QUANTIFYING AND IDENTIFYING CAUSES OF ABSENTEEISM IN MARITIME STUDIES: A CASE STUDY AT BARCELONA SCHOOL OF NAUTICAL STUDIES

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Keywords

Absenteeism, Maritime Education and Training (MET), polytechnic studies, teaching innovation

Abstract

Absenteeism at the university level can be attributed to a multitude of factors. Some of these factors are academic self-perception, attitudes towards teachers, or academic performance. Others are more closely associated with work-related absenteeism, including stress, group size, commitment, and job satisfaction. In Spain, an increase of absenteeism has been noted at university level, particularly after the Covid crisis, making it one of the primary challenges that require attention. Due to the particularities and specific requirements of the Maritime Education and Training (MET) system, this study aims to quantify the current level of absenteeism and identify its main causes at the Barcelona School of Nautical Studies (FNB-UPC). This study represents the initial phase of the teaching innovation project ASAP-UPC, which focuses on redesigning teaching methodologies to minimise absenteeism in polytechnic study programs. Students and lecturers are asked about their interest in attending classes, skill development throughout their FNB-UPC experience, and their perception of the skills required for a maritime career. Information is gathered through both online surveys and in-person interviews. Results indicate that absenteeism occurs not only in class attendance but also in participation in various university activities, partly due to the change in habits caused by the pandemic. A significant number of students express dissatisfaction with in-person classes, claiming that they are overly theoretical and lack the expected balance between theory, experimental practice, and problem-solving components. These findings hold significance for FNB-UPC lecturers and decision-making bodies, as they highlight areas that can be improved to offer a more useful experience to our students. Moreover, the outcomes of this research can potentially be applied to other Maritime Education and Training Institutions (METIs).

1 INTRODUCTION

Attendance at university lessons has been a worrying issue in the last decades, as already mentioned in St Glair & St Clair (1999), when the institution's reputation was stated to decrease if students were able to obtain degrees without attending the lessons. At that time, the European Higher Education Area was created, enhancing the need to increase students' engagement and promote a student-centred approach to the learning process (European Commission, 2015). In fact, absenteeism not only has negative consequences on the learning process, but also it can be seen as a waste of economic resources, specifically in the public university system. Despite all this framework, a global analysis of absenteeism around the world is still missing. Only absenteeism percentages for specific studies are available. For instance, in Kousalya et al. (2006) the absenteeism rates in an Indian engineering college were found to be around 30-50%. These rates were also obtained in a sample of nearly 2,000 undergraduate students from STEM (Science, Technology, Engineering and Mathematics) and business studies in the UK (Summers et al., 2021). In a study carried out in a chemical education degree in Nigeria, the percentage of absenteeism was found to be between 25-45%, whereas the findings of Vicéns Moltó et al. (2019) showed a rate of 70% during the first year of an engineering degree, a figure that was found to increase throughout the studies reaching values of almost 80% in the last course.

There is an abundance of literature which suggests a significant correlation between attendance and attainment at university (Credé et al., 2010; Kassarnig et al., 2017; Keyser, 2019; Moores et al., 2019; Rendleman, 2017; Shaaban & Reda, 2021). A special case is the one in Crespo Tejero et al., 2012 where a mathematical formula to estimate the grade based on the absenteeism rate is proposed. However, the causal nature of the absenteeism relationship with the attainment is debated, with some researchers contesting that poor attainment can cause low attendance as well as vice versa (Credé et al., 2010; Kahu, 2013). Indeed, attendance alone does not imply active participation (Kassarnig et al., 2017; Moores et al., 2019). This is the reason why mandatory policies do not have a clear positive impact on attainment (Rendleman, 2017).

There are a multitude of influences on attendance decisions in students, including institutional, psychological and socio-demographic factors. Research findings should be considered in the context of the country, the funding system, the publication year, the student demographic of the particular university investigated, the size and nature of the class, and the discipline under study (Moores et al., 2019). For instance, in a study carried out

in an Indian engineering college (Kousalya et al., 2006) and based on a multicriteria decision-making method, parents involvement and counselling were the most relevant factors for absenteeism, followed by peer pressure and punishments for absence, in front of making lecture more attractive, improve the infrastructure or increase the coherence between the curriculum and the assessment. In Al-Labadi et al. (2022), a quantitative study of roughly 15,200 students in a Canadian university showed that the main reason for absence in class was the need to study and prepare for other courses, followed by students' mental health and poor sleeping habits. In a Spanish study with nearly 1900 students from the Business Administration, Economics and Sociology degrees (Triado-Ivern et al., 2020), the main reasons for the absenteeism are students' own planning, teaching methodology, learning methodology, course characteristics and external sources. The difficulty to reach the university has been identified as the main absenteeism reason in Qatar, where a minimum attendance rate of 75% was mandatory, and a transportation service was implemented for female students (Shaaban & Reda, 2021). Regarding gender effects, some authors have found that male students are more absent than their female counterparts (Al-Labadi et al., 2022; Nja et al., 2019). Other key factors might be the combination of working and studying, or the availability of online material, which might force rethinking the teaching methodology (Moores et al., 2019; Rutherford & McGrath, 2022).

According to results in López-Bonilla & López-Bonilla (2015), students consider that the educator's teaching method and competence is the most important factor behind their absenteeism. However, it is found that whilst low-quality lectures are likely to encourage absenteeism, higher-quality lectures will not necessarily encourage higher attendance. Optimising alignment between teaching and assessment practices may instead serve to increase the perceived value of sessions (Moores et al., 2019). Social aspects are also a construct of absenteeism. Indeed, university students have unique characteristics compared to high-school students since they socialise more (Shaaban & Reda, 2021). This has a direct effect on attendance, since it has been observed that attendance increases if the colleagues also attend the lessons (López-Bonilla & López-Bonilla, 2015), being this correlation higher among high performers (Kassarnig et al., 2017). According to Leufer & Cleary-Holdforth (2010), absenteeism can increase in large classes by the feeling that the lecturer is not interested in students' contributions, or only has time for those sitting in front of the class. Indeed, the one-to-one contact with teaching staff and the sense of belonging increases attendance (Moores et al., 2019; Webb & Cotton, 2018). As can be seen, absenteeism has a multifactorial construct that is strongly related with each specific context. This means that actions to decrease absenteeism need a customised plan and design, i.e., in this case the same strategy does not fit all (Triado-Ivern et al., 2020).

In the context of Maritime Education and Training (MET), higher education institutions have specific requirements whereby students must adhere to the particular characteristics of internationalisation and specialisation as outlined by the International Maritime Organization (IMO). Seafarers constantly have to follow training programs to meet international standards. The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW code) gives the international minimum standards for MET and the minimum requirements for the competences of seafarers (IMO 2010). In addition, the IMO also adapted standard models of competence-based training for STCW (Emad i Roth 2008).

The standards established in the STCW code are mandatory in Maritime Education and Training Institutions (METIs) for ensuring the acquisition of competences related to safety at sea and the prevention of maritime accidents, inter alia. In regard to safety, seafarers are bound to possess the necessary skills and knowledge to operate safely and efficiently on board ships. This includes training in firefighting, first aid, survival techniques, and ship handling, among other essential skills. By mandating these competences, maritime authorities aim to enhance safety standards and reduce the risks associated with maritime operations. In terms of preventing maritime accidents and environmental disasters, competent and well-trained seafarers are essential. The STCW code covers topics such as collision prevention, navigation, and ship stability, equipping seafarers with the skills needed to avoid accidents and mitigate risks while at sea and, thus, reducing the likelihood of incidents that could result in injury, loss of life, or environmental damage.

The acquisition of STCW competences is a prerequisite for obtaining maritime certifications and advancing in a seafaring career. By requiring these courses in METIs, aspiring seafarers can acquire the necessary

qualifications to pursue career opportunities in the maritime industry. Additionally, ongoing training and certification help experienced seafarers stay updated on new regulations, technologies, and best practices, enhancing their employability and career prospects. The fact that these standards are international guarantees the global recognition of minimum requirements, ensuring a consistent level of competency among seafarers regardless of their nationality or the flag of the vessel they serve on. Mandating STCW courses in METIs helps countries comply with these international standards.

This research presents the initial phase of the teaching innovation project entitled "Active methodologies for a significant face-to-face learning, ASAP-UPC" (UPC Teaching Innovation Projects 2023) focused on enhancing engineering education. This project has centered on analyzing two schools of the Universitat Politècnica de Catalunya (UPC): the Barcelona School of Industrial Engineering (ETSEIB), with 2,111 bachelor students and 1,061 master students, and the Barcelona School of Nautical Studies (FNB) with 697 bachelor students and 117 master students (academic year 2023-24). The project involved a team of fourteen teaching staff members from ETSEIB and five teaching staff members from FNB. This initiative aims to implement innovative teaching methodologies within the field of engineering studies. Given the particularities and specific requirements of the MET system, this paper aims to quantify the current level of absenteeism and identify its main causes in one METI, the Barcelona School of Nautical Studies of the UPC. To monitor absenteeism, this case study has been conducted with three subjects from the Bachelor's degree in Nautical Science and Maritime Transport, involving 151 enrolled students and achieving a survey participation rate of 21.7% of undergraduate students.

2. BACKGROUND

In the light of the context described in the previous section and in order to quantify and identify the causes of absenteeism in maritime studies, before conducting the case study, other key factors have been examined to determine whether student absenteeism correlates with other activities conducted within the university framework. Firstly, an analysis of the student participation in surveys on teaching performance and subjects over an extended period (1998-2023); secondly, an examination of the trend in library occupancy rates between 2019 and 2024; and finally, an analysis of the general absenteeism report conducted by the University in 2020-2021 to understand the current situation and take action to implement measures.

2.1 Analysis of the students' participation in subjects and teaching performance

Each semester, the UPC conducts surveys to all university students. The main objective of these surveys is to obtain information about the students' assessment concerning teaching staff performance and subjects taught. Figure 1 shows the participation of FNB students' in surveys over a long period of time (1998-2023). In general, participation has decreased over the period studied, with a significant reduction during the academic years 2012-13, 2013-14 and 2014-15. The main reason for this drastic reduction is that during the academic year 2012-2013, surveys transitioned from being conducted in-person to entirely electronic. The transition to electronic surveys required some actions and involved an adaptation process for the university community, which is still evident in subsequent academic years (2013-14 and 2014-15). Despite an initial increase in participation once the electronic surveys were fully established, overall participation has decreased by around 20%. Therefore, we can say that there has been a decline not only in class attendance but also in the interest to participate in the various activities conducted by the university.

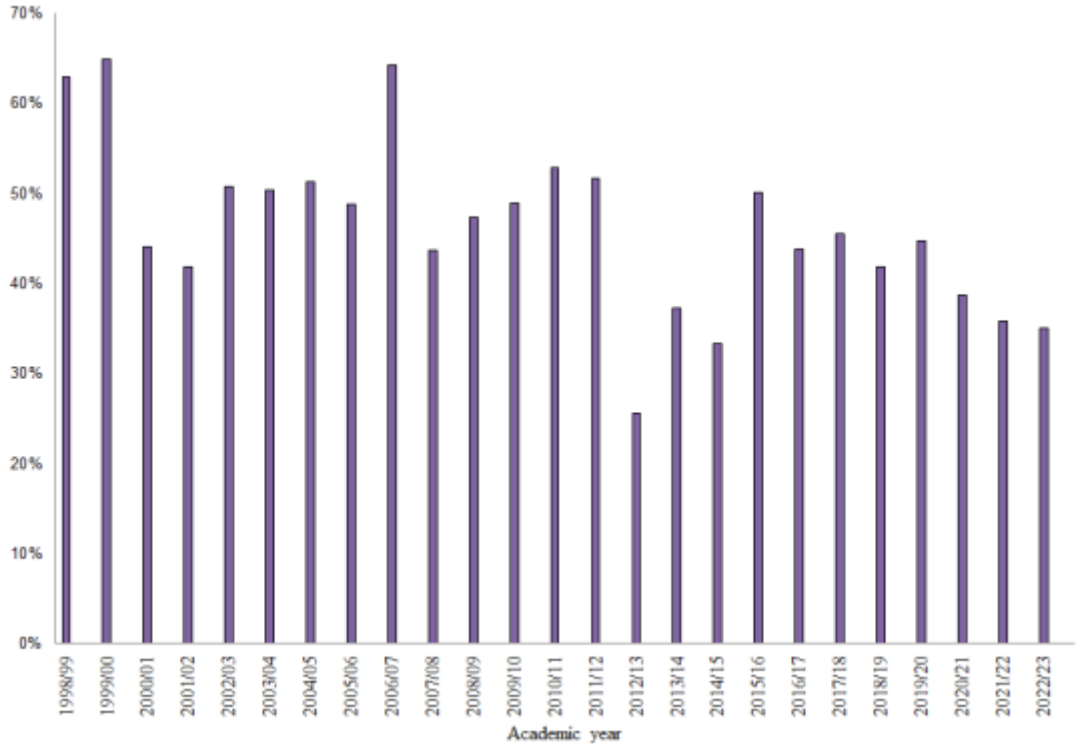

Fig. 1. Student participation in surveys on teaching staff performance and subjects taught (from academic year 1998-1999 to 2022-2023)

2.2 Report on library occupancy rate

Secondly, another activity that has been examined is the occupancy rates of the FNB library between 2019 and 2024.

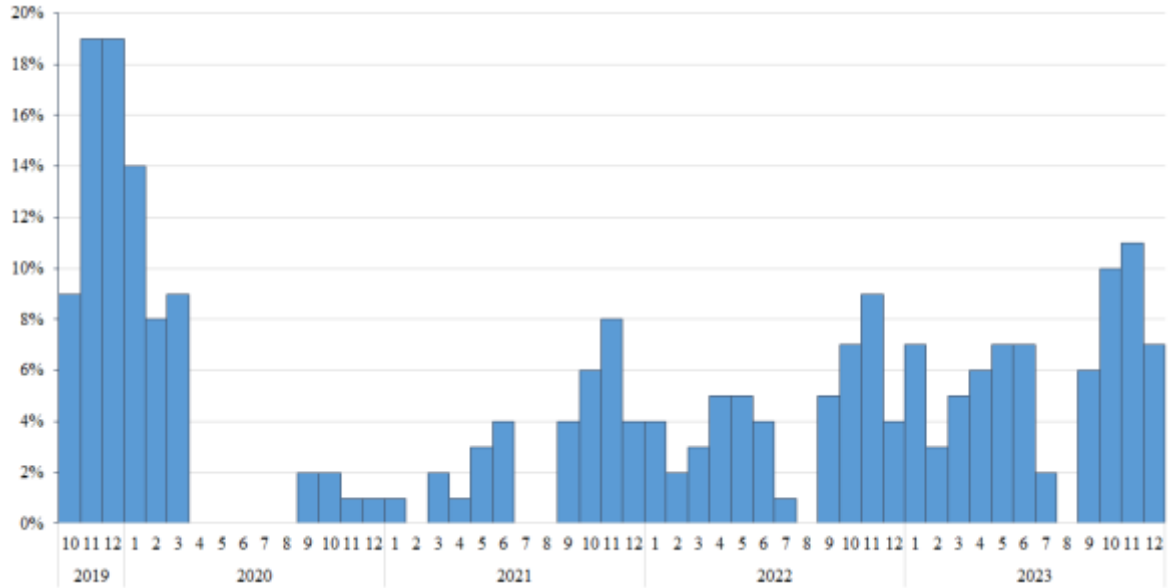

Fig. 2. FNB Library Occupancy Rate (from 2019 to 2023)

As can be observed in Figure 2, before the COVID-19 pandemic, the occupancy of the library was higher than after COVID. Therefore, we can say that the COVID-19 pandemic has led to a change in habits at all levels. Students study more from home, thanks to technologies and the ease of access to teaching materials, and as a consequence, they do not go to university campuses.

2.3 General Absenteeism report

To achieve the engagement to reduce absenteeism, the UPC started to implement measures within the university community, including a general absenteeism report during the academic course 2021-2022. Figure 3 shows the percentage of "Yes" to the question: "During the academic year 2021-2022, did you attend theory and problem-solving classes for all subjects equally?". In all surveyed centres, absenteeism is observed to be 'per subject,' as the average across surveyed centres is 39.76%.

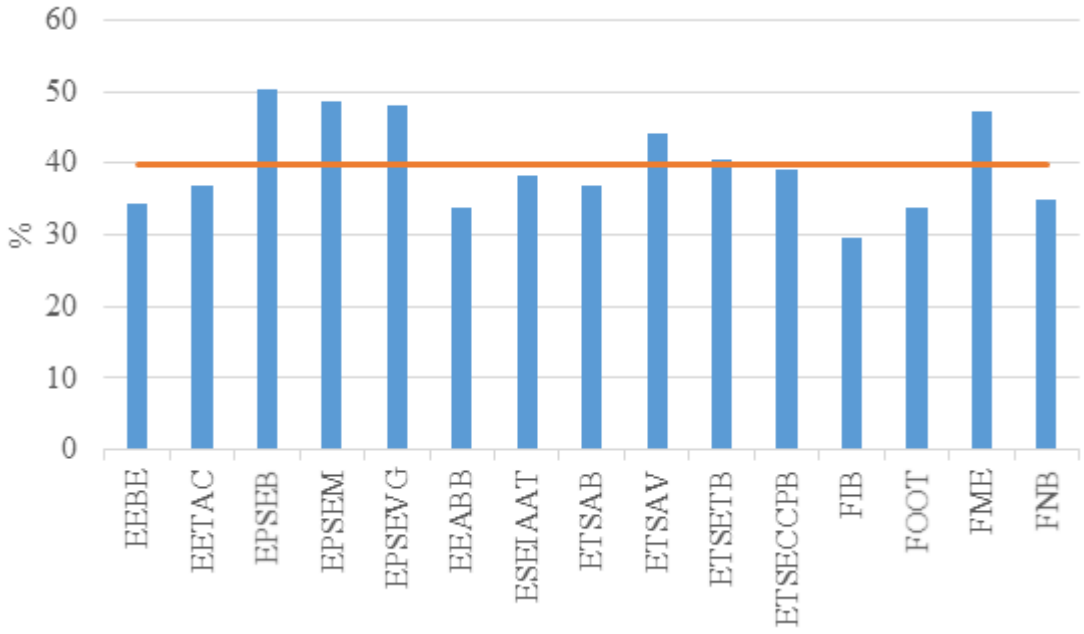

Fig. 3 Did you attend theory and problem-solving classes for all subjects equally? Responses per UPC centres. Orange line represents the average value among UPC centres.

When students were asked about their attendance, on average, 95.66% stated that they attended more than 75% of the classes or 100%. However, in the absence of objective data on the actual level of attendance, this seems like a somewhat high number and not very consistent with the overall perception of the teaching staff. Perhaps they responded based on the subject they attended the most, rather than across all subjects. Considering all UPC centres and focusing only on subjects with the highest absenteeism rates, the result was that 22.3% of students attended less than a quarter of the sessions during the 2021-2022 academic year.

3 A CASE STUDY AT BARCELONA SCHOOL OF NAUTICAL STUDIES

The Barcelona School of Nautical Studies offers the bachelor's and master's degrees stated below:

- Bachelor's degree in marine technologies
- Bachelor's degree in nautical science and maritime transport
- Bachelor's degree in naval systems and technology engineering
- Master's degree nautical science and maritime transport management

- Master's degree in the management and operation of the marine energy facilities
- Master's degree in naval architecture and ocean engineering

The Bachelor's degree in marine technologies and the Bachelor's degree in nautical science and maritime transport along with the Master's degree in nautical science and maritime transport management and the Master's degree in the management and operation of the marine energy facilities are designed to prepare seafarers ensuring mandatory attendance to attain the required competences and obtain STCW certificates. This compliance includes meeting the minimum percentage stated by the STCW code or Spanish legislation (Ministerio de Fomento, Gobierno de España, 2002), whichever is more restrictive. In that sense, Table 1 presents a summary of the courses with mandatory attendance, indicating the required percentage depending on the type of teaching, whether theoretical or practical.

STCW Certificates	Hours Theoretical/Practical	Department
ECDIS	27.5 / 12.5	Deck
GMDSS technical	15 / 25	Deck
GMDSS general	50 / 70	Deck
Radar/ARPA	12 / 18	Deck
Maritime protection (basic)	9 / 3	Deck/Engine
Cruise ships	12 / 4	Deck/Engine
Basic safety training	45 / 25	Deck/Engine
Survival craft and rescue boat, other than fast rescue boat	12 / 12	Deck/Engine
Advanced fire fighting	12 / 12	Deck/Engine
Fast rescue boats	9 / 7	Deck/Engine
Liquefied Gas Tanker Basic	30 / 10	Deck/Engine
Oil Tanker Basic	30 / 10	Deck/Engine
Chemical Tanker Basic	30 / 10	Deck/Engine
Liquefied gas tanker Advanced	40 / 14	Deck/Engine
Oil Tanker Advanced	40 / 14	Deck/Engine
Chemical Tanker Advanced	40 / 14	Deck/Engine

Table 1 STCW certificates with mandatory attendance

Overall, the mandatory nature of STCW courses in METIs serves to promote safety, professionalism, and competence among seafarers, thereby contributing to the sustainable development of the maritime industry. However, the general academic regulations of the UPC (Vicerectorat de Política Acadèmica UPC, 2023) do not consider attendance and therefore do not establish rules in this regard. Thus, for the majority of courses in the bachelor's and master's degrees offered at FNB, attendance is not mandatory and depends on the lecturers in charge of each course. Even more, although it is not the usual procedure, some UPC courses allow students to pass a subject through a single final test, with no attendance at all.

3.1 Methodology

Once the results of the previous section were analysed, the need to conduct a more thorough study of absenteeism at this higher education METI was observed. Therefore, the methodology applied to analyse the absenteeism within the nautical field, aiming to determine its impact on both students and lecturers, consisted of three different phases: an online survey targeted at students, in-person interviews with students, and an online survey directed at lecturers (see Figure 4). Reliable and objective data regarding the actual attendance in selected subjects were also obtained by performing daily attendance checks. The surveys included open and closed questions to gather both quantitative and qualitative information. The first online survey to students was carried out at the beginning of the second semester (sem.) of the academic year 2022-2023, the in-person interviews

with students at the end of this semester, and the online survey to lecturers during the first semester of the academic year 2023-2024.

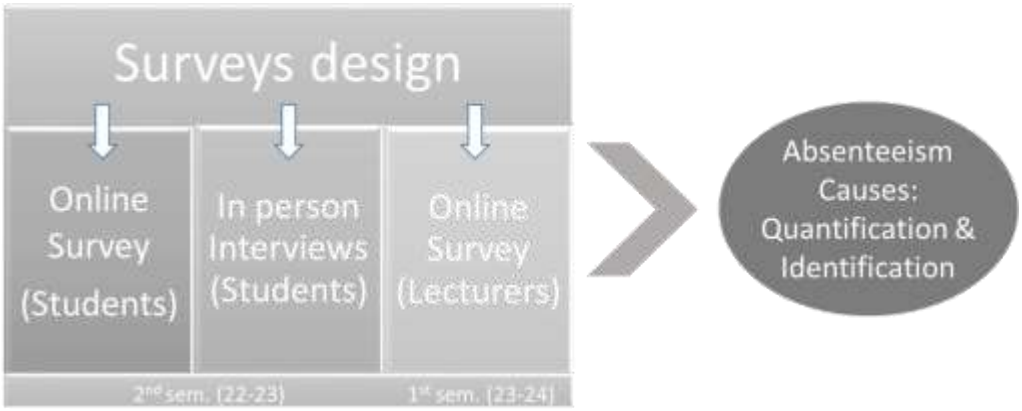

Fig. 4 Steps of research methodology

3.1 Online survey (students)

In order to address absenteeism in higher education teaching and to advance towards redesigning teaching methodologies to minimize absenteeism in the field of nautical studies, an online survey was conducted in three different courses of the Bachelor's degree in Nautical Science and Maritime Transport offered at the Barcelona School of Nautical Studies. Table 2 displays the participating courses together with the enrolled students.

Course	Enrolled students	Man	Woman
Ship Theory	53	78%	22%
Automatic Regulation and Control	59	78%	22%
Maritime Technical English	39	76.9%	23.1%

Table 2 Online survey courses targeting students, disaggregated by sex

The student online survey comprised four sections: (1) participants' features; (2) causes of attendance and absenteeism; (3) strategies to increase attendance; and (4) skills relevant to student's professional lives. Open fields, multiple and close questions totalling 7 questions, were asked. This survey can be found in Appendix 1.

3.2 In-person interviews (students)

At the end of the academic year and considering the attendance list, some in-person interviews were conducted with students who attended less than 25% of the classes, inquiring about the specific reasons for their non-attendance (see Table 3).

Course	Class Attendance	Number of in-person interviews
Ship Theory	51.3%	5
Automatic Regulation and Control	65.1%	5
Maritime Technical English	69%	4

Table 3 In-person interviews conducted for courses

These personal interviews were focused on the following questions: "What is your main reason for not attending class?" and "What do you think can be done to increase your attendance in class?".

3.3 Online survey (lecturers)

To analyse absenteeism and to determine its impact, an online survey to FNB lecturers was also conducted during the first semester of the academic year 2023-2024. The lecturer's online survey comprised three sections: (1) overview of the subject/course; (2) teacher's perception regarding attendance and (3) teacher's involvement. Open fields, multiple and close questions, totalling 9 questions, were asked. This survey can be found in Appendix 2.

4. RESULTS

In this section, the data gathered from the three different surveys is analysed. Through this data analysis, which combines quantitative and qualitative information based on the different types of questions in the surveys, our goal is to provide a more comprehensive understanding of the causes of absenteeism in maritime studies. This section includes the results from students' and lecturers' opinions on this topic. These results are displayed and analysed below.

4.1 Online survey (students)

To combat absenteeism, it is necessary to understand the reasons behind its occurrence and the needs of students that are currently unaddressed. The main objective of this online survey is to conduct a causal analysis of absenteeism to propose possible practical solutions to address it.

Section 1. Participants' features

Table 4 displays the participating courses together with the ratio of responses per number of enrolled students.

Course	Ratio of responses / enrolled students
Ship Theory	62%
Automatic Regulation and Control	17%
Maritime Technical English	31%

Table 4 Ratio of responses/enrolled students

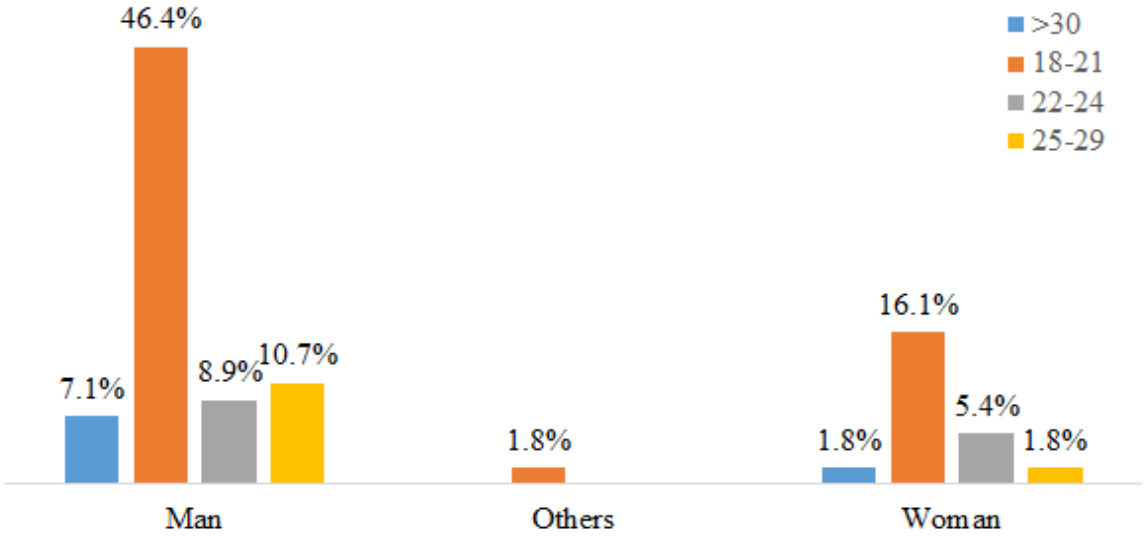

Fig. 5 Participants features disaggregated by sex and age

As observed from Figure 5, the majority of participants were men (73.21%) aged between 18 and 21 years old.

However, as seen in Table 2, the percentage of male students enrolled in these subjects is higher than the percentage of men who have participated in the survey, confirming what was stated by Al-Labadi et al. (2022) and Nja et al. (2019) that men were more absent than their female counterparts.

Section 2. Causes of attendance and absenteeism

The main objective of this section is to identify the main reasons why students attend (Figure 6) or do not attend class (Figure 7). In both cases, predefined responses have been provided, but students were also given the option to provide their own answers.

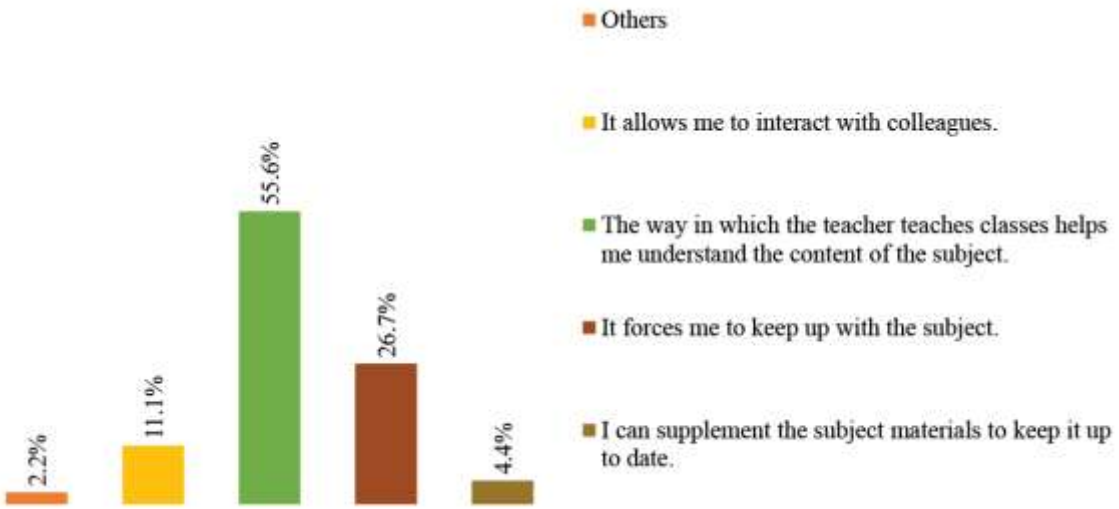

Fig. 6 Participants' main reasons for attending classes

The main reasons why students attend classes are the teaching style of the lecturer and the necessity to keep up with the subject matter (82.23%). Only 11.11% of students attend classes in order to socialise with their classmates, and none of the students have indicated that they like the subject or that it fits with their class schedule. Only 2.22% of the students have cited other reasons.

However, in the second question (see Figure 7) where students were asked about the reasons for not attending class, a high percentage (41.7%) have responded with "others," without specifying what these other reasons are in the open-ended question that followed. Among the proposed options, the main causes selected are that they work, study independently, or dislike the schedule. None of the students have indicated that they attend an academy or dislike the atmosphere in class.

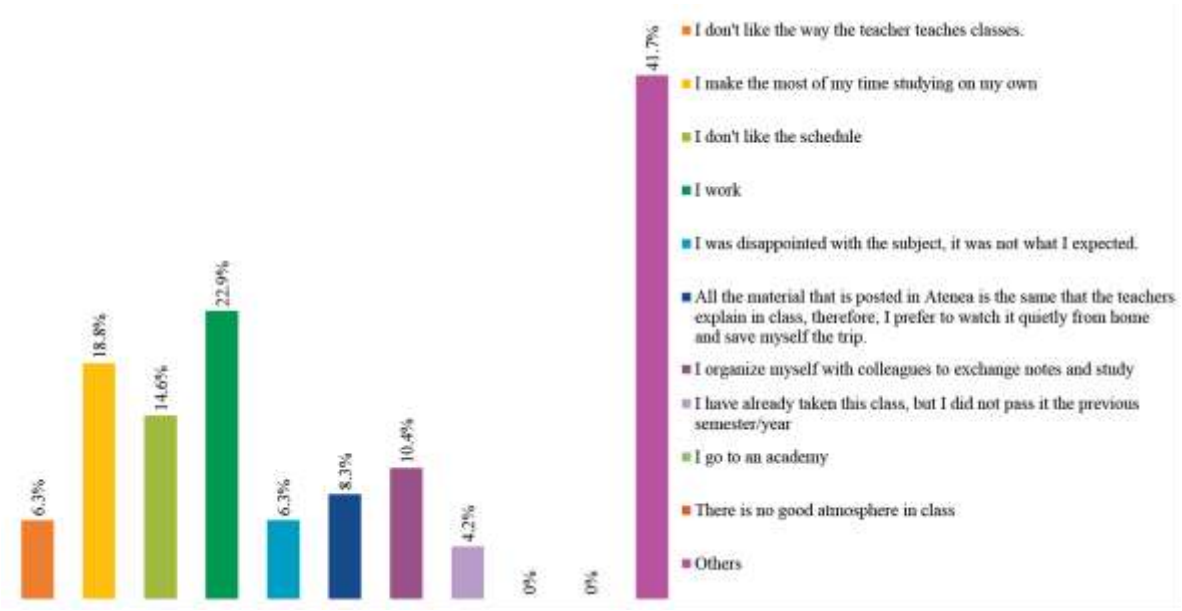

Fig. 7 Participants' main reasons for not attending classes

Section 3. Strategies to increase attendance

In this section, students were asked what initiatives they believed would be most suitable to encourage their class attendance (Figure 8). Again, predefined responses had been provided, but students were also given the option to provide their own answers.

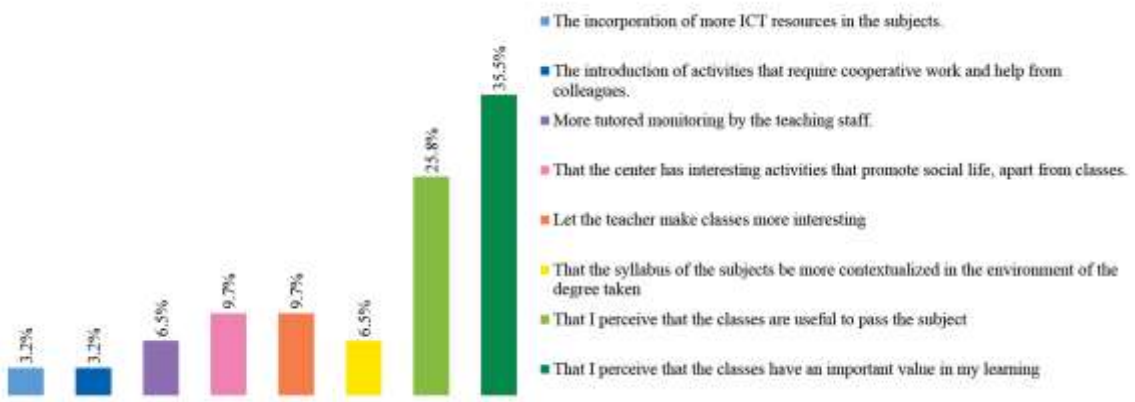

Fig. 8 Strategies to increase attendance

More than half of the surveyed students answered that the way to increase their interest in attending class would be for them to perceive that classes have a more important value for their learning and that they are useful for passing the subjects.

Section 4. Skills relevant to student's professional lives

In the last section, students were asked about the skills that they considered most relevant to their professional life.

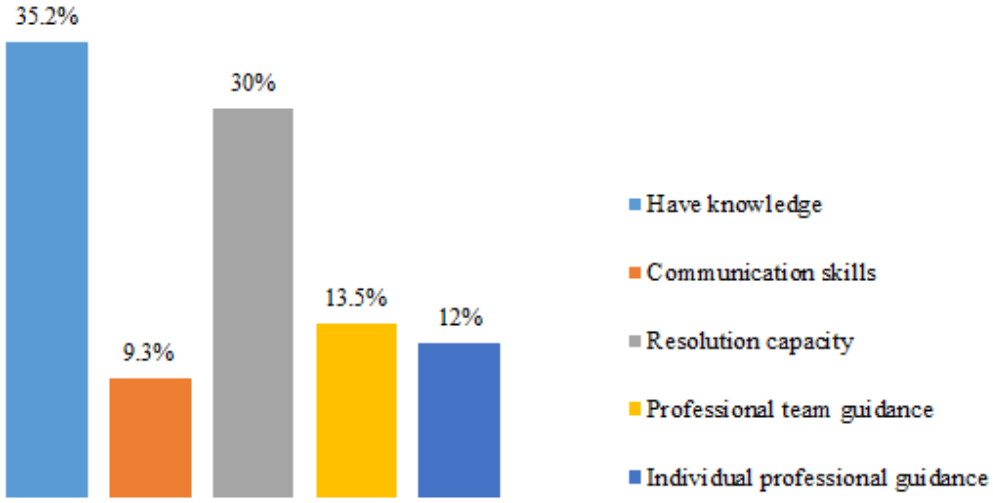

Fig. 9 Participants' most relevant skills

From Figure 9, it is evident that the skills students consider most important to acquire during their classes are "gaining knowledge" (35.2%) followed by "resolution capacity" (30%). These results align with the responses students have provided regarding the actions necessary to increase class attendance.

Figure 10 shows the correlation between all proposed competencies with a p-value <0.05, where ±1 indicates perfect agreement or disagreement, and 0 indicates no relationship. Black boxes indicate the correlation values are statistically insignificant.

	Theoretical knowledge	Practical knowledge	Knowledge of laws and regulations	Numerical skills	Use of software specific to the	Communication skills (oral and written)	Negotiation skills	Real problem solving	Ability to make decisions	Ability to generate new ideas and	Ability to generate new ideas and	Adaptability	Independent work	Teamwork	Leadership	Involvement in work	Responsibility at work
Theoretical knowledge		0.3	-0.1	0.1	0.2		-0.2			-0.3	0.2	0.1	-0.1			0.2	0.4
Practical knowledge			-0.1	-0.1	0.0	-0.2	0.0	-0.1	-0.1	0.0	-0.1	0.0	0.0	0.0	-0.3	0.0	0.2
Knowledge of laws and				-0.1		-0.1		0.1		-0.1	-0.2				0.0		
Numerical skills						0.0		-0.2	-0.1			-0.2		-0.2	0.0	0.3	-0.2
Use of software specific to the professional sector						-0.1		0.2	-0.1					0.1	-0.1		0.0
Communication skills (oral and written)							0.3	0.2		-0.2	0.1		-0.1			-0.2	
Negotiation skills								0.1			0.4	0.1		0.0	0.3		-0.1
Real problem solving										-0.3	0.1	-0.1	0.2	0.2	0.2	-0.4	-0.3
Ability to make decisions										0.3	0.0	0.1	0.1	0.1		0.2	0.2
Ability to generate new ideas and solutions														-0.1	-0.1		-0.2
Ability to generate new ideas and solutions following the principles of sustainability and social commitment												0.2		0.1	0.1	0.2	-0.1
Adaptability																	
Independent work														0.2	0.1		0.0
Teamwork																	
Leadership																0.0	
Involvement in work																	
Responsibility at work																	

Fig. 10 Pearson correlation coefficient between proposed competencies according to the interviewed students

Finally, the FNB-UPC had a total of 120 agreements with maritime companies during the academic year of 2020. The satisfaction rating of these contracting companies with students was 7.46 out of 10. Additionally, the companies were surveyed about the skills they seek in prospective employees.

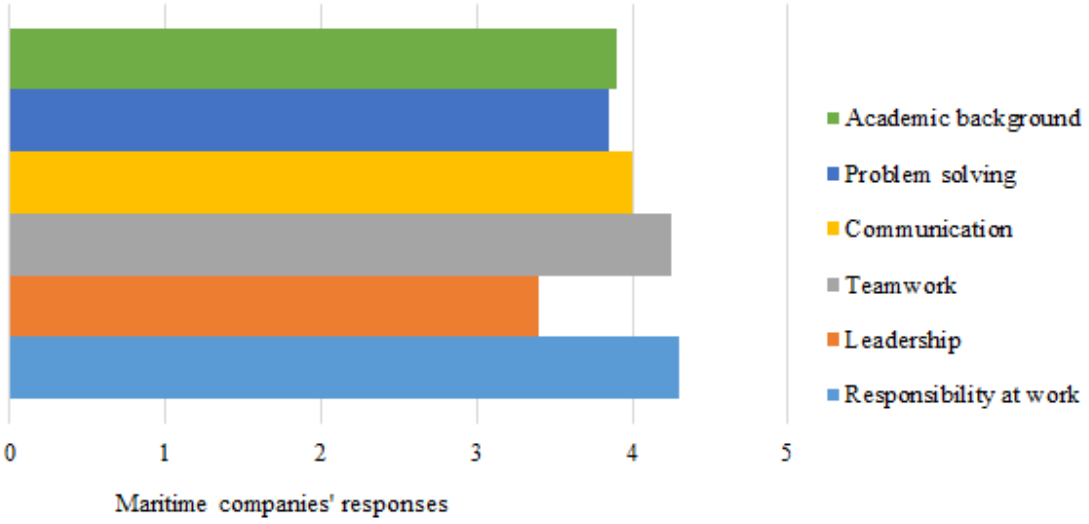

Fig. 11 Maritime companies' assessment of FNB students' skills

4.2 In-person interviews (students)

An important aspect of this analysis is understanding the reasons why students do not attend class. However, as seen in Figure 7, the primary cause mentioned in the online surveys is 'others,' without clearly specifying those reasons. Consequently, it was decided, at the end of the semester, to conduct personal interviews with students who had attended very few classes. A total of 14 personal interviews have been conducted with students who have attended less than 25% of the classes, aiming to gain deeper insights into the reasons for their lack of attendance. These interviews have been conducted by lecturers from other subjects or by final year students to avoid influencing the responses. These personal interviews have focused on answering the following questions: "What is the reason for not attending class?" and "What do you think can be done to increase your attendance in class?".

According to the responses to the first question, the primary reason for not attending classes is work obligations (43%), despite acknowledging the importance of attending class. Students stated that the problem does not stem from the quality of teaching, but rather from other factors. Twenty-one percent of students prefer to stay at home and work on the materials, despite believing that class attendance is important. Fourteen percent of students cannot attend classes due to the time scheduling (they are retaking the subject and have another class scheduled at the same time), while another 14% cite personal reasons. Finally, 8% of students do not attend class because they lack any motivation (either due to the teaching method or because they fall asleep in the morning).

From the responses to the second question, 'What do you think can be done to increase your attendance in class?' students have mainly commented that classes should be more practical and that classroom attendance should be mandatory.

In general, students perceive that first-year courses are the ones in which attending class is not necessary because they can find all the information online, and attending class does not add much value for them. However, starting from the second year, as the courses become more specialized in nautical issues, they do place more importance on attendance.

4.3 Online survey (lecturers)

The total number of responses obtained from the online survey for lecturers was 26 out of the 86 on teaching staff (30.2%).

Section 1: Overview of the subject/course

According to the surveys, the subjects they teach are mainly theoretical (55.2%), followed by practical/exercises classes (34.5%) and finally laboratory and simulator sessions (10.3%). Based on the previous response, Figure 12 shows the mandatory attendance in accordance with the typology of classes. As observed, the mandatory attendance is very low in all cases, and it is even more critical in the case of practical sessions in simulators or in the laboratory.

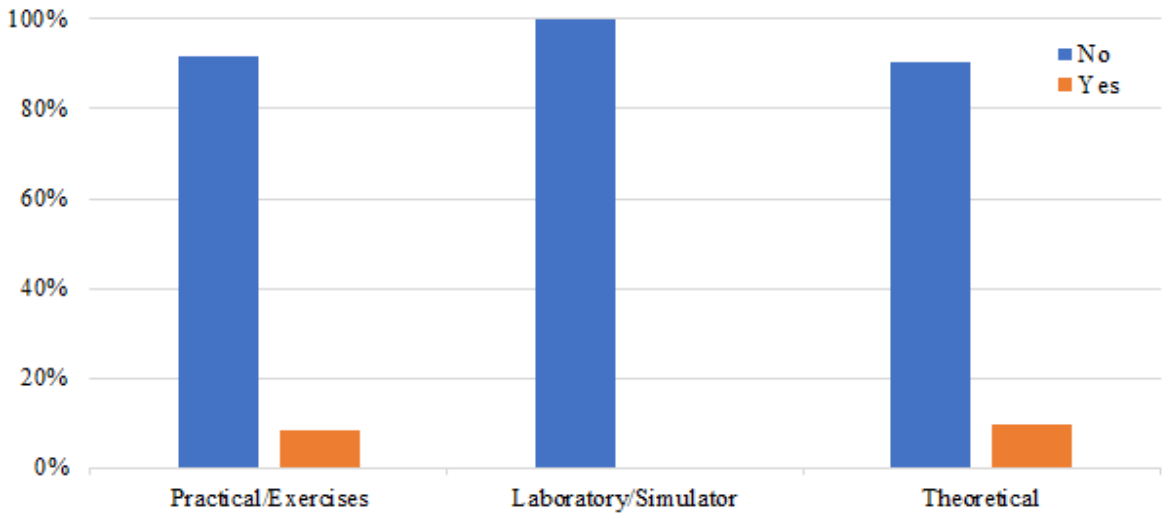

Fig. 12 Mandatory attendance in accordance with the typology of classes

Section 2: Lecturer's perception

The main objective of the second section of this survey is to gather information about lecturers' perception regarding absenteeism after the COVID pandemic and how attendance has changed in various academic activities: class attendance, questions during individual tutoring sessions, or inquiries during breaks or at the end of class.

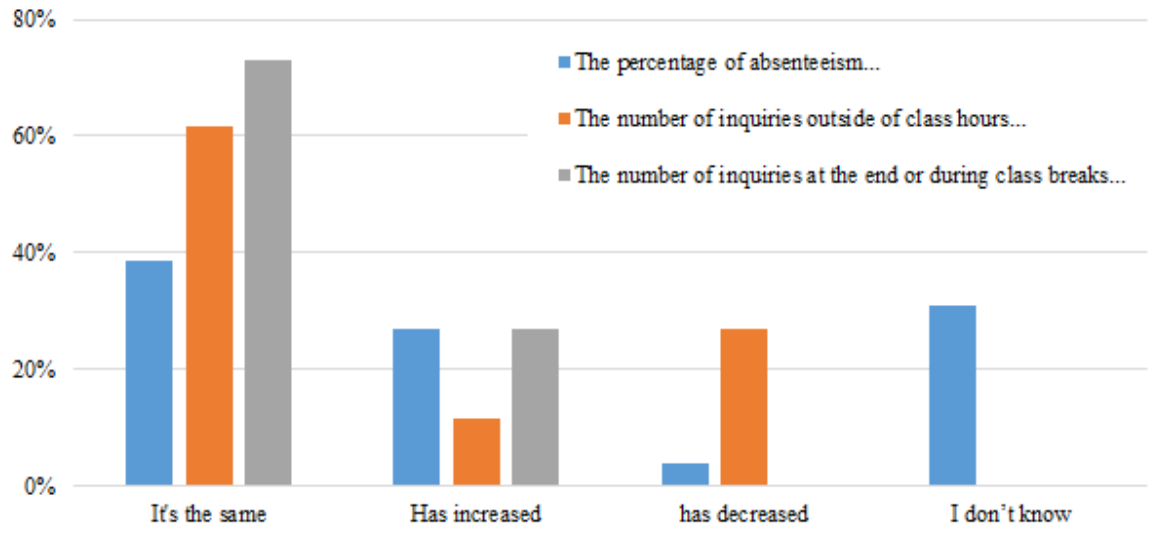

Fig. 13 Lecturer's perception regarding student's absenteeism

Figure 13 indicates that attendance has generally remained consistent across the different analysed academic activities. It is important to note that a high percentage of lecturers (30%) could not determine whether class attendance has remained stable, increased, or decreased.

Section 3: Lecturer's involvement

Finally, the last section of the survey examines the lecturer's involvement in implementing new methodologies to improve their teaching practices and thus increase classroom attendance. As explained in Section 2.1, each semester, the UPC conducts surveys to all university students to gather information about the assessment of teaching performance by teaching staff and the subjects taught. One hundred percent of interviewees confirm that they regularly review these surveys, and 57% have taken action to improve their teaching based on the feedback and comments received. However, among those who have taken any action, 66.7% report that they have not noticed any improvement in class attendance after implementing them. On the other hand, as explained in Section 2.3, a general absenteeism report during the academic course 2021-2022 was conducted by the UPC. Fifty percent of interviewees confirm that they reviewed this report, and 36% of those who responded affirmatively have taken action to improve their teaching. However, among those who have taken any action, 41% have not noticed any improvement in class attendance.

5 CONCLUSIONS

The main goal of this study is to provide a more comprehensive understanding of the causes of absenteeism in maritime studies. To achieve this, three different surveys were conducted to explore the insights of lecturers and students on absenteeism in a higher education METI. The data and results obtained are displayed and analysed in Section 4. These results have been useful for analysing the current situation and proposing strategic approaches to improve classroom attendance.

When students were asked how to increase their interest in attending class, more than half of the surveyed students answered that classes provide an added value to their learning and, secondly, that classes are useful for passing the subjects. This aligns with the professional skills that students consider most important to acquire during their classes. In addition, from the in-person interviews, students responded that classes should be more practical and emphasised the importance of mandatory attendance in the classroom. As explained in Section 3,

certain courses have mandatory attendance requirements according to the STCW code. However, as observed in Figure 12, the mandatory attendance for the remaining courses is notably low, even in the case of sessions conducted in simulators or laboratories. This decision is often left to the lecturers responsible for each course, since neither the FNB nor the UPC institution have established rules regarding the obligation to attend class.

As a result of the present study, we propose some practical solutions to improve class attendance. Innovative teaching strategies, such as active learning or flipped classes, can make courses more engaging and can indirectly compel students to attend class. Other actions to be considered include more critical thinking activities (within the contents, methodology and assessment) and a higher number of hands-on activities. The objective is to get students to perceive that the activities that are carried out in class cannot be done outside class.

On the other hand, when students were asked about the reasons for not attending class (see Figure 7), a high percentage (41.7%) responded "others," without specifying what these other reasons are in the open-ended question that followed. Although it was decided to conduct interviews with specific individuals to understand the "other" reasons for absenteeism in class, it has been observed that it is necessary to conduct an even more thorough survey to determine the actual causes of this absenteeism. Therefore, in the following semester, the student survey will be redesigned, providing more mandatory closed-ended responses to this question in order to analyse it more effectively.

Finally, it is important to emphasize that carrying out all these actions requires involvement from the entire teaching staff. From the online survey for lecturers, it has been observed that just over half of them take improvement actions based on the results of their surveys. Without their involvement, increasing classroom attendance will be very challenging.

6 REFERENCES

Al-Labadi, L., Kumar Advani, H., Holder, B., & Lim, K. (2022). Education Influential Factors of University Attendance. Journal of Educational and Developmental Psychology, 13(1), 29. https://doi.org/10.5539/jedp.v13n1p29

Credé, M., Roch, S. G., & Kieszczynka, U. M. (2010). Class Attendance in College: A Meta-Analytic Review of the Relationship of Class Attendance With Grades and Student Characteristics. Review of Educational Research, 80(2), 272–295. https://doi.org/10.3102/0034654310362998

Crespo Tejero, N., Palomo Vadillo, M. T., & Méndez Suá, M. (2012). El efecto del absentismo universitario en el expediente académico y en la percepción de sus causas. EDUCADE - Revista de Educación En Contabilidad, Finanzas y Administración de Empresas, 3, 477–65. https://doi.org/10.12795/educade.2012.i03.04

Emad, Gholam Reza, & Wolff Roth. (2008). Contradictions in the practices of training for and assessment of competency: A case study from the maritime domain. Education + Training 50: 260-72. https://doi.org/10.1108/00400910810874026.

European Commission. (2015). ECTS Users' Guide.

IMO, International Maritime Organization. (2010). «International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW)». London, UK.

Kahu, E. R. (2013). Framing student engagement in higher education. Studies in Higher Education, 38(5), l758-775. https://doi.org/10.1080/03075079.2011.598505

Kassarnig, V., Bjerre-Nielsen, A., Mones, E., Lehmann, S., & Lassen, D. D. (2017). Class attendance, peer similarity, and academic performance in a large field study. PLoS ONE, 12(11). https://doi.org/10.1371/journal.pone.0187078

Keyser, R. S. (2019). A Correlation Between Absenteeism and Course Grades in a Third-Year Industrial Engineering Class. Research in Higher Education Journal, 37. http://www.aabri.com/copyright.html

Kousalya, P., Ravindranath, V., & Vizayakumar, K. (2006). Student absenteeism in Engineering colleges: evaluation of alternatives using AHP. https://doi.org/10.1155/JAMDS/2006/58232

Leufer, T., & Cleary-Holdforth, J. (2010). Reflections on the Experience of Mandating Lecture Attendance in One School of Nursing in the Republic of Ireland. All Ireland Journal of Higher Education, 2(1). https://ojs.aishe.org/index.php/aishe-j/article/view/18

López-Bonilla, J. M., & López-Bonilla, L. M. (2015). The multidimensional structure of university absenteeism: an exploratory study. Innovations in Education and Teaching International, 52(2), 185–195. https://doi.org/10.1080/14703297.2013.847382

Ministerio de Fomento, Gobierno de España (2002). ORDEN FOM/2296/2002, de 4 de septiembre, por la que se regulan los programas de formación de los títulos profesionales de Marineros de Puente y de Máquinas de la Marina Mercante, y de Patrón Portuario, así como los certificados de especialidad acreditativos de la competencia profesional. https://www.boe.es/eli/es/o/2002/09/04/fom2296

Moores, E., Birdi, G. K., & Higson, H. E. (2019). Determinants of university students' attendance. Educational Research, 61(4), 371–387. https://doi.org/10.1080/00131881.2019.1660587

Nja, C., Cornelius-Ukpepi, B., & Chinyere Ihejiamaizu, C. (2019). Educational Research and Reviews The influence of age and gender on class attendance plus the academic achievement of undergraduate Chemistry Education students at University of Calabar. 14(18), 661–667. https://doi.org/10.5897/ERR2019.3805

Rendleman, C. M. (2017). North American Colleges and Teachers of Agriculture (NACTA) Do Attendance Policies Improve Student Performance? The Relationship among Attendance, Class Policies, and Grades. Journal, 61(4), 347–349. https://doi.org/10.2307/90021486

Rutherford, P., & McGrath, D. (2022). Supporting student attendance. Institute for Teaching and Learning Innovation.

Shaaban, K., & Reda, R. (2021). Impact of College Provided Transportation on the Absenteeism and Academic Performance of Engineering Students. Eurasia Journal of Mathematics, Science and Technology Education, 17(3), 1–7. https://doi.org/10.29333/ejmste/9727.

St Glair, K. L., & St Clair, K. L. (1999). A Case Against Compulsory Class Attendance Policies in Higher Education. Innovative Higher Education, 23(3).

Summers, R. J., Higson, H. E., & Moores, E. (2021). Measures of engagement in the first three weeks of higher education predict subsequent activity and attainment in first year undergraduate students: a UK case study. Assessment and Evaluation in Higher Education, 46(5), 821–836. https://doi.org/10.1080/02602938.2020.1822282

Triado-Ivern, X., Aparicio-Chueca, P., Elasri-Ejjaberi, A., Maestro-Yarza, I., Bernardo, M., & Presas, P. (2020). A factorial structure of university absenteeism in higher education: A student perspective. Innovations in Education and Teaching International, 57(2), 136–147.

Vicéns Moltó, J. L., Hervás Avilés, R. M., & Zamora Parra, B. (2019). El absentismo escolar, un problema en la Enseñanza de la Ingeniería. Análisis de la UPCT. REDES DE INVESTIGACIÓN E INNOVACIÓN EN DOCENCIA UNIVERSITARIA, 556–563. http://rua.ua.es/dspace/handle/10045/99074

Vicerectorat de Política Acadèmica. Universitat Politècnica de Catalunya (2023). Normativa Acadèmica dels Estudis de Grau i Màster (NAGRAMA). Curs 2023-2024. https://govern.upc.edu/ca/consell-de-govern/consell-de-govern/sessio-03-2023-del-consell-de-govern/comissio-de-docencia-i-politica-academica-pendent-celebracio/aprovacio-de-la-normativa-academica-dels-estudis-de-grau-i-master-curs-2023-2024/aprovacio-de-la-normativa-academica-dels-estudis-de-grau-i-master-curs-2023-2024/@@display-file/visiblefile/NAGRAMA%202023-2024%20_%20DEF_rev_SLT.pdf

Webb, O. J., & Cotton, D. R. E. (2018). Early withdrawal from higher education: a focus on academic experiences. Teaching in Higher Education, 23(7), 835–852. https://doi.org/10.1080/13562517.2018.1437130

Appendix 1. Online- Survey on Classroom Absenteeism (students)

Section 1. Participants' features

1. How old are you?

2. How do you identify yourself?

   - Male
   - Female
   - Non-binary

Section 2. Causes of attendance and absenteeism

3. Why do you usually attend classes?

   - The way the teacher teaches helps me understand the content of the subject.
   - It allows me to interact with colleagues.
   - It forces me to keep the subject up.
   - I can supplement the subject materials to keep it up to date.
   - I am fine with the class schedule.
   - Because I like the subject
   - Others

4. Why do you usually don't attend classes?

   - I don't like the way the teacher teaches.
   - I make the most of my time studying on my own.
   - I don't like the schedule.
   - I work
   - I was disappointed with the subject, it was not what I expected.
   - All the material that is posted in Atenea is the same that the teachers explain in class, therefore, I prefer to check it by my own.
   - I don't study from the contents of the subject, but from collections of solved exams from other terms/years (by the teaching staff themselves, by colleagues, by academy staff...).
   - I organize myself with colleagues to exchange notes and study.
   - I have already taken this class, but I did not pass it in the previous term/year.
   - There is no good atmosphere in class.
   - Others. Specify:

Section 3. Strategies to increase attendance

5. What aspects do you think can increase your attendance in class?

   - I feel that classes are important for my learning
   - I feel that the classes are useful for passing the subject
   - The teacher makes more interesting classes
   - There is more connection between theory and problems or practices
   - The syllabus of the subjects are more contextualized with the scope of the degree or master
   - That the centre has interesting activities that encourage social life, apart from classes.
   - More tutored monitoring by teaching staff.
   - The introduction of activities that require cooperative work and help from colleagues
   - The incorporation of more ICT resources in the subjects
   - Others

Section 4. Skills relevant to student's professional lives

6. Select 5 skills you consider most relevant to your professional life

   - Theoretical knowledge

- Practical knowledge
- Knowledge of laws and regulations
- Numerical skills
- Use of software specific to the professional sector
- Communication skills (oral and written)
- Negotiation skills
- Solving real problems
- Ability to make decisions
- Ability to generate new ideas and solutions
- Ability to generate new ideas and solutions following the principles of sustainability and social commitment
- Ability to adaptation
- Independent work
- Leadership
- Involvement at work
- Responsibility at work
- Other:

7. Identify to what degree you think the UPC has contributed to acquiring the following skills

- Theoretical knowledge
- Practical knowledge
- Knowledge of laws and regulations
- Numerical skills
- Use of software specific to the professional sector
- Communication skills (oral and written)
- Negotiation skills
- Solving real problems
- Ability to make decisions
- Ability to generate new ideas and solutions
- Ability to generate new ideas and solutions following the principles of sustainability and social commitment
- Ability to adaptation
- Independent work
- Leadership
- Involvement at work
- Responsibility at work
- Other:

Appendix 2. Online- Survey on Classroom Absenteeism (lecturers)

Section 1. Overview of the subject/course

1. Main typology of the subject
   - Theoretical
   - Practical/exercises
   - Laboratory/simulator

2. Mandatory attendance
   - % Theoretical
   - % Practical/exercises
   - % Laboratory/simulator

Section 2. Lecturer's perception regarding absenteeism

3. Do you believe the percentage of absenteeism in your classes is the same as before the pandemic?
   - It's the same
   - Has increased
   - Has decreased
   - I don't know

   3.1 In case you have noticed more absenteeism, what would you say are the reasons behind this change in behavior?
   - They have more course material at their disposal
   - They have become accustomed to working more on their own
   - They simply skip more
   - I think they go to the academy instead of coming to class
   - Others (mandatory open-ended question)

4. Do you think the students who attend class benefit greatly?
   - Yes
   - No

5. Have you noticed a decrease in the number of inquiries outside class hours?
   - Yes
   - No

6. Have you noticed an increase in the number of inquiries at the end or during class breaks?
   - Yes
   - No

Section 3. Lecturer's involvement

7. Do you usually review the surveys and evaluations made by students regarding the performance of the faculty and the subject?
   - Yes
   - No

     7.1 In case you have answered Yes, have you taken any action?
     - Yes

- No

  7.1.1 In case you answered Yes, has attendance improved?

  - Yes
  - No
  - I don't know

8. Did you review the absenteeism surveys at UPC for the academic year 2021/22?
   - Yes
   - No

     8.1 In case you have answered Yes, have you taken any action?

     - Yes
     - No

       8.1.1 In case you answered Yes, has attendance improved?

       - Yes
       - No
       - I don't know

9. What is the main obstacle to making changes in the teaching methodology of your subject?
   - I don't believe any other methodology could improve student learning
   - Since teaching is poorly valued for academic promotion at the university, the time I can dedicate to it is limited
   - There is little stable full-time faculty in the subject, so it is difficult to make changes as the cost is too high
   - I am not the course coordinator and cannot make changes
   - Others