



A POINT OF VIEW ON FORMATIVE- EVALUATION OF PART- TIME STUDENTS IN CONSTANTA MARITIME UNIVERSITY- A CASE OF STUDY

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Abstract: Part- time education is very attractive for students and universities, due to its obvious benefits related with economic, mobility and friendly education environment aspects. In Constanta Maritime University, part- time education is available for marine engineering, electrical engineering and navigation and waterborne transport programs. According to the Romanian legislation, the evaluation of part- time students consists in two types of assessment: formative evaluation and final evaluation. The formative evaluation is carried on by the use of the university' E-Platform, while the final evaluation is face to face type- exactly like the one of full- time students. In the case of study, it is described the formative evaluation of part- time students enrolled in Marine Engineering program, second year of study, in the case of students' performance assessment in Thermodynamics 1 Course. There are enrolled 52 students, but only 25 attended the formative evaluation, despite of the fact that this evaluation has a percentage in the final grade. This paper describes the manner in which this evaluation took place. Also, where analysed the reasons for not attendance and mistakes in test solving. Where identified the ways in which students performance might be improved, for a better understanding of the curricula.

Key words: part- time students, marine engineering, formative evaluation, e- Learning

1. INTRODUCTION

According to the Romanian legislation [1], higher part time education represents a form of organization of didactic processes characterized by teaching-learning-evaluation activities dedicated to applied training, programmed in a compact or periodic way, which involves both the direct meeting of students/students in the university space with teaching staff, as well as the use of teaching/training aids specific to distance education.

Part-time education offers students the opportunity to manage their learning process in compliance with the schedule established by the university.

As a rule, assisted teaching activities are scheduled on weekends.

Part-time education has features in common with both full-time and distance education.

Thus, the study of the courses is carried out individually, the students having at their disposal study materials adapted to the individual study, the self-instructional process.

For the form of organization of the didactic process specific for part- time education, the programming of the subjects in the education plan will be done according to the duration of schooling in full-time education.

In order to ensure the equivalence of the forms of education, the following types of activities will be carried out within each discipline:

a) seminar activities consisting of face-to-face meetings on the university campus and/or online synchronously through online platforms, with the same number of seminar hours as in the full time education form. These activities are organized by groups/subgroups:

b) applied activities (laboratory, practical work, project, specialized practice) with the same number of hours as in the full time education form. These activities are organized face to face in the university campus/online synchronously in groups/subgroups;

c) the course hours from the regular education form are compensated by self-instructional activities, based on distance education specific learning resources.

Teaching activities are carried out by the university permanent instructors or by part-time instructors.

Discipline coordinator - which is a permanent lecturer has a large range of activities, such as: defines and implements the structure and sequence of distance and face-to-face teaching activities, designs self-study course support, learning tasks, mid-term and final assessments, and how the support materials are used, develops the exam topics and/or the marking grids, ensures the final assessment of students in the knowledge assessment sessions.

On the other hand, part-time instructors are important actors in part-time education due to the fact that they are motivated to work hard in order to gain the appreciation of the academic staff and of students [2].

Among many other, discipline coordinators have to deal with two important tasks: study materials design and part-time students' evaluation. Study materials are working tools in teaching, learning and assessment, which must replace the role and presence of the trainer in traditional training processes.

These materials are adapted to self-learning and are carried out entirely in distance-learning technology. These can be achieved, implemented and delivered to students using various media: printed teaching materials, digital resources on online platforms, any suitable electronic storage/presentation media.

These materials have an introductory section on assessment methods and tools and the number and format of formative evaluation of part-time students. The content of the teaching materials is divided into learning units/modules that facilitate gradual and structured learning in a defined unit of time.

Designing study materials in distance-learning technology considers the facilitation of individual study and the development of learning skills and techniques, ensuring a high level of interactivity and feedback, the generation of student-teacher and student-student interactions, the use of a wide range of procedures that facilitate and consolidate learning: illustrative examples, summaries, conclusions, etc.

The evaluation of part-time students' knowledge for the promotion of curricula and the granting of credits requires formative and final evaluation procedures.

Formative evaluation can include self-evaluation tests, verification works, practical tests, etc. - inserted in the study materials and/or posted on the e-Learning platform and has a percentage in the final grade; this type of evaluation is realised in a tutorial system, and checking, marking, discussing and recording the results can be done directly on the e-Learning platform.

Students must be informed about the nature and purpose of the formative evaluations, as well as about their percentage in the final grade.

The final evaluation of part-time students is carried out in the same system used in the case of full-time students, meaning face to face knowledge assessment.

Part-time programs are a necessity in the context of actual labour market; they represent a good solution for the ones which are working or for different reasons cannot be enrolled in full-time programs, but still want to have access to higher education (a category characterised by diversity and complexity) [3], [4].

2. METHODS AND MATERIALS

Highly educated seafarers, able to cope with challenges imposed by modern shipping industry, are the result of the cooperation between higher maritime education institutions and stakeholders in shipping [5].

Lately, the need of highly trained human resources on board the ships is evident; in this context, MET (Maritime Education and Training) programs providing the industry the personnel with academic knowledge and practical skill are of high importance [6]. Having in view that part-time students enrolled in Constanta Maritime University already work in the shipping sector, this type of program is very attractive for the one willing to achieve a better position on board, through marine higher education.

This paper deals with formative evaluation of part-time students enrolled in Marine Engineering program in Constanta Maritime University, second year of study, in the case of students' performance assessment in Thermodynamics 1 Course. There are 52 students attending this course.

The general objective of the discipline consists in the formation of competences in the field of thermal engineering, for future marine engineers. Thermodynamics is a fundamental course in mechanical engineering since it provides basic knowledge for the understanding of succeeding courses [7].

In Constanta Maritime University such examples are Internal combustion engines components and ancillary systems, Internal combustion engines processes and characteristics, Steam generators, steam and gas turbines or Marine refrigerating plants.

For the case in study, Thermodynamics 1 course needs 42 hours of self-study training, while the seminar activities (which are face to face or online) require 28 hours per semester. One seminar (2 hours per semester) is carried out online, by using the e-Learning platform of the university. In this case, seminar activities are in the task of a part-time instructor. E-learning improves teaching and learning processes and enables universities to be more and more competitive; electronic learning improves the relationship student-student and student-lecturer, as well [8], [9].

E-Learning is both flexible and affordable and can be used as a strong tool in passive and active learning processes [10]. In Constanta Maritime University, Moodle E-learning platform is at the disposal of teaching staff and full-time and part-time students. It provides a virtual learning environment able to support learning and knowledge assessment processes, while lecturers and students might have synchronised or non-synchronised activities [11].

Students are informed on the scheduled learning activities and course content on the course page, available on the platform (Figure 1).

By accessing the course details, students are informed that the formative evaluation will consist in solving a task, scheduled in week no 9, from Modules 4,5,6 (Figure 2).

Module 4 deals with perfect gas mixtures, module 5 deals with transformations of perfect gases, while module 6- with the second law of thermodynamics.

The formative knowledge assessment is carried out by the use of the platform. The assessment consists in

solving a test that contains grid-type questions and a problem, for which theoretical knowledge from the mentioned units is required. The lecturer's feedback is transmitted to the students also by the use of the platform.

Students have to up load their solved test on the platform (Figure 3). For solving and up loading the tests, students have at their disposal 1 hour.

As seen from Figure 4, 25 students have attended the formative evaluation.

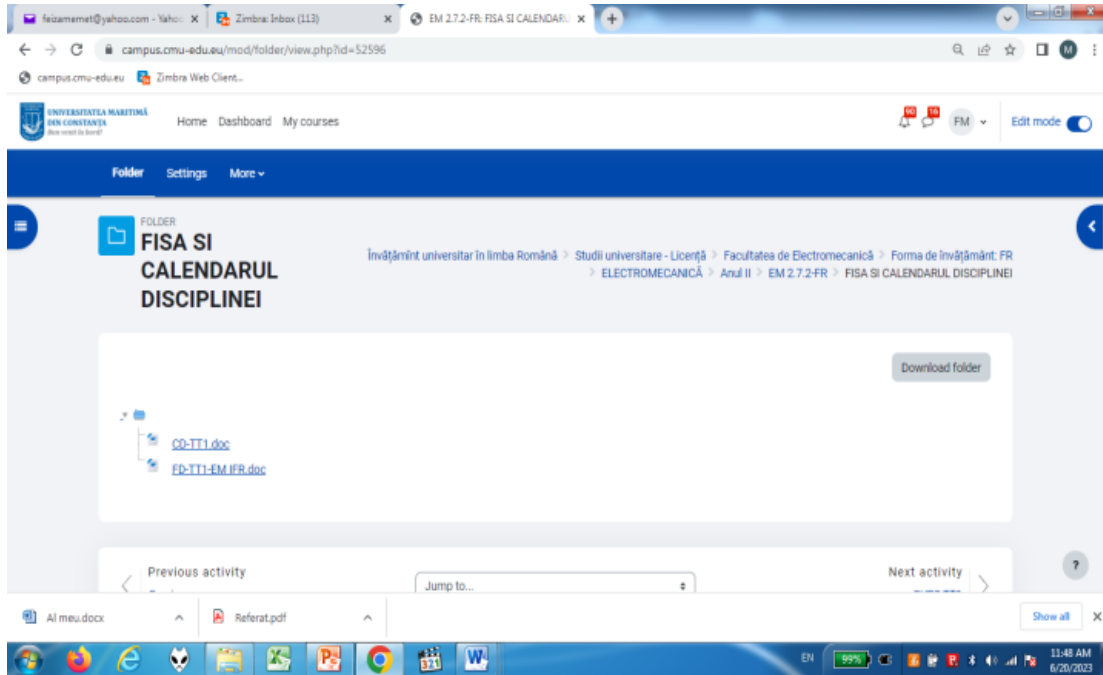


Figure 1 Thermodynamics 1 course details

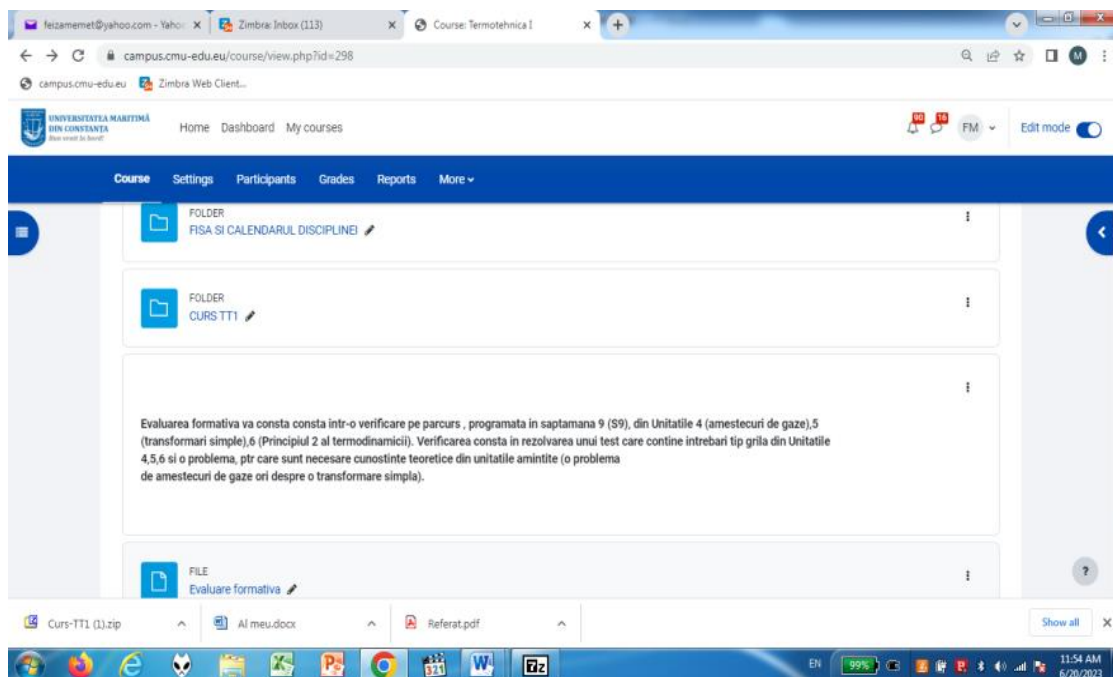


Figure 2 Information regarding formative evaluation

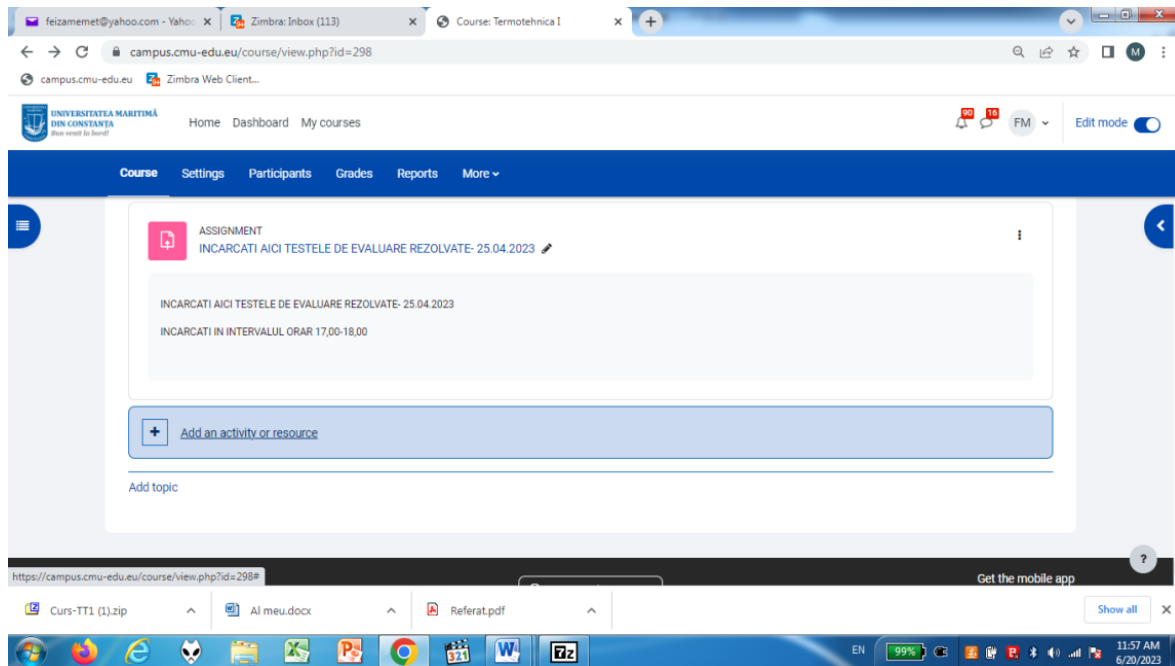


Figure 3 Up loading the solved tests on E-Campus

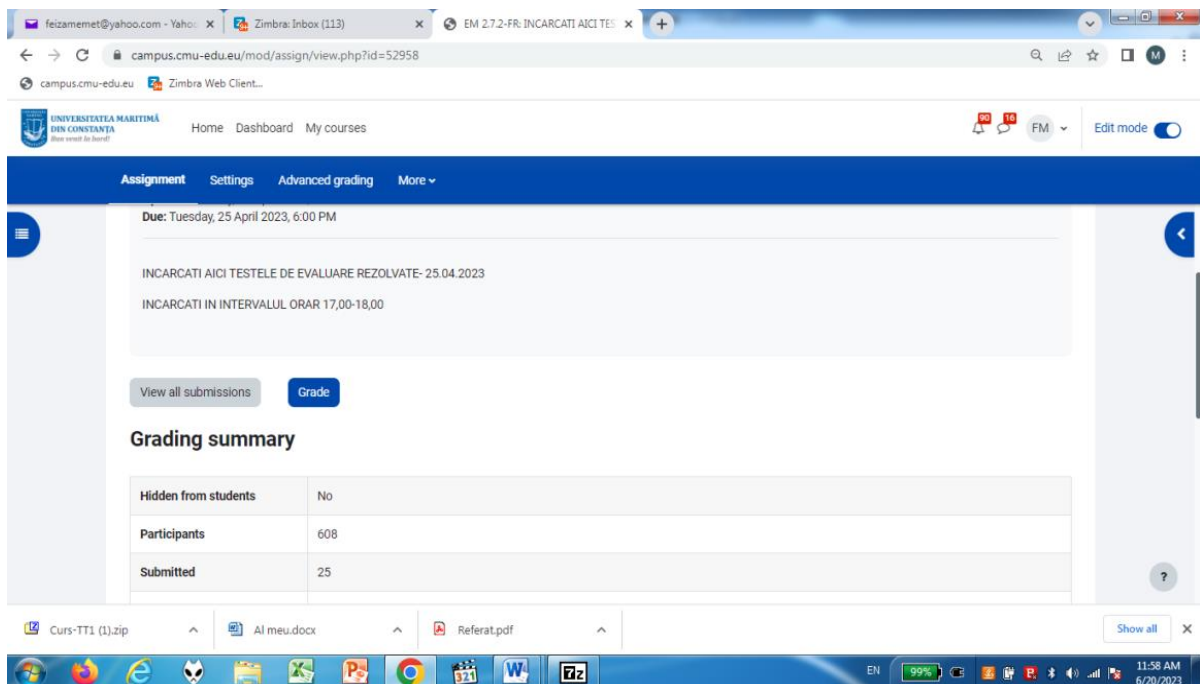


Figure 4 Papers to be granted

The content of the formative evaluation is provided below.

Formative assessment- For the questions 1-6, bold the correct answer

1. $c_p(T_2-T_1)$ is the formulae for:

- a) the heat in an isobaric process, b) the heat in an isochoric process, c) mechanical work in an isothermal process
2. Molar mass of a gas mixture depends on the:
 - a) pressure of component "i", b) molar mass of component "i", c) density of component "i"
3. During an isochoric heating:

- a) The pressure decreases at constant volume, b) the pressure increases at constant volume, c) the pressure increases at constant pressure
4. The heat is completely converted into mechanical work during:
a) an isothermal, b) a polytropic process, c) an isochoric process
5. Carnot cycle consist of :
a) 2 isothermal and 2 adiabatic processes, b) 2 isothermal and 2 isochoric processes, c) 2 isobaric and 2 adiabatic processes
6. The efficiency of a heat engine is always:
a) negative, b) less than unity, c) less than two
7. For the pre- heating of air in a steam generator are used burnt gases. Knowing that the air flow is $10000\text{m}^3/\text{h}$ and that the air inlet temperature is 20°C , find the heat transfer rate absorbed by the air if the exit

air temperature is 200°C . The pre- heating process is isobaric. It is given the value of $c_p = 1,311\text{ kJ}/(\text{m}^3\text{K})$.

Bold the correct answer: the heat transfer rate is:

- a) $2,88 \times 10^6\text{ kJ/h}$, b) $3,91 \times 10^6\text{ kJ/h}$, c) $2,36 \times 10^6\text{ kJ/h}$

3. DISCUSSIONS AND RESULTS

As seen from Figure 4, 27 part- time students have not attend the formative evaluation. According their declarations, 70% were on duty on board, 20% were on duty on land, 8%, didn't want to attend because of feeling unprepared, while 2 % had personal reasons for missing the evaluation.

In Figure 5 there are provided the reasons for which a small percentage of participants missed to correctly reply to all the topics.

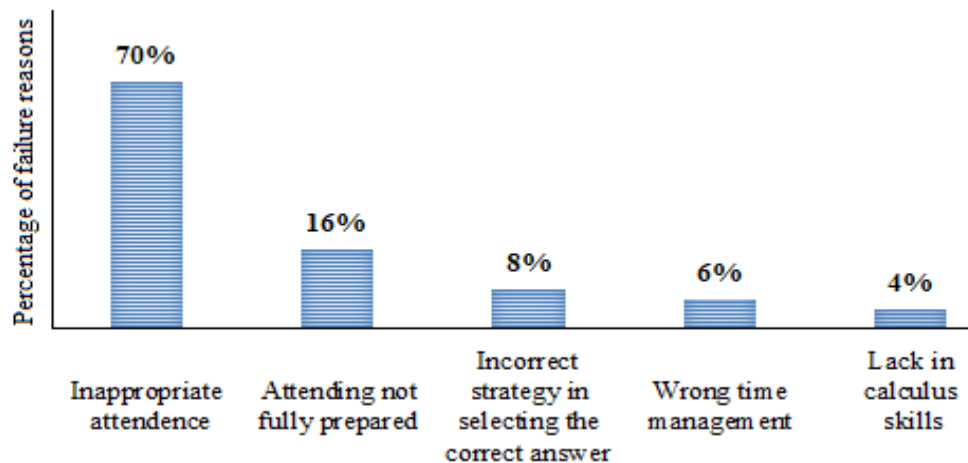


Figure 5 Analyse of the mistakes

The analysis of the formative evaluation results identified the reasons for which a small percentage of participants missed to correctly reply to all the topics.

70% didn't attend the class (face- to face seminar activities) regularly, 4% have not enough problem solving skills, 8 % change the initial answer (which was the correct one), 6% didn't manage properly their time, 16 % attend the formative evaluation without studying earlier the Module dealing with the second law of thermodynamics.

By completing the analysis of results, the discipline coordinator and part-time instructor have identified the following way to improve the future results of part- time students:

-better assessment of the level of previous knowledge and capabilities that students have at the beginning of a new learning process and which constitutes the

necessary basis for real access to learning new knowledge and forming new skills

-punctual correction of mistakes through recommendations (identifying weaknesses and fixing them, recommending additional sources of learning)

-increasing the attractiveness of knowledge and understanding of theoretical aspects through more frequent references to concrete examples on board the ship

-organising additional meetings to discuss misunderstood issues, within a program established by mutual agreement teacher-student, through the platform

-motivating students by involving them in Student Competitions

-intensifying oral checks through free exposures, evaluation conversations, oral questionnaires, interviews

-strengthening the teacher-students connection

-improvement of take notes abilities



4. CONCLUSIONS

Part- time students' formative evaluation was carried out through e-Campus learning platform. Discipline coordinator transmitted its feedback also by the use of this tool.

The analysis of the results indicated for which reasons only about 48% of students missed this type of examination: 70% were on duty on board, 20% were on duty on land, 8%, didn't want to attend because of feeling unprepared, while 2 % had personal reasons for missing the evaluation.

Even if a small number of students didn't reply correctly to all the topics included in the test, the main explanations for this situation were identified: 70% didn't attend the class (face- to face seminar activities) regularly, 4% have not enough problem solving skills, 8 % change the initial answer (which was the correct one), 6% didn't manage properly their time, 16 % attend the formative evaluation without studying earlier the Module dealing with the second law of thermodynamics.

In this context, the main concern of the lecturers was to establish the pylons for gaining students better results: a better correlation between the curricula and previous students' knowledge, increase the connection between theoretical and practical aspects, strengthen the relation student- professor, involving students in the research activities.

5. REFERENCES

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