

Features of synchronous and asynchronous e-learning on the example of teaching the European experience of social inclusion

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Abstract. The research focusing on synchronous and asynchronous learning is often reduced to a psychological assessment of the learner. The learner's motivation will determine the success of the learning process. The quality of perception and understanding of the educational content offered will depend on their experience. Familiarity with the research of the international community and European practices allowed us to select interesting content and diversify the module "Social integration of children with special needs in an environment of diversity and inclusion: European approaches" (SEEDUE4UA-101085267), as well as supplement the content of related disciplines.

However, we paid most attention to the issue of synchronous and asynchronous format of the online educational process. We had to implement this aspect of interaction with students due to the consequences of military aggression in Ukraine. And for the convenience of both students and teachers, we created a flexible package of educational content that allowed us to engage young people through the use of video materials, individual and group projects, and quickly change the form of the online classroom (when the lesson began in the synchronous mode of group interaction, and after 20-30 minutes we had to interact with students asynchronously due to the danger to the life and health of the participants in the educational process).

The biggest challenge in the flexible format for our team was the development of emotional intelligence, that is, the ability of students to assess the situation in an inclusive educational environment, conduct supervision, lead a discussion, etc.

Among the challenges, we also considered the issue of implementing sections of changes in students' attitudes and perceptions of information as a result of mostly asynchronous interaction.

That is why, in the course of this scientific review, we analysed the forms of interactive interaction we selected, described some of the programmes that were used and involved students with appropriate reflection with elements of simulation games, etc. We also drew an analogy with certain topics studied by full-time students in the traditional offline mode of interaction. This allowed us to draw conclusions about the need to adjust certain elements of the programme for all forms of the educational process based on the results of reflection on certain elements of emotional intelligence development within the framework of simulations of physiological and social skills.

As we noted earlier, this analysis allowed us to revise the amount of material and the format of its presentation for better mastering the module issues, as well as to develop a universal toolkit that can be flexibly used in the process of mastering information on social inclusion and European experience in synchronous and asynchronous formats of both project implementation and teaching of relevant disciplines.

Keywords: *asynchronous education, European experience, online education, social inclusion, synchronous education, training.*

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I. INTRODUCTION

Our research is conducted within the framework of two main topics and areas of organisation of the modern educational space. The first of these is inclusive education, which is in line with the project we are implementing in cooperation with the EU. It is also the issue of inclusion of all children with special educational needs in the educational process, which has been addressed by the Ministry of Education and Science of Ukraine since 2010. In addition, this process is currently being expanded and transformed by lifelong learning.

On the other hand, the second topic that directly and fundamentally affects the educational paradigm is distance education and everything related to technology in education. E-learning, which encompasses various procedures such as online learning, computer-based learning, virtual classrooms and digital collaboration, provides a new paradigm in which learning has become possible in any field, for anyone, anytime and anywhere [1]. However, as our fellow researchers point out, despite the growing popularity of distance education and its potential benefits, there is still a lack of data on best practices and research related to teaching and learning in virtual schools [2].

Notably, from 2015 to the present day, it has been noted that student success in virtual schools is largely dependent on the teacher's ability to plan, implement and evaluate their online teaching and learning [2]. In particular, online course development and design is more complex and different from a face-to-face course, as teachers need to consider content, activities (including synchronous and asynchronous activities), facilitation and assessment, all within the constraints of physical and possible distance between the learner and the teacher [2].

This leads to the need to adapt and modify the existing methodology in the development of lectures, practical and other classes, considering the complex process of distance education with its own design, software and professional readiness of the student at the end of the course.

In the Ukrainian educational space, there are significant differences between distance education and inclusive education. Inclusive education provides conditions for unimpeded access to educational institutions and educational services. In particular, not far from the place of residence of a child or a person who needs additional psychological and pedagogical support [3]. While e-learning allows learning regardless of geographic location and time, and has been the main choice for continuing education since 2019 [4].

Thus, the similarity of these two areas is an integral part of the issues of accessibility of education. After all, distance education makes it possible to organise training for any category of people, anywhere in the world and within the required time frame. Similarly, inclusive education makes it possible to provide support and services to children with special educational needs in the format that suits them best. And in combination, these components create the best conditions for the development and functioning of the individual.

Although, again, the difference between them is manifested in the issues of socialisation, the formation of social and emotional intelligence, which we will write about later.

In general, it is a serious challenge for the implementation of our project. As well as for the organisation of the entire educational process, the issue of lack of physical access to educational institutions has become a major challenge. In 2019-2021, it was due to quarantine restrictions, and since 2022, due to the aggravation of the military and political situation in Ukraine. All this, on the one hand, contributed to the search, implementation and implementation of distance education, but on the other hand, required additional measures and implementation of the existing foreign experience of appropriate training organisation with the needs of Ukrainian pupils/students, including children with special educational needs.

Since we are responsible for training young professionals to work with children with special needs, we had to rethink and reformat the presentation of information. After all, those forms of work and training exercises that were effective in traditional education and ensured direct involvement of students in the work process have become essentially vestiges of education. Although they made it possible to understand the main positions and values of inclusive education through the proposed EU experience and the accumulated experience of Ukrainian teachers, experiencing it in the classroom. In order, to maintain the effectiveness of this teaching strategy, the most important thing was to transfer the relevant elements of training exercises and interactions with emotional inclusion and the development of individual skills into an online format.

Thus, the main purpose of our study is to analyse the possibilities and prospects of distance education in the format of training in synchronous and/or asynchronous format. We consider this on the example of teaching the European experience of social inclusion as part of the project of the module "Social integration of children with special needs in an environment of diversity and inclusion: European approaches" (SEEDUE4UA-101085267; hereinafter referred to as the SEED:UE4UA module).

The realisation of this goal allowed us to define the following tasks for the presentation of our experience:

- firstly, we had to analyse the issues of synchronous and asynchronous format of the educational process to achieve the main goal of the SEED:UE4UA module and related disciplines. We paid special attention to the flexible format of their combination due to circumstances beyond the control of the educational institution and the teacher;
- secondly, to present the developments within the proposed flexible format of interaction, their possibilities for the formation of emotional intelligence and feedback from students on the proposed forms of work.

II. MATERIALS AND METHODS

Thus, our research concerns the developments of the SEED:UE4UA module since 2022 and certain disciplines taught at the Vinnytsia Mykhailo Kotsiubynskyi State

Pedagogical University in the specialities of Inclusive Education and Speech Therapy since 2017 and related to the module topic.

Taking into account the tasks we set ourselves in this study, we analysed international and domestic scientific and pedagogical literature on distance education, in particular on the issues of synchronous and asynchronous formats of its implementation. This allowed us to further talk about the flexible format of distance education, which we came to due to the military-political situation (2014), quarantine restrictions (2019) and military escalation (2022).

For example, as part of the description of the flexible format, we presented the module itself and the forms of interaction with students that allow not only to enrich their knowledge on social inclusion, issues related to the environment of diversity, the experience of the European Union countries in implementing relevant strategies, but also to work out elements of practical activities through emotional inclusion during training exercises, reflection, simulation games, etc.

III. RESULTS

To address the first question, we identified as the main one. We can note that online education, also known as e-learning, has become increasingly important in recent years due to its advantages over classroom learning, which include significant savings in time, labour and material resources associated with managing an e-learning environment [5]. The advantages mentioned in almost all scientific reviews are the issue of opportunity:

- to receive education at an individual pace;
- reduce the interaction between students and teachers, or between teachers and students;
- to get rid of time and space constraints by using asynchronous and synchronous networked learning models [5] – [7].

If we look at the first attempts to organise online learning, we should understand that its organisation was based on the use of the so-called Web 1.0, which could ensure student participation only as a passive consumer of content provided by teachers. The evolution of Web 1.0 to Web 2.0 facilitated the use of e-learning in a more interactive form [5] although in Ukrainian society the process of using Web 1.0 can be considered as having been leapfrogged (within the framework of obtaining professions of the humanitarian cycle, such as psychologist, social worker, teacher, etc.) After all, by and large, those offers that entered the market and became available to the general public already had a Web 2.0 format (some of them were described in our previous analytical article on the proposed online courses for training inclusive education specialists).

It is also worth noting that, in addition to the advantages, scientists themselves note that distance education, in particular asynchronous learning, while creating time advantages and other conveniences for students, has a number of difficulties for teachers. In particular:

- difficulty in retaining students in an e-learning classroom, due to the lack of personal contact between students and the teacher. That is, the inability to read non-verbal signals, boredom or frustration of your students [6].
- another difficulty in the case of teachers is their low readiness to use web programming technologies that allow them to easily develop Web 2.0 applications. Although most teachers are gradually mastering the skills of organising the educational process within the framework of the proposed educational platforms, in most cases, to build high-quality own content, it becomes necessary to go beyond the proposed products (for example, educational products from Google).

If we go deeper into this issue, even in Moodle, there is a need to record your own lecture, edit it, supplement and format it if necessary, and upload it to the platform. And these actions already require knowledge of the relevant software, the help of technical specialists, and high-quality presentation material in addition to video, which are combined to form the necessary content. Yes, of course, the time, technical and design costs will quickly pay for themselves, but only if the information is static and there is no need to update the discipline's materials. At the same time, we understand that in today's open information society, static information can affect the interest and participation of students in the process of studying the discipline. Today, once prepared content (video, text, podcast, etc.) should be gradually supplemented and updated with additional data that will promote interest in the discipline. This is particularly true for distance education, as the less social interaction and emotional involvement in work and learning, the less response to the content.

It is equally important to understand the differences, disadvantages and advantages of synchronous and asynchronous learning. In particular, the issues we have raised above, and in the issues that our colleagues in different parts of the world are considering.

Turning to terminology, we can outline the following. Synchronous learning is more similar to face-to-face learning due to its important feature of providing real-time communication [8]. Asynchronous learning, on the other hand, takes place entirely in an online classroom without a real-time component, using multimedia (video lectures, graphics and/or other visual and audio media), announcements, discussion forums (e.g., threaded discussions), and course materials designed and adjusted to facilitate the achievement of the course learning objectives [9]

In practice, we can observe that teachers already use asynchronous media, such as e-mail and discussion boards, but these methods are often insufficient [10]. The implementation of courses, in the humanities, requires access and availability of information through practical aspects and emotions "here and now". In addition, teachers should not only have digital skills themselves, but also be aware of the level of relevant skills and the availability of technical means for students to participate in distance learning processes within the course. It is worth noting that students do not always "reveal" the real level of technical skills and knowledge of Web 2.0 products, which creates

their own collapse in gaining knowledge, because repeated repetition of information already heard, exercises performed or practicing already acquired skills not only wastes productive time, but also motivation and interest in the subject matter.

Smartphone learning became one of the most used methods for Ukrainian students in 2022 and 2023, which also had to be considered when organising courses, making presentations in synchronous mode and offering video viewing in asynchronous format. This requires attention to the video quality and resolution of presentations, which had to be loaded at the lowest quality of 144p - 360p (if we take YouTube as a starting point), but not lose the clarity of the visuals for reading text and infographics with a screen diagonal of 4" and up to 6.5". This factor is no less important than the others, as more than fifty per cent of students at home use personal mobile data with a moderate Internet connection [11]. In addition to this, over these 5 years it has become clear that students prefer to stay at home and attend classes because they have available devices [12], with which we fully agree, observing the changes in the attitudes of students, their self-employment and involvement in professional activities externally, i.e. before completing their studies (in some cases in the 2nd or 3rd year of their bachelor's degree).

For teachers, an important component of the success of teaching the course is proper technical support for the synchronous teaching format, so that all students can attend online classes, regardless of the mode in which it was implemented; have recorded classes and high-quality live classes; receive instant feedback in live classes [7], [12]. In addition, for many students, the unusual distance in learning was difficult, and the use of their webcams in synchronous settings created discomfort for students [7] although no one has cancelled research on the inconvenience for teaching staff, but it has not been studied from a psychological point of view. Separately, the authors emphasised the feeling of diffuse relationships with their peers and were less likely to feel social support in online learning compared to traditional learning [7], in particular, this was the case in Ukrainian practice in the first two years of the full transition to distance education. This, in our opinion, was due to the frustration of the teaching staff due to the unpreparedness of the content for presentation in the online environment and the psychological challenges that arose as a result of the technical inability to provide the course; lack of close interpersonal contact, group presence and physiological sense of closeness with the participants of the educational process for students who are accustomed to traditional learning (sitting in class, going out for a break with peers and friends) and constant live communication. It is this lack of physical and social presence that affects students' engagement and interaction, which are important factors that influence satisfaction with online learning and, in turn, affect students' knowledge, skills and attitudes towards online learning [11]. Although the main advantages of synchronous online learning are real-time interpersonal communication, the use of natural language and immediate feedback, this type of learning interaction has been found to be less useful when discussing complex ideas or deep thinking [7]. In addition, many students also reported an increase in workload [7] but teachers also

raised the same issues, adding to them the lack of separation of personal and workspace.

At the same time, it is worth referring to the research of our colleagues and the practical experience gained regarding the gaps in asynchronous learning. According to scholars and researchers, although this format of interaction can allow students to work at their own pace and independently of time and place, not all students have the right strategies to take advantage of this potential advantage. After all, it requires more self-learning skills to keep up with the schedule, including adequate motivation and desire to achieve learning goals [13].

In addition, the complexity of teaching was to change the role of the teacher to a facilitator of knowledge building, skill acquisition and information transfer. And students were transformed from passive receivers to active participants in the process, whose role was to interact with course materials, other students and the teacher to understand, analyse and apply course concepts and skills in practice [9]

Thus, having identified the main advantages and disadvantages of synchronous and asynchronous learning, the theoretical aspects of forming a quality online classroom environment, we came to the need to revise and transform the SEED:UE4UA module syllabus and to meet not only the principles of e-learning, but also the needs and capabilities of students and, in particular, project teachers.

The difficulty of this process was that the basic development of the module concept, presentation and implementation was based on the traditional teaching format. However, due to the circumstances in Ukraine, this format had to be converted into an electronic format without losing the quantity and quality of the material presented. In this case, it was logical to transfer the course to a synchronous form of distance education, which should not have seriously affected the timing of sessions and the organisation of discussions or projects within the four sections. However, due to the escalation of the military-political situation and temporary communication blackouts, the lack of power supply and the need to take shelter in time during air raids, we had to provide a flexible format for the interaction between the project team and module participants to work through the material according to the class schedule and in accordance with the topic.

The module included the following sections:

1. European social inclusion studies, which included the following topics:
 - Topic 1: European markers of diversity and their role in inclusive education.
 - Topic 2. European practice of finding educational strategies based on environmental factors.
 - Topic 3. Psychological and pedagogical bases of forming an environment of diversity and quality of education for children with SEN in the EU and Ukraine.
 - Topic 4 Psychological and pedagogical foundations of creating an environment of diversity and quality of education for children with

learning difficulties, cultural differences, social barriers, geographical barriers.

2. Legal, social and pedagogical basis for preparing children with special needs for successful life: comparison of European and Ukrainian experience
 - Topic 1: Regulatory and legal support for inclusive education: European and Ukrainian lawmaking and legal implementation.
 - Topic 2. Legal support for people with disabilities in crisis situations: the mission of the state and public institutions in Europe and Ukraine
 - Topic 3: Legal protection of persons with disabilities in the context of inclusion: mechanisms of interaction for social adaptation
3. European practices of developing social competence of gifted children in the regional inclusive space
 - Topic 1: Status of gifted children as persons with special educational needs in the EU and Ukraine.
 - Topic 2. Social and psychological problems and special needs of gifted children in the scientific field of the EU and Ukraine
 - Topic 3. Social and pedagogical work with gifted children with disabilities (doubly disabled) in the EU countries.
 - Topic 4. Cooperation of teachers, social workers and representatives of social services in social and educational work with gifted children.
 - Topic 5. Socially oriented volunteer projects in work with gifted children.
4. Social and pedagogical support for children with disabilities in a diverse environment: EU experience
 - Topic 1: Socio-economic and political prerequisites for the development of socio-psychological support for children with disabilities in the EU.
 - Topic 2. The main international documents regulating the social and psychological support of children with disabilities in the EU countries.
 - Topic 3. The system of social and psychological support for children with disabilities in the EU countries.
 - Topic 4. Participation of young people in support programmes for children with disabilities in EU countries.

Each of the topics was prepared by the teachers in the format of .pdf files and presentations, which were available for reading in a joint Google class. Questionnaires and surveys were conducted using Google forms both for the general data and by each teacher separately according to the topics they taught.

As part of the supervisions to discuss the best options for implementing the module's goals and objectives, the project team decided to follow the CTBL approach: Comprehensive Technology-Based Learning [14], which allowed to refer to international documents and European

practice of implementing diversity and inclusion policies in education through students' basic knowledge of pedagogical, psychological, social and legal disciplines.

This was a convenient solution that covered the basic needs of both teachers to teach the course and students to gain the necessary knowledge and skills. In addition, some of the materials were dubbed in a specially created group on the Viber messenger. The main attributes included in this complex were [14]:

- textual materials that provided full coverage of the material in accordance with the module topics, and also included answers to questions and questionnaires within each of the sections proposed by the teachers;
- videos, which included:
 - videos from the YouTube video hosting service, which were related to the presentation of the EU experience on diversity and inclusion;
 - video messages, instruction from teachers (in some cases, audio messages, which were better delivered in conditions of limited traffic) to prepare and guide students to complete practical tasks in an asynchronous format; preparation of materials and tools for exercises conducted in a synchronous format; and to clarify certain topics whose detailed discussion during the online meeting was interrupted by an air raid. The use of this video and audio format had its advantages and disadvantages, but the main one was that such video/audio did not require special processing, cutting, gluing, or other manipulations with the video recording of the lecture material. In addition, at the second stage of the project, the project team began to include videos from popular social networks such as TikTok and Instagram, which were selected to enhance the effect of emotional inclusion, the formation of emotional intelligence through discussions, and social intelligence through the development of algorithms for interacting with children with SEN based on emotional experience;
- feedback questionnaires, but, unlike the proposed approach, at all stages of the module implementation in accordance with the needs of the team and each teacher separately;
- answers to the questions that we transformed into interviews at the end of the module to obtain feedback and included as separate questions in the questionnaire by section. Following this point allowed us not only to keep in touch with students, but also to respond to challenges in a timely manner in accordance with their needs, the purpose and objectives of the module.

In addition, as part of the module and the proposed trainings for working professionals, we were able to use non-standard forms of interaction, such as online challenges, the simulation game "Together", an educational hackathon on inclusive topics, which helped to consolidate the knowledge gained within the module, practice exercises to develop emotional and social intelligence, involve a wide audience in discussing the results of the work of

project participants and students involved in related disciplines in discussing the European experience within the module "Social integration of children with special needs in an environment of diversity and inclusion: European approaches"

IV. DISCUSSION

Among the problematic issues that arise during the work of the project team, it is worth noting such a thing as feedback in the form of interviews or feedback questionnaires in the classroom. In our opinion, it has its limitations, which relate to sincerity in statements, relevance to the topic and general involvement of students in the interaction, their inclusion in synchronous discussion, formed life position regarding people with special educational needs, as well as the European experience of shaping the educational environment through social, economic and cultural levers that differ from the student's personal position. All this creates a separate "bubble" of personal experience and professional development, which directly affect students' responses, their practical skills in implementing an educational programme for children with SEN and their contribution to innovations that change the educational paradigm and should promote diversity and inclusion policies.

This, in turn, creates prerequisites for rethinking the format of material presentation, visible gaps in student engagement and motivation during work. However, this factor does not fundamentally change the project's subject matter and goal. Rather, we, like all our colleagues in the international space, need to think about updating the principles and strategies for implementing the module in particular and all related disciplines in general.

This part may be subjective, but it is fundamental to our project and teaching, as it allows us to provide an individual approach to teaching, which is part of the issues of inclusion and diversity.

V. CONCLUSIONS

Given that we have reviewed a number of modern studies and practical cases on the meaning, principles, and possibilities of synchronous and asynchronous learning. We got acquainted with the results of studies on the impact of synchronous and asynchronous learning on student performance, which are not without ambiguity [Y.Ghilya, 2022]. In our practice of flexible combination of synchronous and asynchronous distance education, we have come to the conclusion that with the use of quality planning, supervision and team discussion of the strategy for implementing each of the project steps, the use of clear instructions in creating practical and theoretical cases for students, and quality discussion of the issues raised in the module topics, we can achieve significant results in accordance with the goals and objectives of the courses. Unfortunately, it is not possible to compare the results of the distance format of the SEED:UE4UA module itself with the traditional form of teaching today, as we started working in autumn 2022, so we can only judge the effectiveness of the course from the online classes.

This also does not change the fact that for the second year in a row, working in a flexible distance learning format, we continue to improve and look for the best

solutions to present European experience to the students of the project. This is due to the involvement of new tools of good pedagogical practice and ongoing discussion of the results of each of the four sections and the training offer for practicing teachers.

In general, addressing the issue of teaching the European experience of social inclusion, we should note that thanks to modern technological solutions, CTBL cases, distance education in the format of training, that is, the use of training exercises and simulation games to form social and emotional intelligence in synchronous and asynchronous formats, has every opportunity to function without immersion in the traditional format of training specialists in the field of social inclusion and diversity.

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