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MAPPING THE USE OF ACTIVE
LEARNING APPROACHES AT THE
UNIVERSITY OF MINHO

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Team

Rui M. Lima - Associate Professor at the School of Engineering

Elsa Costa e Silva - Assistant Professor at the Institute of Social Sciences

Isabel Flávia Vieira - Full Professor at the Institute of Education

Maria Teresa Malheiro - Assistant Professor at the School of Sciences

Rui Oliveira - Assistant Professor at the School of Sciences

Sandra Marinho - Assistant Professor at the Institute of Social Sciences

Silvia Araújo - Assistant Professor at the School of Humanities, Arts, and Social Sciences

Teresa Freire - Assistant Professor at the School of Psychology

Manuel João Costa - Vice-Rector of the University of Minho, Associate Professor at the School of Medicine, Coordinator of the IDEA Center

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Acronyms and Abbreviations

ARS - Audience Response Systems

CBL - Challenge Based Learning

PBL – Problem and Project-Based Learning

RGPD - General Data Protection Regulation

TBL - Team-Based Learning

UMinho - University of Minho

OU - Organic Unit

Executive Summary

The growing recommendation for the implementation of active learning practices in higher education forms the basis of a mapping study examining the practices and approaches used by faculty members of undergraduate and integrated master's courses at the University of Minho (UMinho) during the 2022/2023 academic year. The project aimed to identify teaching-learning approaches, collecting perceptions from faculty members on the factors that influence the adoption of active learning practices.

The survey involved 266 teachers out of a total of 1615 with teaching assignments in 2022/2023. The study participants were linked to various Organic Units, with the School of Engineering being the most represented. The majority of respondents are Assistant Professors, with an average of 23 years of service, who taught an average of 8 hours per week. The survey revealed that 59.8% of respondents participated in active learning training in the last 5 years.

The results allow us to conclude that the majority of UMinho's faculty members use at least one active learning practice in their classes frequently. Specific approaches, such as PBL (Project-Based Learning) or TBL (Team-Based Learning), were always used by 16.2% of respondents, while 13.3% rarely or never used them. It can also be seen that 44.4% often use one of the approaches, which translates to a total of more than 60% of respondents often or always resorting to strategies that promote autonomy and self-reflection among students. Technologies supporting active learning were used with high frequency by 40% of respondents, predominantly videos. Group projects were a commonly used practice, while simulated practice is rare. Regarding assessment, written exams prevailed, with project work and oral presentations also referred to as being used frequently.

Regarding the factors that inhibit the adoption of active learning, teachers identified workload and large class sizes as the main obstacles. The lack of training, lack of suitable spaces, and student resistance were also factors mentioned by respondents as inhibitors. Responding openly about other issues that may hinder the implementation of active learning, the faculty highlighted individual factors (workload, lack of time), organizational factors (lack of recognition, lack of autonomy), and contextual factors (conservatism among peers, student behavior).

Facilitators for adopting active learning included a focus on students' needs, positive feedback from students, relevant training provided by the university, and opportunities to share experiences with colleagues. The analysis also identified several themes to promote the implementation of active learning, such as updating physical spaces, managing workload, continuing ongoing training, increasing recognition of teaching activities in career progression, and collaboration between departments.

Implementation Context

Active learning approaches have been described in the scientific literature as suitable for building teaching-learning processes that value student autonomy, stimulating the development of critical thinking, communication skills, teamwork, and decision-making. Students, when faced with problems and challenges, are called to participate and actively engage in the learning process, assuming themselves as interested, collaborative, and responsible parties.

This typology of approaches demands from the teacher a new positioning towards the teaching-learning process. By incorporating active practices, the teacher acts as a guide, supervisor, or facilitator of the learning process, rather than just a transmitter and sole source of information and knowledge. Active learning approaches create collaborative learning environments, with regular feedback to students about their development process and performance, stimulating self-regulation.

The implementation of active learning practices in the context of Higher Education has been increasingly recommended, posing relevant challenges to institutions, such as supporting teachers to assume new approaches, successfully involving students in activities, or responding to new demands for physical or technological resources. In order to respond to these challenges and identify potential lines of action, it is necessary, first of all, to know the terrain, that is, to identify what practices and approaches are currently used by teachers.

Objectives

This project aimed to map the active learning practices of teachers at the University of Minho (UMinho), who taught Courses in the academic year 2022/2023, in undergraduate and master's programs. In addition to seeking to identify the approaches and practices regarding assessment and classroom activities, this study also aimed to collect teachers' perceptions about the factors that promote or inhibit the adoption of pedagogical practices based on active learning.

In addition to enabling the characterization of the current stage of implementation of active learning, the mapping can serve as a solid basis for formulating recommendations and possible pedagogical innovation policies. For this purpose, a questionnaire was constructed and administered to the teaching community of UMinho, with teaching service assigned in 2022/2023.

Thus, based on the characterization of the pedagogical innovation strategies used by the professors at the University of Minho, the development of new procedures, new guidelines, and/or policies that may translate into benefits for the teaching staff is expected.

Implementation process

Targeting the faculty members of the University of Minho in the academic year 2022/2023 in undergraduate and master's programs, this study relied on existing literature (e.g., Eagan et al., 2014; Landrum et al., 2017; Marham et al., 1998; Walter et al., 2016) to construct a questionnaire aimed at collecting information on self-reported active learning practices,

as well as perceptions about their adoption process. The questionnaire was validated through a pre-test conducted in the form of 'think aloud'.

The questionnaire was developed in Microsoft Forms, and a link was generated and distributed via email to all faculty members for voluntary response. Data were statistically processed and analyzed by the project team.

The implementation of the project comprised the following four (4) phases/tasks: Phase 1 – Questionnaire Construction; Phase 2 – Response Collection; Phase 3 – Results Analysis; and Phase 4 – Results Reporting, according to the timeline presented in Figure 1.

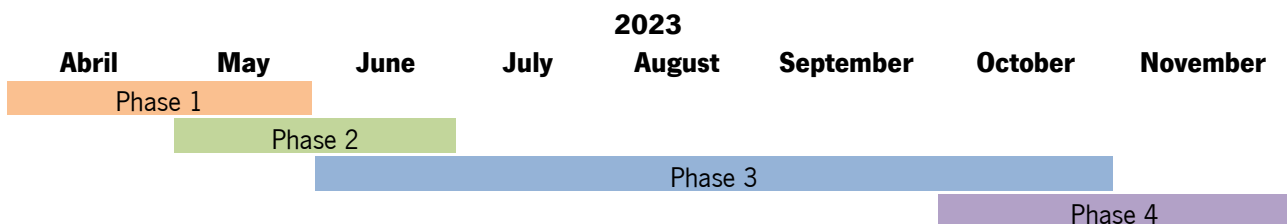


Figure 1 - Timeline of project phases.

The questionnaire informed the participants about the study's objectives, target population, and ensured the anonymity of their responses. Following this clarification, participants were invited to confirm voluntary participation. To familiarize the teachers with the specific language, the usage and referencing of the expressions "active learning approaches" and "active learning practices" were explained.

Participants were informed that questionnaire responses would be stored on the University of Minho's OneDrive network for a period of 5 years, and only the research team would have access to them. Responses were treated confidentially, and results were disseminated only in aggregate form. Collected data will not be used for commercial purposes or processed in a manner incompatible with the General Data Protection Regulation (GDPR). There will be no disclosure or communication of individual results.

Some questions (e.g., Active Learning Practices, Specific Approaches to Active Learning, use of technology, assessment strategies) used a 5-point Likert scale, while the item regarding factors inhibiting or favoring the adoption of approaches required a selection of up to three factors. When reporting the results of closed-ended questions, two approaches were used: one reporting aggregated questions such as "Active Learning Practices" (Figure 2), "Specific Approaches to Active Learning" (Figure 3), and "Technology Usage - frequency of use" (Figure 4), and another reporting individual items of these questions (Figures 6 to 8). These closed-ended responses were processed using the R software, which produced the main statistical analyses.

The questionnaire included open-ended questions primarily to allow respondents to provide additional information if necessary. Open-ended responses were coded and subjected to qualitative analysis. The results are presented graphically and subject to interpretation, highlighting the main findings.

Sample

The universe of faculty members with teaching assignments in 2022/2023 consists of 1615 professionals (with a dedication percentage ranging from 20% to 100%). A total of 266 questionnaires were validated, representing a response rate of 16.5%. Considering that the sample size is less than 500, which would require a response rate between 20% and 25% (Fosnacht et al., 2017), any inferences drawn from these results should be cautious. Among the factors that the literature points out as potential contributors to lower response rates, we highlight the questionnaire's length and respondent fatigue (Fan & Yan, 2010), as respondents receive many requests of a similar nature.

Regarding demographic variables, the sample consists of predominantly female participants (54.1%), with the mode age falling within the 51-55 range (23.3%). It's noteworthy that only 15% of respondents are 40 years old or younger, and only 3 teachers are between 66 and 70 years old.

The sample includes faculty from all Organic Units (OU), with the School of Engineering being the most represented (30.8%). Overall, the distribution in the sample is proportional to the representation of each OU in the universe, with some exceptions, such as the Institute of Education, which has a higher relative representation in the sample, possibly due to the interest this topic sparks among teachers in this area.

Regarding Professional Category, the most represented are Assistant Professor (45.9%), Associate Professor (20.3%), and Guest Professor (15%). It's understandable that the categories of polytechnic education have considerably lower representation, considering their proportion in the universe.

In terms of years of service, the mode corresponds to 30 years (9.8% of respondents), and the median corresponds to 23 years (meaning 50% of respondents have between 0 - less than a year - and 23 years of service). Looking at the distribution, respondents with between 36 and 45 years of service are marginal.

Looking at teaching duties, the mode and median of the average number of hours of classes per week correspond to 8 hours (14.7%). The other significant values are: 10.9% teach 9 hours; 10.9% teach 10 hours; and 9.8% teach an average of 6 hours per week. Regarding the extremes of the distribution, 10% of respondents teach above an average of 10 hours per week, and 25% report less than 5 hours. This could be explained by the presence of guest professors in the sample (recalling that dedication varies from 20% to 100%).

Regarding the number of courses per academic year, the mode and median correspond to 4, meaning 50% of respondents teach between 0 and 4 courses per year. It's also interesting to note the percentage of responses related to 5 (17.7%), 6 (12%), and 7 (7.5%) courses. Although these are residual values considering the sample size, 5% of respondents teach between 9 and 14 courses per year. Concerning degrees, respondents typically teach a combination of Bachelor's and Master's (31.2%) and Bachelor's, Master's, and Integrated Master's (12.4%).

Active Learning Training

Regarding active learning training, 59.8% of respondents report having participated in training on this topic in the preceding 5 years. Among those who participated, the mode corresponds to 1 training session (14.3%). Between 2 and 5 training sessions, we find 28.3% of respondents. This distribution is affected by extreme values, as it has a range of 40 (one respondent claims to have attended 40 training sessions; another 23; 4 claim 20, etc.). The same applies to the number of training hours, with a range up to 300 hours (one respondent claims to have attended 300h of training; another 246; another 200, etc.). In any case, the mode corresponds to 20h of training (6.8%). However, it's worth noting that 40.2% of respondents did not attend any training. When asked about the specific topics of the training they attended, teachers mention a wide variety of topics. A second conclusion drawn from the presented topics concerns the fact that not all of them integrate the universe of active methodologies and often refer to generic terminologies such as active methods and active engagement, which do not clearly identify the object of the training. This diversity of terminology may indicate the need for a better understanding of the existing understanding of the concept of active learning.

Regarding the most mentioned training topics by teachers, some of those organized by IDEA, internally, or within inter-institutional initiatives such as Pedagogical Development Days and the Docência+ program are mentioned predominantly. Therefore, mainly active learning topics related to assessment (peer assessment, assessment feedback, assessment as learning) and specific approaches (PBL - Project-Based Learning, TBL - Team Based Learning, flipped learning, gamification, CBL - Challenge Based Learning) are mentioned. There are also several references to training in technologies that enhance active learning, such as ARS - Audience Response Systems and Padlet. It's also worth mentioning that the training program with the UMinho brand, Docência+, and other initiatives for debate and sharing (but not necessarily training, such as Partilha+, Hoje Partilhamos Ideias, and ChatGPT) are also among the responses.

Regarding respondents' performance as trainers on active learning topics, 8% of respondents declare having carried out this type of activity, mainly on the following topics: TBL, platforms for pedagogical interaction, assessment, and project work. Regarding scientific dissemination activity, 73.7% declare that they have not published any work in this area or presented communications at scientific events. Among those who did, the mode corresponds to 1 (9.4%), but the range is 15 (2 people report 15; 1 person reports 10, etc.).

General results

Faculty members were asked to indicate, on a scale ranging from Never to Always, the frequency of using **active learning practices**, described as the strategies used to enliven classes, such as classroom discussions, cooperative learning, group projects, or simulated practice. Initially, responses were aggregated to provide an overall picture of the use of these practices.

Regarding teachers' experience in the classroom, approximately 90% (Figure 2) report always or often using at least one active learning practice. Thus, one of the most evident results concerns the significant dissemination of these practices at UMinho.

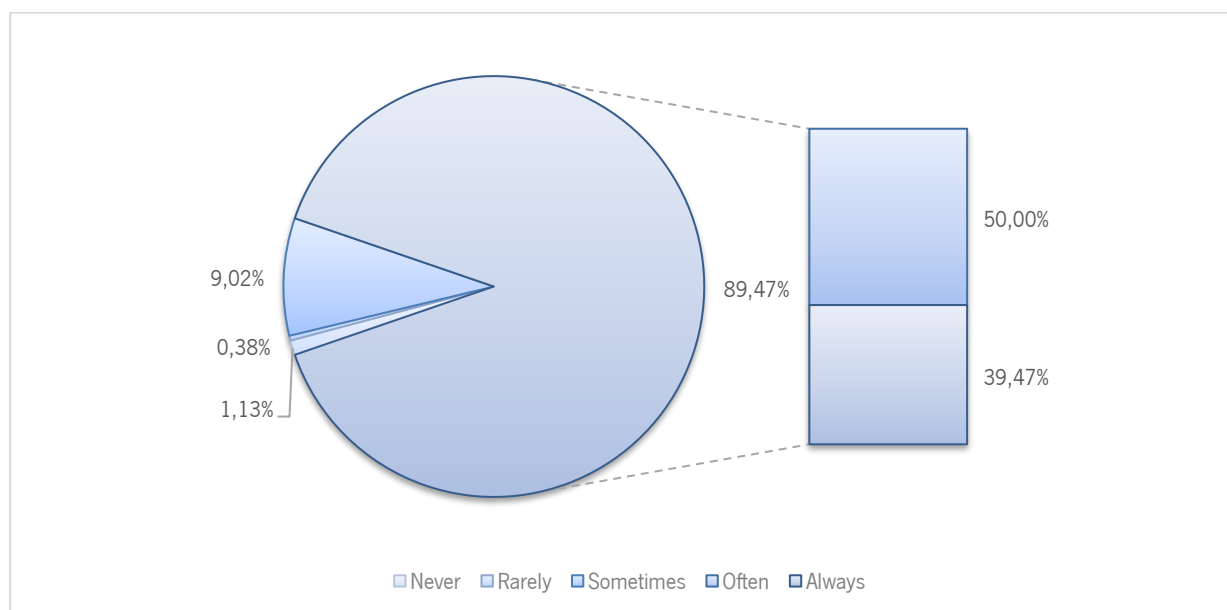


Figure 2 - Aggregated Results on "Active Learning Practices".

Faculty members were also asked about the frequency of using **specific approaches** to active learning, described as those that promote student autonomy, their involvement, and reflection on their learning. Among these approaches were listed, for example, problem-based learning (PBL) or project-based learning (PBL), team-based learning (TBL), gamification, and case studies.

Regarding the listed approaches, the overall results presented in Figure 3 indicate that 16.2% always use at least one of them, while 13.3% never or rarely use one of the approaches. It is also significant that almost half of the teachers (44.4%) report using one of the approaches frequently, meaning that more than 60% of the sample of UMinho faculty often or always use strategies that promote student autonomy and self-reflection.

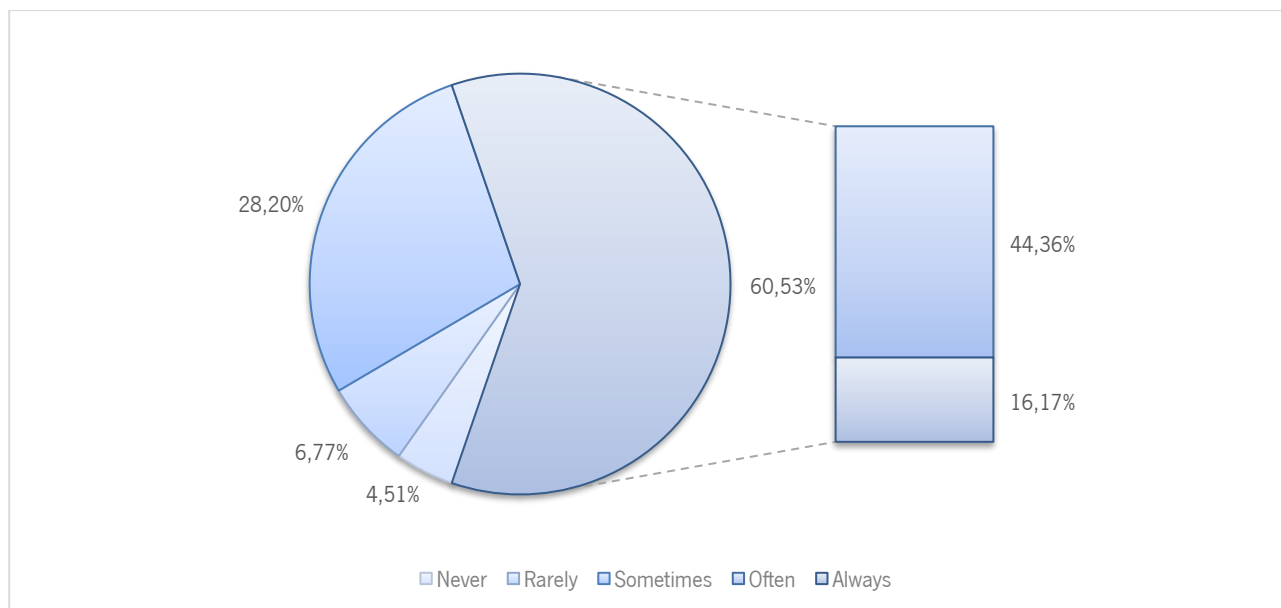


Figure 3 - Aggregated Results on "Specific Approaches to Active Learning".

The frequency of using **technology-based active learning approaches** was also self-reported by respondents, whose responses were aggregated to indicate the overall percentage of using at least one technology, such as videos or podcasts, online laboratories, audience response systems (like *voxvote*, *Slido*, or *Kahoot*), or online collaborative tools.

The use of technology at UMinho to support teaching or learning practices seems to be a well-established activity among the respondents. Thus, 40% of teachers report always or often using one of the listed technologies in the questionnaire, with approximately 20% reporting rare or no use of technology to support their teaching, as illustrated in Figure 4.

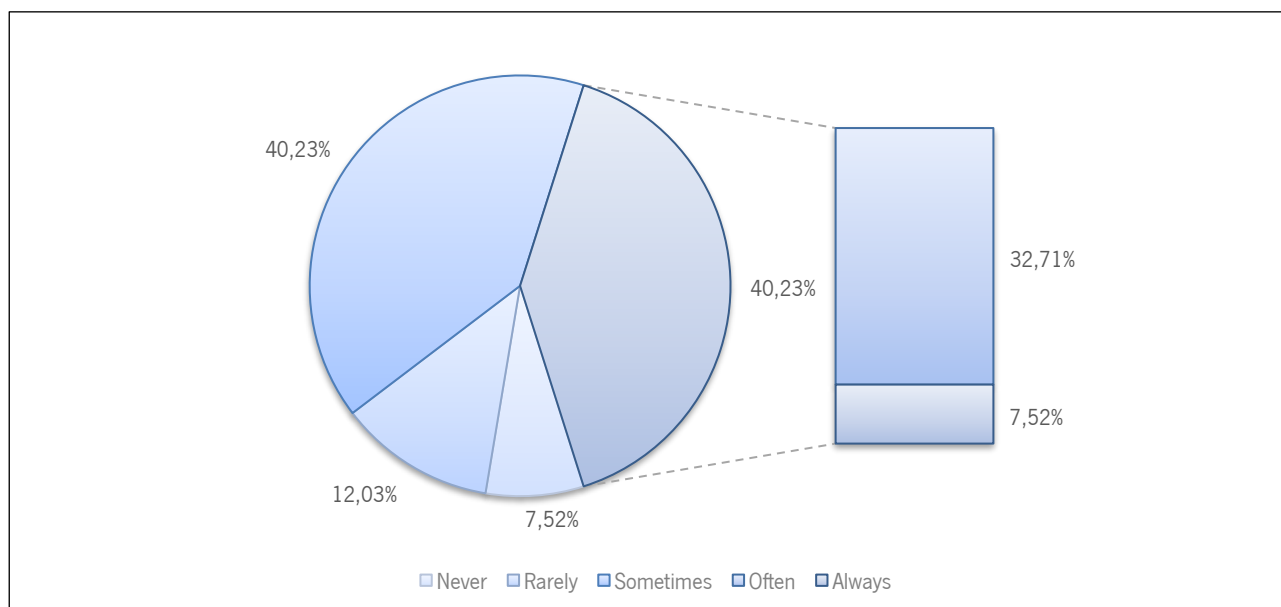


Figure 4 - Aggregated Results on "Technology Usage" - frequency of use

Active Learning Practices

Looking now at the active learning practices in a disaggregated manner to identify the most and least used practices by this sample of University of Minho faculty, Figure 5 shows a significant disparity in usage levels. The Group Projects option stands out as the practice that is always or often used. On the other hand, simulated practice stands out as the practice that is never or rarely used by most teachers, probably due to the perception that it may be suitable for certain disciplinary areas. Among the most frequent experiences, written assignments, oral presentations, and the promotion of cooperative learning are also highlighted. A surprising result is the low level of use of electronic quizzes (using services like *voxvote*, *Slido*, or *Kahoot!*), considering their ease of use in any teaching context.

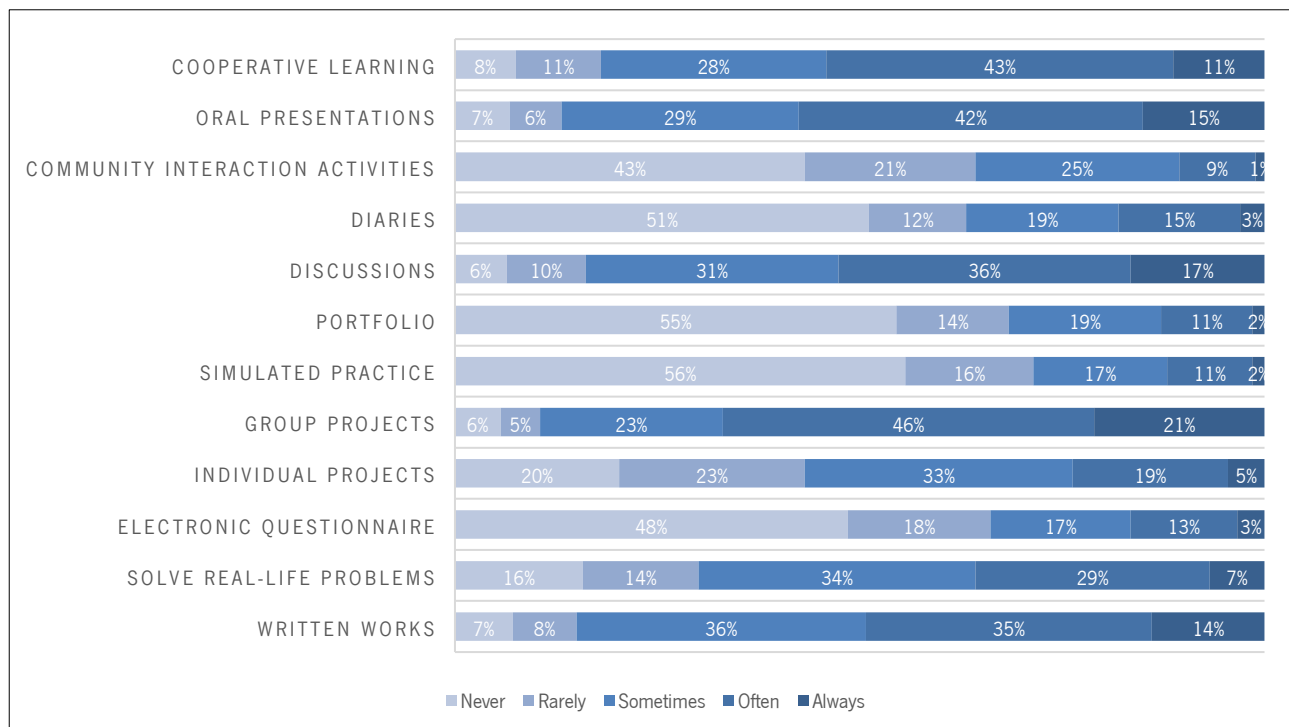


Figure 5 - Active Learning Practices - frequency of use.

Assessment Practices

Regarding assessment practices, the disaggregated analysis of the frequency of use reported by teachers and represented in Figure 6 does not bring any major surprises regarding the most used assessment methodology: written tests or exams, with only 13.5% of respondents stating that they never or rarely use this practice. In line with those identified as the most used active learning practices, project assignments and oral presentations also stand out in this item. Reports and, to a lesser extent, debates follow as the most adopted practices. With lower frequency of use, diaries and portfolios, open-book tests and exams, as well as artifact production are highlighted. Thus, despite the predominance of tests as the main assessment element used, it is worth noting the great diversity of assessment practices, which, with more or less frequency of use, demonstrate the openness of teachers to new methodologies for evaluating students.

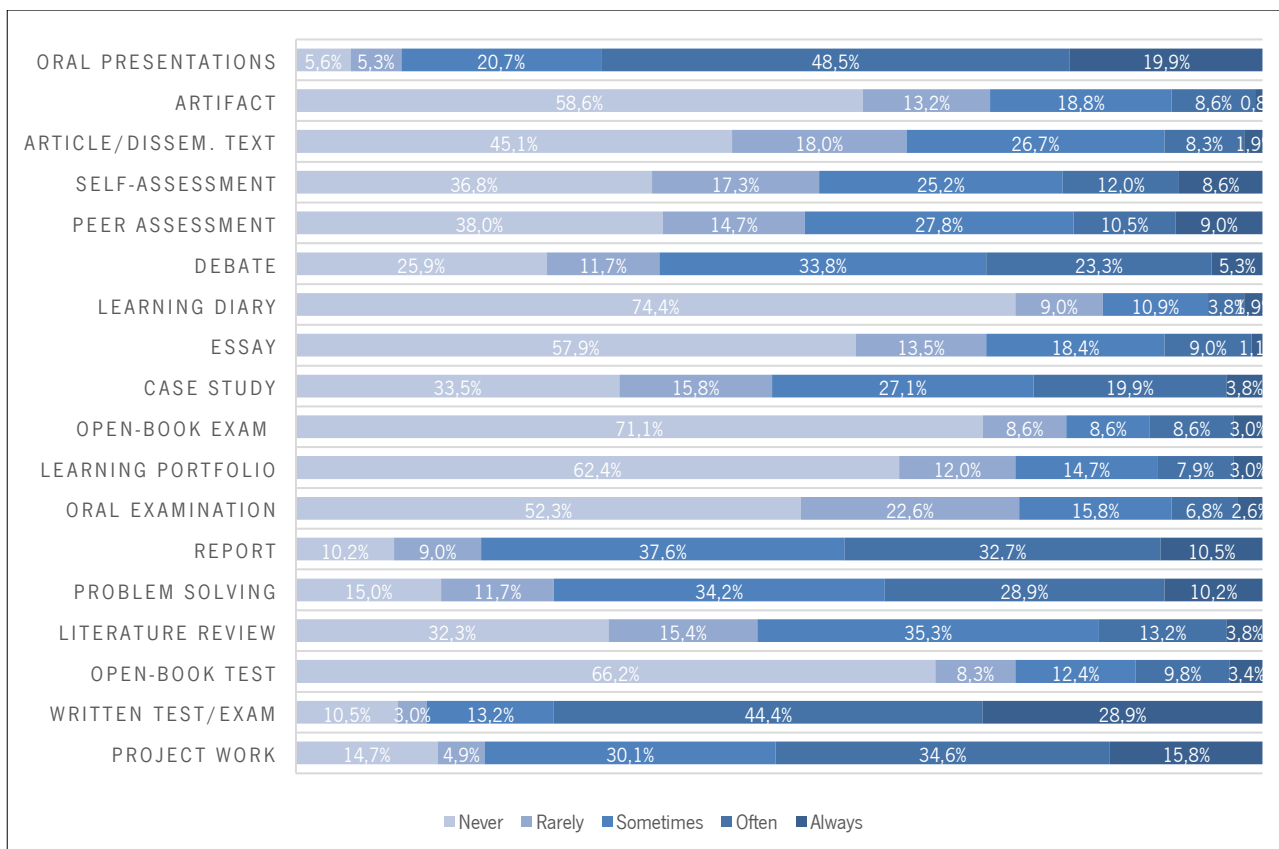


Figure 6 - Assessment Activities - frequency of use.

Active Learning Specific Approaches

Regarding specific approaches to active learning, the disaggregated analysis also shows some diversity in adoption by teachers, with a predominance of problem or project-based learning, as can be seen in Figure 7. Case studies are also frequently used, with over 50% of teachers using them often or sometimes. Gamification and games are the approaches with the lowest self-reported frequency of use. Worth mentioning for its low reported usage rate is the practice of using short active learning activities (such as Think-Pair-Share), which, due to their flexibility and reduced time impact, might initially suggest a greater preference from teachers.

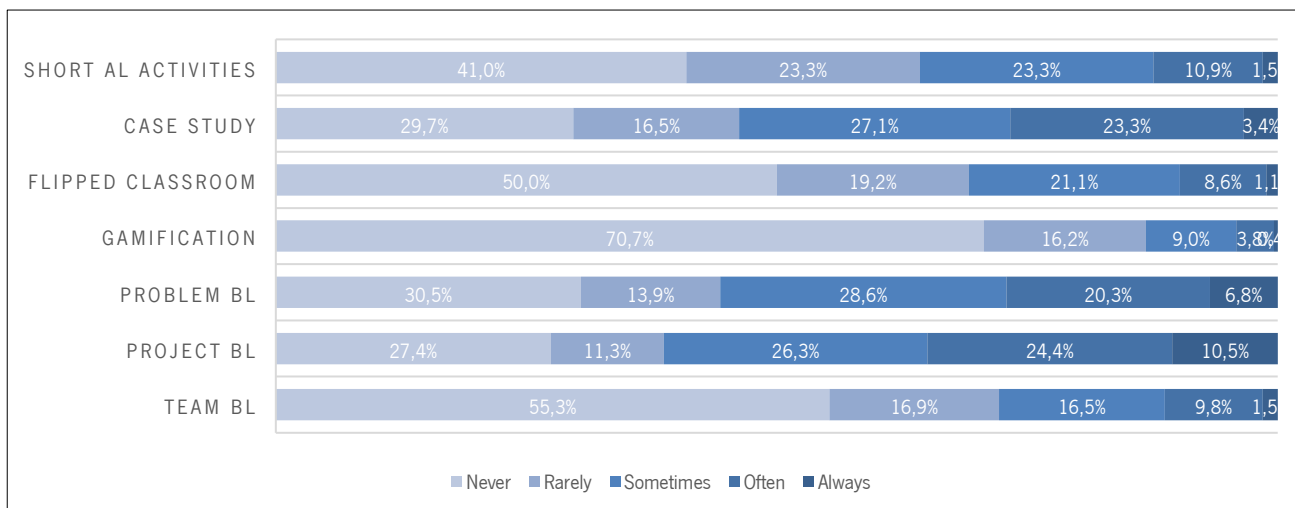


Figure 7 - Specific Approaches to Active Learning - frequency of use.

Active Learning Technologies

Regarding technologies, there is some diversity, but as seen in Figure 8, the frequency of use is not very high. More than 20% of teachers report always or often using videos, with an additional 35% doing so sometimes. Virtual labs and virtual reality technologies are the least frequently used, which can be explained by both requiring more competence from the teacher for their use and not being as easily accessible and available as the others.

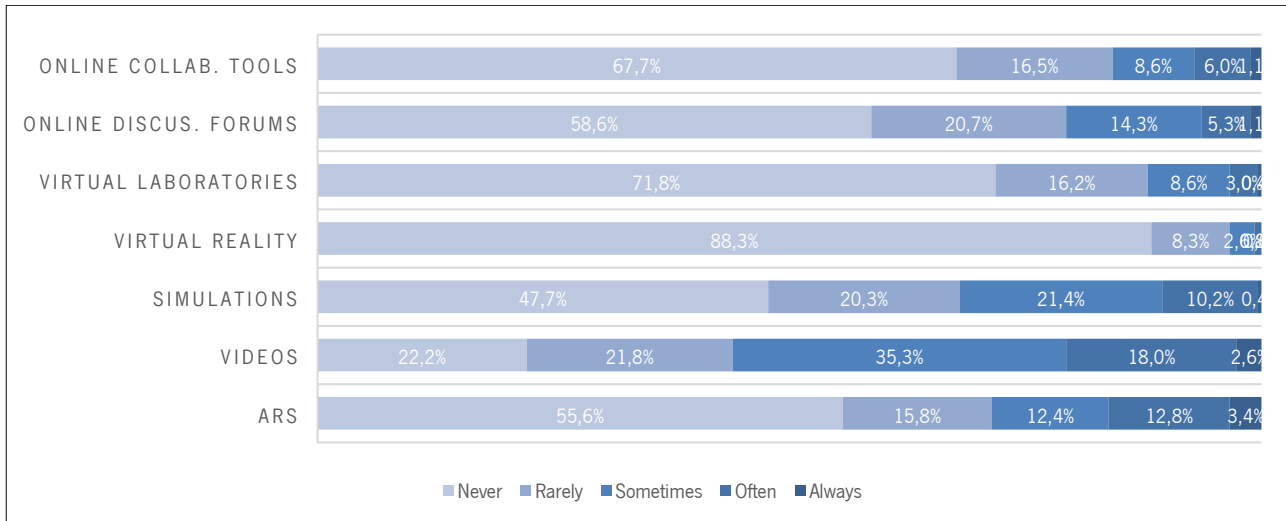


Figure 8 - Technology Usage - frequency of use.

Finally, teachers were asked to rate their classes by indicating their agreement with a statement emphasizing the expository dimension of their classes. As can be seen in Figure 9, nearly 60% of teachers disagree that their classes are essentially expository, thus positioning themselves more within the realm of active learning. While the agreement expressed with the statement is relatively low (20%), it is surprising that we have another 20% who refuse to position themselves regarding the statement. This may result from cases where teachers have classes are divided into theoretical and practical types, which leads teachers to be unsure on how to position themselves. However, even so, this result does not align clearly with the statement from 90% of teachers that they always or often use active learning practices. Once again, this seems to point to the need to investigate more thoroughly what teachers understand by active learning.

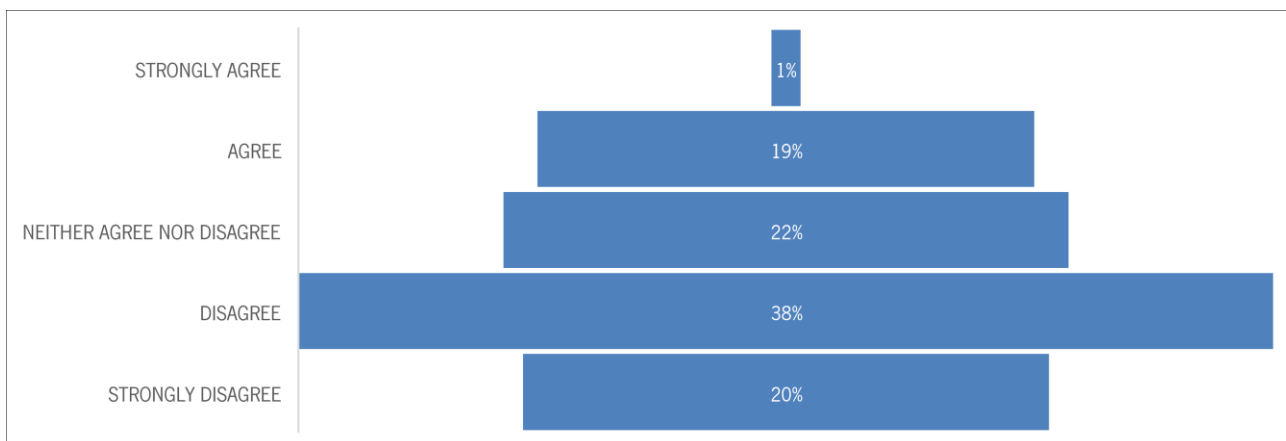


Figure 9 - Agreement of participants with the statement "My classes are essentially lectures".

Factors Inhibiting the Adoption of Active Learning

When asked to choose up to 3 factors inhibiting the adoption of active learning practices and approaches, two obstacles stand out clearly (Figure 10): workload overload and excessive class size. There is a perception that adopting these practices requires more work and effort from the teacher, who is already heavily burdened with other tasks and responsibilities. On the other hand, it is understood that teachers feel more capable of implementing new approaches in smaller classes, where student participation and engagement are easier to achieve. Other frequently mentioned factors (generally by about a quarter of respondents) include lack of training, lack of adequate spaces, and student resistance. What is not reported by many respondents as a reason to avoid these strategies is personal inertia, which was only selected by 5.6% of respondents, or not considering active learning practices important (0.4%).

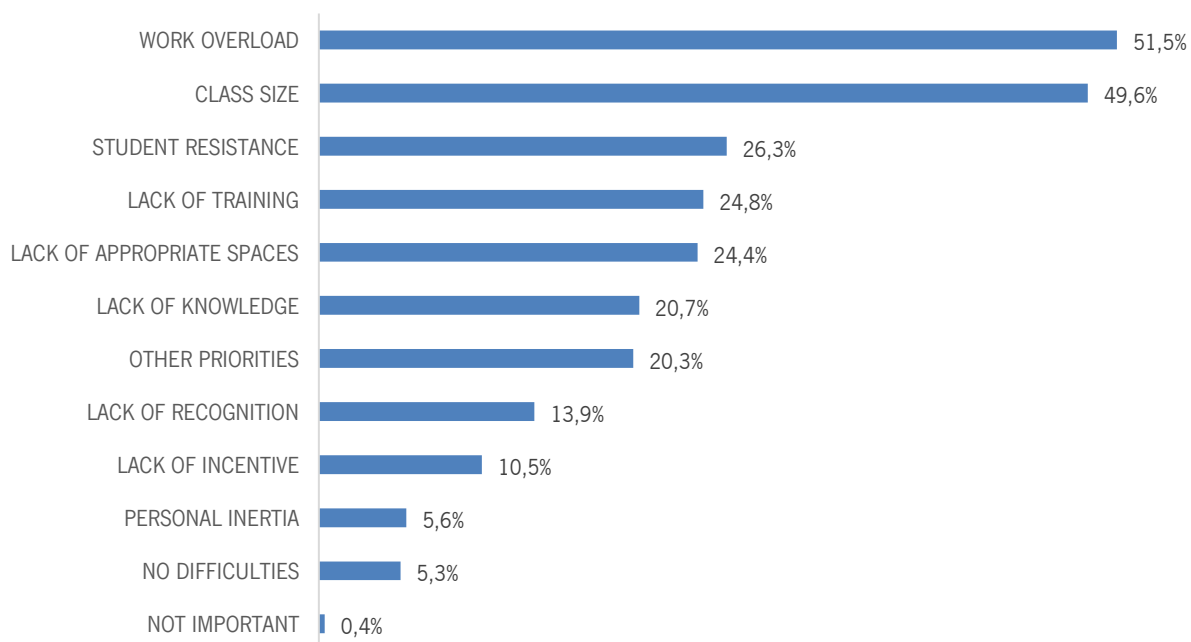


Figure 10 - Results on the difficulties presented in the implementation of Active Learning

When asked about **other factors that hinder the adoption of active learning strategies**, teachers mention in open-ended responses obstacles that relate to three dimensions: individual, organizational, and community.

Regarding the organizational dimension, there are two essential axes: policies and resources. Regarding the first axis, teachers mention the lack of appreciation for teaching in the career compared to the weight of research, lack of autonomy to manage courses (due to not being responsible, not deciding schedules, not being given preparation time) and lack of coordination at the year or course level. Concerning resources, classrooms (in terms of table arrangement, internet access, and power supply) and furniture are mentioned.

The individual dimension is expressed by factors such as overload (of work, of students), which translates into lack of time. Precariousness is also mentioned at this level. The perception of lacking competence to develop active learning is also mentioned.

Finally, regarding the community dimension, teachers mention, on the one hand, peers, and on the other hand, students. Regarding the former, some mention lack of recognition, as well as some conservatism. Students are pointed out as obstacles, notably due to their behavior (such as excessive use of mobile phones) and passivity, immaturity, and lack of study habits.

Of the three dimensions, the organizational one is the most expressive in terms of the quantity of references from teachers, both in terms of policies and resources. References to students as obstacles constitute the second most mentioned cause.

Factors Promoting the Adoption of Active Learning

Regarding the **factors that have facilitated or promoted the use of Active Learning approaches**, it is possible to organize the responses around a set of themes that reflect drivers or facilitators at both an organizational/institutional and individual level.

The most prominent factor in the set of comments is "focus on students", that is, respondents say they feel motivated by the positive feedback they receive from students, their "interest," "participation," involvement. Still focusing on students, they state that they are motivated to improve student learning and the need to "reach out to students," to motivate them, especially to attend classes. The greater "interaction with students" that these approaches allow is mentioned. Keeping the focus on students, but now from the perspective of the change intended at the level of their skills, the possibility of stimulating autonomy and self-learning, reflective and critical skills - but also of relationship with practice, with "reality" - collaborative work habits and creative thinking, and promoting "collaboration with companies" are mentioned.

Equally prominent is the idea that training activities provided at UMinho (particularly through IDEA-UMinho) are a facilitator. The importance of specialized literature and educational materials being available for consultation is added. Articulated with the relevance of training is the highlighted opportunity to share experiences with colleagues, to hear testimonies from other teachers and to be encouraged by them or, from another perspective, the possibility of publicly sharing the result of investment in these approaches and being recognized by colleagues. This aspect is linked to what could be considered an institutional dimension as a driver of the use of active learning: encouragement from Schools, Departments, or Program Coordinators (or even "directives" in that sense); the idea of it being the "culture" of the School or UMinho; the fact that they are adopted by colleagues in other courses and are "an effort of the teaching team" or the result of integration into a "community of practice."

The focus on improving the quality of teaching is highlighted in various ways: the desire to "improve teaching," to give more "engaging" and "dynamic" classes, to "update" teaching and "improve as a teacher," as a result of "dissatisfaction with traditional teaching." The idea of introducing more "variety" into classes, "innovating," and "diversifying" also stands out. This effort to improve extends to assessment, which is specified by some respondents: introducing more "clarity" in assessment; making it more "inclusive" and "diversifying" it; and improving student outcomes.

There is also a dimension associated with the conditions for the implementation of Active Learning: the class size is highlighted by several teachers (small classes); the adequacy of the classrooms; the availability of appropriate technology

and free use (as well as the ease with which students can use it); and the nature of the courses (not all lend themselves to the use of active learning).

The focus on self-motivation is prominent: the idea that, above all, it is the teacher who must self-motivate to go down this path (without relying on external motivation, which may not even exist). It is a matter of "personal interest" and "personal gratification," with advantages: greater motivation for teaching and classes; greater ease in imparting knowledge; teaching becomes more "enticing," and there is a feeling of greater "academic freedom."

Finally, respondents highlight a motivation factor: the fact that active learning actually works. They mention the "results obtained," the "efficiency" in learning, and the "real data" that support these perspectives - the existence of evidence.

Factors UMinho can adopt to support the adoption of active learning

Faculty members also had the opportunity to leave comments on **how the University of Minho can support the implementation of Active Learning by teachers and the general use of Active Learning** (relevance, knowledge, utility, timeliness, etc.). An exploratory thematic analysis revealed six themes: physical spaces/rooms; working conditions; training; career; an ideological dimension; and communication.

Regarding "physical spaces/rooms," the need to renovate and update the equipment available in classrooms, particularly with more flexible furniture, and the lack of comfort resulting from room climate control and lighting were noted.

The theme of "working conditions" encompasses the need to hire more professors, thus increasing the teaching workload/hours; the importance of fewer bureaucratic tasks, allowing more time to prepare teaching activities and receive training; class size (smaller classes) and the lack of support software licenses for active learning were also mentioned.

Regarding "training," the importance of continuing to provide training/more training, especially online training, to facilitate participation is emphasized; some suggest that pedagogical training should be mandatory for teachers and limit this obligation to those entering the profession; it is noted that training should be an integral part of the service and not something extra; there is talk of the importance of involving students in teachers' pedagogical training, but also of creating specific training for students (at the beginning of the year); also mentioned is the importance of evaluating the impact of training to generate evidence and the fact that the training offered to teachers should be more strategically planned, with less "random" training.

In the "career" theme, there is a need for greater appreciation of teaching/pedagogical dimension in the career, evaluation, and progression in the career competitions; the importance of there being consequences for poor pedagogical practice (regulatory dimension); and the advantage of having mentoring/tutoring practices by more experienced colleagues.

We aggregate in the "ideological dimension" these positions: the need to be careful not to turn active learning into a fad or panacea and not to devalue expository teaching, which has its place. A strategic component is also identified from these perceptions: the importance of involving course directors in the creation of transversal teaching strategies in courses; simplifying active learning, showing that it is not only for specialists and that there may be practices that teachers already

incorporate without being able to classify them as active learning; and finally, the need to decentralize training, further involving the academic units rather than the Rectorate.

Finally, regarding "communication" and dissemination of training initiatives, some consider that they lack dissemination, but also that there is too much information.

Final Considerations

The limited sample of participants, likely composed of faculty members particularly attentive to teaching and learning issues, introduces biases in the interpretation of the results, which cannot be generalized to the population of the University of Minho. Among the participants, a high frequency of active learning practices was identified. However, there is a high potential for diverse interpretations in the responses, which opens up the possibility of further investigation.

The use of digital technologies in education was relatively infrequent, with a small portion of the sample resorting to these resources. The dissemination of videos is evident, but there is a high potential to explore other digital resources.

The analysis of difficulties, motivating factors, and improvement suggestions highlights the importance of supporting a broader approach to active learning. The lack of valorization of this aspect at the university is identified as an obstacle, as well as the inadequacy of physical spaces. Pedagogical management also faces challenges, on the one hand, due to the difficulties pointed out in using these approaches in large classes and, on the other hand, due to the overload of teachers when attempting to increase and diversify active learning.

The need to revisit and improve the mapping instrument is fundamental, and for this, it is crucial to involve the university's pedagogical structures in this process. This collaborative approach allows for an effective reflection of the institution's current needs and realities. The proposal to apply the instrument periodically allows for continuous and adaptive evaluation of pedagogical practices. However, in addition to periodic application, it is imperative to consider and share the generated feedback, promoting a culture of continuous improvement.

This study can also inform changes at various levels, including the valorization of the teaching component in career progression, the change of pedagogical spaces, increasing the digital component, managing teacher overload, and developing teacher training aligned with the identified needs.

Acknowledgement

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Appendix – Questionnaire

This is a translation to English of the questionnaire developed, validated, and applied in Portuguese.

Active Learning Mapping at the University of Minho

The IDEA-UMinho Center aims to map and characterize the implementation of Active Learning in the academic year 2022/2023, in the undergraduate, master's, and integrated master's courses at the University of Minho. This questionnaire aims to achieve this mapping and is directed to teachers teaching at the University of Minho in 2022/2023.

In this questionnaire, we encompass in the term "Active Learning approaches" the approaches (e.g., "Project-Based Learning," among others) that promote student autonomy, engagement, action, and reflection on their learning. These approaches can be referenced in various ways, and in this questionnaire, they are centered around some mentioned at the following link: <https://idea.uminho.pt/pt/ideadigital/entradas/Paginas/entrada33.aspx>

In addition to the term "approaches," we also use the expression "active learning practices" when referring to strategies used in classroom dynamics (e.g., group work, among others).

In your answers, consider the set of undergraduate, master's, and/or integrated master's courses you taught in this academic year of 2022/2023.

The responses will be anonymous and treated confidentially, with the results disseminated only in aggregate form. The collected data will not be used for commercial purposes or processed in a manner incompatible with the General Data Protection Regulation (GDPR). There will be no disclosure or communication of individual results.

By answering "Yes" below, you indicate that you voluntarily agree to participate in this questionnaire, confirming that you have been informed about its conditions. If you wish, you can stop your responses at any time by simply closing the browser window.

..Yes No

General Data

Position: [Full Professor / Associate Professor / Assistant Professor / Guest Professor / Principal Coordinator Professor / Coordinator Professor / Assistant Professor / Principal Researcher / Principal Investigator / Assistant Researcher / Investigator]

Organic Unit of the University of Minho to which you were affiliated this academic year: [list]

How many years have you been teaching in higher education? [Number]

Gender: how do you identify? [Female/Male/Non-binary/Prefer not to answer/Prefer to describe: _____]

Age [Intervals: [Under 30], [31-35], [36-40], [41-45], [46-50], [51-55], [56-60], [61-65], [66-70], [Over 70]]

In which degrees did you teach this academic year? [undergraduate, integrated master's, master's, doctoral]

How many undergraduate, master's, and/or integrated master's courses did you teach this academic year? [Num]

How many hours did you teach on average per week in undergraduate, master's, and/or integrated master's courses this academic year? [Num]

Involvement in Active Learning training activities

Have you participated in training activities related to Active Learning in the last five years? Yes/No (If you have not participated in any training activity, skip to the next question)

If you participated in training activities related to Active Learning in the last five years, indicate approximately how many training activities you participated in? ##

If you participated in training activities related to Active Learning in the last five years, indicate some of the topic(s) covered in these training sessions: [Open!]

If you participated in training activities related to Active Learning in the last five years, indicate the approximate number of training hours? ##

If you have acted as a trainer in training activities related to active learning in the last five years, indicate some topics you covered: [Open!]

In the last five years, how many works related to Active Learning have you shared in publications and/or events? ##

Active learning

Indicate on a scale of agreement your current involvement with the Active Learning topic.

[Strongly Disagree / Disagree / Neither Agree nor Disagree / Agree / Strongly Agree / Not Applicable]

- Before this questionnaire, were you already familiar with Active Learning Approaches?
- I have dedicated time to learning about Active Learning Approaches (e.g., participated in training, experimented in the classroom, read educational literature, discussed the topic with colleagues).
- I plan to implement Active Learning Approaches in my courses.
- I am using Active Learning Approaches in my courses.
- I have evidence that my teaching has improved since I started using Active Learning Approaches.

Active Learning Practices - frequency of use

Throughout this academic year, how often have you used the following Active Learning practices in your courses?

[Never / Rarely / Sometimes / Often / Always]

- In-class discussions
- Cooperative learning (small groups)
- Student oral presentations
- Group projects
- Individual projects
- Production of written works
- Reflective writing and/or journal
- Portfolio
- Community interaction activities
- Electronic questionnaires (ARS - Audience Response Systems, such as *VoxlVote*)
- Real-life problem-solving
- Simulated practice or role-play
- Student involvement as partners in the teaching-learning process (e.g., involving them in decisions about the assessment process, about the focus to give to different topics, about the implementation mode of practices to be used in the classroom)

Describe other Active Learning practices that you have used and were not mentioned previously: [Open-ended]

Specific Approaches to Active Learning - Frequency of Use

Throughout this academic year, how often did you use the following specific approaches to Active Learning in your classes? [Never / Rarely / Sometimes / Often / Always]

- Short Active Learning Activities (Quizzes, Think-Pair-Share, One-minute paper...)
- Team-Based Learning [This is an evidence-based collaborative teaching approach, based on a three-step cycle: individual preparation, (solving an Individual Readiness Assessment test), team resolution (Group Readiness Assessment), and application exercises.]
- Problem-Based Learning [In this approach, an open "problem" aligned with the learning outcomes is placed as a central element of the teaching and learning process. Students work in a collaborative environment that allows them to identify what they already know and what they need to know, developing research and analysis skills to propose solutions to the problem at hand.]
- Project-Based Learning [This approach integrates the development of a project to find a solution to an open problem, where students must be able to formulate the problem before developing their solution. Teachers act as facilitators, mentors, or supervisors, depending on the project phase. In most situations, the project-based approach is developed over a longer period of time (e.g., a semester) than the problem-based approach (e.g., 4 weeks).]
- Case Studies [An approach that focuses on the detailed analysis of a real, complex, and in-depth situation involving a decision-making process. This analysis should enable students to mobilize a set of skills associated with the learning outcomes to which this strategy belongs.]
- Gamification / Games [The use of game design elements (Gamification) or games for learning (Game Based Learning) in non-game contexts, aiming to create an engaging environment similar to games, to motivate action, promote learning, and solve problems.]
- Flipped Classroom [A pedagogical approach in which the times and spaces inherent in the teaching and learning process are reversed: the initial exposure to content is done by students before class (individual space); in class, students have the opportunity to interact with the teacher and each other (group space) to apply, develop, and clarify previously covered content. What is inverted is simply what happens in the classroom.]

Describe other Active Learning approaches that you have used and were not mentioned previously: [Open-ended]

Use of Technology - Frequency of Use

Throughout this academic year, how often did you use the following technology-based approaches in your classes?

[Never / Rarely / Sometimes / Often / Always]

- Videos or podcasts
- Simulations
- Virtual laboratories
- Online discussion forums
- Audience Response Systems (ARS) such as VoxVote
- Virtual or augmented reality
- Collaborative online tools (e.g., Jamboard)

Describe other technology-based approaches that you have used and were not mentioned previously: [Open-ended]

Assessment Activities - Frequency of Use

Throughout this academic year, how often did you use the following assessment activities to evaluate students' academic performance?

[Never / Rarely / Sometimes / Often / Always]

- Essay
- Report
- Literature review or critique
- Article/Newsletter
- Artifact (e.g., video, podcast)
- Oral presentation of assignments
- Debate
- Case study
- Problem-solving
- Project work
- Learning portfolio
- Learning diary
- Open-book test
- Closed-book test
- Self-assessment
- Peer assessment
- Written test/exam
- Oral examination

Describe other assessment activities involving active student engagement that you have used and were not mentioned previously: [Open-ended]

Difficulties and Facilitators in the Implementation of Active Learning

In general, based on your experience, what aspects hinder the use of Active Learning approaches? Please select up to three aspects.

- Lack of knowledge about the topic
- Lack of relevant training on the subject
- Lack of incentive at the department/school level
- Lack of recognition at the department/school level
- Student resistance
- Excessive class size
- Inadequate spaces
- Personal inertia
- Work overload
- Other priorities in my university activities (research, management)
- I do not consider the use of these approaches important or relevant

Please describe other aspects that hinder the implementation of Active Learning approaches that have not been mentioned before: [Open-ended]

From your experience, please **indicate up to a maximum of 3 aspects** that have facilitated or promoted the use of Active Learning approaches: [Open-ended]

Positioning

Indicate your level of agreement with the following statement:

[Strongly disagree / Disagree / Neither agree nor disagree / Agree / Strongly agree]

My classes are essentially lectures.

Final comments

Considering the topics covered throughout the questionnaire, please comment on how the University of Minho can support the implementation of Active Learning by teachers: [Open-ended]

Feel free to add any other final comments you would like to make about the topics explored in this questionnaire (relevance, knowledge, usefulness, timeliness, etc.): [Open-ended]