



ASPECTS REGARDING THE ONLINE MODULAR EDUCATION SYSTEM COMPARED WITH THE CLASSICAL ONSITE SYSTEM

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Abstract

In according with the situation created by the pandemics of the world [4,6,7,8,9,10], the Covid-19 viruses were affected the all fields of activity from the all domains, like as: industrial domains, tourism, commercial, even of the educational system at all levels [1,2]. In this context our university, George Emil Palade University of Medicine, Pharmacy, Science and Technology of Targu Mures, it had to move from the classical educational system to approach of the new online modular system. This forced adaptation presents a lots of problems, especially of the all specializations within the Faculty of Engineering and Information Technology, where there are practical activities that involve laboratories with practical execution they cannot be performed by the online system. After an experience gained of almost 4 months of online activity, more several negative aspects are configured to be analyzed in order to find constructive solutions for optimizing the online educational system [1]. The present paper proposes to identification of a questionnaire addressed for the students as well as to the teachers from the Faculty of Engineering and Information Technology of UMFST “G.E.Palade” of Tg.Mures. Following the analysis of the all results of the questionnaire, the deficiencies of the problems raised by the technical disciplines that require phisicals practical applications in laboratory classes will be identified, respectively new directions for the development of modular online education will be identified representing the only alternative of the onsite classic education in this situation.

Keywords: education, online modular courses, onsite courses, research, cooperation, questionnaire.

1. Introduction

The COVID-19 pandemic crisis has significantly changed the all-human society, even if only temporarily reducing social interactions to a strictly necessary level, which is unimaginable in early 2020. Many areas of activity have undergone changes by adapting to the situation imposed by pandemic crisis. Thus the educational system at all levels where suffered, respectively at the level of life and social activities and

it had to transfer all them to the online system. The online system seems to be becoming the new reality in many segments of our life. The virtual education system is now encouraged, a lot has been invested like of: money, time and even emotions and not only for the pandemic period but quite probably in the future, also developing a compromise situation.

For this situation created by the COVID-19 virus [3], [5] within the “George Emil Palade” University of

Medicine, Pharmacy, Sciences and Technology from Târgu Mureș, Romania, it was established an exclusively online educational system and implemented in a relatively short time, [11,12].

After each module, it is organized a summative session exams which evaluates the theoretical and practical activity of the disciplines studied during in the last seven weeks. The structure of modular education system is concentrates for 3-4 disciplines / module thus doubling the number of hours provided in the syllabus of the each specialization. After each module it is follows an examination session.

For a short experience gained in the last 4 months, it can be said that the transition from the classical educational system to the modular online system involved several problems, especially in carrying out for practical activities (laboratory class) specific to technical disciplines within at the Faculty of Engineering and Information Technology at UMFST. George Emil Palade ”from Targu Mures.

These practical applications are limited in online system, all the practical application can not be processed, assimilate and implement like: apply various measurements, determinations of reactions specific to practical laboratories where there is a real need for laboratory physical activity, which takes place on specific equipment in laboratory.

Thus, through the applicative study of the physical, chemical, mechanical phenomena that are determined in the case of these practical laboratories and that complete the assimilated knowledge at theoretical level, it ensures the acquisition and the practical abilities specific to the engineering field. In other words, the implementation of the modular online system presents a series of problems related to practical activities, which cannot be performed in the online system.

2. Research Method

The practical activities performed in the laboratory underwent a transition from practice to theory by approaching the online system, so the practical activities were supplemented by video examples, videos by youtube channel or other media solutions, all these working methods having a limited perception in the correct assimilation of processes. and strongly applied practical phenomena [2,5,12].

In order to establish several directions for the development and improvement of the modular online system as well as the optimization of the online system, a questionnaire was proposed with the participation of 142 respondents from the Faculty of Engineering and Information Technology, belonging to UMFST “G.E.Palade” from Tg.Mures. The questionnaire is structured on 18 questions that identify the direct opinion of the respondents

regarding of the specific technical education conducted online / onsite, respectively the adaptation of the teacher to this new education system, namely modular online system .

The answers for all the questions identify an objective opinion of the respondent, the weight of the answer variants having the highest percentages, respectively the lowest percentages were taken into account. On the other hand, as you can see the extreme values are relevant for the questions and answers of the respondents with reference to the questionnaire applied.

Question no.1: *What do you think about the modular online system recently adopted by UMFST "G.E.Palade" of Tg.Mures?*

R: *limited / partially good / good / very good;*

The majority opinion of the respondents of 37%, defines a partially good attitude regarding the implementation of a modular online system, and the only 9% have a very good opinion regarding the implementation of such online system, 35% consider it is a limited system as an approach, and 19% among the respondents considers a good option in approaching such an educational system.

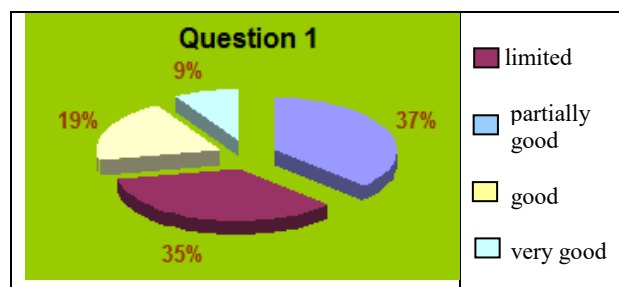


Fig.1: Evaluation of the results for question 1

Question no.2: *How many hours do you spend daily on the computer (or technology) for educational purposes on the UMFST online platform?*

R: *least / enough / much / exaggerated;*

Only 43% of respondents admit that they have more spent the time online, only 5% consider that they spend less time on the platform, 37% consider that they spend enough time on the online platform and 15% of respondents exaggerate with many hours spent the time on the online platform, in Fig.2 you can see the evaluation of the answers.

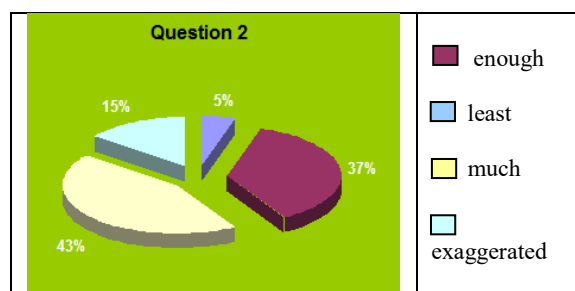


Fig.2 Evaluation of the results for question 2

Question no.3: How do you like online education?

R: useless / less usefull / helpful / educational / constructive;

A share of 35% consider that the online modular system is useful, and 7% consider it useless, 11% of the respondents that consider it is constructive, 18% not very useful and 29% of the respondents consider a high-performance educational system, in Fig.3 you can see the evaluation of the answers.

The argumentation of the respondents 35% is supported by the fact that in this pandemic situation it is the only efficient communication system.

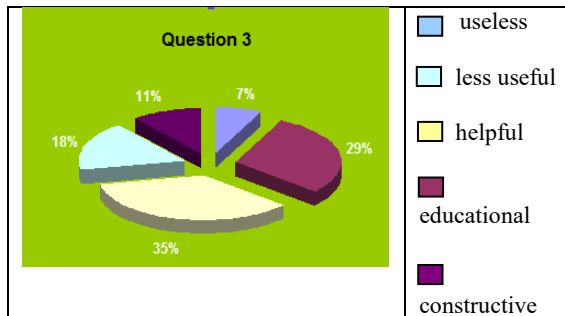


Fig.3 Evaluation of the results for question 3

Question no.4: How do you appreciate to use the UMFST online platform at the didactic-educational level?

R: useless / useful / very useful / indispensable;

A share of 51% by respondents admit that using the online platform considers it useful, while only 11% consider it is useless in the education process, and 2% of respondents consider the platform it is indispensable, 36% consider the platform very useful in approaching activities online. In Fig.4 are presented the evaluation of the answers.

The high percentage of 51% and 36% it is explained by the fact that there is no other means of online communication offered by the university environment as an alternative to the online system approach.

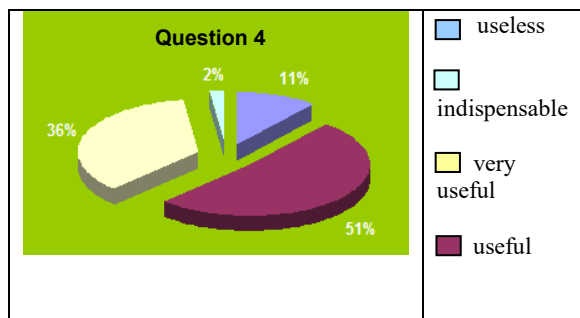


Fig.4 Evaluation of the results for question 4

Question no.5: What do you think about of the classic educational system compared of the modular online educational system?

R: good / applied / diversified / useless / weak / non-performing;

The increased share of 35%, 33% and 26% of the

respondents consider that the classical education system is better than the online system, considering it as a strongly applied and diversified system, and the share of 2%, 4% and 0% of the respondents considers that it is a non-performing system, weak and non-educational performance.

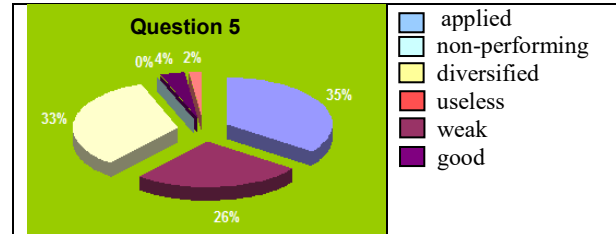


Fig.5 Evaluation of the results for question 5

The argumentation of the justification of the performances of the classical system, results from the impossibility of carrying out of the practical applications within the disciplines with technical specificity defining in the online system.

Question no.6: How it is the intellectual effort related to assimilation and understanding of the technical knowlege in the modular educational system?

R: weak / limited / difficult to assimilate / good / very good / impartial;

The share of 33%, 26% and 18% of respondents consider that the assimilation of the information's volume it is lower, difficult to assimilate and limited, and the share of 17%, 3% of respondents, considers that the information is very good and easy to assimilate in the online system, a share of 3% of the respondents being impartial in options.

The justification of the results reflects the large information volume of uploaded on the platform associated with the disciplines.

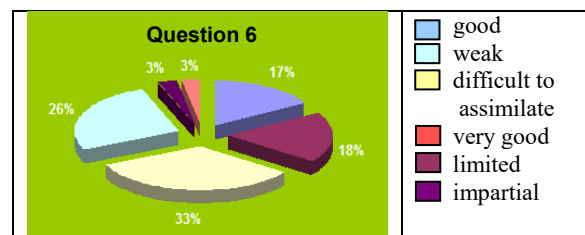


Fig.6 Evaluation of the results for question 6

Question no.7: Feeling tired after you are in online activity session?

R: very tired / exhausted / impartial / slightly tired / not at all;

A share of 33%, 25% respondents consider that they are very tired, exhausted, and 16% it is consider themselves impartial. Share of 20%, consider that they are slightly tired, and share of 6%, consider that they are not tired after a session of activities performed in online system.

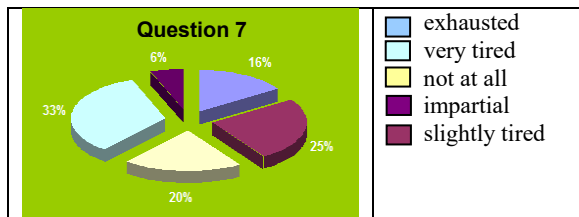


Fig.7 Evaluation of the results for question 7

Question no.8: Are they practical applications less perceived / assimilated in the online system?

R: affirmative / misunderstood / difficult to assimilate / self additional training / unbiased;
A share of 54% of the respondents answered in the affirmative, 23% considered the notions it is more difficult to assimilate in the online system, 9% considered that they do not perceive any of the assimilated notions, 8%, of the respondents request additional training, and 6% gave an impartial answer.

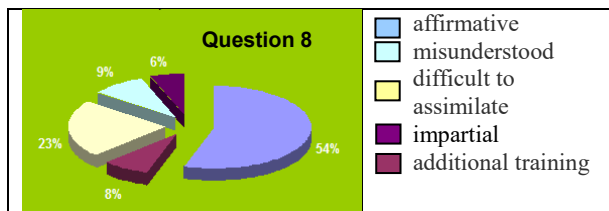


Fig.8 Evaluation of the results for question 8

Question no.9: How much the time do you spend completing additional knowledge to understand the new notions assimilated online?

R: not at all / maximum one hour / maximum two hours / more than two hours;
A share of 37% of the respondents consider that they need to study more than two hours, 34% consider that a maximum of two hours are enough for additional study, 25% consider that more than one hour ensures sufficient additional study, and 4 % consider that it is not necessary to go further, as the hours provided in the online program it is sufficient.

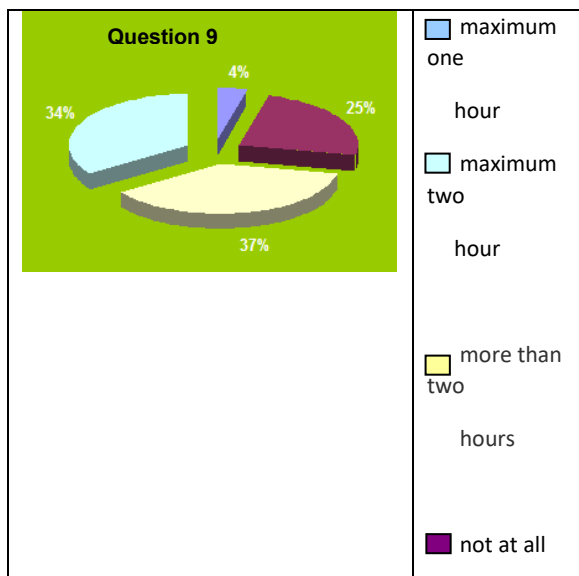


Fig.9 Evaluation of the results for question 9

Question no.10: How did you receive / assimilate the way of exposing of the teacher's course at the course / laboratory / or project support?

R: misunderstand / partially assimilated / additional completions / without problems;

A share of 41% of the respondents consider the subject partially assimilated at the class, 34% request additional additions, 22% without problems, and 3% of the respondents consider that they do not understand anything. The justification of the results is argued by the total or partial absence from the class. In Fig.10 you can see the result.

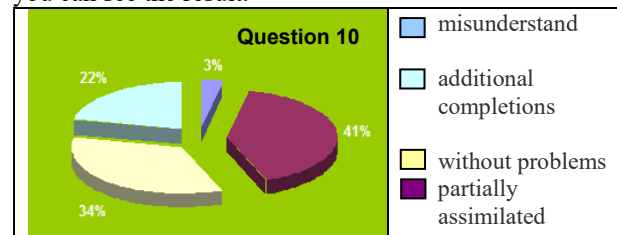


Fig.10 Evaluation of the results for question 10

Question no.11: Was the workload allocated to the course / laboratory / project support in the online system higher than in the classical educational system?

R: affirmative, exaggerated / a little much / impartial / sufficient
A share of 43% of the respondents consider an exaggerated workload, 36% consider the workload submitted in the online system a little more, 12% of the respondents are impartial, and 9% consider that the workload is within normal norms of effort. In Fig.11 you can see the results.

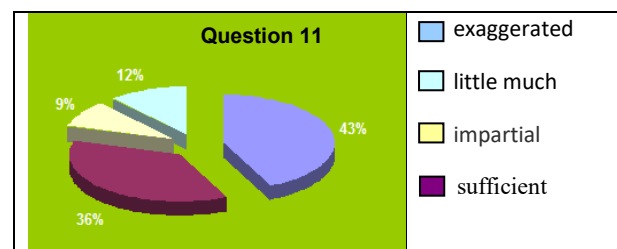


Fig.11 Evaluation of the results for question 11

Question no.12: How effective is the online platform in the correct assimilation of the fundamental knowledge having a theoretical character, oriented at course / laboratory / project level?

R: not at all / least / partially / good / very good / indifferent;
The share of 43% and 25% of respondents considered the online platform it is performing, 17% are without opinion, 7% consider that the theoretical notions are insufficiently detailed, 6% are partially satisfied and 2% consider a fully integrated approach to theoretical notions in the system online. Obviously, these answers are argued by the frequency of listening to online activities.

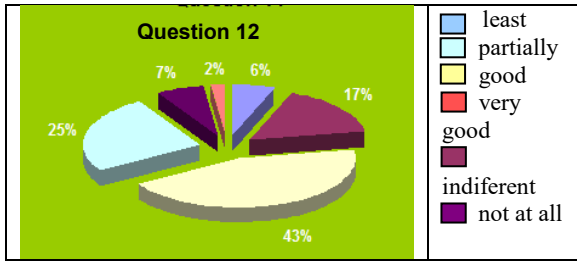


Fig.12 Evaluation of the results for question 12

Question no.13: How effective is it the online platform in the correct assimilation of the fundamental notions having a practical character, oriented at the course / laboratory / project level?

R: not at all / least / partially / good / very good / indifferent;

A share of 29% of the respondents consider practical applications were little assimilated in the online system, 28%, are partially satisfied with the understanding of practical applications, 21% are not at all satisfied with the assimilation of practical knowledge, 20% consider good practical approach, and 1% say indifferent, respectively 1% of the respondents consider a very good approach to practical applications in the online system. The argumentation of the answers is made according to the perception and understanding of the practical aspects within the laboratory applications, presented virtually.

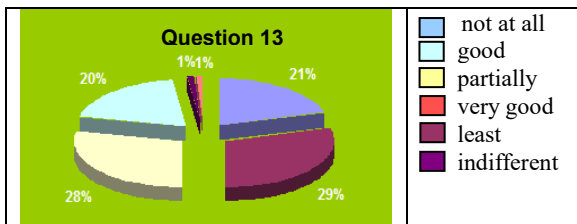


Fig.13 Evaluation of the results for question 13

Question no.14: What is your opinion on the online summative examination compared with the classical educational system at the engineering field level?

R: unrealistic / weak / impartial / good / / very good

A share of 34% of the respondents consider an impartial opinion, 30% assume an unrealistic evaluation of the results in the online system, 15% consider it is a correct evaluation of the results, 12% consider a weak, inconclusive evaluation based only on the answers to choice and term the editing limit, and a share of 5% and 4% of the respondents, consider that the online system is educational and with very good results in the online system. In Fig.14 you can see the results..

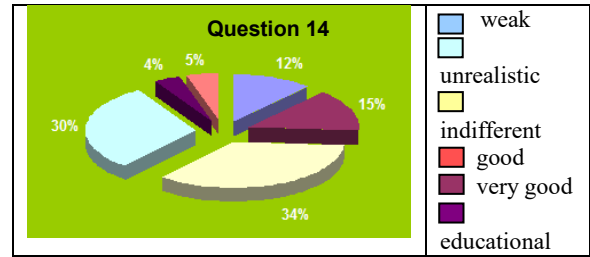


Fig.14 Evaluation of the results for question 14

Question no.15: In the future, do you recommend the modular online educational system, associated with the educational offer of UMFST "G.E.Palade" of Tg.Mures?

R: I am not interested / disappointed / impartial / excited;

A share of 32% of the respondents declared a constant interest being delighted by the educational offer, 42% a little disappointed, 9% are not interested in such a system promoted by UMFST, declaring in any form they will not promote the educational offer of UMFST, and 17% of respondents are impartial.

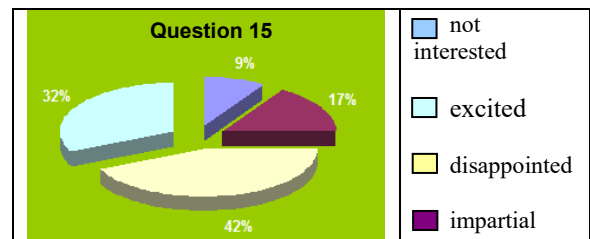


Fig.15 Evaluation of the results for question 15

Question no.16: Do you think that the new technology (mobile phone, tablet, etc.) it is on influences of thinking?

R: negative / don't know / affirmative;

Shares of 49% of the respondents do not know a concrete answer, and 25% consider it is an affirmative answer they believes that technology adversely affects of the social development.

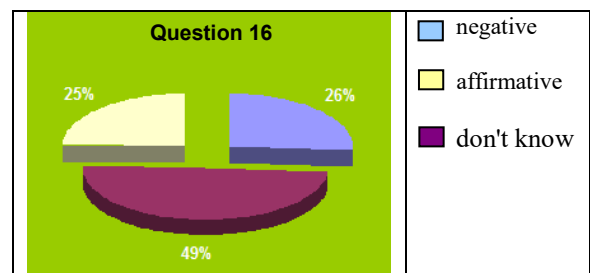


Fig.16 Evaluation of the results for question 16

Question no.17: Do you have any objective proposals or suggestions in order to improve the modular online system at the level of the Faculty of Engineering (write your opinion)?

R: written answer;

A share of 70% of the respondents confirm an answer regarding of the elimination of the modular online system, it is an heavy systems being too focused while

justifying the limited time for knowledge, they are being totally dissatisfied with this education system, and 30% did not answer this question. In Fig.17 you can see the evaluation of the answers.

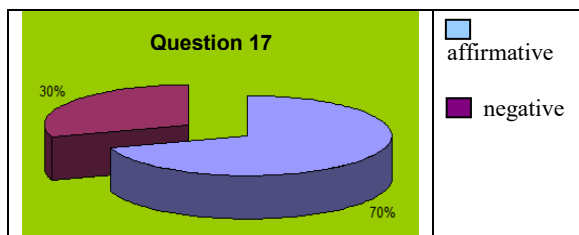


Fig.17 Evaluation of the results for question 17

Question no.18: *Regarding of the teacher's activity at the course / laboratory / project do you have any objective suggestions / observations (write your opinion)?*

R: *written answer:*

A share of 82% of the respondents appreciate the effort made by the teacher to concentrate and ensure for the teaching support in understanding the theoretical and practical knowledge assimilated by the students in this modular online system promoted by UMFST "GEPalade" of Tg. Mures, and 18% of the respondents consider that online system it is needs to be improved especially at the level of practical activities, in Fig.18 you can see the evaluation of the answers.

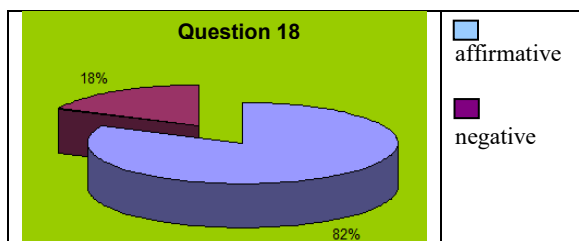


Fig.18 Evaluation of the results for question 18

3. Conclusions

As the students' opinions are different, some important aspects stand out:

- The modular online system can currently be accepted due to the situation of need, but after it will return to normal, almost all the students do not want to continue in this structure because it does not provide easy to assimilate information, especially practical applications;
- In order for the transmitted of the all knowledge to be understood and then put into practice, both at the laboratory, for the other hand the didactic projects as well as the courses and seminars it is must be carried out in a system approved into the university's spaces;
- The modular online system it is compresses too much the knowledge, it is makes much more difficult to assimilate the knowledges due to the fact that the received information does not have time to

settle, to be disseminated and assimilated easily by the students;

- On the other hand, there are a more concrete problems, such as internet access in rural or remote areas, the financial capacity of parents and teachers, the possibility of supervising online exams, as well as logistical and the all IT's support that can be offered by the online system;
- Impossibility of the all students to use specific programs with academic license, it must have necessary to complete their laboratory applications (AutoCAD, Autodesk Inventor, MathCAD, etc.).

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