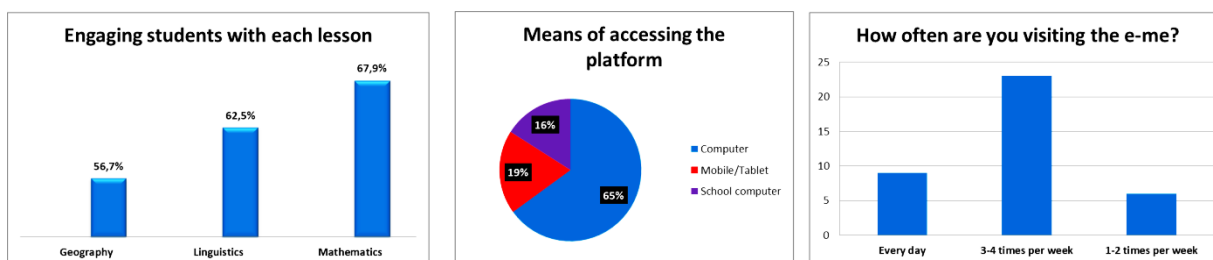
III. Results

A. STUDENTS
- Satisfactory participation. They were more concerned with Mathematics.
- Mainly computer was used.
- Visit to the platform 3- 4 times / week.

The above results are summarized in the following group of diagrams (Figure 3)

Figure3. Results of research on students regarding their participation in the platform


1st research question (evaluation of open and distance education)

- Students prefer the teaching of all three courses with the mixed method (GolikidouLiakeas 2013 • January 2015 • KoutzeklidouMavroidis, 2017 • Makrodimos etc. 2017)
- Satisfied with the action of open and distance education.
- They want it to continue in the coming years and to be extended to other courses (Gariou plus 2015 • ZiskosPapadakis, 2015 • Makrodimos plus 2017 • NafpliotiTzimogiannis 2017)
- Comprehensible educational material helped to consolidate concepts (Exercises, Presentations, Video, Images) (Anastasiou et al 2010 • 2015)
- Presentation of educational material diversity (GolikidouLiakeas 2013 • ZiskosPapadakis, 2015)
- Ability to access the material for repetition.
- Enhancing the engagement with the lessons.

The above results are summarized in the following group of diagrams (Figure 4)

Figure 4. Research results regarding the students' evaluation of open and distance education
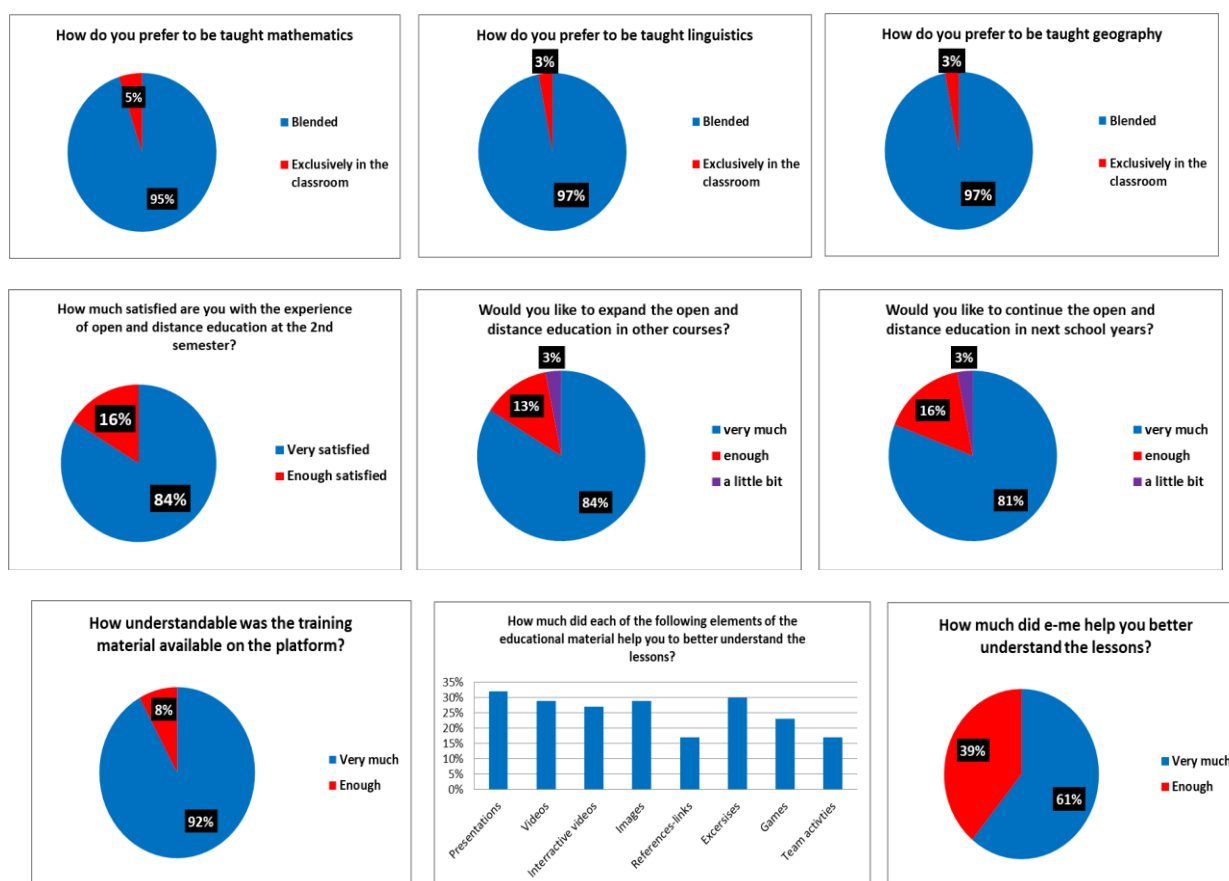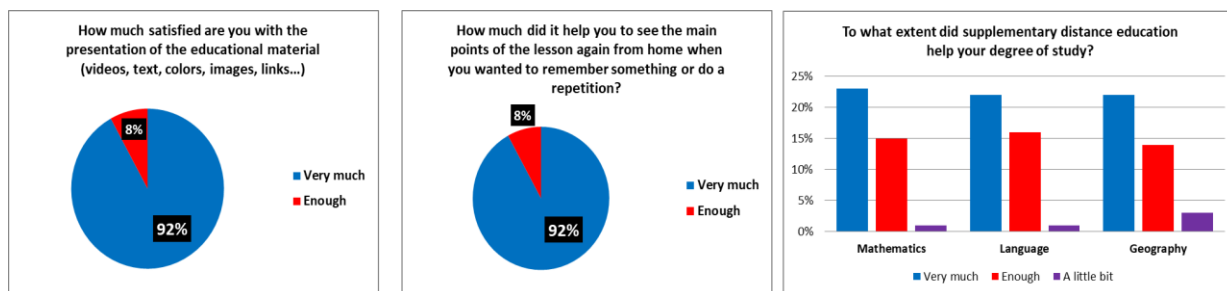
The participation of the 38 students in the program of additional distance education was evaluated by their total presence on the platform, i.e. by the comments, assignments and recorded activity they had in relation to the posted objects. The e-me platform provides the ability to monitor user activity, for objects created through the e-me content application and which require at least one response from the user. In a total of 62 objects that met the above criterion (at least one answer from the user), as shown in the diagram below, more than half of the students dealt with / solved more than half of the objects that were posted. The above is confirmed by the interest shown by students at school, their attendance at the computer room during breaks, even students who had not stated that they do not have access to the platform. Regarding the functions and features of the platform, most students said they were satisfied with the e-me content, the application in which teachers created their own educational material, the cell wall, in which they had the opportunity to interact with their classmates and teachers and personal messages, a function that piqued their interest from the beginning, as it gave them the opportunity to personally communicate with their friends and teachers when they wanted to communicate on topics they did not want to be known to the whole of the class. This was followed by the application e-me blogs (creation of blogs), Files and e-me assignment and finally the application of "Poll".
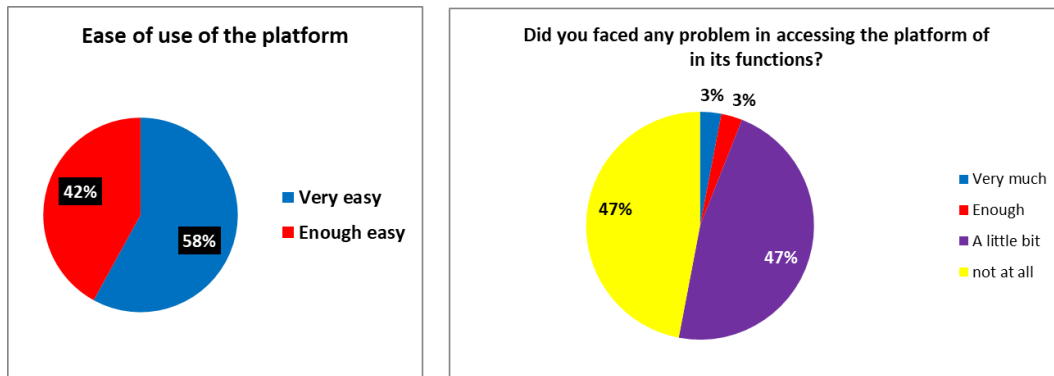
2nd research question (evaluation of e me)
- Satisfaction with the appearance of the platform & available functions (e-me content - Cell wall - Personal messages)
- Ease of use.
- Absence of technical problems

The above results are summarized in the following group of diagrams (Figure 5)

Figure 5. Research results regarding the evaluation of the e me platform
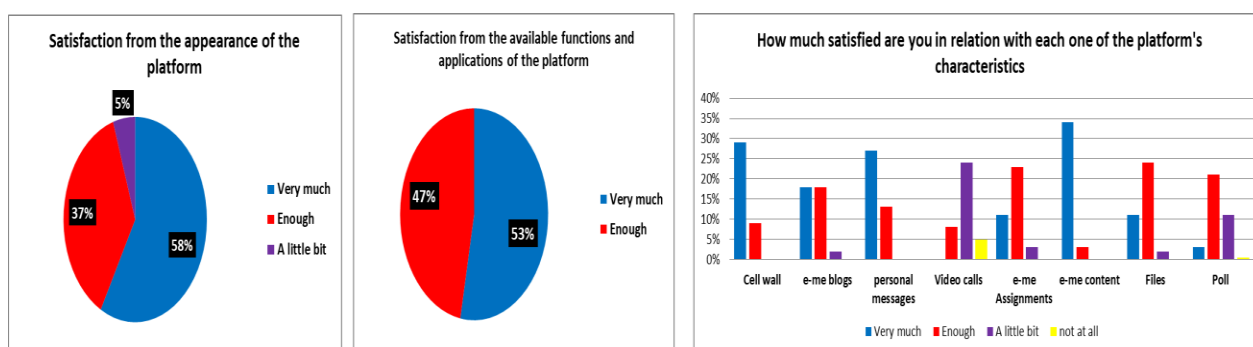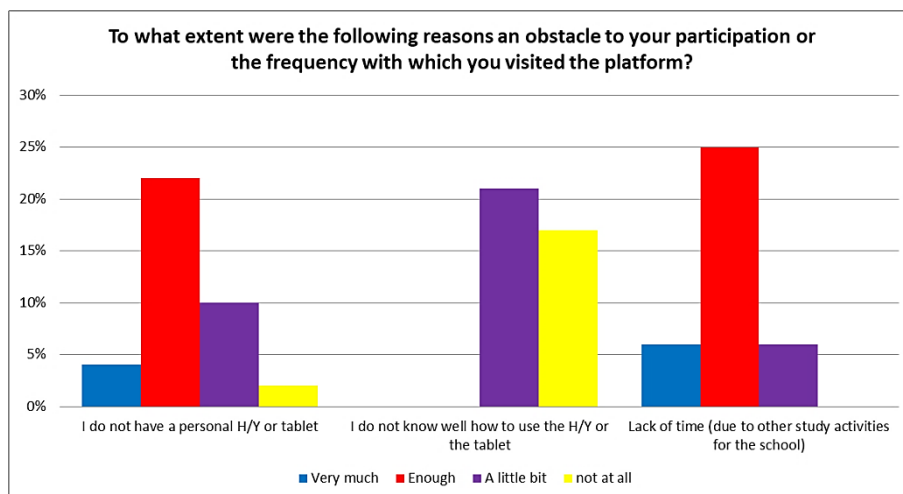
3rd research question (factors that make difficult the open and distance education)
- Lack of time
- Exclusively available computer or other medium.

The above results are summarized in Figure 6 below.

Figure 6. Research results (students) regarding the factors that make difficult the open and distance education

4th research question (benefits from open and distance education)
- Communication & relationships with classmates & teachers
- Enhancing engagement with specific courses
- Material available for practice & repetition

B. TEACHERS

Table 2 below presents the results of the research questions as they emerged from the teachers' interviews, in summary.

Table no1. Teachers' results per research question

Research question	Results
1st: Evaluation of distance education	• Satisfactory degree of participation • Satisfactory performance • The students showed interest • Possibility for the material to be collected and not sought after by parents who are not competent • Possibility of more practice • Possibility of replacement in case of absence • Approaching teaching in a new way • Greater effort of weaker students

	• Ability to repeat the activity • The objectives of the courses were achieved • Educational material aroused the students' interest • Teachers had the opportunity to create their own educational material
2nd: Evaluation of e-me platform	• Easy to use, even for users with basic skills • Students did not have difficulty • There were no significant technical problems • Satisfaction with available applications / functions • e-me content was used more to create educational material • cell wall was used more for posting educational material and communicating interaction with students • e-me assignment for individualized / differentiated teaching • Sense of security due to user certification through Greek School Network
3rd: Factors that make difficult the open and distance education– factors that shape the effective open and distance education	• Lack of technological equipment for students • Possibility of autonomy - self-regulation of the student (procrastination, immaturity, need for constant reminder and encouragement) • Extracurricular activities of students • Technological equipment of teachers • Knowledge - skills of teachers in computers • Established beliefs and methods of teachers • Process of finding, creating, archiving educational material time consuming • Security issue frightens teachers and parents • Necessary knowledge and skills of teachers, need for training • Training in issues related to open and distance education • Training material: clear instructions and clarifications, anticipation of possible obstacles, questions, proper feedback, encouragement, pleasant and attractive appearance, interaction, alternative approach to the lesson compared to lifelong teaching • The medium to be selected is appropriate. Provide the ability to interact • Creation and reuse of learning objects • Incentives for teachers to take similar initiatives to offset the time required • Securing a secure platform by the ministry
4th: Benefits from open and distance education	• Cognitive: students came closer to the lesson • They came in contact with a new way of teaching and learning • Students who had more learning needs met them without being exposed • Students who want more difficult material have had this opportunity • They had material available without having to look for it • They directly controlled their performance • Familiarity with time management • Collaborated in groups to create a final product • Communication with classmates • Relationships were strengthened and new ones were created • More introverted students had the opportunity to communicate • Communication with teachers became direct even outside the educational context • Familiarized with the computer and the platform, applied knowledge they had acquired in previous years in ICT • Developed social skills and had a first acquaintance with some aspects of social media

In summary, the implementation of supplementary distance education had positive results, as the students participated in it to a satisfactory degree, were helped by the educational material, strengthened their communication with classmates and teachers and most of them stated that although they had not participated in the past in a similar program, they prefer this teaching method to the traditional classroom-only teaching. The teachers expressed satisfaction with the participation and performance of the students, pointed out the difficulties arising from the lack of technological equipment and the necessary digital skills as well as the benefits that arise for the students and the possibilities provided by the distance learning educational material when it is properly designed and created. Finally, students and teachers were satisfied with the e-me platform which did not make it difficult for them and provided many useful functions for the implementation of distance education.

IV. Discussion

In relation to the 1st research question concerning the evaluation of the implementation of the supplementary open and distance education, the results are evaluated as positive. The supplementary distance education program that was implemented was successful in terms of participation, satisfaction of students and teachers and proved to be useful in relation to parameters that will be mentioned below. No student or teacher had any previous experience with a distance learning program; however, although this was a new approach to teaching, the majority of students said they were satisfied with the open and distance program. After the action in which the students participated, they answered that they prefer the teaching of all three subjects with this new way of mixed teaching and not only with the traditional teaching that they were used to before, something that

has emerged in other researches (Golikidou&Liakeas, 2013 • January 2015 • Koutzeklidou&Mavroidis, 2017 • Makrodimos et al., 2017), for this reason they wish the open and distance education to continue in the following school years but also to extend its application to other subjects (Gary et al., 2015 • Ziskos&Papadakis, 2015 • Makrodimos etc., 2017 • Nafplioti&Tzimogiannis, 2017).

As can be seen from the analysis of quantitative and qualitative data, the educational material which was understandable contributed to the success of the supplementary program and the students 'satisfaction, while with the way it was presented it managed to attract the students' interest and involve them in enjoyable activities that helped them better understand the lessons (Golikidou&Liakeas, 2013 • Ziskos&Papadakis, 2015). The diversity of the educational material played an important role in its effectiveness, as in the students 'answers they stand out in terms of the satisfaction and help provided by the exercises, presentations, videos and pictures which aroused the students' interest and promoted the active their participation. Students when they come in contact with a static educational material usually in written form, tend to lose their interest while in contrast to the provision of audiovisual interactive material they develop motivation for learning (Georganta, 2019).The students with the program had the opportunity to understand and consolidate concepts more easily but also to control their own performance, since the exercises had the ability to provide immediate feedback (Xanthopoulou&Kefis, 2019 • Anastasiou et al. 2010 • 2015, Ziskos&Papadakis, 2015 • Papafilippou et al., 2016 • Lychnou, 2017 • Makrodimos et al., 2017 • Boubouka et al., 2017). Another important thing that helped the students, was the possibility provided by the platform environment to return to activities and objects at a later time, whenever they needed it (Gariou et al., 2015 • Ziskos&Papadakis, 2015 • Papafilippou, 2016). Overall, with the open and distance education program, the students stated that their engagement with all three courses was enhanced.

The teachers were satisfied with the participation and performance of the students in the activities of the educational material and they believe that the educational goals they had set were achieved. The evaluation of the action showed that the open and distance education had an effective application in the case of filling gaps that a student may have either due to his absence from school or due to learning needs, while at the same time relieving the parents from a responsibility which they are not responsible for (Papanikolaou&Manousou, 2019) and which even the teachers do not want to be transferred to the parents. In addition, it is very useful to have the material collected and available to students whenever they need it, in cases of repetition especially before a competition as it gives them the opportunity to practice more if they need it (Doukakis&Michalopoulou, 2016), while providing grade exercises difficulty either for students who want something more difficult or for students who want more in-depth and practice because they face difficulties, something that in the case of exclusive conventional teaching cannot happen mainly due to time constraints. The teachers, however, noted that they had to insist and encourage the students so that they do not neglect to visit the platform with the educational material (Skoularidou&Mavroidis, 2016 • Koutzeklidou&Mavroidis, 2017) something related to the possibility of self-regulation of students in which we will mention below.

The entries in the researcher's diary also indicate that the supplementary distance education program had a satisfactory result. The participation of the students in the platform, their attendance at the IT laboratory during the breaks, the comments they made both on the platform and live to the researcher, show their satisfaction with the action. The same applies to the three teachers, who throughout the activity reported the positive image they had formed of the way students received this new way of teaching and the difference they observed in individual cases, mainly of weaker students, both in their interest in a course and in their performance, although it is a parameter that has not been explored in the present work.

The second research question concerned the evaluation of the digital e-me platform as a means of implementing the supplementary distance education, which has recently started operating and there has been no other research on distance education based on its use. However, it has elements of a social networking tool such as similar learning platforms, while the results from its evaluation as a means of implementing distance education are similar to those of other surveys that used platforms such as of LAMS, Moodle, Edmodo and are judged as positive. Students through the interactive nature of the platform that allowed the use of multiform material, participated more actively in the learning process and at the same time had the opportunity to develop through it new ways of communication and interaction with their classmates and teachers.The students considered that they could cope with the requirements of the platform as it seemed simple to use, they did not face significant technical problems that prevented access to it, and they were satisfied with its appearance and available functions. Similar were the findings in elementary school students who used other platforms, such as Moodle (Kofteros et al., 2009) and Edmodo (Lazari et al., 2015 • Makrodimos et al., 2017 • Nafplioti&Tzimogiannis, 2017 • Papanikolaou&Manousou, 2019) where the students successfully coped with the use of each platform. The functions that most satisfied the students were the e-me content, through which the teachers created the educational material that they could watch many times, the cell wall which is the main way for the distribution of the educational material and for the communication in general and personal messages.

Some students also explored the e-me blogs application, creating their personal blogs with their interests and inviting their classmates to visit them.

The platform seemed simple to use and to the teachers, who, however, used only a part of its potential. To create their own material the teachers tried hard and used the available functions of the platform. Particularly useful was the application e-me content that allows the creation of learning objects that can be reused. Also, each learning object can be repeated as many times as the student wishes, while at the same time providing immediate feedback, explanations and grades prepared by the teacher / creator of the object. The cell wall enabled the communication and distribution of educational material and at the same time was a first acquaintance with social media to students. The platform also had the ability to apply differentiated teaching through the e-me assignment application, which also proved useful in cases of students who needed more help in specific courses / modules. Finally, in the matter of student safety and protection of their personal data, the e-me platform was a reliable choice as access to it is allowed only to certified users of Greek School Network, i.e. students and teachers.

From the researcher's notes in the diary, the e-me platform did not make it difficult for the participants nor did it present any problems in its operation. Any questions that may have been resolved quite easily with the help of the researcher and in only one case after contacting the technical support team of the platform. In terms of its features, the platform has what is considered necessary, such as profile management, usability, security, the ability to create multifaceted educational material, the ability to transfer and reuse it, the ability to communicate and social networking features and the basic functions that a complete learning environment on the internet must have as already mentioned (Anastasiadis, 2006). It would be useful to have the ability to send e-mail directly to the students' accounts in the Greek School Network while the proposal of one teacher to collect the learning objects and use them by the teachers has already been implemented, with the possibility for anyone who wants to download the objects creates in e-me content in the digital repository of learning objects "*Photodentro*". Therefore, in combination with the positive evaluation by students and teachers, the e-me platform is considered appropriate for the implementation of asynchronous complementary open and distance education in primary school students.

The 3rd research question looked for the factors that make it difficult to apply the open and distance education to primary school students, as well as those that affect its effective implementation. The availability of a means for students to access the platform is a factor that affected their frequency of visitation but not their participation in general. Most students had a computer or mobile phone / tablet, but in a family with more than one child where there is only one computer, it is not easy for the student to use it whenever he or she wishes. Dependence on technological equipment has emerged as a deterrent to the implementation of the open and distance education and in the research of Boubuka et al. (2017). Another factor that negatively affects the frequency of their participation is the other activities that occupy them in the afternoons which due to the age of the students are increased so that they do not have free time (Kofteros et al., 2009 • Doukakis&Michalopoulou, 2016). Two students reported as an additional reason that they did not always need more help in class so they did not visit the platform often and one student reported that his parents did not want to spend much time in front of the computer.

The teachers also pointed out the difficulties faced by some students but also with the technological equipment. The inability of some students to effectively manage their time and study, the lack of autonomy and self-regulation are also factors that make it difficult to apply open and distance education to primary school students. For the teachers themselves, the process of creating the educational material presupposes a lot of work that is done in their personal free time, something that for some is an anti-incentive for the open and distance education but can be offset by the possibility that the material can be reused in the future only with the necessary modifications (Gariou et al., 2015). The educators who participated in the action reported that their knowledge and skills in new technologies, computers and software are deficient and as a result they feel that they can adequately meet only the basic functions of a platform, without being able to undertake on their own similar initiatives for the implementation of open and distance education programs, while in some cases they are not willing to make changes and integrate new teaching methods. This hesitant attitude of teachers in relation to their knowledge and beliefs is also reflected in the study of Demetriadis et al. (2003). The above is confirmed by the observations of the researcher. Students who visited the IT lab often reported that they either could not use the computer whenever they wanted because an older sibling usually needed it, or that they did not have time in the afternoons after all the activities they were attending. In relation to the teachers, there was reluctance at the beginning as to the time they should devote to creating the material and monitoring the progress of the students. Then it was limited as there was the help of the researcher but they themselves became sufficiently familiar with the platform so the time they devoted was limited while at the same time they had begun to observe the positive results of their effort.

The teachers agreed that what makes the implementation of the open and distance education successful and effective is mainly the educational material and the communication. They found in practice,

although they had no previous experience that the educational material should make up for the absence of the teacher as the student is alone and interacts with it, thus promoting the autonomy and self-action of the student. Must have all those instructions, explanations, encouragement, feedback, goals, anticipate potential obstacles and difficulties the student will encounter, be graded for all cognitive levels and individual learning needs of students, characteristics that are also mentioned in the study of Manousos, Kontogeorgakis and Kokkalis (2017).

The last research question was about the potential benefits for students from participating in an open and distance education program. The answer to the research question emerged from the interviews of the teachers and the observations of the researcher and the conclusion drawn is that the students through the supplementary distance education as implemented with the model of mixed learning had significant benefits. The students had material available at any time and at no cost, without having to look for it themselves or their parents which in addition gave them the opportunity to directly control their performance (Doukakis&Michalopoulou, 2016). The educational material changed, was enriched with interactive and collaborative activities and the teaching was transformed into a student-centered one, a framework completely different from what they were used to in the classroom and in the narrow timeframes of the lesson in it (Boubuka et al., 2017) and The students who had special learning needs actively participated in the platform and in the group work and studied the educational material created especially for them (Kelenidou, Antoniou &Papadakis, 2017 • Koutzeklidou&Mavroidis, 2017 • Boubouka et al., 2017).

They enhanced their knowledge of the specific courses and developed their autonomy and self-regulation, as they learned at their own pace and managed their own study time (Psallidas&Manousou, 2011) even with the encouragement of teachers whenever necessary. They cultivated collaboration with their classmates as part of the group activities assigned to them, creating and posting on the platform.Another important benefit that the students gained from their participation in the action was the communication in which the platform itself helped, since with the functions it had, the communication became even easier. As Anastasiadis (2014) states, asynchronous communication that develops in learning environments has the effect of encouraging student participation and cultivating their critical thinking. Students had the opportunity to develop and strengthen their relationships with classmates and teachers by participating in discussions on the platform, commenting on their classmates posts, exchanging messages, even during periods when the school was closed (Lychnou, 2017) and topics not related to school or classes. The most introverted students also benefited from the possibility of communication, who cultivated new relationships with their classmates in the environment of the platform. Furthermore, the students practiced the knowledge they have acquired in ICT and developed the cooperation with their classmates (Psallidas&Manousou, 2011). Through the platform and the educational material, they put skills into practice.

V. Conclusion

In the present work, an attempt was made to study the application of supplementary distance education in primary education. More specifically, through the research questions that were asked, they were evaluated by the students and teachers who participated in the distance education application as well as the e-me platform used for its implementation. In addition, the reasons that may hinder the application of exAE to primary school students, the factors that determine its effective implementation and finally the possible benefits that arise for students from their participation in an exae program were investigated. To investigate the above, after studying the relevant literature, a three-month action research was designed and implemented in 38 primary school students for the subjects of Mathematics, Language and Geography and quantitative means (student questionnaire) and qualitative means were used (teacher interviews, researcher diary) for data collection. The results of the investigation of the research questions cannot be generalized, due to the limited context in which the action research was conducted, but they provide useful data for distance education in primary education and for similar actions in the future. In conclusion, in the present work the individual goals that were set were achieved and overall the action taken is judged by the participants as successful.

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