

# Perceived Impact of Active Pedagogy in Medical Students' Learning at the Faculty of Medicine and Pharmacy of Casablanca

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## Abstract:-

### ➤ *Background:*

Learning through active methods is recognized for facilitating material assimilation, increasing motivation, improving performance, and fostering autonomy among medical students. Despite these advantages, some difficulties persist for certain students, and traditional teaching methods continue to dominate in medical faculties.

### ➤ *Objective:*

This study aims to describe the viewed impact of active pedagogy methods and students' perception towards them.

### ➤ *Population and Methods:*

A cross-sectional study was conducted among medical students at the Faculty of Medicine and Pharmacy of Casablanca in November and December 2023. The sample size was calculated using Epi Info 7.2.5.0 software, and probabilistic sampling was used to determine our sample. Data were collected using an electronic questionnaire (Google Forms) containing questions about the impact and perception of active pedagogy, then processed and analyzed using R software while maintaining confidentiality and data protection.

### ➤ *Results:*

Out of a total of 442 students who were mostly female (57.2%), a large portion (83.0%) were unfamiliar with the concept of active pedagogy. However, the most well-known active pedagogy methods were simulation, practical and directed work, and clinical cases among 54.0% of students, role-playing, group work, and presentations among 44.2%, as well as e-learning among 32.7%. The results showed that the majority of students

recognized the benefits of active pedagogy: it increases educational performance (86.8%) and engagement (77.7%), helps succeed in evaluations (80.4%), boosts motivation (80%), fosters autonomy (79.5%), and prepares for professional life according to 81.3% of students. Over 82% of students favored replacing traditional pedagogy with active pedagogy.

### ➤ *Conclusion:*

Active methods are highly appreciated by medical students for their ability to promote autonomous learning and high educational performance. However, despite their satisfaction, these methods remain underutilized, and some students still encounter difficulties. The majority of students support their generalization as a replacement for traditional methods.

*Keywords:- Active pedagogy, Learning, Medical Students, Impact, Satisfaction.*

## I. INTRODUCTION

During the 1980s, a desire to reform higher education teaching methods emerged, aiming to transition from traditional approaches where professors speak and students passively listen, to active methods involving students in their learning, known as "Active Pedagogy" (1,2). Despite this intent, traditional methods persist in many universities (3).

Active pedagogy emphasizes the active involvement of students in their learning through interactive, collaborative, and practical methods that promote engagement, skill acquisition, autonomy, and student performance (4). Active Pedagogy engages students in high-level thinking (analysis, synthesis, evaluation) and concrete activities (reading,

discussion, writing, practice) to explore their attitudes and values (3,5).

Several methods of active pedagogy are grouped under four principles: experimental, socio-collaborative, problem-based, and project-based learning (6). These methods, such as online teaching, case studies, role-playing, debates, simulations, group learning, peer teaching, etc., positively influence student attitudes, interactions, and results (3). A recent study in the United States has shown that active pedagogy methods improve knowledge retention compared to traditional methods, particularly in specific areas such as Advanced Pharmacy Practice Experiences (APPE) in pharmacy (7).

However, the adoption of these methods has encountered challenges such as student engagement, managing classroom distractions, and institutional and logistical barriers (3). Obstacles to the adoption of these methods include the persistent influence of traditional methods, teacher reluctance, anxiety about change, increased preparation time, and lack of resources (3). Despite these challenges and obstacles, various methods of active pedagogy are applied in medical education in Casablanca while the traditional method persists.

The objective of this study is to describe the viewed impact of active pedagogy methods and to specify students' perceptions towards them.

## II. POPULATION AND METHODS

This is a descriptive cross-sectional study conducted in November and December 2023, including students from the Medicine program at the Faculty of Medicine and Pharmacy of Casablanca from the 1st to the 6th year.

The sample size calculation was performed using Epi Info 7.2.5.0 software, based on the assumption that 50% of students admitted that active pedagogy has an impact on their learning, given the absence of any previous studies on this subject. Using a precision of 5%, we obtained a necessary sample size of at least 341 students. Then, we conducted a probabilistic cluster sampling stratified according to the years of study.

Data were collected using an electronic Google Forms questionnaire, which was shared in practical work or directed work groups for pre-clinical students and in internship groups for clinical-stage students. The questionnaire included the study of sociodemographic characteristics, the impact of active pedagogy on learning according to students, as well as their perception and recommendations on the subject.

Data analysis was conducted using R software version 4.3.2, which allowed for calculating means (with standard deviation) and frequencies. Data collection and processing were carried out in compliance with confidentiality and data protection regulations specific to participants.

## III. RESULTS

In our sample of 442 students, the mean age was 20.4 years ( $\pm 1.8$  SD) with a female predominance of 57.2%. In terms of year of study, there was a slight predominance of the 5th year (21.9%), while the other years were almost evenly distributed between 13.8% for the 6th year and 17.4% for the 1st year.

The majority of students (83.0%) were unaware of the concept of active pedagogy, while 17.0% claimed to be familiar with it. The most well-known active pedagogy methods were dominated by Simulations, practical work, directed work and clinical cases known by 54.0% of students, followed by role-playing, group work and presentations by 44.2% of students, then e-learning by 32.7%. Flipped classroom was the least known, mentioned by only 11.4% of students.

Our study revealed that most students used summaries, worksheets and mind maps for learning, accounting for 86.7% of students, with self-directed learning and reflections following closely at 74.0% and e-learning being utilized by 69.9% of students. The flipped classroom teaching method was ranked last, with only 5.4% of students using it. (Figure 1)

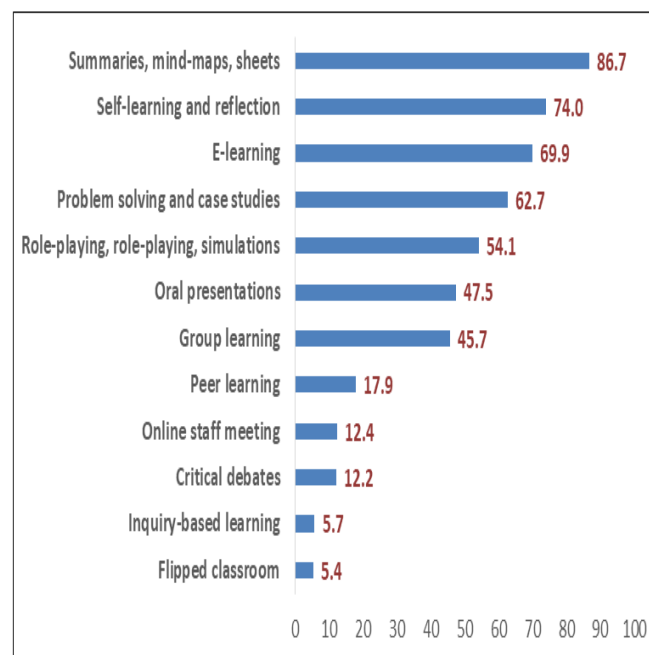


Fig 1 Active Pedagogy Methods used by Medical Students in Casablanca (% of Students)

Overall, our study found that the number of students dissatisfied with current teaching methods (47.8%) greatly exceeded the number of those who were satisfied (12.2%); while 40.0% of students preferred to remain neutral.

The majority of students affirmed that active pedagogy methods have a beneficial effect on their learning. According to 86.8% of students, they increase their educational performance, while 77.7% claim they improve their engagement and involvement. Also, 87.3% admitted

that they facilitate understanding and mastery of the course, while 77.5% admitted that they develop their social skills and sense of teamwork. Additionally, 87.5% judged that they stimulate creativity and critical thinking, 80.4% stated that they help them succeed in evaluations, and 80.0% agreed that active pedagogy facilitates understanding of new concepts. (Table 1)

Table 1 Perceived Impact of Active Pedagogy According to Medical Students

	Strongly disagree N (%)	Disagree N (%)	Neutral N (%)	Agree N (%)	Strongly agree N (%)
Improving educational performance	9 (2.0)	5 (1.1)	44 (10.0)	305 (69.0)	79 (17.9)
More engaged and involved	10 (2.3)	17 (3.8)	71 (16.1)	253 (57.2)	91 (20.6)
Ease of understanding and mastery	7 (1.6)	7 (1.6)	42 (9.5)	169 (38.2)	217 (49.1)
Developing social skills and teamwork	11 (2.5)	15 (3.4)	73 (16.5)	249 (56.3)	94 (21.3)
Stimulates creativity and critical thinking	7 (1.6)	12 (2.7)	36 (8.1)	199 (45.0)	188 (42.5)
Succeeding in evaluations	7 (1.6)	19 (4.3)	60 (13.6)	236 (53.4)	120 (27.1)
Ease of understanding new concepts	6 (1.4)	16 (3.6)	66 (14.9)	242 (54.8)	112 (25.3)
Discussing ideas freely with colleagues	12 (2.7)	18 (4.1)	85 (19.2)	184 (41.6)	143 (32.4)
Increases motivation and enthusiasm	10 (2.3)	12 (2.7)	66 (14.9)	203 (45.9)	151 (34.2)
Autonomy in learning	9 (2.0)	12 (2.7)	69 (15.6)	205 (46.4)	147 (33.3)
Building coherent projects	11 (2.5)	27 (6.1)	100 (22.6)	213 (48.2)	91 (20.6)
Positive and inclusive group dynamics	6 (1.4)	19 (4.3)	78 (17.6)	183 (41.4)	156 (35.3)

The study also found that active pedagogy increases motivation and enthusiasm in nearly 80.0% of students, develops autonomy in learning according to 79.5%, but also allows for the construction of coherent projects according to 68.6% of students. (Table 1)

Regarding students' perception of currently applied active pedagogy methods for their learning, only 22.5% believed that student-teacher interactions were sufficient and effective. Almost half of them (49.2%) considered that active pedagogy helps identify their strengths and weaknesses, and 23.4% admitted that the materials used are suitable. The pace of classes was considered appropriate, and teaching was clear and precise according to 27.5% of students. The way information was conveyed was motivating according to 30.2% of students, the feedback received was relevant for 26.8% and 81.3% of them believed that their professional life as clinicians would be enhanced through active pedagogical methods.

Compared to traditional pedagogy, which can, in some cases, slow down or make learning more difficult, students pointed out numerous benefits of embracing active pedagogy, with the primary ones being efficiency and enhanced performance cited by 56.3% of respondents. Additionally, 33.3% of students emphasized its role in stimulating productivity, motivation, and fostering student autonomy, while 20.0% highlighted its facilitation of learning with ease and speed.

The majority of students (65.0%) did not encounter difficulties with active pedagogy methods in their learning, while 35.0% reported having difficulties. Among the difficulties cited, 54.3% of students indicated needing more

time to adapt to active methods, 51.4% reported having difficulties applying these methods, and 40.8% of them highlighted inequality among learners. (Figure 2)

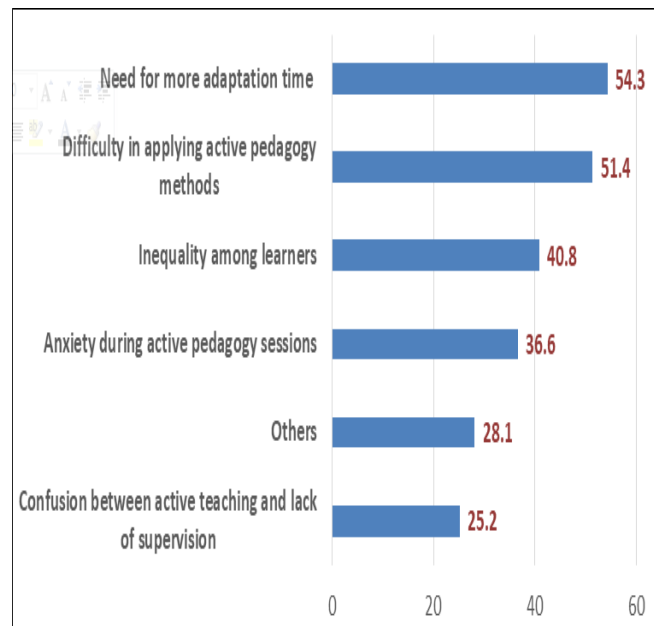


Fig 2 Types of Difficulties Associated with Active Pedagogy (% of Students)

Our study found a statistically significant association between the presence of difficulties and the willingness to replace traditional methods with active pedagogy (p = 0.005). There was also a significant association between the year of study and difficulties during active pedagogy sessions (p = 0.00004), with a decrease in difficulties as the course progressed.

The vast majority of students (82.7%) were in favor of replacing traditional teaching methods with active pedagogy, while 10.0% of students favored hybrid learning combining both types of teaching to benefit maximally and ensure complete and quality learning. It is noteworthy that a significant proportion of students (7.3%) favored maintaining traditional pedagogy and considered it effective and sufficient for ensuring good learning. A great proportion of students (88.1%) suggested wide introduction of active pedagogy methods in the teaching program, and 85.6% of students preferred to have active pedagogy sessions after lectures.

Most students (88.4%) wished for active pedagogy sessions to be supervised by qualified teachers from the early years of study. They suggested avoiding questions of simple information retrieval, and 86.8% of them wanted to be able to specify in advance any form of preparatory work before discussion sessions (readings, research, prerequisites, etc.). Almost all students (90.2%) expressed their willingness to adhere to scheduling active pedagogy sessions according to their availability despite time constraints and busy schedules, and 87.9% of students were in favor of spreading active pedagogy techniques.

#### IV. DISCUSSION

Our study revealed a significant number of students (83.0%) unaware of the concept of active pedagogy, while a minority of 17.0% claimed familiarity. This result could be attributed to a gap in academic programs that do not adequately address this educational approach.

Most students confirmed a positive impact of active pedagogy on various aspects of their learning, with 86.8% stating that it enhances their educational performance. These results align with findings from a study conducted in the United Arab Emirates in 2018 (4). Similarly, another study in Pennsylvania, USA (2004), found that 90.0% of students reported that active methods facilitate understanding and assimilation of basic concepts in their studies (6).

Over 80.0% of students affirmed that active pedagogy methods help them succeed in evaluations and facilitate their understanding of new concepts. This result resembles the findings in a study conducted in Ohio, USA in 2007 (8).

According to 77.7% of students, active methods increase their engagement and involvement in learning. This supports the findings of previous studies conducted in Ohio, USA (2007) and the United Arab Emirates (2018). (4,8). Similarly, in another study in the United Kingdom in 2021, 82.0% of students asserted that active learning had a significant impact on their level of engagement (9).

In our study, 77.5% of students attested that group work allows them to develop social skills within a positive and inclusive group dynamic. According to the same study conducted in the United Kingdom in 2021, 72.0% of students agreed that collaborative methods enabled them to develop social skills while increasing their willingness to participate actively (9).

Only 23.4% of students admitted that the materials used during active pedagogy sessions were suitable, and 41.8% felt that the pace of sessions was not appropriate. In Dijon, France (2015), a study showed, on the contrary, that 72.2% thought that the materials used were suitable; similarly, 75.1% felt that the pace of classes was appropriate (10). This difference could be explained by the disparity in resources deployed in educational systems and the time devoted to developing specific and adapted programs.

Based on our study, only 30.2% of students found the transmission of information motivating. In contrast, 68.4% of students in a similar French study found it motivating. (10). Similarly, a study conducted in Brazil showed that most students were motivated during active learning sessions (11). This gap between our results and the literature could be due to better teacher training through more recent programs, targeting weaknesses and addressing learners' needs.

About half of the students (49.2%) admitted that active pedagogy helps them identify their strengths and weaknesses. In comparison, a study in the UAE in 2021 demonstrated that 75.0% of students agreed that active pedagogy enables students to identify their strengths and weaknesses (12).

Our study revealed a statistically significant association between difficulties and preference for active pedagogy ( $p = 0.005$ ). Students without difficulty (65.0%) favored transitioning to this method, while students with difficulties (35.0%) preferred hybrid or traditional teaching. The year of study was also linked to difficulties in active pedagogy ( $p = 0.00004$ ), with an increase in familiarity among students as they progressed in their curriculum.

A large majority of students (88.1%) were in favor of a broader introduction of active pedagogy methods into their program. Similarly, 85.6% of students recommended planning lectures before active pedagogy sessions, and 87.9% expressed a desire to participate in active pedagogy sessions. Likewise, in the same 2021 UAE study, 85% of students expressed their desire to have access to active pedagogy sessions in the future (12).

Finally, 82.7% of students were in favor of replacing traditional pedagogy with active pedagogy, citing several advantages of the latter. 10.0% were in favor of hybrid teaching combining traditional and active pedagogy, while only 7.3% preferred maintaining traditional methods. In a study in Brazil 2019, 81.0% of students favored combining traditional methods with teamwork learning (11). The majority of students (86.8%) believed that specifying preparatory work in advance was necessary. Similarly, in the same study conducted in the UAE, 82.5% agreed with this statement (12).

#### V. CONCLUSION

The study has highlighted the perceived positive impact of active pedagogy on medical learning, despite the difficulties experienced by some students in its adoption. Variations in evaluations are attributed to students' expectations, their prior exposure to active methods, and local educational standards. This finding underscores the need to adapt pedagogical approaches to better meet the specific needs of students.

While data on the use of these methods in Morocco are limited, encouraging experiences have shown promising results. The reform of pedagogical practices should be initiated by teachers, who must devise active learning strategies that suit them. These strategies should be well-structured, planned, and focused on familiar subjects for both teachers and students.

The gradual integration of more active strategies into traditional teaching is essential, supported by training for teachers to facilitate this transition towards a more participatory and interactive approach to medical education.

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