

The Academic Pedagogical Approaches used by teachers in the Training of Undergraduate Students of the Higher Institutes of Nursing Professions and Health Techniques of the Fez-Meknes Region Morocco

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Abstract:

Introduction: The quality of the work of future Health Professionals greatly depends on the pedagogical approach teachers use during training. Nevertheless, in nursing education, teaching practices are still focused on the transmission of decontextualized knowledge, separating the clinical environment from the academic one, and integrating little critical reflection on clinical action. This approach penalizes the motivation and performance of learners and, subsequently, on their professional practice. Thus, a study was initiated to describe the academic pedagogical approaches used by the Higher Institutes of Nursing Professions and Health Techniques teachers in the Fez-Meknes region. **Material & Methods:** To identify the dominant pedagogical approach among the teachers of the Higher Institute of Fez and its annexes (n=233), the study was based on a questionnaire created by Google Forms and sent via e-mail. The questionnaire contains two parts; the first corresponds to the definition of concepts, and the second to the course of the academic work. For each participant, the sum of responses corresponding to each of the four approaches was calculated. The dominant approach is the one with the highest score. The data analysis was carried out using the "Epi info," and "SPSS" software. The association between the dominant approach and pedagogy training was conducted using the Chi-square test. **Results:** 204 teachers responded to the questionnaire. The data analysis has revealed a significant predominance of the Behaviorist Approach (64.71%; 97.5% of them have never received pedagogical training), followed by the Constructivist Approach (31.86%; 72.1% of them have already received pedagogical training) and then the Socio-constructivist Approach with only 2.45%, and almost an ab-

sence of the Cognitivist Approach (0.98%). **Conclusion:** The study reveals a strong predominance of the Behaviorist approach and that adopting an active approach remains dependent on training in pedagogy. Therefore, teachers are expected to question their traditional approaches and innovate in pedagogy in order to foster active learning for students.

Keywords: Educational approach; In-depth approach; Learning; Morocco; Nursing training; Surface approach; Teaching.

Introduction

A pedagogical approach (PA) is a conduct, a roadmap, and a pedagogical orientation that improves teaching practice. It is the set of strategies used by the teacher to provide students with a platform that they can take as a base to guarantee motivation and success in their studies, and, above all, professional development [1,2,3].

Medical studies conducted in pedagogy have confirmed the existence of a statistically significant association between teaching based on active pedagogical approaches and motivation, success, development of personal and professional skills, integration into groups, and better patient care [4]. Whereas, the adoption of traditional approaches leads to demotivation, difficulty in achieving personal and professional goals, academic failure [5], professional incompetence [6,7], problems in decision-making, lack of team spirit, reflection, and analysis, and the risk of disproving protocol or making errors in judgment [8,9,10].

So, how to teach today at the level of the Higher Institutes of Nursing professions and Health Techniques (HINPHT), with a view to the integration and transfer of learning, and ensure that access to motivation and success in studies and therefore to professional development for all nursing students?

The main pedagogical approaches that have marked teaching over the years are the Behaviorist Approach (BA), the Cognitivist Approach (CGA), the Constructivist Approach (CA), and the Socio-constructivist Approach (SCA) [11,12,13,14].

The BA is a monopoly, unidirectional and transmissive approach. It is a theory of learning that studies observable behaviors without using internal mechanisms in the brain or mental processes not directly observable [11,12,13].

The second is the CGA. It focuses on ways of thinking and solving problems [12]. It is a pedagogy that aims at the development of the cognitive and metacognitive abilities of the learner, which is considered as an active information processing system similar to that of a computer [12,15,16].

The third is the CA, in which learning is done by constructing or reorganizing mental activities in interaction with the environment. It is an approach where the student is offered meaningful activities, changing his relationship to knowledge [11,3]. In this approach, assimilation and accommodation forms are essential for a cognitive activity whose different balancing processes will be developed in balancing cognitive structures [14,17,18,19].

The fourth is the SCA. It is a cooperative, collaborative, and mutual aid pedagogy, aiming to make decisions collegially. It is done within the group by the socio-constructive debates triggered by the teacher [20,21,22,23,24].

The evolution of different pedagogical approaches has marked a mandatory shift from a teaching-centered paradigm to a learning-centered paradigm [14,25].

Background and Objective of the study

In today's world, which is marked by innovation in pedagogy, HINPHT of Morocco, currently bet on the quality of the training of their graduates so that they could become reflective practitioners and not just manipulators of gestures. So what are the pedagogical approaches

adopted by teachers of the HINPHT to ensure the training of students during the undergraduate cycle?

To answer this question, this study was conducted. It is descriptive and analytical, aiming to: Describe the pedagogical approaches used in the academic teaching in HINPHT of Fez and its annexes. And, analyze the relationship between the dominant approach and training in pedagogy.

Material & Methods

The following work is part of a larger study approved by the Ethics Committee of the Faculty of Medicine, Pharmacy and Medicine dentary of Fez, classified under 05/20. Its realization took six months, from July 2020 to January 2021.

1S.tudy population

It is made up of all the teachers who provide theoretical courses, for the benefit of students in HINPHT, at the level of the three centers of the Fez-Meknes region. There are 233 teachers: 128 at HINPHT in Fez, 40 in Taza, and 65 in Meknes.

It should be noted that the participants do not provide the same module, each according to his specialty and to the option, he teaches.

2.Method and instrument of data collection

It is a survey through a questionnaire in French that was created using Google Forms and sent to participants via e-mail.

The questionnaire has two components: the 1st with three questions related to the definitions of the main concepts: Teaching, Learning, and Evaluating. The 2nd with nine questions on the course of the academic work, namely: the approach adopted by teachers in preparing the course, the approach adopted in giving the course, the affinity for the objectives, the role played by teachers in the face of heterogeneity of the students, the expectations towards the students, the style adopted, the methods used to ensure the teaching, the learning activities proposed and the strategies undertaken.

Each question has four choices, each of which corresponds precisely to one of the pedagogical approaches: Behaviorism, Cognitivism, Constructivism, and Socio-constructivism.

For each participant in the study, and to define the dominant approach, the sum of responses corresponding to each of the four approaches was calculated. The dominant approach is the one with the highest score.

The rationale for the choice of instrument

The questionnaire is the most affordable tool for collecting quantitative data from a large public.

3.Methods of data analysis and processing

The data analysis was carried out using the "Epi info," and "SPSS," software, based on frequency distributions and percentages concerning descriptive statistics. Afterwards, an association analysis was carried out with the Chi-square test.

4.Study ethical considerations:

Data collection was preceded by an explanation of the study's purpose. Anonymity and confidentiality relating to the identity of the teachers were ensured.

Results

The number of participants was 204 teachers: 116 for HINPHT in Fez, 55 in Meknes, and 33 in Taza. 9 teachers refused to participate in the study. 20 questionnaires were withdrawn because they contained incomplete responses.

1. Characteristics of study participants (Table I)

50% of the participants are women. 51.47% are permanent staff. 15.2% are Teacher-researchers. 21.1% are Specialist Doctors. 8.8% are Doctors outside of health. 9.8% have a Master's degree outside of pedagogy. 4.9% have a Master's degree in pedagogy. 27.9% are teachers with a diploma from the second cycle of paramedical studies (PMS). 10.3% are teachers with a diploma from the first cycle of paramedical studies. 1.5% are teachers with a diploma from an Executive school. 42.2% of participants have already received training in pedagogy.

2. Definition of concepts (Table II)

For 62.75% of participants, "**LEARNING**" is the fact of associating, by conditioning, a reward with a specific response. For 33.82%, it is a question of building and organizing their knowledge through action while interacting with their environment.

As for the concept of "**TEACHING**," for 62.75% of participants, it is about stimulating, creating, and reinforcing appropriate observable behaviors while transmitting information in a structured, hierarchical, and deductive way. For 33.82%, it is a question of creating a favorable environment to promote the construction of knowledge by the student himself.

Regarding the concept of "**EVALUATE**," 62.75% see it as evaluating the mastery of knowledge through the exercise of know-how stated in terms of observable behavior. For 31.86%, it is a fact of seeking to promote complex and authentic situations.

3. The academic work

In **preparing for the course**, 62.25% spend a lot of time analyzing the theoretical content and finding ways to make it accessible. 32.35% try to review content and present it from various perspectives (**Table III**).

By **giving the course**, 63.73% break up the objectives into small logically ordered steps. 32.35% respect the abilities of their students by allowing them to make their reasoning and their intellectual approaches (**Table III**).

Regarding **expectations of students**, 64% expect students to be attentive, memorize and try to reproduce. 32% hope for them to become aware of their thoughts about those of others, reconsider their ways of thinking and solving problems situations and learn to internalize different norms (**Table IV**).

As for the **activities proposed by the teachers to ensure the teaching-learning**, 64.22% offer exercises and closed case studies that guide them. 32.35% present complex learning situations containing authentic activities (**Table IV**).

Regarding the **teaching methods** adopted, 63.24% adopt a method based on the unidirectional transmission of knowledge. 32.84% aim to acquire knowledge through reorganizing mental conceptions, construction, or reconstruction work (**Table V**).

Regarding the **strategies** undertaken, 65% opt for pedagogies of memorization and the established order. 32% undertake a strategy focused on taking charge of learning by the students themselves (**Table V**).

4. Dominant approach (Table VI)

The **dominant approach** is the Behaviorist one (64.71%), followed by the Constructivist approach (31.86%), then the Socio-constructivist (2.45%), and at the bottom of the order, the Cognitivist approach (0.98%).

5. Cross-referencing of results

The cross-referenced results concerning participants' dominant approach and specialties show that the BA dominates among all general practitioners, and almost all teacher-

researchers, laureates of the first cycle of PMS, and specialist doctors (93%). For doctors outside of health, the BA dominates in 77.8% and the CA in 22.2%. For the laureates of the 2nd cycle of PMS and the laureates with a master's degree in pedagogy, the CA dominates (**Table VII**).

The cross-referenced results concerning the dominant approach and pedagogical training show that the BA dominates for 97.5% of the participants who have never received pedagogical training. While the CA predominates in 72.1% of the participants who have already received pedagogical training (**Table VIII**). The *P* value indicates a very low probability ($P = 0.000$) largely below the significance level $\alpha=0.05$ (**Table IX**).

Discussion

We have received 204 responses out of 233 teachers.

The data analysis reveals that 62.75% are behaviorists who share, for the concept of "**LEARNING**" the definition of Jouquan, Bail, and Vienneau. Indeed, these authors specify that Learning aims to associate, by conditioning, a reward to a specific response. It is a behavior change that joins stimuli to the observable responses of the learner [13,14,26]. 33.82% are constructivists, as they have opted for the definition given by Clauzard and Alipour. These latter state that learning in the CA consists of modifying one's previous knowledge and adapting to new situations to build new knowledge, organize it and integrate it to be retrieved when needed [14,27].

Regarding the concept of "**TEACHING**," 62.75% adopt the BA since they share the exact definition given by Kozanitis and Goyette. These authors report that teaching involves educating learners to produce the expected answers according to the problems encountered [16,28]. The focus is on the transmission of knowledge and not on the ways and strategies used to get it across [16,29,30]. In the CA, teaching is seen as promoting the construction of knowledge by the student through creating a suitable atmosphere [3,8]. This definition chose 33.82% of the participants.

Refers to "**EVALUATING**," the BA reduces its definition to the mastery of knowledge; by the exercise of know-how stated in terms of observable behavior [15,29,30]. This reductive vision toward evaluation made the choice of 62.75% of the participants. In the CA, this concept highlights the process more than the final product [31]. It is a question of stimulating mental activities by promoting meaningful, complex, and close-to-reality situations [32]; indeed, 31.86% opted for this constructivist definition.

The definitions given to the concepts of the study highlight a predominance of the BA and almost an absence of the SCA and the CGA. Participants are not interested in memory work and how the brain perceives data. Nor to social interactions. However, the study conducted by Hattie confirmed the existence of a specific effect of teaching practices on motivation, perseverance, and success in studies. His synthesis showed that an increase of one standard deviation in teacher effectiveness is accompanied by an increase of about one-third in the standard deviation of learners' achievements. Thus, teachers who opt for active pedagogies help the learner in his capacities of self-regulation, which are fundamental in achieving objectives and success. Whereas, the teacher adopting a behaviorist pedagogy makes it difficult for the learner to integrate academic and social integration and does not arouse his interest in persevering in studies, leading to failure [1].

When it comes to **course preparation**, behaviorists spend a lot of time analyzing theoretical content and finding ways to make it accessible; while specifying for each learning sequence the knowledge that students should acquire [12]. 62.25% opted for this way of doing

things. Constructivists try to review the contents and present them from various perspectives; while preparing situations that aim at the construction of knowledge by the student himself [33,34]. This orientation was the choice of 32.35%. In contrast, there is almost an absence of the SCA that focuses on preparing situations that stimulate sociocognitive conflict in students [3], [21], and an absence of the CGA whose teachers rely on elaboration and organization strategies to facilitate the integration of knowledge [35,36].

In **giving the course**, 63.73% are behaviorists since their choice corroborates with Vienneau's words. The latter specifies that in the BA, teachers break down objectives into small, logically ordered steps and prioritize exercises by increasing complexity [8,12,17]. 32.35% are constructivists who respect students' abilities by allowing them to make their reasoning and intellectual approaches [12,14,15]. However, there is an absence of the CGA and SCA.

Then, there is always a Behaviorist orientation. The participants do not consider the internal mechanisms of the brain and the mental processes not directly observable. Do not make students work in groups. Do not pay any particular attention to the structure of the content and do not emphasize the knowledge and skills that the person already has. This corroborates with the results of Halawah's studies, which specify that most teachers in higher education are reluctant to change and advocate the paradigm centered on teaching. For them, using active learner-centered approaches requires more effort and time, while they have fixed goals and an hourly volume that should not be exceeded. For these teachers, motivation and success are devoid of the cognitive abilities that the learner already possesses and not of the approach taken by the teacher [37]. However, the results of the study conducted by Freeman and al. on two groups of university students showed that: students, teachers who set goals in consultation with them, that met their expectations, who tried teaching the course to promote socio-cognitive learning, and who were interested in processes more than in results, were more motivated and persevered more in their studies than the students of teachers who respected to the letter the objectives and who considered themselves the only holders of knowledge [38].

In connection with the **methods and strategies** teachers adopt, in the BA, the non-individualized method prevails [23]. Partisan teachers opt for a pedagogy of memorization and the established order [12]. In the CGA, the teacher adopts an interrogative method. In the CA, it is the generation of a cognitive conflict through the confrontation of a learner with a problem situation, which is at the origin of the birth of a destabilizing effect, likely to cause a reorganization of knowledge, or the acquisition of new knowledge and know-how [6,20,35,39]. In the SCA, the teacher adopts the cooperative and collaborative method, which aims to make decisions collegially [14,21]. Referring to the above elements, we always note a predominance of the BA with 63.24%. However, in his study on the effectiveness of teaching practices, Carlos has shown that Socio-constructivism, is the most motivating approach since it can support the attention of almost all students, promote participation and allow mutual support and collaboration [40].

Also, research on the sources of engagement, conducted by Gerard & Rubio on 192 undergraduate engineering students, shows that the success rate was very high among students taught using methods based on constructive feedback, the organization of adapted pedagogical activities, the contextualization of learning with authentic activities and the reflective thinking acquired through the Problem Approach [41].

In light of this discussion, it emerges a strong predominance of the BA (64.71%). These results corroborate with the studies of several authors who report that the BA is the most wide-

spread practice in higher education [42]. However, the American Psychological Association confirms that learning is most effective when it comes to an intentional process of constructing meaning from experience and new information [34]. Similarly, the results of a meta-analysis by Freeman and al. comparing student performance in courses that advocate active learning and traditional approaches show that students in classes using traditional teaching were 1.5 times more likely to fail than students in classes using active learning [37,38].

Within the same framework of ideas, Love and all, according to their study comparing the academic performance of students in the flipped classroom (FC), as an active method, with that of students in traditional classes, show that FC students scored significantly higher than students in the conventional classroom [43,44]. This FC focuses learning on the learner [45] and prepares him before the course to make him more active and more socio-constructive once in class [46,47,48,49,50,51,52].

Thus, Socio-constructivism is the pedagogical model best adapted to the reality of the health sciences. It is the one that has been advocated in recent years as the basis of educational reform in the West [3]. In this respect, teaching is part of a constructivist and then social-constructivist approach in Europe, or a cognitivist and then constructivist in America. Influencing each other, these educational approaches have indeed highlighted the student's perspective as a key player in his learning [53].

The **intersection** between the dominant approach and the respondents' specialty revealed that the BA dominates in almost all categories of teachers except for the laureates of the 2nd cycle of PMS and those with a master's degree in pedagogy, in which the CA dominates.

The intersection between the dominant approach and training in pedagogy has highlighted a marked predominance of the BA among teachers who have not received training in pedagogy, against a strong predominance of the CA among those who have already received training in the field. Indeed, the independence of the dominant approach and the training in pedagogy is not plausible. The *P* value indicates a very low probability ($P = 0.000$) largely below the significance level $\alpha=0.05$. So, the null hypothesis is rejected to accept the existence of a strong association between these two variables (**Table VIII**).

Indeed, the significant predominance of the CA, only among teachers with a master's degree in pedagogy or a 2nd cycle diploma of PMS, can be explained by the fact that these teachers have benefited from complete training in pedagogy. The other categories of teachers have, like all other professors in higher education, recognized disciplinary expertise without being trained in pedagogy. Thus, as Kolmos and al. point out, it is not enough to be a high-level researcher to be a perfect pedagogue [24]. This goes in parallel with Lison's words, who specifies that pedagogical training is the first essential component to adopt a congruent approach and move from a paradigm based on teachings to a paradigm based on learning [53].

With the massification and change that higher education is experiencing, professors do not have to pay close attention specifically to research work. They are supposed, in parallel, to develop and innovate in pedagogy, be open to effective practices, and even make significant pedagogical changes. This bears the name of the professionalization of education [54].

In conclusion, even though the development of curricula remains dependent on the return to the basics of socio-constructivism and cognition according to a logic of skills, and any slippage towards the traditional molds of pedagogy goes against professional development; HIN-PHT teachers in the Fez-Meknes region are firmly inclined towards the teaching-centric paradigm. In this paradigm, we no longer attribute to the learner his role as a stakeholder and a leading actor in the learning process. On the contrary, we consider him as an object to be

shaped and manipulated, in which we seek only a change of behavior. However, this linear and reductive way of seeing the Teaching/Learning process is deficient and is criticized above all for being limited to transmitting knowledge to passive and unmotivated students [4,55].

Recommendation

This study focused on pedagogical approaches that positively influence students' academic motivation and success. On this basis, it is recommended to (1) Help teachers gradually migrate to more prosperous, interactive, proactive pedagogical devices. (2) Organize periodic continuing education sessions to enable them to understand the value of adopting active approaches. (3) Train and support them in introducing new information and communication technologies and provide them with platforms to facilitate the adoption of new techniques such as the flipped classroom. And (4) Advocate co-teaching that will allow collaboration and sharing, facilitate the diversification of pedagogical strategies, and reduce work overload.

Conclusion

It has now become "pedagogically correct" to be "student-centered [56]." Thus, the question of pedagogical approaches is at the heart of the problem of the teaching/learning process, insofar as we recognize the importance of teaching activities and the existence of a master effect on student learning [57]. However, our study on the pedagogical approaches used in the academic teaching of students of the HINPHT of Fez and its annexes, reveals a strong predominance of the Behaviorist approach.

Indeed, to meet the requirements of training, teachers are expected to innovate in pedagogy and question their traditional approaches, thus promoting active learning [21,58]; aimed at developing cognitive and metacognitive abilities and focusing on collaboration and teamwork [27,42].

Conflicts of interest and Funding

The authors declare that they have no conflict of interest.

Authors' contributions

The authors provided expertise, guided the research work and were involved in the study design, data interpretation, and editing before the submission of the article for publication.

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Table I: Characteristics of study participants

Characteristics	Number	Percentage
Sex		
Woman	102	50%
Man	102	50%
Type of commitment		
Permanent	105	51.47%
Temporary	99	48.53%
Seniority		
Less than 5 years	49	24.02%
Between 5 and 10 years old	111	54.41%
More than 10 years	44	21.577%
Specialty		
Teacher-researcher	31	15.2%
Specialist doctor	43	21.1%
General practitioner	1	0.5%
Doctor outside health	18	8.8%
Master's degree outside of pedagogy	20	9.8%
Master's degree in pedagogy	10	4.9%
The second cycle of paramedical studies	57	27.9%
The first cycle of paramedical studies	21	10.3%
Executive School	3	1.5%
Pedagogical training		
Yes	86	42.2%
No	118	57.8.2%

Table II: Distribution of participants by definition of study concepts

LEARNING	Percentage
Associate, by conditioning, a reward with a specific response	62.75%
Process and store new information in an organized way	0.98%
Build and organize your knowledge through your action while interacting with your environment	33.82%
Co-constructing one's knowledge by confronting one's representations with those of others	2.45%
TEACHING	Percentage
Stimulate, create and reinforce appropriate observable behaviors while conveying information in a structured, hierarchical, and deductive way	62.75%
Provide barrier situations that allow for the development of adequate representations of the world	0.98%
Create a conducive environment to promote the construction of knowledge by the student himself	33.82%
Organize learning situations conducive to dialogue to provoke and resolve socio-cognitive conflicts	2.45%
EVALUATING	Percentage
Evaluate the mastery of knowledge through the exercise of know-how stated in terms of observable behavior	62.75%
Verify students' ability to retrieve information encoded and stored in long-term memory to respond to complex situations	1.47%
Seek to promote complex and authentic situations that stimulate the mental activities that students will undertake in professional life and that allow the valorization of both the process and the final product	31.86%
Engage students in taking a constructive and realistic look back at their actions and those of peers to evaluate and then refine them	3.92%

Table III: Distribution of teachers according to the approaches they adopt in preparing and delivering the course

The Pedagogical Approach adopted by teachers in preparing the course	Percentage
The teacher spends a lot of time analyzing the theoretical content and finding ways to make it accessible while specifying for each learning sequence the knowledge that students should acquire	62.25%
The teacher prepares different strategies to facilitate the integration of each of the knowledge (declarative, procedural, and conditional) because they are represented differently in memory; to facilitate the structuring and encoding of information	2.45%
The teacher tries to review the contents and present them from various perspectives; since knowledge is not unique while preparing situations that aim at the construction of knowledge by the student himself	32.35%
The teacher prepares situations that will stimulate socio-cognitive conflict in his students	2.94%
The Pedagogical Approach adopted by teachers in giving the course	Percentage
The teacher divides the objectives into small, logically ordered steps to guide the student toward the expected behavior, and prioritizes the exercises by increasing complexity, reinforcing the behaviors that one wishes to develop	63.73%
The teacher captivates the learner's attention while paying particular attention to the structure of the content (underlining, symbols, organizing patterns, colors, images. ...), and insists on the knowledge and skills that the person already has because it is this knowledge that makes it possible to give meaning to new information	0.49%
The teacher respects the abilities of his students by allowing them to make their own reasoning and their own intellectual approaches	32.35%
The teacher seeks that the student learns to perceive reality according to various points of view to construct his or her own vision of this perceived reality and promote the debate among the students by making them work in groups	3.43%

Table IV: Distribution of teachers according to their expectations of students and the activities that offer to them

Teachers' expectations of students	Percentage
The teacher expects his students to be attentive, listen, react, memorize and try to reproduce	64%
The teacher expects his students to be active participants who seek to develop their knowledge banks and cognitive structures while perceiving the information they receive from the outside world, recognizing it, storing it in memory, and then retrieving it when they need it to understand the environment or solve problems	1%
The teacher expects his students to be autonomous, to build and rebuild by mobilizing knowledge, by doing, being active, acting on things, confronting problem situations, and solving them while using reflection and decision-making activities	3%
The teacher expects his students to become aware of their own thoughts about those of others, reconsider their ways of thinking and solving the problem situation, and learn to internalize different norms, to become social professionals who interact and collaborate	32%
The activities proposed by the teachers to ensure the teaching-learning	Percentage
The teacher gives closed exercises and case studies that he guides himself	64.22%
The teacher gives exercises and case studies of high complexity that stimulate the learner's mental activities	3.43%
The teacher presents complex learning situations containing authentic activities so that students can take a reflective approach, make decisions and solve complex problems similar to those they can encounter in the reality	32.35%
The teacher gives mini-group projects to promote intra-cognitive work and collaborative work between peers	0%

Table V: Distribution of teachers according to the methods and strategies they undertake to ensure the Teaching-Learning process

Teaching methods adopted by teachers	Percentage
The teacher adopts the non-individualized method based on unidirectional transmission	63.24%

The teacher adopts the interrogative method that is based on questions to get an idea of the prerequisites of the students regarding the content that will be taught	1.77%
The teacher adopts the method aimed at the acquisition of knowledge not by a simple stacking but by a reorganization of previous mental conceptions, a work of construction or reconstruction	32.84%
The teacher adopts the cooperative and collaborative method that aims to make decisions in a collegial manner	2.45%
Strategies undertaken by teachers	Percentage
The teacher opts for a pedagogy of memorization while exposing the learner to a source of information to learn, and a pedagogy of the established order while asking the learner to repeat as long as the performance is not yet achieved	65%
To modify the representations that are well anchored in memory, the teacher tries to be aware of them and allow his learners to convince themselves of their shortcomings, to offer them other more accurate representations on which they can subsequently rely	1%
The teacher promotes an approach centered on the ownership of learning by the students themselves since learning requires a deep commitment on the part of the learner	32%
The teacher creates situations conducive to learning, directs students to valuable resources, advises them, and completes their incomplete notions	2%

Table VI: The pedagogical approach that dominates the teaching practice of the teachers who participated in the study

Dominant approach	Approche Behaviorist	Approche Cognitivist	Approche Constructivist	Approche Socio-constructivist
%	64.71%	0.98%	31.86%	2.45%

Table VII: Distribution of the dominant pedagogical approaches according to the specialties of the participants

*		Dominant approach				Total	
		Behaviorist	Cognitivist	Constructivist	Socio-constructivist		
Participant's specialty	Teacher-researcher	Number	29	0	2	0	31
		%	93.5%	0%	6.5%	0%	100%
	Specialist doctor	Number	41	0	1	1	43
		%	95.3%	0%	2.3%	2.3%	100%
	General practitioner	Number	1	0	0	0	1
		%	100%	0%	0%	0%	100%
	Doctor outside health	Number	14	0	4	0	18
		%	77.8%	0%	22.2%	0%	100%
	Master's degree outside of pedagogy	Number	8	0	11	1	20
		%	40%	0%	55%	5%	100%
Master's degree in pedagogy	Number	4	1	5	0	10	
	%	40%	10%	50%	0%	100%	
Second cycle of	Number	15	0	39	3	57	

	paramedical studies	%	26.3%	0%	68.4%	5.3%	100%
	First cycle of paramedical studies	Number	19	1	1	0	21
		%	90.5%	4.8%	4.8%	0%	100%
	Executive School	Number	1	0	2	0	3
		%	33.3%	0%	66.7%	0%	100%
Total		Number	132	2	65	5	204
		%	64.7%	1%	31.9%	2.5%	100%

Table VIII: Identification of the dominant approach according to whether or not teachers have received training in pedagogy

*		Dominant approach				Total	
		Behaviorist	Cognitivist	Constructivist	Socio-constructivist		
Training in pedagogy	NO	Number	115	0	3	0	118
		Percentage	97.5%	0%	2.5%	0%	100%
	YES	Number	17	2	62	5	86
		Percentage	19.8%	2.3%	72.1%	5.8%	100%
Total	Number	132	2	65	5	204	
	Percentage	64.7%	1%	31.9%	2.5%	100%	

Table IX : Chi-square test : Dominant approach and Training in pedagogy

*	Value	Degree of freedom	P Value
Pearson's Chi-square	131.528 ^a	3	.000
Plausibility value	152.054	3	.000
Number of valid observations	204		