Management of the Teaching Process in Higher Education in COVID-19 Pandemic: Socio-Cultural and Economic Aspects

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Abstract:

Purpose: *Due to the COVID-19 pandemic outbreak and an increasing share of technology, there has been a shift to online higher education. It was considered justified to know the assessment of the quality of teaching in changing conditions, particularly the influence of the human factor and technology. The research aimed to identify the most important factors determining students' expectations of the teaching process during the COVID-19 pandemic.*

Approach/Methodology/Design: *The study was based on the classical experimental design. The empirical material was collected using online surveys (Computer-Assisted Web Interview). Data were statistically analyzed using factor analysis and the test of the homogeneity of variance.*

Findings: *The students found the most critical determinants of the learning process related to the lecturer and then to the technology, confirmed by the model using factor analysis. Data analysis also shows that there are differences in the assessment between blended and online students.*

Practical Implications: *Managing the teaching process requires mindfulness and adaptation to dynamic changes, as well as investment in lecturers' skills and solutions used in an international environment. The results may be useful for the implementation of systemic solutions in higher education in times of social isolation.*

Originality/Value: *The proposed solutions should contribute to remodeling the teaching process at universities.*

Keywords: *Higher education, management of the teaching process, social isolation, standards and assessment, university management.*

JEL classification: *I23, M12, M15, C38.*

Paper Type: *Research article.*

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1. Introduction

In a time of changes, higher education is in the position of having to adapt to external conditions, especially technology development and current social phenomena and processes.

1.1 Blended Learning and E-Learning in Higher Education

The blended learning implementation remains a challenging process (Bruggeman *et al.,* 2021), requiring careful reflection. It always means strategically adopting and implementing (Graham *et al.,* 2013) and making changes within institutional and leadership areas (Garrison and Vaughan, 2013). The issue of blended learning is still explored by science, especially in the context of management. Some summary of the scientific view on blended learning has been made by uncovering the methodologies, research questions, and theoretical frameworks and then discussing these findings' implications for blended learning research (Halverson *et al.,* 2014).

The current research on blended learning has indicated, among others, relationships between the performances of students in a blended learning model and social abilities, the perceived team learning (Türel, 2016) or due to the previous experience (Asarta and Schmidt, 2020). The findings also illustrate how new online learning models could serve particular niches (Littenberg-Tobias and Reich, 2020). The latest research also concerns the effectiveness of e-learning during the COVID-19 pandemic, especially at medical universities, where clinical teaching is the most challenging learning outcome (Ibrahim *et al.,* 2020) – particularly in practical sessions (Mitra *et al.,* 2020). The area that still requires inquiry is the socio-cultural conditioning of teaching based on blended learning and e-learning, especially the importance of human and technology in the teaching process.

1.2 Quality of Blended Learning

A vital thread from university management's perspective is to ensure a high level of e-learning quality. Research on this topic has been conducted for many years and concerns, among others, aspects such as study factors that influence the quality of an e-learning (Thompson and MacDonald, 2005) or evaluation models of e-learning systems (Al-Fraihat *et al.,* 2020; Vasconcelos *et al.,* 2020). The quality of e-learning was assessed both by teachers (Han *et al.,* 2019) and students (Hussein, 2012).

Some results show that ICT and e-learning could improve the quality of higher education through innovative methods by increasing the students' motivation, interest and engagement, by facilitating the acquisition of skills and by enhancing teacher training which will better communication and exchange of information eventually (Pavel *et al.,* 2015). University tutors should help learners see values of getting knowledge through blended discussions and attempt to explain how face-to-face and online consultations are integrated (Han and Ellis 2019).

Previous studies have found that the amount of time spent online impacts the extent to which students positively perceive teaching presence, social presence, and cognitive presence (Hilliard and Stewart, 2019) and their perceptions and performance (Owston and York, 2018). In turn, online interaction quality was found to affect learners' bonding and bridge social capital significantly, but unfortunately not their learning performance (Diep *et al.,* 2017). The question about the quality of e-learning is still relevant, considering the present challenges especially.

1.3 Current Challenges of E-Learning in Social Isolation by the COVID-19 Pandemic Outbreak

The coronavirus COVID-19 pandemic's ongoing situation has quite suddenly switched the teaching process mode almost entirely to e-learning (Yang and Huang, 2021). Students and lecturers remain in social isolation (Metcalfe, 2021), which impacts the quality of teaching (Moja, 2021; van Schalkwyk, 2021; Watermeyer *et al.,* 2021). Previous research has shown that social isolation could contribute to socio-psychological distress. The impact of increased social isolation on mental and social health functioning during the COVID-19 crisis, as well as potential mechanisms to buffer this impact, have yet to be investigated (Smith *et al.,* 2020). Some researches indicate that loneliness and social isolation are common sources of chronic stress in modern society (Li and Xia, 2020).

Day-to-day social processes, such as socialization may be affected by online education isolation (Garcia and Yao, 2019). It is apparent that the classroom interaction is more in-depth than that in the online learning mode (Shu and Gu, 2018). Furthermore, technological illiteracy and incompetency undoubtedly contribute to students' isolation and students' poor self-regulation skills out of their face-to-face sessions (Rasheed *et al.,* 2020).

Some results also show that "e-Learning crack-up" perception has a significant positive impact on students' psychological distress, and fear of academic year loss is the crucial factor responsible for psychological distress during COVID-19 lockdown (Hasan and Bao, 2020). Counteracting such problems requires the essence of quality of education in e-learning recognition. The purpose of the article is to identify the most important factors determining students' expectations of the teaching process in the COVID-19 pandemic time.

2. Change of the Teaching Model

It seems necessary to consider changing the teaching model, especially during the current COVID-19 pandemic and social isolation conditions. Consequently, distinctly worth examining could be here the role of technology and human in the teaching process.

2.1 Advantages of the Technology-Based Teaching

Nowadays, it is unlikely to ignore the enormous technological proliferation. Technology makes the process of acquiring knowledge easier. The ICT could play a massive role in increasing learning among students through interactive and flexible tools (Mostafa *et al.,* 2017). Some research findings prove that games are useful in teaching and learning a foreign language (Martínez *et al.,* 2007). The results of studies also show that technology-based teaching and learning are more effective than traditional attendance in classes. It is because using ICT tools and teaching equipment will provide an active learning environment that is more interesting and effective for both lecturers and students. Besides, the ICT helps students be more creative as well (Ghavifekr and Rosdy, 2015).

Other findings showed that technology provides interaction between lecturers and students, allows lecturers to develop reasoning skills, makes learning and teaching more student-centred, promotes learners' autonomy and helps them to feel more confident, and increases students' motivation in learning a foreign language effectively (Ahmadi, 2018). Technology development is dynamic and cannot be stopped because it is already a permanent part of everyday life. Investments in university infrastructure seem to be keeping pace with the development of technology. The problem is to close the gap in access to good quality infrastructure and its full use.

2.2 Challenges of the Technology-Based Teaching

Nowadays, most students tend to stay focused and reach their goals. They want to achieve aims quickly, but often they do not discover what they are nor need. Unfortunately, the technology development has distracted students from their book study and theory-based/information-based study. However, it somehow has disadvantages that could worsen the education process. Students nowadays do not get used to writing down and become lazy to write (Johan and Harlan, 2014). Some results show that students revealed no associations between the number of times they read teaching materials and their learning effects (Yamaguchi *et al.,* 2019), which might indicate technology problems usage. Self-regulation difficulties and difficulties in using learning technology are the critical challenges for students (Rasheed *et al.,* 2020).

Online relation create practical challenges, such as group work or postponing tasks (Vanslambrouck *et al.,* 2018). Other results show that e-learning favours interactivity over dialogue, and generates simplifications as well as superficiality. Moreover, both lecturers and students point to the lack of personal contact and real human communication when analyzing online teaching (Kacetl and Semradova, 2020). Interaction between students and lecturer has been shown to be a key component to the success of online and blended learning (Blaine, 2019). Students

need lecturers' support, but the question is whether the lecturer is still an authority for them?

2.3 Lecturers' Authority Crisis

Nowadays, we could witness a crisis of respect for authority in general (including the respect for lecturer's situation). However, there is a gap in empirical research on the topic of academicians' authority. The authority itself is hardly an individual matter as there are broader institutional factors to be considered, such as the university or local authority's policy on behaviour management approaches (Macleod, MacAllister, and Pirrie, 2012). The legitimacy of lecturer's authority could not be easily assumed; it is rather granted during ongoing interactions with students. Above all else, classroom authority is a social and cultural construction (Pace and Hemmings, 2007), especially that the educational process usually takes place in a master-student relationship (Karpouza and Emvalotis, 2019).

Some researches show that interaction between lecturers and students could contribute to the effective communication or might be the root of problematic situations (Muste, 2016). The socially and culturally constructed nature of the lecturer-student relation is highly complex. Students need guides on the side from whom they could learn and grow. Lecturers should pursue power that is reward and expert-based, as well as the authority that is goal-oriented, and apprenticed authority types (Alsobaie, 2015). Highest-rated lecturers are those who spend more time doing research, thus underlining the importance of expertise and experience (Cho and Baek, 2019). Therefore, it is indispensable to examine the importance of technology and human in the teaching process.

3. Research Methodology

3.1 Purpose of the Research

The research aimed to identify the most important factors determining students' expectations of the teaching process during the COVID-19 pandemic. In particular, it was necessary to consider whether technology is more significant than a human factor in the teaching process. An entirely separate consideration was the issue of the educational model's future. The question of replacing the human with technology will most likely remain an unsolved philosophical problem in the nearest future.

3.2 Data Collection

The study was based on the classical experimental design. There were 85 blended students in the experimental group and 58 online students in the control group. The research was conducted based on Computer-Assisted Web Interview (CAWI). Research practice indicates that respondents are sometimes reluctant to describe

individual attitudes or behaviour in interviews but are willing to provide answers in a self-completion and anonymous questionnaire.

3.3 Characteristics of the Sample

The study used a purposive sampling. At this stage of the research, there is no need to extend the conclusions to the general population. The choice of respondents was based on socio-demographic characteristics and the distinctive features of the educational process participants. The respondents' selection in the study reflects the population's structure, i.e., diversity due to the following socio-demographic characteristics: gender, age, size of place of origin, professional activity, membership in organizations, frequency of using modern technologies in everyday life. Among the participants of the study, 58% were men, and 42% women, aged 18-24, with secondary education (81.1%) and tertiary education (18.9%), living in rural areas (26.6%), in small towns up to 50,000 citizens (35.7%), medium-sized cities up to 300,000 residents (18.2%) and large above 300,000 citizens (19.6%), inactive (58%) and professionally active (42%).

3.4 Quality Model of the Teaching Process

The literature analysis and the lecturer's own experience were the basis for determining four areas of higher education teaching process: infrastructural (technical), organizational, methodological, and social. Each of these four areas have been assigned determinants (presented in Table 1) that may affect the quality of teaching. After all, it was decided to limit the number of determinants to 20 due to the survey questionnaire's functionality. All determinants were evaluated based on the Likert five-point rating scale (1- absolutely irrelevant, 2- irrelevant, 3- neither irrelevant nor essential, 4- essential, 5-definitely essential).

4. Results

The study results show how students perceive the teaching process and some brand new findings.

4.1 Factors Determining the Teaching Process According to Students

Determinants selected by the researchers turn out to be important in the students' assessment, similar to other studies (Uusen, 2011). The lowest average grade was obtained by factor " the e-learning teaching mode" (3,64), and the highest average grade was obtained by determinant "the ease of contact with lecturers" (4,64). It confirms the selection accuracy of determinants for the study, and at the same time, it indicates some challenges with the statistical analysis of the collected data. Some characters were found to be more critical than others, so there is scope for some interpretation of their weight. The student's assessment of individual factors influencing teaching is presented in Table 1.

The first five determinants are related to the lecturer itself. An easy contact with the lecturer is the most relevant for students. The vast majority of students (77,6%) assessed this determinant as very important. It shows that the teaching process is still based on the human factor that cannot be easily replaced. The computerization level of socio-economic life seems to indicate a certain insufficiency in the area of direct interpersonal communication. As it turns out, the educational process's human factor appears to be irreplaceable and crucial for its effectiveness. The master-student relationship still seems to be fundamental. Other research also showed that lecturer-student relationship's satisfaction is notably strong (Siming *et al.,* 2015).

The ability of the lecturer to create a good connection with students positively influences their perception of applied teaching methods (Hernández-López *et al.,* 2016). Lecturers' substantive competencies, such as presenting information and communication skills, are essential for students as well. Students also appreciate lecturers' good manners. Data analysis shows that students in higher levels of education attach greater importance to the way of making statements by the lecturer (Chi square = 48,020; df = 8; contingency coefficient = 0,501), the personal culture of the lecturer (Chi square = 24,226; df = 6; contingency coefficient = 0,381), the substantive preparation of the lecturer (Chi square = 48,564; df = 6; contingency coefficient = 0,504). In turn, the method of presenting information by the lecturer is correlated with the degree of use of modern technologies (Chi square = 35,960; df = 9; contingency coefficient = 0,448). Preparation and transfer of knowledge are the essence of the teaching process, which, according to students, is valuable when done with a lecturer's participation.

Some research also showed that the most noticeable factor in evaluating education quality seems to be lecturers professionalism, devotion, communication skills, and attractiveness (Uusen, 2011). Other results showed that the ability to deliver the lecture effectively plays a significant role compared to other teaching processes' quality criteria (Samian and Noor, 2012). The atmosphere of the relationship between students and the lecturer seems to be not without significance. Other current findings have indicated that affective commitment and affective conflict are critical relationship quality dimensions that influence the student engagement dimensions of absorption, dedication, and vigour (Snijders *et al.,* 2020).

Table 1. *The student's assessment of individual factors influencing the teaching process.*

Question no.	Factor	Average grade
Q9	*the ease of contact with lecturers*	*4,64*
Q20	*the way of making statements by the lecturer*	*4,59*
Q14	*the method of presenting information by the lecturer*	*4,59*
Q19	*the personal culture of the lecturer*	*4,53*
Q18	*the substantive preparation of the lecturer*	*4,45*
Q5	*the reliability and speed of data transfer of the wireless Internet network available at the university*	*4,38*

Q13	the utility/effectiveness of applying the knowledge acquired during the classes in business practice	4,20
Q11	the electronic access to administrative services	4,20
Q12	the use of mobile tools in science classrooms	4,17
Q2	to hold classes in laboratories and science classrooms	4,13
Q4	the use of multimedia devices and IT equipment in science classrooms	4,11
Q7	the access to professional (business) software	4,10
Q8	the timeliness of classes	4,10
Q10	the flexibility of administrative procedures	4,08
Q15	the need for an intellectual effort when verifying knowledge	3,98
Q6	the access and use of applications and services such as e-mail and FTP in science classrooms	3,95
Q3	the access to digital library resources	3,92
Q21	the position of the faculty on the market of educational services industry	3,86
Q17	the use of games and simulations in science classrooms	3,78
Q14	the e-learning teaching mode	3,64

Source: *Authors' own research.*

Other highly rated according to students determinants are linked to the usefulness of the infrastructure. First of all, it concerns the efficiency and comfort of daily life in the academic environment, such as being online and dealing with official matters. Students engaged in multiple organizations attach greater importance to the reliability and speed of data transfer of the wireless Internet network available at the university (Chi square = 16,479; df = 4; contingency coefficient = 0,321). Secondly, it also concerns learning and having access to new technologies (mainly professional software) used in business. Practical knowledge gained through implementing business processes is also vital for students. The aspects of infrastructure and new technologies is becoming increasingly relevant in the teaching process. Data analysis shows a correlation between adopting mobile tools in science classrooms and the frequency of using modern technologies in everyday life (Chi square = 42,913; df = 16; contingency coefficient = 0,480). Therefore, it means that there is a shift in presenting information towards a major intensification in the use of modern technologies. Other research results also show a positive perception of technology's role in education (Harerimana and Mtshali, 2020).

Determinants indicated by students as the least relevant for the teaching process concern methodology and organizational issues. The way of functioning by an institution that provides educational services seems vital for those who use them. According to the respondents, the teaching process depends on the lecturer's level of substantive preparation and knowledge transfer competencies. Noteworthy here is adapting knowledge to the needs of business practice and the ability to transfer/learn specific competencies useful in business practice. Therefore, the teaching workshop remains a critical element of the teaching process and undoubtedly deserves improvement, both at the individual and organizational levels. With the current availability of many sorts of classes and methods of their delivery, the attention of consumers of educational services goes to other aspects. The data also shows a hypothesis concerning the change of students' mentality in achieving scientific

goals. Students' high aspirations do not have to be associated with spending time in the library (even with digital resources) or choosing a higher education path based on a professional opinion about the faculty. Student expectations appear to focus more and more on a demanding approach related to receiving all required materials from the lecturer. Concrete knowledge seems to supplant abstract.

4.2 Technology and Human in the Teaching Process

The human issue and technology prove to be the two most important in the teaching process. The assessment of the significance of individual aspects of teaching by students indicates that today this process is oriented around two main axes: human and infrastructure. The above hypothesis has been confirmed by the result of the conducted factor analysis.

Reflecting on whether the aspects of the teaching process assessed by students could be divided into some groups, it was decided to use factor analysis as a classification method. Preliminary data analysis indicated that lecturer-related indicators are correlated with each other, and technology-related indicators are correlated too. In turn, the correlations between the two types of indicators (lecturer-related and technology-related ones) are relatively small. Thus, it seems that our correlation matrix reflects two relatively independent factors, one related to the lecturer and the other to the technology. Principal component analysis was performed and a two-factor solution was obtained, which was extracted by default (these correlations are called factor loadings). The obtained results were subjected to rotation of the factor structure (using the normalized varimax rotation) to find a rotation that maximizes the variance concerning the new axis. In this way, such a system of charges was obtained for each factor that shows the greatest possible variation.

Figure 1. *Factor analysis.*
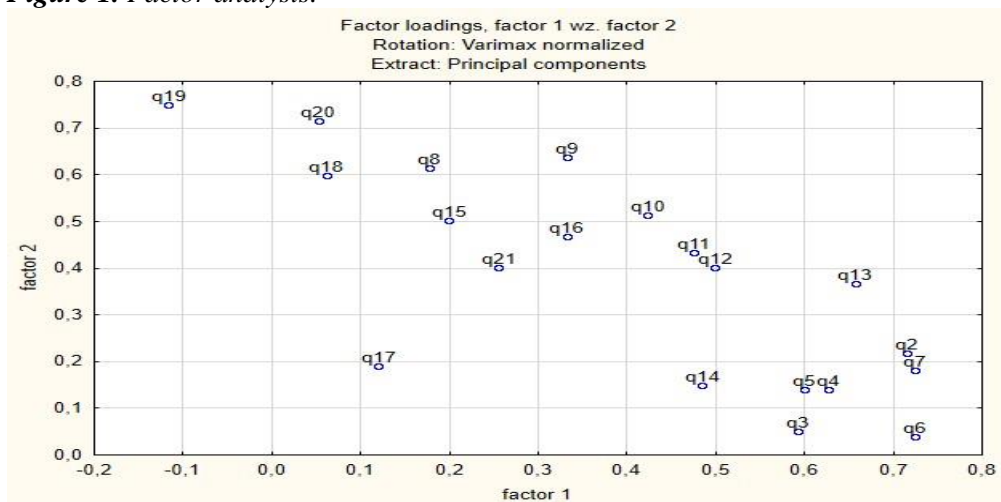
Source: *Authors' own research.*

As a result, a relatively clear model has been achieved, in which the first factor is distinguished by high loads at the technology's significance indicators (q7: the access to professional (business) software = 0,725074, q6: the access and use of applications and services such as e-mail and FTP in science classrooms = 0,723558, q2: to hold classes in laboratories and science classrooms = 0,714752), and the second factor is distinguished by high loads at the lecturer's significance indicators (q19: the personal culture of the lecturer = 0,749807, q20: the way of making statements by the lecturer = 0,714466). These results indicate that, in students' opinion, the key components of the learning process are the lecturer and the infrastructure (technology in particular).

4.3 Consequences of COVID-19 Pandemic for the Teaching Process

The analyses conducted so far have covered the general assessment of the teaching process in higher education. The COVID-19 pandemic time presents us with new challenges. Therefore, it is necessary to ask questions about the students' assessment of particular aspects of the teaching process concerning classroom and online learning. Research material includes measurement among both students studying in class and online only.

The COVID-19 pandemic outbreak has resulted in a shift from classroom teaching and blended learning to e-learning mode. It turns out that the complete transition to online education is vital for the teaching process, especially in terms of contact with the lecturer. Data analysis shows that there are differences in the importance attached to ease of contact with the lecturer between students attending classes and students learning online. Online students rate easy communication with the lecturer as more critical to the teaching process. On the contrary, students studying in the classroom rate the importance of this contact slightly lower. It has been confirmed by the result of Levene's test of the homogeneity of variance ($F = 15.747$; $p = 0.000$). The same is true for the lecturer's method of presenting information - online students assessed this factor as more important than classroom students. It has also been confirmed by the result of Levene's test of the homogeneity of variance ($F = 10.301$; $p = 0.002$).

It seems that social isolation influences the search for direct contact with another person. The lack of direct contact with the lecturer probably affects the quality of the material provided, so online students pay more attention to how the study material is presented.

5. Discussion and Conclusion

The university management and the teaching process itself requires that particular attention be paid to a human being's ultimate value – a person conducting academic courses. All sorts of modern technologies such as infrastructure, IT tools and equipment, transfer of study materials or communication are only complementary to

the lecturer's work. The tertiary education process's essence is still the magic master-student relationship, which is shaped by the recognition of specific values such as truth and trust. It seems necessary to invest in lecturers' competencies, especially in soft skills (social engineering skills), content presentation, software knowledge, and IT skills. It should be remembered that the level of lecturers' proficiency varies greatly. Raising the level of lecturers' IT skills will allow not only to use the potential of the university's infrastructure fully but also to stimulate the transfer of knowledge to students, because of creatively connecting technologies to learning processes (Bruggeman *et al.,* 2021). Other findings also show that higher education institutions should encourage all staff members' competence development, encourage team building, facilitate knowledge exchange, and implement a shared vision strategy (Mababu and Revilla, 2016). Untapped potential in lecturers' training is in experience of embedded expert (Lock and Redmond, 2021).

Lecturer's competencies in the so-called soft skills area are essential elements of the teaching process, and it seems that this is not an unexpected observation. Contemporary socio-economic reality and the extremely dynamic development of modern technologies indicate the randomness of interpersonal relations, society's individualized nature, and acting out on self-interest only, which is not conducive to developing interaction. The COVID-19 pandemic outbreak further complicates the situation. In association with the above, the respondents' indications regarding social issues might be the answer to the emerging deficit in real – and not only virtual – social contacts and relationships area. Some researchers noted that communication is a critical factor influencing student performance (Mushtaq and Khan, 2012). Other studies showed that in-person students have significantly stronger social goal orientations than online students (O'Neill *et al.,* 2021).

Until recently, the infrastructure had the smallest impact on students' satisfaction and pointed out staff development's critical role in higher education (Calvo *et al.,* 2010). There is a change of orientation in the teaching process towards increasing modern technologies usage, especially ICT tools. Strengthening the message with the help of various types of tools seems to be already a standard. It affects the students' perception of how information is presented as an essential factor determining the teaching process. It turns out that the development of teaching infrastructure that could be noticed in recent years is vital for people who use higher educational services. It is meaningful as long as it is related to the business reality. It shows that students are oriented towards dynamic career development and expect their studies to develop practical rather than general academic competencies.

New trends in education development indicate that the transformative education is a new capability and strategy aiming to re-design higher education in a holistic way focusing on total quality management of human resources. Cyber-physical systems, sentiment management and ubiquitous learning delivery beyond time and space limitations are promoted (Lytras *et al.,* 2020). The use of technology is becoming more and more necessary, but not always with specific benefits. Some studies show

that students are better off without relying on digital technologies. While virtual learning environment could enhance students' higher education goals achievement with additional inputs, students who use social media are the least efficient (Lacka *et al.,* 2020). Modern technologies should be considered as basic in the nearest future (Hamidi and Chavoshi, 2018). It applies to the infrastructure understood as online software and classroom facilities with their equipment, particularly tools that support the discussed issues during classes. Therefore, it makes sense to invest in infrastructure and software that are common in the international higher education and business environment. The internationalization of tools used in higher education allows for the integration of students and lecturers and the uniformization of education programs.

The demanding and lazy/inactive students observed in the research require watchfulness when working with them, especially in e-learning. The lecturer's role is more often reduced not to transfer knowledge only but to mobilize students in searching for it and deepening it independently. It should be stated that the students' ideas of an effective lecturer are predicted on their perceiving themselves as partners in the learning process and not only recipients of knowledge (Allan *et al.,* 2009). Some study illustrated that, in addition to a dialectic approach, a dialogical approach is also needed to understand and support collaborative interaction's contextual nature, including students' perspectives and situated learning (Arvaja and Hämäläinen, 2021). Today a model of education based on interest in the subject matter is still being created.

Education is key to the future quality of human life and the world's sustainability (Burbules *et al.,* 2020). Therefore, it should be emphasized that although the teaching process in an academic unit is based on specific procedures and organization management systems, the most critical factor remains a person. Lecturer is not another "resource" that could be set in each configuration, assigned to a specific task, but he is the essence of the process examined in this research. The scope of competencies and individual, unique personality traits, are sometimes difficult to replace. That is why from an organization management point of view, HR policy seems to be critical here, focused on building teams competent and capable of carrying out tasks for modern higher education purposes.

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