

Article

Using Digital Tools to Teach Soft Skill-Oriented Subjects to University Students during the COVID-19 Pandemic

Aleksandr Volkov ¹, Yury Rishko ¹, Yury Kostyukhin ², Elena Sidorova ² , Diana Boboshko ^{2,*} , Darya Savinova ² 
and Veronika Ershova ²

¹ Educational and Methodological Department, National University of Science & Technology (MISIS), 119049 Moscow, Russia; volkov@edu.misis.ru (A.V.); rishko@misis.ru (Y.R.)

² College of Economics & Industrial Management, National University of Science & Technology (MISIS), 119049 Moscow, Russia; kostyukhin@mail.ru (Y.K.); ejidorova@yandex.ru (E.S.); savinova96@bk.ru (D.S.); nika.ershova2012@yandex.ru (V.E.)

* Correspondence: dboboshko@gmail.com

Abstract: Radical changes in education occurred in 2020 during the pandemic. The need to fully switch to a distance-learning mode required rethinking the approaches to the organization of the learning process. Despite the fact that Russian universities were already using digital learning tools quite extensively at the beginning of the pandemic—those were seen as auxiliary, supporting tools. Within a short period, online learning made it necessary to design educational programs from a digital-technologies viewpoint, as traditional teaching methods had lost some of their functionality in the distance-learning mode. First of all, the changes affected the disciplines focused on the formation of soft skills, such as communication skills, group interaction, and managing people. Another problem of digitalization of all aspects of our lives is the huge amount of readily available information. In this regard, developing the students' systemic thinking and augmenting their ability to find and properly use information became an important alternative to acquisition of factual knowledge. This article summarizes the experience of the educational process at one of the leading Russian universities, National University of Science and Technology (NUST) "MISIS" during the COVID-19 pandemic based on the analysis of the degree of application of digital tools in online and hybrid learning. In this article, we present the description of methodology approaches to the use of digital tools for soft skill development, using the example of teaching specific disciplines "Systems Thinking and Theory of Constraints" and "Life Cycle of Corporations and Change Management" in the master's program in Corporate Finance taught at NUST "MISIS".

Keywords: higher education; digital learning tools; soft skills; courseware design; COVID-19 pandemic



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1. Introduction

Under the COVID-19 pandemic, educational institutions around the world were forced to switch to online and hybrid education models, using alternative teaching methods [1–3]. Even after the end of the strict lockdowns, universities could not fully return to the previous system of education, and perhaps they considered it no longer appropriate, because in that very short period of time new teaching practices were introduced to meet the new realities of our time. At the same time, there are objective reasons why the educational process cannot be returned to its previous format. First and foremost, these reasons include the ongoing tandem waves, when lockdowns return on what is seen as a regular basis, while universities must continue their operations. For the same reason, international travel is still complicated, and all major universities have international students, many of whom for various reasons were unable to return to their campuses and recommence their full-time in-person studies.

It is worth noting that during the COVID-19 pandemic, the most important principle of the educational process has been to maintain its sustainability in the face of new chal-

allenges [4–7]. Undoubtedly, the COVID-19 pandemic led to certain consequences for the educational process. There was a need to revisit the contents of curricula and individual disciplines to reassess their relevance in the conditions of the COVID-19 pandemic, as well as to review the possibility of teaching in a hybrid learning environment.

In our opinion, one of the most critical problems in the new educational process environment is formation of students' soft skills—including interaction with people, organization of group work, ability to solve problems without searching the public sources for previously-described solutions [8–10]. Further, these skills also undergo profound changes: for example, the methods of interpersonal communication have clearly changed. The circle of people with whom a person could talk during the lockdown period narrowed down to the immediate family members; all other interactions, in all spheres of life were carried out using digital gadgets [11]. All of these changes, in one way or another, affected the process of education. The quality of that process depends on the efficiency of adaptation to these changes—which ultimately determines the relevance of this study.

The purpose of our study is to identify best practices for the use of digital tools in teaching soft skill-forming disciplines to university students and implementation of such best practices in the educational process.

Objectives of the study:

1. Analysis of the level of digitalization of teaching academic disciplines at NUST "MISIS"
2. Identifying academic disciplines having the highest level of digital tool usage in the process of forming the soft skills of university students.
3. Describing best practices of digital tool usage referring to actual procedures of teaching specific academic disciplines aimed at forming the soft skills of university students.

It should be noted that development of online education began long before the pandemic; these tools existed in different formats as supplementary education, professional development courses, as standalone courses for self-education offered via popular platforms such as Coursera, EdX, Udacity, etc. However, academic universities first had to go completely online during the COVID-19 pandemic. When conducting our research, we relied on the experience of our colleagues from other universities accumulated before the pandemic and during it; this was reflected in the literature review section below. The authors also had access to the university-wide online platform used by NUST "MISIS" for teaching its academic disciplines; we were able to study the educational process in real time, including obtaining information about the students' activity, their interactions with each other and with faculty members.

2. Literature Review

First of all, we were interested in the approaches to the formation of the students' soft skills and in changes that have recently taken place in the concept of soft skills: which ones out of those skills are a priority for building a successful career, and which soft skills catch an employers' attention first. A number of authors point out that soft skills are in great demand by employers today, and development of such skills is considered to be a good investment by companies [12,13]. Although interpersonal skills are crucial for employers, many applicants and current employees do not possess adequate interpersonal skills. Sujová, E and others believe that graduates with developed soft skills have a competitive advantage in the hiring process and more easily perform work tasks in lower managerial positions. In addition, this study notes that it is necessary to include interpersonal skills training in technically oriented curricula [12].

In our days, soft skills (also called general competencies) are increasingly being evaluated by employers as necessary skills for professional success. Fernández-Arias, P. et al. pointed out that in the future post-COVID-19 model of education, there is a need to develop training programs promoting both hard skills (specific competencies) and soft skills. This highlights the need for university faculty members to possess an optimum level of interpersonal skills so that their students can acquire them [14].

A study by Antón-Sancho, Á.; Vergara, D.; and Fernández-Arias, P. showed how soft skills are related to the age of the individual. Age has a certain influence on an individual's own evaluation of his/her soft skills, in the sense that older people have a more pessimistic perception in this respect [15]. Based on the studies conducted by Antón-Sancho, Á. et al., it could be said that older participants expressed lower self-esteem compared to middle-aged participants.

Table 1 presents lists of interpersonal skills necessary for being hired and for success in the workplace [13].

Table 1. List of Soft Skills Considered Important in Different Studies.

Author/Source	Area of Focus	Source of Data	List of Soft Skills Considered Important
Andrews and Higson, 2008 [16] (over 1200 citations)	Graduate employment	Literature review	Professionalism, reliability, ability to cope with uncertainty, ability to work under pressure, ability to plan and think strategically, capability to communicate and interact with others either in a team or through networking, good written and verbal communication skills, creativity and self-confidence, good self-management and time management skills, willingness to learn and accept responsibility
Aasheim, Li, and Williams, 2009 [17] (over 140 citations)	Information technology (entry-level)	Senior and middle management	Communication, ability to work in teams, interpersonal skills, personal skills or traits, honesty/integrity, analytical skills, flexibility/adaptability, motivation, creative thinking, organizational skills, entrepreneurial skills/risk-taking
Mitchell, Skinner, and White, 2010 [18] (over 350 citations)	Business graduates	Recruiters	Positive attitude, being respectful, trustworthy, honest and ethical, taking initiative and responsibility, being co-operative and a team player, possessing good communication and interpersonal skills, being ambitious and self-confident, and ability to think critically
Crawford, Lang, Fink, Dalton, and Fielitz, 2011 [19]	Students graduating from agriculture and natural resources related programs	Employers Alum, Faculty, Students	Seven soft skills clusters: communication, decision-making/problem-solving, self-management, team work, professionalism
21st century skills for engineers (Hanover, 2011) [20]	Engineers		Team work, consensus building, entrepreneurial mindset, creative design, empathy and social responsibility, global awareness and perspective, ethical behavior and trustworthiness, broad systems thinking, multidisciplinary thinking
Robles, 2012 [21] (over 1600 citations)	Business graduates	Business Executives	Communication, courtesy, flexibility, integrity, interpersonal skills, positive attitude, professionalism, responsibility, team work, work ethic
Lippman, Ryberg, Carney, and Moore, 2015 [22] (over 200 citations)	Youth	Literature review	Social skills, communication skills, higher order thinking skills, self-control, positive self-concept
Wikle and Fagin, 2015 [23] (over 50 citations)	Geographic Information Science	Employer	Problem solving/trouble shooting, critical thinking, flexibility/adaptability, working in a team environment/ability to work independently, time management/multi-tasking, creativity/verbal presentation, writing, project management/leadership
Berger, 2016 [24] (over 5 citations)	Entry-level contributors	LinkedIn profiles	Communication, organization, team work, creativity, social skills, critical thinking, interpersonal communication, adaptability, punctuality, friendly personality
John and Chen, 2017 [25] (over 2 citations)	STEM	Employer	Team work, communication, empathy, analytical skills, self-control, positive self-concept
Pócssová, Bednářová, Bogdanovská, and Mojžišová, 2020 [26] (over 2 citations)	Engineers	Social and emotional learning competencies	Critical thinking/problem solving, creativity, communication skills, collaboration
Fernandes, Jardim, and Lopes, 2021 [27] (over 5 citations)	Special education teachers	Literature review	Personal and social skills, personal attributes management, performance improvement, sustaining interpersonal relationships

There is no generally accepted classification of what constitutes soft skills. [28] Hiru-dayaraj, M. et al. in their research use such terms as non-cognitive, non-technical skills; people skills; transferable skills; employability skills; while interpersonal skills are included in the soft skills category. Most studies equate interpersonal skills with people skills or the ability to get along with or work effectively with others [29]. However, soft skills are more than just people skills or interpersonal skills (such as effective communication, cooperation, and collaboration) needed to communicate with others.

Today soft skills are increasingly valued by employers as essential skills for professional success [30]. Employers believe that recent university graduates lack some of the skills needed to succeed in the professional world, and understand that university graduates do not have the level of such skills required to perform the tasks demanded at work. On the other hand, there is a great dissatisfaction of university graduates with the results of their education, which is the most important basis for the connection between the educational and business worlds [30]. Although soft skills are highly valued by employers, there is still a lot of work to be done to ensure adequate training of university graduates [31].

Soft skills are closely related to artificial intelligence. A study by Regona, M. et al. states that artificial intelligence (AI) is a powerful technology that can be used throughout the life cycle of a construction project [32]. AI technologies have become widespread in many industries.

In the beginning of the 21st century, broad strata of the global society realized that the intellectual potential is a defining constructive factor in the development of civilization. Science and education are now understood as the main factors of intellectual growth [33]. In the study of Stoyanova, T., it was noticed that distance learning is the most effective system of education in the sphere of economic innovations. Distance learning is a new type of education which emerged due to the demands of modern society and the development of new computer technologies. In fact, it is a complex set of learning activities for a wide range of students, organized via use of specialized computer and educational technologies [33].

Studies have shown the importance of increasing the interaction component in the development of online courses [34]. Three types of interactions are important for the student community in an online course include: interaction with online content, interaction with remote instructors, and interaction with remote peers.

The traditional method of digital-technology learning, known as e-learning, involves the use of web portals to share files and to personalize the learning process. In general, the goal of traditional e-learning is to replace books with computers and Web sites [35].

The success of the digitalization of learning in recent years has contributed to the implementation of digital content creation tools (DCC) in the classroom to optimize the results of the teaching and learning process through a holistic approach that allows the incorporation of knowledge and the development of students' competencies [36].

Antón-Sancho, Á, et al., in their study argued that the situation caused by the global pandemic has led to a process of reflection of the education system in order to achieve the creation of high-performance digital ecosystems that are accessible to all. In addition, the study highlighted the fact that nearly 100% of university professors interviewed were using DCC tools in their classroom development, evaluation, and grading processes.

Currently, due to the use of digital communication technologies, most experts consider the system of distance learning as the most reliable platform, guaranteeing the sustainability and universal nature of the knowledge being acquired, while preserving and developing individual cognitive activities of the learner [34]. Figure 1 shows the diagram of simultaneous distance learning technology.

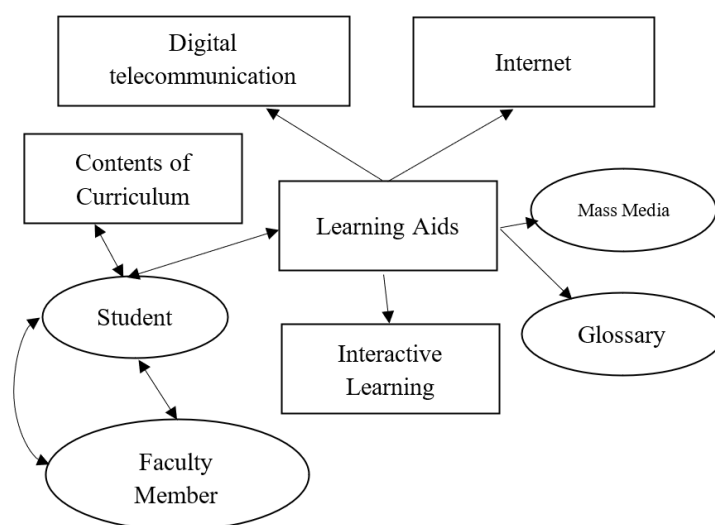


Figure 1. Technological diagram of simultaneous distant learning.

According to the diagram above, changes occur in the “faculty member-student” relationship in innovative learning technologies compared to the traditional scheme of the process of education [34].

3. Materials and Methods

In the first stage of research, we analyzed the level of digitalization of teaching academic disciplines at NUST “MISIS” in order to identify the tools used to form a soft skill. We analyzed 236 disciplines taught in the spring semester of the academic year 2020/2021 using online platforms. The vast majority of the disciplines at NUST “MISIS” are taught using LMS Canvas and MS Teams. The use of these systems recently was made mandatory—but there is a transition period for the faculty members to adapt to this online environment if they have just started using it and previously they used other platforms. Nevertheless, the university is striving for 100% implementation of the educational process using the above-mentioned online platforms, which are used across the university and are therefore its “corporate learning tools”.

Universal implementation of electronic systems in the educational process is exemplified by an interactive class schedule taken from the website of NUST “MISIS”; this schedule provides links to the class being taught in LMS Canvas and to the team (group of students taking the course) in MS Teams (Figure 2). In the figure below, there is a fragment of a faculty member’s interactive schedule, where two links are displayed. The schedule in a similar format is displayed for each student in his/her personal online cabinet.

MS Teams is used for online interaction with students (lectures, seminars, and consultations). All lecture materials, study guides, and assignments are uploaded to the LMS Canvas. This system is used by students to take their tests, to upload their written assignments, to interact (in chat and e-mail modes) with other students and with the faculty member outside of the scheduled class time; interactive commenting on the assignment is also provided; the student’s rating in that class is automatically calculated based on the results achieved.

At NUST “MISIS” the Center for Teaching Excellence developed a method to evaluate the content of the academic discipline courses taught using the online environment. The methodology is based on the allocation of academic discipline blocks (course components) and their elements. Points are assigned for availability of said blocks [37,38]. The following blocks are singled out:

1. Information and organizational block;
2. Theoretical materials;
3. Control and measurement materials;

4. Learning technologies;
5. Course design;
6. Student and instructor activity in the online course

previous week

This week

next week

Schedule from December 20, 2021 to December 25, 2021

Time	Monday 12/20/21	Tuesday 12/21/21	Wednesday 12/22/21
09:00 10:35		<div>Practice</div> <p>Taxes and taxation Boboshko D.Yu.</p> <p>gr: BEK-18-2</p> <p>aud: G-510a</p> <p>link to course/team</p> <p>Link to copy: https://teams.microsoft.com/l/team/19%3aT6lrT15aRostR_PhT9GFs1xwLuHWfoQ-FIBAFJoN0ms1%40thread.tacv2/conversations?groupId=40dfc552-6a91-480b-9d2f-dfa94db9a369&tenantId=21f92996-c72d-4b9f-b5a5-283c00b9ecaa</p> <p>Second link to course/team</p> <p>Copy link: https://lms.misis.ru/enroll/JCJDX6</p>	
10:50 12:25	<div>Practice</div> <p>Taxes and taxation Boboshko D.Yu.</p>		<div>Practice</div> <p>Taxes and taxation Boboshko D.Yu.</p>

Figure 2. Interactive schedule fragment in the faculty member’s personal online cabinet, available at the NUST “MISIS” website.

Each block is divided into components. Points are assigned for availability of components within the blocks. An example of block components and their corresponding points is provided in Table 2.

Table 2. Assessment of components for the “Learning technologies” block.

Academic Discipline Block	Block Components	Points	File Formats
4. Learning technologies	Scenarios of application of active learning methods at offline classes (business games, projects, discussions . . .)	3	pdf, doc, ppt
	Availability of assignments with mutual testing of other student’s assignments (work in pairs, performed online)	3	LMS Canvas tools
	Availability of assignments involving online interaction between the students using LMS Canvas tools (discussions, cooperative and group work)	3	LMS Canvas tools
	Implementation (using the LMS Canvas tools) of online-based project activities involving the academic discipline taught	3	LMS Canvas tools, external services
	Use of multimedia materials and Internet services for online assignments	3	LMS Canvas tools, external services

We used this point-scoring and rating system to analyze the disciplines taught via LMS Canvas in order to identify the most advanced courses. In the sample obtained, we analyzed and summarized methodological approaches to the use of digital tools for the formation of university students' soft skills. We particularly looked for tools focusing on the student interaction in the online environment, organization of independent work, as well as work with non-standard tasks aimed at boosting solution-finding skills. The use of qualitative analysis methods has been described by us in previous studies [39,40]. The advantages and disadvantages of the point method of evaluation are described in the studies [41,42], the use of this method to assess the work of the university is mentioned in [43].

4. Results

4.1. Analysis of the Level of Digitalization of Teaching Academic Disciplines at NUST "MISIS"

As mentioned above, we analyzed 236 disciplines taught at NUST "MISIS" using the electronic environment according to the presented methodology. After analysis of the disciplines' blocks, 20 disciplines were selected based on the highest number of points awarded. The complete ranking is presented in Table 3.

Table 3. Results of ranking the academic discipline courses by quality of digital design.

Points	The Number of Disciplines Receiving the Indicated Number of Points
Over 30	20
25–30	27
19–24	76
12–18	113
Total disciplines analyzed	236

It should be noted that out of 20 disciplines that scored over 30 points, three disciplines are in the syllabus of the Corporate Finance program, taught by the Institute of Economics and Management of Industrial Enterprises, named after V.A. Roments at NUST "MISIS". We have chosen two disciplines—"Systems Thinking and Theory of Constraints" and "Life Cycle of Corporations and Change Management"—to analyze tools aimed at developing the students' soft skills when interacting in a digital environment and conducting the educational process online. As a result of identifying the best practices in the use of digital tools for teaching of academic disciplines aimed at development of students' soft skills, we provide below a detailed description of the implementation of the academic disciplines "Systems thinking and theory of constraints" and "Life cycle of corporations and change management" in online and hybrid learning environments.

4.2. Brief Description of Contents of the Academic Disciplines

Within the scope of the master's program in Corporate Finance, two disciplines "Systems Thinking and Theory of Constraints" and "Life Cycle of Corporations and Change Management" are taught in an interconnected fashion: the schedule of these disciplines is mutually dependent, specifically in semesters 1 and 2 of the first year of the master's program. When designing a curriculum, it is important to remember that the issues at hand should be addressed holistically even when those issues are complex and extensive; it is important to allocate enough time and to use efficient tools for discussion of these issues. Thus, all faculty members face the limitations imposed on them by the structure of the program, by the time limits, by the impossibility of providing offline learning for all students in the program, and by the complexity of the issue at hand. During the COVID-19 pandemic the number of restrictions increases significantly—that is why the relevance of theory of constraints increases now. Considering the problem of developing a student's systems thinking as it applies to the theory of constraints is extremely important now, but the issues involved are highly complex ones, so the course structure should be well

thought-out and display a system approach—so that students could obtain the required skills even in a hybrid learning environment.

Systems thinking provides the skills and abilities for a global understanding of the world and the processes underway in it. The COVID-19 pandemic situation requires citizens to “respond to the future”; this theory emerged about 50 years ago, its founder Alvin Toffler in his book “The Future Shock” made a case for the future-looking orientation of the educational curriculum [44]. Incorporating the “future dimension” into the curriculum is significantly less radical than the “future-looking orientation” of the curriculum, and is consistent with the proposal for global education [45]. In fact, images of desired future and identifying the sources of hope (e.g., people, places, landscapes, events, and ideas) have received some attention in the past decade, as using this technique could assist students in clarifying their vision of a more sustainable society [46,47].

Since a sustainable global future involves many complex exchanges, it is imperative that curriculum contents foster the student’s systems thinking, so it is important to build these skills and abilities in students at the very beginning. Yet it is not feasible to develop these skills and abilities without prior knowledge of the theory of constraints. Thus, the program should help students to understand the complexity of the world around them and to develop their thinking in terms of relationships and coherence [48].

A good illustration of thinking in terms of relationships was the impact of the COVID-19 pandemic. As part of teaching the “Systems Thinking and Theory of Constraints” course, it is important to engage the students in discussions about issues and problems that involve different perspectives and even conflicts; this is the best way of introducing students to systems thinking. It is important for students to stop thinking in a linear way. To do this, when teaching this discipline, it is important to train students in thinking in terms of relationships and viewing the issue from different perspectives—this is called extending identity, or what Esbjorn-Hargens [49] calls “widening of identity”.

Considering that systems thinking first emerged in its modern form in the 1950s as a reaction to the limitations imposed by traditional scientific methods, as well as the management methods applied to real-life complex problems [50], it becomes clear that systems thinking requires a change of perspective, or what the physicist Fritjof Capra called a shift from a mechanistic to a holistic paradigm [51,52]. The discipline “Systems Thinking and Theory of Constraints” (“ST & TC”) consists of several modules: thinking beyond the obvious, constructing mental models, introduction to the Theory of Constraints, the tree of current and future reality. Within the framework of “ST & TC” discipline, soft skills are being developed in the direction of systematic understanding of life tasks and problems, determining the optimum solution for a problem, as well as determination of the loopback circuit for resolving the situation. Also when communicating with people and teams it is necessary to remember that such situations give rise to certain restrictions—and in the framework of this academic discipline these restrictions are discussed and taught in the form of the theory of constraints.

4.3. Methodology Approaches to Teaching of Academic Disciplines Included in Our Review

These study courses are implemented on the LMS Canvas platform. One of the most important tasks in forming skills of interaction with other people is the task of organizing active participation of students in group work. The case-stage method, pair assignments with mutual checking of each other’s work (using cross-assessment function in LMS Canvas), as well as tasks aimed at interaction between the students (discussions, collaboration, and group work) were determined to be the main tools for that purpose [53,54]. In development of cases and practical situations, students use websites of metallurgical companies for collection of empirical material, use specific examples from these companies, and then share their conclusions in class at the end of each study.

At the same time, theoretical material is presented in this course for students to master independently, most of the time is used to discuss cases and practical situations. Students in the first part of the course design problem situations centering on topics such as “thinking

beyond the obvious” and “building mental models” and present these in class to offer the audience a chance to generate their solutions. Thus, this blended learning approach can add value to both independent and collaborative learning strategies [2]. The main objective of teaching is to encourage student participation in learning, such as through creation of cases and practical situations, building logic chains and trees of current and future reality, engaging in group discussions and giving presentations. At the same time, a 192-page practical coursebook having the same title: “Systems Thinking and Theory of Constraints” was written on the basis of the above-mentioned study course; it was published in 2022 by the central Russian publishing house “Piter” [55].

One more discipline “Life Cycle of Corporations and Change Management” (“LCC & CM”): is designed using the Canvas platform, the objective of using these tools is, among other things, to stimulate the student’s active participation in group work. This course is directed at development of conceptual understanding of estimated stage of the corporate life cycle and of change management. The students also develop their analytical abilities to analyze operations of steelmaking and other metallurgical enterprises with the purpose of determining the specific stage of the corporate life cycle and developing suggestions for retaining sustainability and development of the company. In this case, the data for term papers are taken from open sources, and (considering the specialization of NUST “MISIS” University) such enterprises as NLMK Group, OMK, ChTPZ, and other large steelmaking and metallurgical companies are suggested to students as objects of their research. At the same time, a practical coursebook with the same title: “Life cycle of corporations and change management” has been developed on the basis of this course and is going to be published in 2022 by “Piter”, the central Russian publishing house.

The important themes of the “LCC & CM” course include the strategies of change management, life cycle of enterprise and analysis of organizational behavior, as well as organizational therapy; the course applies hybrid learning activities based on the Kolb’s Learning Cycle.

4.4. Digital Tools for Teaching of Academic Disciplines Developing University Students’ Soft Skills

Now let us consider the general characteristics of teaching these two courses. Group sessions and individual forms of work are used for practical seminars. “ST & TC” and “LCC & CM” courses in every module of the curriculum use the system of testing to verify the level of theoretical knowledge retained by the students. As part of individual work, groups consisting of two students each discuss topical issues related to the subjects of these disciplines. Thus, in the course “ST & TC”, we discuss simple and complex systems, the leverage principle, contour-driven thinking, feedback loops, generative learning, reasons that prevent us from learning, and the concept of “restrictions”, we also check the mental model employed by the student, the definition of limiting (restrictive) mental models, build logical constructs and verify those, etc. In their presentations, the students report on the current reality tree obtained by analyzing the situation chosen as an example and the problems it contains viewed within the framework of the theory of constraints. Then on the basis of the current reality tree the students develop a future reality tree and a plan of transformation and transition to the desired state.

Conflict and its types, types of leaders, stages of organizational development, organizational behavior are discussed in the “LCC & CM” course. In their presentations within the framework of the “LCC & CM” course, the students report on the change map for the company (developed by them), provide definition of the life cycle of the corporation using as examples steelmaking and other metallurgical companies.

Throughout the entire course, there is a process of communication with students using the LMS Canvas system (the instructor posts announcements for students turning on the commenting function for such announcements; students can submit their inquiries using the system with questions addressed to the instructor); e-mail correspondence is also used based on the corporate e-mail system of NUST “MISIS” University; a group in WhatsApp messenger is created for correspondence; conferences and consultations are held

weekly in Zoom app to discuss problems and questions during the students' completion of assignments. At the same time, for the systematization of students' work and for a synchronized educational process, the course has a calendar schedule of the academic discipline, as well as a list of tasks (assignments) for the course with the relevant deadlines. The system of grading used for these courses is unified by the single concept—there is a ratings plan for the academic discipline, and also for each assignment the criteria of its grading (and points received by the student receives for its completion) are stated. In this case, for grading we use both a single-criteria system (for simple tasks) and a multiple-criteria system (for complex assignments, for example, the term paper in the “LCC and IS” course).

Reflexive learning involves small groups (three to four students) investigating a problematic situation presented in the course; subsequently, this group creates a study case and uploads it to the course materials posted in the Canvas system. Before beginning, students discuss the problematic topics to select the most interesting one and to start their work on the chosen topic. These assignments can be used not only to encourage students to think independently, but also to motivate them to actively participate in the learning process. When delivering a lecture, the instructor uses a concept cloud, so before the lecture starts, the instructor identifies the key words of the lecture and asks students to write these down—and to provide definitions for these terms at the end of the lecture. The second tool used during the lecture is a variety of the “Bingo” game; the instructor emails each student individually with a card containing the key concepts of the upcoming lecture; during the lecture as the material is delivered, the students name and explain the terms on their bingo-cards; once the term is named by the student, he or she crosses it out on his card. The third tool, which is used during the lecture, is the summary, when after 15 min of the lecture the instructor asks 2 or 3 students to summarize the material presented in the fragment of the lecture. In each of the two courses, there are video lectures covering the experience of the leading experts in this area so that students can learn from these experts; for example, the course “ST & TC” incorporates lectures by E. Goldratt, a leading expert in TOC (Theory of Constraints) [56].

We examined the methodology for using digital tools in teaching two selected disciplines. However, using the LMS Canvas allows the system to organize work aimed at developing soft skills in the teaching of any discipline. A clear work schedule for completing tasks for a semester, for example, develops time management skills. Table 4 shows some digital tools and indicates the soft skills that these tools form.

Table 4. The digital tools and formed soft skills.

The Digital Tools	Formed Soft Skills
Courses are implemented on the LMS Canvas platform, where materials and tasks are placed for groups of some students to complete them in a fixed time.	Good self-management and time management skills, willingness to learn and accept responsibility, ability to work independently
Pair assignments with mutual checking of each other's work (using cross-assessment function in LMS Canvas)	Communication, decision-making, self-management, team work, professionalism, multi-tasking
The case-study method, which is implemented with a self-search for data from the Internet resources	Professionalism, adaptability ability to cope with uncertainty, ability to plan and think strategically, capability to interact with others either in a team or through networking
Groups in WhatsApp messenger created for correspondence; conferences and consultations in Zoom (MS Teams, Google conference, etc.)	Communication, working in a team environment, ability to work independently, time management, leadership
Google tables for collaboration	Communication, ability to work in teams, inter-personal skills, personal skills, analytical skills, organizational skills

5. Discussion

In our opinion, the most important element of this study is the presented digital design of teaching the academic disciplines focused more on the development of soft skills rather than professional skills. The choice of disciplines and the methodological description of teaching which are presented in this article are based on an analysis of the use of digital tools in 236 disciplines taught at the university. The analysis showed that the chosen disciplines have the high level of usage of digital tools. Precisely in these disciplines, we can see the use of such tools for the development of university students' soft skills.

According to the analysis of literature, much attention is allocated by researchers to the importance of soft-skills development in students viewed as future specialists [12–15]; however, it is difficult to find researches describing this process from the viewpoint of a fully-digital educational—and during the COVID-19 pandemic and its subsequent waves this fully-online academic process became a necessity.

It should be noted that digital education was developing even before the pandemic [38,50,57,58]. Almost all online platforms used for the implementation of the educational process already existed by 2019; these platforms presented both distance-learning courses and standalone courses in specific disciplines. Many academic universities already used such platforms as LMS Canvas or Moodle to organize the educational process and continued to do so during the pandemic [58–60]. In particular, universities used such platforms to share materials required for mastering the academic disciplines, individual assignments, and for (limited-scope) interaction between the instructor and the students. However, with the pandemic, universities had to completely transfer the educational process into the digital environment. This required urgent implementation of new approaches to education. Our research sheds light on what we consider to be the most challenging problem arising in a fully-digital version of the educational process—specifically, the organization of efficient interpersonal interactions in groups; this is seen as one of the most important flexible skills, as well as the issues of development of other soft skills (such problems and issues arose because of the lack of “live” in-class communication).

Undoubtedly, discussions between the faculty members will continue regarding the skills that are necessary for new professionals, as these professionals will undoubtedly perform their professional activities in the digital environment. In order to robustly link the usage of digital tools with the development of soft skills, it is necessary to receive feedback from university graduates and from employers. This year, the master's program at our university will be celebrating graduation of the second class of students who have studied a majority of their academic disciplines entirely on digital platforms. We will get feedback from our graduates and from their employers.

6. Conclusions

The development of digital tools for the implementation of the online educational process began long before the COVID-19 pandemic—but mass implementation of these tools happened after the start of the pandemic, over the last two years. The experience of academic universities in the digital environment changed, which required completely different approaches. It was in the past two years that educational activities switched totally to a digital, online environment. This experience yet fails to provide answers to all of the questions—but it should be generalized and seen as identifying promising areas of teaching activities. Our study highlights the effective experience of using digital tools in teaching academic disciplines aiming to a greater extent on development of students' soft skills during the pandemic and subsequently—in constantly changing formats of the educational process starting with full online learning and hybrid formats and all the way to returning to offline education mode (which all of us are sincerely hoping for).

We believe that the topic of our study lays the foundation for a series of publications. The research will be continued by the group of scientists analyzing implementation of educational process at NUST “MISIS” and implementing the identified effective methods in their teaching activities.

In conclusion it should be noted that the importance of developing the university graduates' soft skills will increase with time. Although we still believe that the role of universities in teaching basic professional skills (which should be the core of a professional career) is still very important, we are also sure that it is precisely the soft skills that allow application of professional skills in any changeable environment.

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