IGIP Prototype Curriculum, Teachers’ Professional Development and Distance Education in Russia During COVID-19 Pandemic

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Abstract. IGIP Prototype Curriculum pays special attention to the development of the ability of engineering university teachers to use effectively technical aids, information and communication technologies (ICT). In Russia, there are various additional professional programs for the same purpose. The outbreak of COVID-19 pandemic caused closures of engineering universities of many countries including Russia for the spring semester 2020. Since the end of March 2020 in Moscow Automobile and Road Construction State Technical University (MADI), all the teaching has been taking place remotely/online. The situation of this large-scale natural experiment gives the opportunity to analyze its results and to try to find answers to numerous questions. The paper is devoted to the survey of the attitude of MADI foreign language teachers and students towards distance learning technologies. The survey identifies the distance technologies used, the opinion of the respondents of their efficiency, the difficulties the respondents faced during remote educational process, the respondents’ opinion of the prospects of distance technologies in foreign language training, the differences and similarities of the attitudes of foreign language teachers and students.

Keywords: IGIP Prototype Curriculum · Teachers’ professional development · Distance education · Foreign language teachers and students’ survey

1 Context

One of IGIP aims is improving teaching methods in technical subjects in engineering universities. Its achievement greatly depends on the qualification of technical teachers. For teachers’ professional development, the Society created IGIP Prototype Curriculum with its versions for different time.

All the four versions of IGIP Prototype Curriculum were designed in different situations but all of them paid special attention to the ability of a teacher to use technical aids in the educational process. The First IGIP Curriculum was created by A. Melezinek in the 1970s. One of the subjects of the Curriculum was “Fundamental Principles of Educational Technology” (24 h). Its aim was to help teachers to use
effectively technical devices, equipment, and systems, including both “classical”
equipment (blackboards, overhead projectors, slides, film projectors, etc.) and the so-
called “new media” (computers, video cameras) [1].

The Second IGIP Curriculum (2005) contained the discipline “Media, E-learning
and Computer-aided Technologies” (2 CP). The aim of the subject was to develop the
ability to use the “classical” teaching media, to know the function, operation of “new”
teaching media and to use adequately and create “new” devices, for example, advanced
learning platforms, various forms of internet communication, to plan the didactic
concept of notebook classes, explain and use databases, etc. [2].

The Third IGIP Curriculum (2013) followed the tradition and included the module
“ICT in Engineering Education” (1CP) [3]. After the course the teachers are supposed
to be able to identify, to select, to design, to produce, and to use the most appropriate
IC technologies or their combination for specific instructional needs in the educational
process, for example, for presenting information or communicating with learners. The
course covers the issues of electronic learning, internet searching, e-learning/blended
learning, communication services and tools, Learning Management Systems (LMS),
Content Learning Management Systems (CLMS), SMART technologies, structure and
organization of an electronic course, methodology of courses, didactic approach to
creating scenarios and structure of an e-course, measuring the effectiveness of an e-
course. At present, the Task Force is developing the Fourth IGIP Prototype Curriculum
and after its approval, many countries will introduce it in Engineering Pedagogy
Centers.

In Russia, besides IGIP Engineering Pedagogy Centers, the courses connected with
modern ICT technologies, are implemented within the programs of professional
retraining for the qualification “Teacher of Higher School” or as short-term programs of
teachers’ professional development (min.16 h).

The aims and content of the disciplines for the development of didactic competence
of teachers in the sphere of ICT are becoming more and more informative and com-
plicated due to the fast changes in this field. Thus, Russian university teachers have the
opportunity to improve corresponding habits and skills. The level of the teachers’ skills
vary from highly advanced ones to rather low ones. However, due to COVID-19
pandemic all of the teachers had to use the acquired skills quite unexpectedly, at a large
scale and at least for the period of a term.

2 Goal

The outbreak of COVID-19 pandemic caused national shutdowns and temporary
closures of schools, colleges, and universities. The process began in China in February
2020. Later engineering universities of Italy, Spain, Switzerland, France and other
countries had to suspend all of their face-to-face teaching activities for the duration of
the spring semester 2020. All the teaching has been taking place remotely/online. In the
Russian Federation, engineering universities closed at the end of March. The RF
Ministry of Higher Education and Science recommended using distance-learning
technologies and open educational applications and planforms to reach learners remotely.
The achievements in e-leaning and distant learning have allowed engineering universities to maintain educational process in the period of COVID-19 pandemic. Russian engineering universities could use Moodle, Google Classroom, and Blackboard as learning management systems to help document, administer and track the educational process. It was possible to use various software: Zoom, Skype, Microsoft Teams, and Google Hangouts as communication tools. The choice of the systems to use depended on the University.

MADI recommended the teachers to use Microsoft Teams. Three days after the switch to distance education the teachers and students received instructions and passwords for the access. Up to now, all the teachers have acquired unprecedented two months experience of distant education. We found ourselves in a large-scale natural experiment. It is necessary not to lose the opportunity to analyze its results and to try to find answers to numerous questions.

One of the questions is connected with the opinion of teachers and students about distance learning. Many educators think that the attitudes of teachers and students towards distance learning are different. They assume that students are eager to switch to distance technologies, and that the teachers are more conservative in this matter. Thus, our goal was to verify this hypothesis, to identify the attitudes of teachers and students towards the distance technologies used and compare them.

3 Approach

In order to achieve the goal and verify the hypothesis mentioned above, a survey method was used. The primary questionnaire method was elected [4] as it has a number of evident benefits. It does not require special training of the interviewers, gives rather accurate results, etc. The questionnaire survey technique included the following stages: preparation, factual data collection, and analysis of the information obtained.

The objectives of the survey were to identify:

- the distance technologies used;
- the opinion of the respondents of their efficiency;
- difficulties the respondents faced during remote educational process;
- the opinion of the respondents of the prospects of distance technologies in foreign language training;
- differences and similarities of the attitudes of teachers and students.

At the preparation stage, two questionnaires were compiled. One of them was intended for teachers and the other one – for students. Both questionnaires consist of three sections: an introduction, factual information, and the basic part. The introduction of the questionnaire reveals the purpose of the interview and instructions for its filling in. The factual information of the questionnaire contained facts concerning the respondents’ age (teachers) and the Department (students). In the basic part both questionnaires included the same semi-closed type questions concerning the distant technologies the respondents used and their opinion of their efficiency, the difficulties they had, and the prospects of future distant technologies implementation. The teachers’ questionnaire contained one additional semi-closed question on the skills the
teachers had acquired and an open question concerning the value of the acquired experience. Both questionnaires contained an open question to find out the respondents’ opinion on the prospects of distant technologies implementation.

The second stage of the survey involved data collection. The survey was organized by the Department of Foreign Languages of MADI in May 2020 and embraced all the teachers of Foreign Language Department (45 teachers) and all the students of the program “International Transport Policy” (four groups, 45 students) who had regular English webinars via Microsoft Teams and attended them regularly.

At the third stage of the survey, the analysis and generalization of the information took place.

4 Actual Outcomes

According to the survey data, the teachers used various technologies of distance education: Microsoft Teams – 60%, ZOOM – 11%, Skype – 26.7%, WhatsApp – 57.8%, chats – 15.5%, e-mails – 100%. The results show that not all the teachers but only 97% of them managed to organize webinars, but all of them used e-mail for corresponding with students. The variety of tools for webinars may be explained by the fact that the teachers had the opportunity of choice. Those who used ZOOM or Skype responded that these tools were easier for them to use than Microsoft Teams.

The students also used various technologies: Microsoft Teams – 100%, WhatsApp – 66%, chats – 6.6%, e-mails – 28.6%. They did not use Skype and ZOOM but only Microsoft Teams as this tool was chosen by their language teachers and was the only way for them to attend webinars. It may be assumed that Microsoft Teams were used for correspondence with teachers as only 28.6% of students used e-mailing.

As far as the opinion of the teachers of the most effective tools is concerned, e-mail takes the leading position (64.4%), then come Microsoft Teams (53.3%), WhatsApp (31.1%), Skype (17.8%), chats (6.7%), and ZOOM (4.4%). The qualitative analysis showed that almost 90% of the teachers who used Microsoft Teams consider this tool most effective.

The students also consider Microsoft Teams to be most effective (100%), then comes WhatsApp (37.4%), e-mails (4.4%), and chats – 0%. ZOOM (0%) and Skype (0%) are not considered effective as the students did not use them. One of the students expressed the opinion that though Microsoft Teams were reliable he preferred Google Classroom because it gives the opportunity to have one common disk to display lectures and home tasks, to have chats, and it is possible to use it with any gadget you have.

The teachers had many difficulties connected with distance education. They had the following problems (in some cases the sum is more than 100% because it was possible to choose more than one answer):

- non-stop work with a computer – 64.4%,
- greater fatigue in comparison with face-to-face studies – 64.4%,
- technical problems – 62.2%,
- absence of direct contact with a teacher and students – 57.64%,
The students also faced various difficulties while distance learning:

- technical problems – 57.2%,
- non-stop work with a computer – 37.4%,
- the absence of direct contact with a teacher and students – 35.2%,
- a larger volume of self-study work – 26.4%,
- difficulties connected with remote communication -22%,
- difficulties of workplace organization at home – 17.6%,
- impossibility of putting clarifying questions – 13.2%,
- greater fatigue in comparison with face-to-face studies – 8.8%,
- no problems at all – 8.8%.

The comparison of the results shows that both the teachers and the students have similar difficulties with almost similar relevance. Most of all both the teachers and the students suffer from the same difficulties: technical problems (62.2% and 57.2% respectively) and non-stop work with a computer (64.4% and 37.4%, respectively), the absence of direct contact with a teacher and students (57.8% and 35.2%). The rating of other problems also coincide. However, the teachers have more difficulties than representatives of “digital natives” generation do. The teachers find almost 1.5 times more difficulties than the students do (144 answers of the teachers compared to 99 answers of the students). Even 8.8% of the students think that they did not have any problems at all. At the same time, there are no teachers without any problems. The greatest difference is connected with the fatigue of distant technologies users. 64.4% of the teachers note it and this difficulty takes one of the two leading positions in their answers, whereas only 8.8% of students feel fatigue.

The teachers’ questionnaire included the question if the teachers managed to acquire valuable technical skills of distance education. The students did not have this question as they have a high level of this competence. 68.8% of the teachers confirmed that they had acquired these skills. 37.8% of them had improved the skills but they did not consider them sufficient, 31.1% had improved the skills considerably, 13.3% managed only to maintain the level they had already had, 8.9% had improved the skills but they would like to take another specialized course. 8.8% of the teachers had not improved the skills for two different reasons: 4.4% failed to do it and 4.4% had already a sufficient level.

Answering the open question concerning the value of the experience gained, the teachers enumerate a lot of various habits and skills. The main part of the teachers write that they have acquired valuable skills of using communication tools (Microsoft Teams or ZOOM); the ability to organize on-line individual self-study work of students, to use ICT for collection, demonstration and introduction of new material (video films, e-textbooks, testing, oral texts for listening). Some teachers underline that they have gained self-confidence in conducting on-line classes, the assurance that they need to
improve their skills of distance education and the experience of adaptation to quite new
conditions. Some of them consider it important, that they had the chance to have a
closer communication with their students, to see them at home and that it contributes to
better understanding between them, a friendlier atmosphere. Some teachers appreciated
the opportunity to compare face-to-face teaching and distant teaching, to see the
advantages and disadvantages of both. Some enjoyed the opportunity to communicate
with students at any convenient time. Some of the teachers noticed that work had
become more individual and the students had taken more responsibility. The teachers
think that now they will participate more often in webinars of other universities and
other countries.

Expressing their opinion on the prospects of distance education in foreign language
training, the teachers think that:

- Elements of distance education are possible only in the cases they are more effective
  than face-to-face training – 51.1%.
- Completely distance education is possible only in case of necessity – 42.2%
- Distance education is possible only for individual consultations – 31.1%
- Distance education in foreign language training is not possible as it requires face-to-
  face contact – 15.5%
- It is better not to use distance education at all – 13.3%
- Completely distance education is necessary as it is more effective – 0%.

Unexpectedly the students turned out to be of almost the same opinion of the
prospects of distance education in foreign language teaching:

- Elements of distance education are possible only in cases they is more effective
  than face-to-face training. 41.8%
- Completely distance education is possible only in the case of necessity – 37.4%
- Distance education is possible only for individual consultations – 15.4%
- It is better not to use distance education at all – 8.8%
- Distance education in foreign language training is not possible as it requires face-to-
  face direct contact – 4.4%
- Completely distance education is necessary as it is more effective – 4.4%

The main difference is that 4.4% of students think that completely distance edu-
cation is possible as it is more effective and no teachers think the same.

The teachers are sure that foreign language training aimed at teaching communi-
cation requires face-to-face classes. At the same time, they think that in the traditional
course it is possible to use distance education technologies for individual work with
students, management of their self-study work, for instruction of correspondence stu-
dents, for inclusive education. Among the advantages of distant learning technologies,
the teachers underline the opportunity to demonstrate video films, oral texts, to use
language tests, to organize on-line conferences. They also think that students gain more
responsibility working on-line. At the same time, they are sure that in this case it is
necessary to introduce radical changes in the programs and teaching materials, to have
reliable equipment for both teachers and students. It is also necessary to provide a
course of further teachers’ professional development oriented at particular electronic
environment used.
According to the students’ opinion, distant learning technologies used for the English course under the program “International Transport Policy” in the situation of coronavirus pandemic were successful. In spite of some technical problems, the students are sure that they managed to acquire the necessary language skills. They underline that distance education is possible only in cases of emergency. They write that in their opinion distance technologies are not appropriate for foreign language studies, as it requires face-to-face communication and very high quality of Internet to feel the peculiarities of pronunciation, to hear oral texts, etc. They note that for them face-to-face direct communication with a foreign language teacher and groupmates is of vital importance.

5 Conclusions

All variants of IGIP Prototype Curriculum paid special attention to the course of distance education technologies. In Russia, additional programs are provided for teachers’ professional development in the sphere of ITC. Thanks to the acquired skills, Russian engineering university teachers have been able to maintain remote teaching for the spring semester 2020 caused by COVID-19 pandemic.

The survey undertaken in MADI at the end of remote educational process has not verified the hypothesis that the students are eager to switch to distance learning technologies while the teachers are more conservative about it. According to the results of the survey the attitudes of foreign language teachers and students towards the efficiency of distant communication tools, the difficulties the participants of the remote educational process meet, the prospects of distant technologies for foreign language training are similar. However, the teachers have more difficulties and suffer more from fatigue than the students who belong to the generation of “digital natives”.

Both the teachers and the students recommend only elements of distant technologies for foreign language in cases they are more effective than traditional methods, as the discipline requires direct face-to-face communication. Distant technologies can be effective mainly for individual work with students.

Coronavirus pandemic has affected engineering education systems worldwide. The teachers including teachers of foreign languages have acquired valuable experience and self-confidence in using distant technologies. The experience of distance education during the pandemic will have a strong positive effect on the engineering education.

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