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## E-learning in the present-day context: from the experience of foreign languages department, PSACEA

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**Abstract.** In the present context of COVID-19 lockdown, when pedagogies had to turn from in-person to virtual instructions, computer-mediated communication (CMC), including distance learning and e-learning, has come to the foreground to maintain the barrier-free educational environment. The three-dimensional model of the e-learning, which includes the principles of knowledge acquisition at ‘any place’, at ‘any time’, at ‘any speed’ is incomplete without the organisational culture component. To analyse what e-learning modes are used in a particular institution, to measure the efficiency of distance courses and, further, to suggest the most effective model and the ways of e-learning integration into a particular HEI according to its needs’ analysis was set up as the aim of this article. To achieve this aim, a complex of qualitative and quantitative research methods was applied. Therefore, in the first phase of our inquiry, a literature review was conducted in which we analysed the definitions of ‘distance learning’ and ‘e-learning’, traced the history of the question, and collected the main characteristics, quality parameters, and models of the distance and e-learning. On the later phases, we introduced the form ‘Analysis of the Distance Learning Tools Preferences’, disseminated among the teachers; a questionnaire ‘Distance Learning Mode of Work Satisfaction/Dissatisfaction’, disseminated among students, and ‘The Instructional Materials Motivation (IMMS)’ online survey by J.M. Keller to measure the efficiency of the distance learning courses design, also disseminated among students. The empirical data was collected at Prydniprovsk State Academy of Civil Engineering and Architecture (PSACEA), the Department of Foreign Languages during March-May, 2020. Thirty instructors from the Department of Foreign Languages and twenty-three students from the first-third years of Foreign Languages studies who regularly participated in online lessons took part in the experiment. Based on the theoretical and empirical data, we got a picture of the e-learning state (in its first approximation) in our HEI, proved that the forms and questionnaires used in the experiment may serve as informative tools of quantitative measurement, drafted the format for further improvement of the e-learning in our organisation.

### 1. Introduction

A present-day need to find ways of future specialists’ training efficiency increase in Higher Educational Institutions (HEIs) dictates further development of approaches and techniques to computer-mediated communication (CMC), including distance learning and e-learning as its variations. Therefore, the discussions around educational digitalisation and CMC’s implementation into various educational contexts continue to gather momentum and are reflected in many contemporary foreign and national scholarly works. For example, the scientific inquiry of A. A. Andreev [2] and L. M. Petrenko [25] is



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connected with distance learning, while V. Ye. Velychko analyses the questions of informatisation in HEIs [11]. W. Bramble and S. Panda in [8] present various distance and online learning models. N. Dabbagh [19], B. Bannan-Ritland [4] focus on online learning's concepts, strategies, and application. R. M. Palloff and K. Pratt [24] describe effective strategies for an online classroom. V. P. Bepalko [6], D. H. Jonassen [9], A. E. Kiv [17], O. O. Lavrentieva [19], W. Lewoniewski [7], Y. Masuda [22], L. M. Rybalko [20], A. M. Striuk [28] – these are just a few researchers' names to add to the list, which proves that both theoretical and practical interests in enhancing ways and methods based on CMC are topical on the global scientific scale [3].

The recent situation with COVID-19 in the world in general, and in Ukraine in particular [27], when in-classroom work has become unavailable, when pedagogies had to turn from in-person to virtual instructions, when the initiatives to maintain the barrier-free educational environment have become paramount [12] – prompted the research topic for this article, which is summarised by us as 'E-learning in the present-day context: from the experience of foreign languages department, PSACEA'. Given this, the purpose of the article is to analyse what means of computer-mediated communication were used for e-learning in time of the quarantine by the faculty at the Department of Foreign Languages, Prydniprovskya State Academy of Civil Engineering and Architecture (PSACEA); to discuss the advantageous and the weak aspects of the CMCs' tools used; to test the instruments to evaluate the efficiency of the courses built on e-learning and distance learning platforms; to suggest strategies for the distance digital format of teaching and learning improvement.

## 2. Research methods

To address the purpose of the article, a complex of qualitative as well as quantitative research methods was applied. For this reason, in the first phase of our inquiry we conducted a literature review, and analysed the definitions of 'distance learning' and 'e-learning', traced the history of the question and collected the main characteristics, quality parameters, and models of the distance and e-learning.

On the later phases, to get statistical data, we introduced the form 'Analysis of the Distance Learning Tools Preferences', disseminated among the teachers; a questionnaire 'Distance Learning Mode of Work Satisfaction/Dissatisfaction', disseminated among students, and 'The Instructional Materials Motivation (IMMS)' online survey by J. M. Keller to measure the efficiency of the distance learning courses design, also disseminated among students.

The empirical data were collected at Prydniprovskya State Academy of Civil Engineering and Architecture, the Department of Foreign Languages during March-May, 2020. Thirty instructors from the Department of Foreign Languages and twenty-three students from the first-third years of Foreign Languages studies who regularly participated in online lessons took part in the experiment.

## 3. Results and discussion

It should be noted that at the moment there are many definitions of the term 'distance learning' that reflect the diversity of approaches to its understanding. In the works of A. Andreev, we could find the following definitions of the phenomenon collected by the scientist:

- distance learning is a mode of learning, along with full-time and part-time modes, in which the educational process uses the best traditional and innovative instructional techniques and tools, as well as the forms of learning based on computer and telecommunication technologies;
- distance learning is a purposeful asynchronous process of interaction between the subject and the object of learning mediated by electronic instructional tools, where the learning process does not depend on the spatial location of the participants;
- distance learning is a set of educational services provided to the general public in the country and abroad through a specialised information educational environment based on the exchange of educational information at a distance [2].

Having analysed different definitions of distance learning, R. Palloff and K. Pratt distinguish three main characteristics of it: 1) learning does not depend on spatial location and time; 2) services are provided through a specialised information environment; 3) learning process is controlled by a student

him/herself [23].

The history of distance learning can be traced more than two centuries back and is connected with the emergence of the correspondence institution. Other forms of communication developed during the period of industrialisation and are associated with the invention of the radio and television, i.e. radio courses and television courses. Later on, the appearance of the World Wide Web played the most significant part in the spread of the remote mode of learning. Consequently, the historical development of distance learning is reflected in its models' evolution – on the basis of a correspondence mode, an online mode, an e-learning mode [8].

The term 'e-learning' also has a big number of interpretations and is used in different ways, depending on pedagogical goals and contexts. Our search for e-learning definitions via Google Search Engine yielded 1330000 entries. The generalised definition of e-learning describes it as a variation of distance learning that has gained active development due to the emergence of new technologies.

It is true that the e-learning model is the latest in the history of distance education and has a three-dimensional structure. Through the training based on e-learning principles, students can acquire knowledge anywhere, anytime, and at any speed [14].

The European e-Learning Action Plan defines e-learning as the use of the latest multimedia technologies and the Internet with the aim to improve the quality of the education through granting access to resources and services, distance exchange, and cooperation [5].

According to the method of interaction, the following modes of e-learning are distinguished: the interaction between a student-electronic environment, student-student, student-teacher, teacher-electronic environment, interaction inside the educational community. According to the time criterion, e-learning organisation is classified as asynchronous (different times of teaching and learning), synchronous (teaching and learning take place at the same time), or a combination of the two. For example, asynchronous communication (e-mail) allows using authentic speech and meaningful context. Compared to face-to-face communication and synchronous online tools, this environment gives students enough time to reflect and formulate their utterance. Synchronous communication – real-time communication (text chats) simulates conversation but is not complicated by the possible 'dominance' of direct discussions. Research confirms the fact that students participate more often and more proportionately in online discussions than in face-to-face communication. It should also be added that online discussions create a student-centred environment in which they are more willing to take risks [1].

According to the criterion of technological means' utilisation, e-learning can be computer-based, laptop-based, video conferencing-based, forums-based, weblogs-based, etc. By the methods of information transfer – text, sound, picture, video, animation, simulation, interactive resources based, etc.

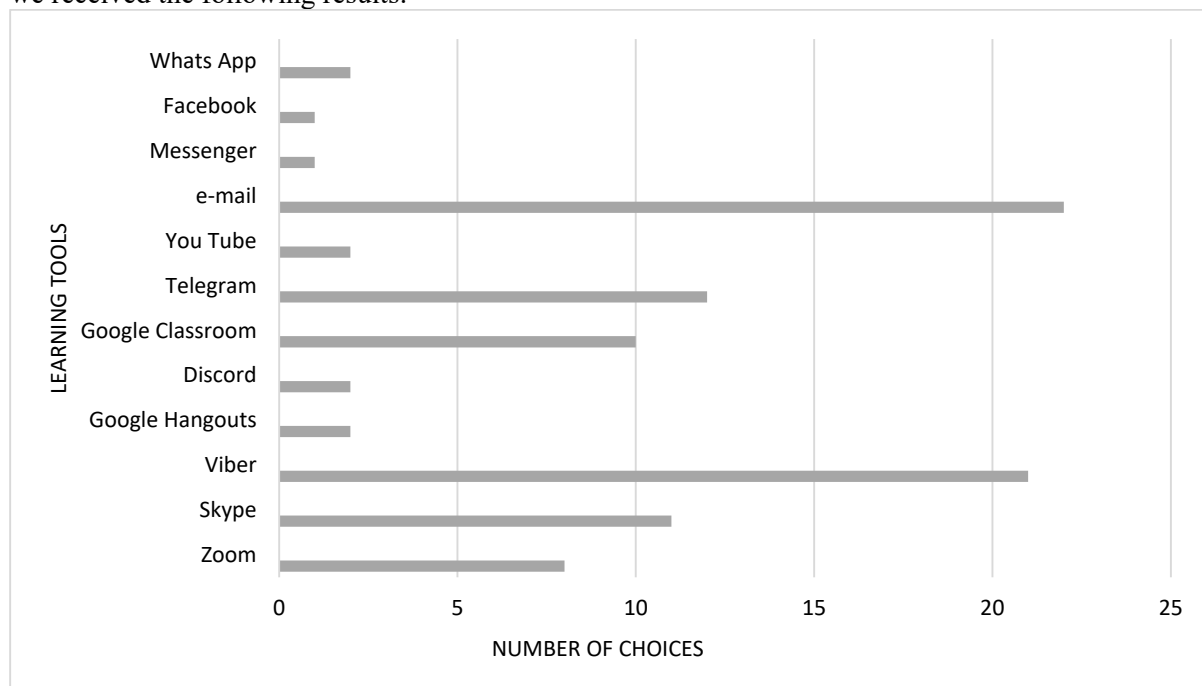
In our article, we use the term 'e-learning' broadly to relate to the learning environments where CMC is used as a component of educational instruction. At the same time, we maintain that the e-learning model, which is based on the dimensions of 'any time', 'any place', 'any way', 'any speed' needs to be supplemented by a cultural component under which we mean the culture of a particular institution [26]. This, in turn, implies the need to understand what e-learning modes are used by an organisation, measure their effectivity, and suggest the most efficient model and the ways of e-learning integration into a particular HEI according to its needs' analysis.

In the time of the quarantine, at the Department of Foreign Languages, Prydniprovsk State Academy of Civil Engineering and Architecture, the instructors have been using such distance learning platforms and tools as Google Classroom, Zoom, Hangouts, Edmodo, Skype, Telegram, Viber, Discord, Web room, WebEx; online resources Edpuzzle, Quizlet, Cambridge English, Lexical Lab, TED Educational (the English Language); AUF, BNEUF, Le Point du FLE, TV5MONDE, Francaisfacile.com (the French Language); Deutsche Welle, Easy German, Learn German with Anja, etc. [15] (the German Language).

To understand what the most preferred platforms and tools for the foreign languages teaching and learning are, we disseminated the form 'Analysis of the Distance Learning Tools Preferences' to be answered by the teaching staff of the department, that contained (among others) the following graphs: 'Specify what online platforms you use for your online classes (ZOOM, Skype, Meet, etc.); 'other

platforms and digital tools you use to organise e-learning, e.g. ‘Google Classroom’; ‘use of e-mails, social networking sites or messengers’; ‘others’.

According to the statistics, obtained after the completed forms’ analysis (30 teachers were asked), we received the following results:



**Figure 1.** Distance learning tools preferences.

In line with the data received, the most popular video-conferencing platforms chosen by teachers of the department were Skype (11 choices) and Zoom (8 choices), while Google Hangouts (2) and Discord (2) with video-conferencing features were found less popular. The popularity of Viber (21) is also explained by its video-conferencing function. Social networking apps that were actively used by the faculty were Telegram (12) and Viber (21). E-mail (22) service was also chosen for the asynchronous correspondence with students. Google Classroom (10) was applied by instructors to exchange texts, audio, video, and hyperlinked material.

Our experience has also ‘fed in’ some qualitative data. For example, the benefits of Skype’s application, according to our staffs’ opinion, lie in the number of video chat participants (which is unlimited), the ease of operation on the screen, the inclusion of such activities as speaking, reading, and, partially, writing. Regarding the use of Google Hangouts application, which is almost identical to Skype, a ‘Share Screen’ feature that lets students see what the instructor demonstrates on the monitor: files, videos, etc., a ‘Chat History’ feature that records the number of people attending each class are regarded as supportive. At the same time, it does not have a file-sharing feature and the number of video chat participants is limited up to 10. When it comes to written assignments, Google Classroom application is named as the best fit. Here, an instructor posts assignments and sets up the deadline, selects students for whom the tasks are assigned, evaluates students’ works (the number of points is selected on a different scale principle following the instructor’s choice).

A separate part of our discussion should be given to Zoom platform’s analysis, as teaching on this platform, judging by our teachers’ feedback, is challenging. This is connected with the phenomenon, described as ‘Zoom fatigue’.

Those teachers who used this video-conferencing platform complained that after two sequential sessions they were more tired than after the same number of face-to-face lessons in a real class setting. One of the explanations to this is provided by Tanya Joosten, a senior scientist, and director of digital-

learning research and development at the University of Wisconsin at Milwaukee. She attributes it to the Gallery view when all the sessions' participants appear, which challenges the brain's central vision, forcing it to decode many people at a time. Moreover, 'one of those boxes on the screen is you', – that may mean that we spend more energy on monitoring our non-verbal communication than we do in person [29]. What we also experienced was a shift towards teacher-centricity and one-way communication.

We also organised a brief questioning of students as to what most difficult aspects of e-learning they could name. The question we asked was 'What is the most challenging for you in distance learning?' The possible alternatives were pre-formulated for the students to choose from and the number of choices was not limited. Our statistics look as follows:

1. Problems with self-organisation, high level of distraction – eight students (34.8%).
2. The excessive number of educational tasks – eight students (34.8%).
3. Dependence on technical means – twenty students (86.9%).
4. Poor quality of home Internet – fourteen students (60.8%).
5. Restrictions on obtaining practical skills – five students (21.7%).
6. Lack of opportunity to communicate freely with the teacher – none (0%).
7. Lack of control over the level of knowledge – three students (13.04%).
8. Insufficient duration of classes (time limit) – none (0%).
9. The quality of the material taught – four students (17.4%).
10. Insufficient theoretical materials to perform tests and/or tasks – seven students (30.4%).
11. Lack of opportunity to communicate with other students – thirteen students (56.5%).
12. The need to learn how to work online – three students (13.04%).

It is necessary to mention here, that we had a chance to compare the results of our questionnaire with the results, obtained in Alfred Nobel University, Dnipro from the same questionnaire introduced during the period from 8 to 14 April 2020 in electronic form. The total number of interviewees there made up 1062 students. According to the form of education, the interviewed students were distributed as follows:

- full-time students – 911 people (85.8%);
- part-time students – 24 people (2.3%);
- correspondence courses' students – 127 people (12%).

Alfred Nobel University's statistics look as follows:

1. Problems with self-organisation, high level of distraction – 351 students (33.1%).
2. The excessive number of educational tasks – 330 students (31.1%).
3. Dependence on technical means – 302 (28.4%).
4. Poor quality of home Internet – 300 (28.2%).
5. Restrictions on obtaining practical skills – 286 (26.9%).
6. Lack of opportunity to communicate freely with the teacher – 249 (23.4%).
7. Lack of control over the level of knowledge – 186 (17.5%).
8. Insufficient duration of classes (time limit) – 162 (15.3%).
9. The quality of the material taught – 122 (11.5%).
10. Insufficient theoretical materials to perform tests and/or tasks – 110 (10.4%).
11. Lack of opportunity to communicate with other students – 108 (10.2%).
12. The need to learn how to work online – 55 (5.2%).

Based on the comparative analysis, we got very close statistical data on statements one, two, five, seven and eight, though the size of the samples interviewed varied.

We also wanted to understand the quality of the e-courses offered in the time of the quarantine. Therefore, in the final phase of our experiment, we organised an online survey based on the IMMS instrument.

There are a number of models that help estimate the quality of e-learning. The existing models can be divided into two categories: those based on empirical data and those based on theoretical developments. An example of the first category is the quality model proposed by the Institute for Higher Education Development 'Quality on the Line: Success Factors for Distance Learning' (Institute of

Higher Education Policy ‘Quality on the Line: Benchmarks for Success in Internet-Based Distance Learning’ Project, 2000); T. Volery and D. Lord’s ‘Critical Success Factors in Online Education’, 2000). A model developed by the European Commission (The BENVIC Project by the European Commission, 2002). The second category includes A. Chickering and Z. Gamson’s model ‘Seven Principles for Good Practice’, 1987; K. Barker’s model ‘Quality Guidelines for Technology-Assisted Distance Education’, 1999; S. Marshall and G. Mitchell model ‘The E-learning Maturity Model’, 2000 [21].

There is one more scientist whose works have been directed at measuring the quality of a course (including distance-learning). J.M. Keller has developed and tested a model to measure learners’ motivation to improve a course design or to adapt a course to learners’ motivational needs [16].

As a result, he came up with the ARCS model based on its acronym (Attention, Relevance, Confidence, and Satisfaction).

Attention – is the importance of incorporating a variety of tactics to gain learner’s attention by the use of interesting graphics, animation, an event that introduces a conflict, by mystery, unresolved problems, and other techniques to stimulate the inquiry in learners.

Relevance – the consistency of the course and the instructional material with students’ goals, learning styles and past experiences. The connection of the content to the learners’ future job or interesting topics.

Confidence – lies in helping students establish a positive attitude, drive for success, and the experience of success as the result of their ability and efforts.

Satisfaction – is the maintenance of positive feelings about learning experiences, i.e. positive rewards and recognition. According to the scientists’ conclusions if all these conditions are met, then students are likely to have a high level of motivation as well as build a continuous motivation to learn [16].

The model and the inventory (that is an integral part of it) were successfully applied to different educational settings and proved to be informative as an instrument for the efficiency of a course measurement ([10], [13]).

The IMMS (the Instructional Materials Motivation) survey consists of 36 items and 4 subscales. The 4 subscales are attention (12 items), relevance (9 items), confidence (9 items), and satisfaction (6 items). It measures learners’ motivation level by applying a 5-point symmetrical Likert scale.

We consider it necessary to give here the examples of questions for each of the subscales.

Examples for ‘Attention’ subscale: ‘There was something interesting at the beginning of this course that got my attention’. ‘These materials are eye-catching’. ‘This course is so abstract that it was hard to keep my attention (an example of a reverse question)’.

Examples for ‘Relevance’ subscale: ‘It is clear to me how the content of this material is related to things I already know’. ‘There were stories, pictures, or examples that showed me how this material could be important to some people’. ‘The content of this material is relevant to my interests’.

Examples for ‘Confidence’ subscale: ‘When I first looked at this course, I understood it would be easy for me’. ‘This material was more difficult to understand than I would like it to be (a reverse question)’. ‘After working on this course for a while, I felt confident that I would be able to pass a test on it’.

For ‘Satisfaction’ subscale: ‘Completing the exercises in this course gave me a satisfying feeling of accomplishment’. ‘I enjoyed this course so much that I would like to know more about this topic’. ‘I really enjoyed studying this course’. ‘The wording of feedback after the exercises, or of other comments in this course, helped me feel rewarded for my effort’ [13].

The data we obtained after analysing the received answers (IMMS) is presented in the table 1.

**Table 1.** Motivation level range.

Motivation Level	Scores	Number of Participants ( <i>N</i> =23)	Percentage
High Level	4.00 – 5.00	<i>N</i> =2	8.7%
Upper Medium Level	3.50 – 3.99	<i>N</i> =5	21.7%
Medium Level	3.00 – 3.49	<i>N</i> =12	52.2%
Low Level	< 3.00	<i>N</i> =4	17.4%

In our research out of 23 students 12 (52.2%) demonstrated medium motivation levels, 5 (21.7%) had upper-medium motivation levels, only 2 (8.7%) had high levels of motivation, and 4 (17.4%) – low motivation levels. The data results may be interpreted as ‘satisfactory disposition’ to the e-learning courses of students who participated in them. It should be noted that the respondents took different courses with different instructors and different syllabus. Consequently, what we got is an overall picture of e-learning courses efficiency.

#### 4. Conclusions and prospects for further research

Though the experimental sample was quite small and limited to thirty instructors and twenty-three students, we maintain that the experience of our department at the time of the quarantine due to the COVID-19 situation still highlights the current e-learning situation in our HEI, reveals several challenges and needs, helps layout further strategies to support fluid, holistic, seamless, pervasive, personalised education optimised by technology.

To sum up the data received, the most popular video-conferencing platforms and tools chosen by the teachers of the department were Viber (with its video-conferencing feature), Skype, and Zoom, while Google Hangouts and Discord with the same video-conferencing feature were found less popular. Social networking apps actively used by the faculty were Telegram, Viber; e-mail service was used as the asynchronous mode of correspondence with students.

Skype was chosen by many because of the unlimited number of video chat participants, the ease of operation on the screen, the inclusion of such activities as speaking, reading, and, partially, writing. Google Hangouts application – because of a ‘Share Screen’ feature that lets students see what the instructor demonstrates on the monitor, a ‘Chat History’ feature – because it records the number of people attending each class, Google Classroom – as it lets post assignments and set up the deadline, evaluate students’ works according to a variety of evaluation scales.

The most debatable was Zoom platform as, on the one hand, it does not limit the number of the participants, is quite easy in operation, has a session recording feature, an instructor’s screen demonstration, a whiteboard to write comments, a group chat feature, a waiting room (to prevent unregistered participants join the conference), a conference room – to split students into separate mini-groups. At the same time, such a phenomenon as ‘Zoom fatigue’ was marked by teachers, which can be partially explained by the presence of many people at a time on the screen, the need to monitor our non-verbal language as instructors, to shift to teacher-centricity and one-way communication. With the reference to the students’ feedback from the distance work during the quarantine – ‘dependence on technical means’ was named as the main challenge, followed by the poor quality of the Internet, problems with self-organisation, the number of tasks, restriction on exercising practical skills.

As for the inventory used by us in the experiment, the form that we introduced among teachers ‘Analysis of the Distance Learning Tools Preferences’ proved to bring informative data to understand what distance learning tools are chosen in our organisation (which gives the understanding of what technological means and technical skills our faculty possess). Not less informative was an online questionnaire ‘Distance Learning Mode of Work Satisfaction/Dissatisfaction’ disseminated among students.

Regarding the efficiency of the courses offered by our department, the majority of students who participated in online classes regularly demonstrated the medium level of courses’ design satisfaction that may be attributed to the short period these courses had to be structured and moved online; the need to increase the level of digital and pedagogical skills of HEIs faculty; to further develop their didactic skills in mastering new approaches to academic course material design in e-learning format; to encourage the culture of cooperation and sharing, as well as to experience a wide range of applications, digital tools, and services that support the process of education; the development of an educational content to be accessed by students at any time, from any place, from any computer, the increase of students’ ICT and digital literacies.

All of the above brings up the issue of a Digital Learning Unit creation as an indispensable part of a contemporary Ukrainian Higher Educational Institution and the need for the extensive digitalisation’s



implementation initiatives that should be rooted in management and the cohesive institutional strategies, which was discussed in our previous work [30].

Unit of Digital Learning, Royal Institute of Technology (KTH), Stockholm, Sweden can serve as an example of such an organisation. The main objective of it is to examine how technology can support education and learning. It is the place where educational digital platforms, online courses, and video are designed. At the unit, research and development (R&D), education and supervision are carried out. The unit is organised into four groups: E-Learning, Media Production, MOOC (Massive Online Open Courses), and Resource Centre for Online Education [18].

The E-learning group maintains and develops the digital learning environment at KTH. It is responsible for investigations and evaluations of the digital learning process, as well as education and support to KTH's teachers (i.e. it conducts the activities to investigate what digital learning environment KTH should have, as well as evaluates whether the current environment meets the needs of teachers and students).

Media Production group provides guidance, development and support in video production for KTH's teachers. Resource Centre for Online Education group has the task of organising and supporting online teaching and developing networking skills. It works for students who want to study online courses and for institutions that want to offer online courses.

Besides these groups, there are Flipped Classrooms, KTH play – a media portal and a recording tool that helps to record, store and share video and audio material, Lecture theatres with recording, Lunch 'n' Learn seminars (aimed at those who are interested in e-learning and want to know more about KTH's digital learning environment).

In conclusion, we would like to summarise that the e-learning that expands educational process by giving access to knowledge from anywhere, at any time, at any speed and is backed up by the latest multimedia technologies and the Internet should be applied with the organisational culture's preliminarily conducted needs' analysis. In this article, we tried to describe our experience of such kind of an analysis based on the data obtained during the distance work (March-May 2020) at Prydniprovsk State Academy of Civil Engineering and Architecture. The research we undertook gave us a picture of the e-learning state (in its first approximation), proved that the forms and questionnaires used in the experiment may serve as informative tools of measurement, gave grounds to draft the format for further improvement of the e-learning in our organisation.

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