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Educational innovation in nursing and health technology in Morocco: a descriptive analytique study exploring the determinants of its adoption at the level of higher institutes of nursing and health technology

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Research Article

Keywords: educational innovation, factors encouraging educational innovation, continuing education, nursing and health sciences, HINHT, Morocco

Posted Date: April 23rd, 2026

DOI: https://doi.org/10.21203/rs.3.rs-9260576/v1

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Additional Declarations: No competing interests reported.

Abstract

Background: Educational innovation is now an essential lever for improving the quality of training. Since the introduction of the Bachelor's-Master 's-Doctorate (BMD) system in Morocco, Higher Institutes of Nursing and Health Techniques (HINHT) have been called upon to rethink their teaching practices. This study aims to exploring the determinants of educational innovation at the level of Higher Institutes of Nursing and Health Techniques in this context of reform.

Methods:A descriptive analytique study was conducted among 301 teachers from various ISPITS in Morocco. The questionnaire used for this study was developed to collect quantitative information on several dimensions related to educational innovation. All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS, version 20.0). The normal distribution of quantitative variables was tested using the Kolmogorov-Smirnov test. Nominal variables were presented as proportions.

Results: The results showed that nearly half of the participants (49.8%) were in the 30-40 age group, with the majority being female (72.1%). Only 27% had received training in pedagogical innovation. The main factors driving innovation were improving teaching (98.7%), Curricular reforms (88.0%), institutional obligation (78.1%), job dissatisfaction (75.4%) and breaking with routine (73.8%).

Conclusions: This study identified the institutional and personal reasons that prompted those responsible for training at HINHP in Morocco to use pedagogical innovation. However, continuing education in pedagogical innovation must reach all teachers. It remains a sine qua non condition for preparing them for innovation, but also for supporting them so that they can keep up with and adapt to the reforms taking place in the education system.

Introduction

The Higher Institutes of Nursing and Health Technology (HINHT) in Morocco, created in 2013, were established as part of an ambitious reform aimed at bringing nursing training in to line with the standards of Law 01 – 00 governing the organisation of higher education [1].These establishments, classified as higher education institutions not affiliated with universities, are placed under the supervision of the government authority responsible for health [2].They offer structured training in three study cycles – Professional Bachelor's Degree, Master's Degree and Doctorate – for nursing and health technology professions, aimed at strengthening the technical and scientific skills of healthcare professionals in Morocco.

The introduction of the Bachelor-Master-Doctorate (BMD) system in the HINHT marked a fundamental break with traditional teaching methods, particularly the traditional lecture format, making pedagogical innovation an essential requirement for improving the quality of education and meeting the new demands of professional training [3, 4].In the same vein, Lahrour and Boudad (2025) [5] advocate that educational innovation appears to day as a strategic necessity to respond to these transformations. It is not limited to the use of digital tools, but encompasses any modification of educational practices aimed at improving the quality of learning, strengthening learner engagement and adapting teaching to contemporary needs.

This concept is central to the thinking not only of teachers and students, but also of policymakers and administrators [6]. It is part of the strategic vision for reform during the 2015–2030 period, which emphasizes the importance of "promoting scientific and technological research and innovation." (Supreme Council for Education, Training and Scientific Research (CSEFRS, 2015) [7].

Research on This topic addresses the major challenges of our time and necessitates a rethinking of teacher training and the updating of teaching methods, taking in to account the diversity of students [8]. This research thus enables the development of new approaches to knowledge transfer, student support, and the transition towards innovative teaching practices, capable of ensuring quality learning and contributing to the development of a globalized society, in the face of educational, scientific, and socio-economic challenges [8].

Teacher training in pedagogical innovation is one of the key steps in the innovation process in higher education [9] and one of the main drivers of progress for any educational institution [3, 10]. The concept of support and guidance as the core principle of innovation is central to the (HINHT) programs, which are managed by the department responsible for research, cooperation, and continuing education. This department considers training in pedagogical innovation to be an essential requirement, not only to enable teachers to adapt to reforms within the education system, but also as an opportunity for their professional and personal development.

Therefore, this study aims to exploring the determinants of educational innovation at the level of Higher Institutes of Nursing and Health Techniques in the context of reform. It also seeks to identify the conditions necessary to make innovation a driving force for progress in the teaching of nursing and healthcare sciences.

Methods

Study design

This is a descriptive analytical study conducted within 23 institutes in Morocco to explore the determinants of educational innovation, particularly in the context of reform.

Study Setting

This study was conducted in 2025 which surveyed 301 teachers working in 23 higher education institutes for health professions and health technologies (HINHT) across Morocco under the Ministry of Health and Social Protection in Morocco.

Data Collection

The data was collected using an online Google Forms questionnaire. This tool was validated by experts and pre-tested before data collection. The questionnaire was developed to collect quantitative information on several dimensions related to educational innovation. It includes five main sections :

Sociodemographic characteristics

This section describes the profile of the study participants through variables such as age, gender, education level, and professional experience.

Institutional motives for adopting pedagogical innovation

This section explores the reasons that may encourage responsible organizations to use pedagogical innovation, including improving the quality of teaching, addressing learner failure, raising the overall level of students, institutional obligation, and the introduction of curricular innovations.

Personal Motivations to Innovate:

This section examines the individual factors that drive teachers to innovate, such as professional dissatisfaction, the start of the academic year, teamwork, the need to break with routine, and feedback after an internship.

Teacher Training in Pedagogical Innovation

This section focuses on teacher participation in training related to pedagogical innovation within Moroccan HINHT.

Impacts of Training on Instructional Design

This final section evaluates the effects of innovation training on the instructional design process, through four phases:

Analysis: taking into account learner characteristics influencing pedagogical choices;

Design: detailed planning of instruction, definition of learning objectives and selection of content and teaching strategies;

Implementation (distribution): implementation of the learning system for learners, involving appropriate logistical and technological organization ;

Assessment: Development of assessment tools to measure the achievement of educational objectives

Statistical analysis

All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS, version 20.0). The normal distribution of quantitative variables was tested using the Kolmogorov-Smirnov test. Nominal variables were presented as proportions.

Results

Sociodemographic characteristics of participants

301 teachers completed the questionnaire, nearly half of the participants (49.8%) are between 30 and 40 years old. The majority are female (72.1%), and almost half have a master's degree (49.8%). Furthermore, more than a third of the participants have between 5 and 10 years of professional experience (see Table 1).

Structures responsible for strengthening teachers' pedagogical innovation skills.

According to Table 2, almost all participants believe that the training department, the academic department and the department of research, continuing education and cooperation at ISPITS are the entités responsible for strengthening teachers' skills in terms of pedagogical innovation.

Training on pedagogical innovation within HINHP

Out of a total of 301 teachers, only 80 (27%) have received training on pedagogical innovation, compared to 221 (73%) who have not yet received training (see figure 1).

Institutional and personal reasons encouraging the use of educational innovation by institutions and teachers

The main institutional and personal reasons for adopting pedagogical innovation within HINHP, from the perspective of both teachers and the responsible organizations (see Table 3).

Personal reasons

Improving teaching quality is the most common reason, with almost all teachers (98.7%) recognizing this as an essential factor.

The overall academic level of students (86.0%) and curriculum reforms (88.0%) are also among the most frequent reasons, followed by more contextual factors such as student underperformance (64.1%) and institutional requirements (78.1%).

Institutional reasons

The responsible organizations primarily identified job dissatisfaction (75.4%) and the need to break with routine (73.8%) as key drivers for adopting innovative approaches.

Other factors related to collaboration and feedback in the innovation process, such as teamwork (72.8%) and evaluating results after a training program (58.5%), were also identified. Finally, almost half (42.2%) considered the start of the academic year a strategic time to initiate pedagogical changes.

Impact of training in educational innovation

According to Table 4, training in educational innovation enabled teachers to adopt the stages of educational design, with 24.6% for implementation, 23.9% for analysis, 23% for evaluation and 22.9% for design (see Table 4).

Discussion

This is the first study to explore the institutional and personal determinants of educational innovation in nursing and health technology education in Morocco following the introduction of the BMD system. The results relating to age group show that almost half of the population (49.8%) is aged between 30 and 40, and more than a third have between 5 and 10 years of professional experience years. In terms of gender, the results show a clear predominance of women (72.1%), compared to 27.9% for men. This explains why nursing is traditionally a female profession [11]. Among the reasons prompting responsible structures to use innovation, the results showed that the improvement of teaching, curricular reforms and institutional obligation are the reasons with the respective proportions of 98.7%, 88%, 78.1%. These results corroborate Feller's (2018) [4] assertion that pedagogical innovation is essential for improving the quality of teaching. The ultimate goal of educational innovation is to continuously improve teaching methods and promote student development while enabling students to articulate their knowledge, reflect on their learning, and develop a personal understanding of it. The use of student-centred teaching strategies promotes optimal thinking development and student engagement in their learning journey [12]. Unequivocally, pedagogical innovations require students to be active in their learning and therefore demand commitment on their part [13].

Regarding curriculum reforms and institutional requirements, our results corroborate the findings of Barich et al. (2019) [14], according to which institutional requirements imposed the adoption of an academic approach that resulted in a new educational architecture based on the

BMD system. This necessitated the use of pedagogical innovation and a restructuring of the content of training programs. Teachers working at HINHP must adapt to one of the requirements of the BMD system, namely pedagogical innovation [14].

Nevertheless, only 27% of participants benefited from continuing education in educational innovation, and our results corroborate the findings of Mili & al (2021) and Nassij (2022) [15, 16] who report that continuing education remains weak and generally does not achieve the expected results and has not yet reached its full potential. However, the National Charter for Education and Training in Morocco emphasizes the mandatory nature of such continuing education, stipulated in Article 136, Section 13 [17]. This enables teachers to supplement and improve their training so that they are able to keep up with and adapt to reforms in the education system It is one of the means of ensuring that human resources adapt to and take action on the environment. This importance given to continuing education reflects the desire to make it a key lever to support the profound transformations of the education system and meet current requirements in terms of quality and educational innovation [18]. Continuing education also has a major impact on the educational process and facilitates quality education and the integration of students into situations of academic success, which subsequently translates into social and professional success [19]. Hence, pedagogical support for teachers remains essential for sustaining innovation [13]. The issue of support and guidance is a key aspect of pedagogical innovation [20]. In order to train and support teachers, it is necessary to consult with education specialists, engage all stakeholders (teachers, students, technicians, educational stakeholders, etc.) in a strong dynamic of educational transformation, take into account motivation, different learning profiles, methods, and assessment methods, and draw inspiration from the educational experiences of developed countries in order to update practices and establish links with the professional world [8].

As for the reasons why teachers resort to pedagogical innovation, they revolve around dissatisfaction with their work, breaking with routine, teamwork, and the outcome of a training course. Nevertheless, they are cited by respondents with almost equal frequency. Respectively, 75.4%, 73.8% and 72.8%. Our results corroborate those of Mosieller (2019)[21], who reports that the beginning of the school year is an ideal time to make changes to one's usual practices (routines) with a view to improving them. Similarly, meeting with a trainer (for example, during an internship) or with a colleague while working in a team can also be a particularly innovative catalyst. Teamwork improves everyone's psycho-pedagogical and didactic training, simply by sharing questions and practices and, in the best cases, through collective reflection on learners, teaching and the curriculum [22]. Teamwork and collegiality among professors is one of the guarantees of success of an innovative program [23] dictated by the establishment of the BMD system.

Similarly, 78.1% of participants cited institutional obligation as one of the reasons for adopting pedagogical innovation. These results reflect the fact that pedagogical innovation was institutional in origin, imposed or recommended by decrees, circulars or framework laws with the introduction of the LMD system[1],[2].

In terms of the impact of training on teachers' practices, the training enabled them to take action at every stage of the teaching/learning process. Indeed, 23% were able to examine the characteristics of learners that will influence educational design decisions. Our findings corroborate those of Prégent (1990) [24], who argues that teachers should choose methods based on the characteristics of the population they are responsible for. Student characteristics also include learning styles. In this regard, El Ghardallou et al (2013) [25] specify that educators seek to identify learning styles and adapt their teaching methods accordingly.

As for assessment, as a stage in instructional design [26], at the end of the teacher training, the results showed that 23.6% had developed assessment tools to evaluate the process of achieving objectives. Continuing education was very useful to participants, enabling them to implement approaches for constructing valid assessment tools. These results clearly demonstrate the impact of training in educational innovation. Continuing education is becoming the preferred route for acquiring the tools needed to teach at all stages of educational design, contributing to professional and personal development as well as adaptation to the reforms currently underway in the education system within HINHP in Morocco.

To achieve this, it would be desirable to create a Centre for Educational Innovation (CEI) within, following the example of other higher education institutions in Morocco. The aim would be to continuously improve the quality of teaching and respond to the contemporary challenges facing higher education.

Conclusions

This study identified the institutional and personal reasons that prompted those responsible for training at HINHP in Morocco to use pedagogical innovation. However, continuing education in pedagogical innovation must reach all teachers. It remains a sine qua non condition for preparing them for innovation, but also for supporting them so that they can keep up with and adapt to the reforms taking place in the education system. This is with a view to contributing to improving the quality of higher education, of which HINHP are a part.

Abbreviations

HINPHT
Higher Institute of Nursing Professions and Health Techniques
BMD
Bachelor's Degree, Master's Degree and Doctorate
CSEFRS
Supreme Council for Education, Training and Scientific Research
SPSS
Statistical Package for the Social Sciences
CEI
Centre for Educational Innovation

Declarations

Ethics approval and consent to participate

The research protocol was approved by the Ethics Committee for Biomedical Research at Mohammed V University in Rabat, Morocco (File No 09/21). We respected the ethical principles of scientific research, in particular, the free and informed consent of participants, the right to information: all participants were informed about the subject of the study and its purpose through a written paragraph prior to the questionnaire, the right to anonymity and confidentiality, and the right to self-determination

Clinical trial number:

Not applicable

Consent for publication

Not applicable

Availability of data and materials

The data used to support the conclusions of this study are available from the corresponding author but access is restricted. These data, used under license for this study, are therefore not publicly available. However, they can be obtained from the authors upon reasonable request.

Competing interests

The authors declare that they have no competing interests

Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Authors' contributions

FB: Study design, Data collection, Data analysis, Study supervision**, KC:** Data collection, Data analysis, **FL:** Data collection, Data analysis**. ER:** Data collection, Data analysis**. BH:** Study design, Data analysis**. AB:** Study design, Data collection, Data analysis, **IB:** Data analysis, Study supervision.

All authors read and agreed to the final version of the manuscript. All authors have critically reviewed and approved the final draft of the manuscript.

Acknowledgements

We would like to thank all the teachers from the 23 institutes in Morocco who participated in this study. We also thank the school administrations who granted permission for the teachers to conduct it.

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Footnotes

1. Decree No. 2-93-602 of 13 Jumada I 1414 (29 October 1993) establishing training institutes for healthcare careers. http://bdj.mmsp.gov.ma/Fr/Document/256-D%C3%A9cret-n-2-93- 308-du-13-joumada-I-1414-29-octobr.aspx?KeyPath=.
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Tables

Table 1: Sociodemographic characteristics of the participants (n=301)

Variables	Population n= 301
Age	
[20 to 30 years [	5 (1.7)
[30 to 40 years [	150 (49.8)
[40 to 50 years [	94(31.2)
50 years and older	52(17.3)
Gender	
Man	84 (27.9)
Woman	217 (72.1)
Role within ISPITS	
Academic teaching and clinical supervision	199 (66.1)
Solely responsible for academic teaching	99 (32.9)
Solely responsible for clinical supervision:	2(0.6)
Department/unit coordinator	59(19.6)
Sector Coordination	23(7.7)
Responsible for a management-level function	43(14.3)
Courses offered by program	
Medical and social assistance	38 (12.6)
Rehabilitation	107(35.5)
Midwifery	96(31.9)
Nursing care	218 (72.4)
Health technologies	107 (35.5)
Years of experience	
< 5 years	69 (22.9)
[5 to10 ans [	104 (34.6)
[10 to 15ans [	37 (12.3)
[15 to 20 ans [	107 (35.5)
≥20 ans	18 (6.0)

Note: The values are expressed as both absolute numbers and percentages.

Table 2: Organizations responsible for enhancing teachers' skills in pedagogical innovation

Variables	Population n=301
Training Division	13(4.3)
No	288(95.7)
Yes	
HINHP Management	
No	16 (5.3)
Yes	285 (94.7)
HINHP Academic Affairs Department	
No	23 (7.6)
Yes	278 (92.4)
Department of Research, Continuing Education and Cooperation HINHP	
No	
Yes	24 (8.0)
	277 (92.0)
General Secretariat of HINHP	
No	112 (37.2)
Yes	189 (62.8)
HINHP programmes	
No	69 (22.9)
Yes	232 (77.1)
HINHP options	
No	78 (25.9)
Yes	223 (74.1)

Note: HINHP: Higher Institute of Nursing and Health Professions. Values are expressed in terms of numbers and percentages

Table 3: Institutional and personal reasons encouraging the use of educational innovation by institutions and teachers

Variables	Population n= 301
Reasons for teachers to use educational innovation	
Improvement in teaching	297(98.7)
Failure of certain pupils	193 (64.1)
General level of pupils	259 (86.0)
Institutional obligation	235 (78.1)
Curricular reforms	265 (88.0)
Reasons motivating responsible structures to resort to innovation	
Dissatisfaction with their work	227 (75.4)
Start of the school year	127 (42.2)
Teamwork	219 (72.8)
At the end of an internship	176 (58.5)
Breaking with routine	222 (73.8)

Note: Values are expressed in numbers and percentages

Table 4: Impact of training in educational innovation on instructional design

Variables	*Population n=301*
Analysis phase : examine learner characteristics that will influence educational design decisions	
No	
Yes	*8(2.7)*
	72(23.9)
Design : specify learning objectives and develop teaching strategies	
No	
Yes	*11 (3.7)*
	69 (22.9)
Implementation: Making the learning system available to students	
No	
Yes	*6 (2.0)*
	74 (24.6)
Evaluation : Develop evaluation tools to assess the process of achieving objectives.	
No	
Yes	9 (3.0)
	71 (23.0)

Note: Values are expressed in numbers and percentages.

Figures

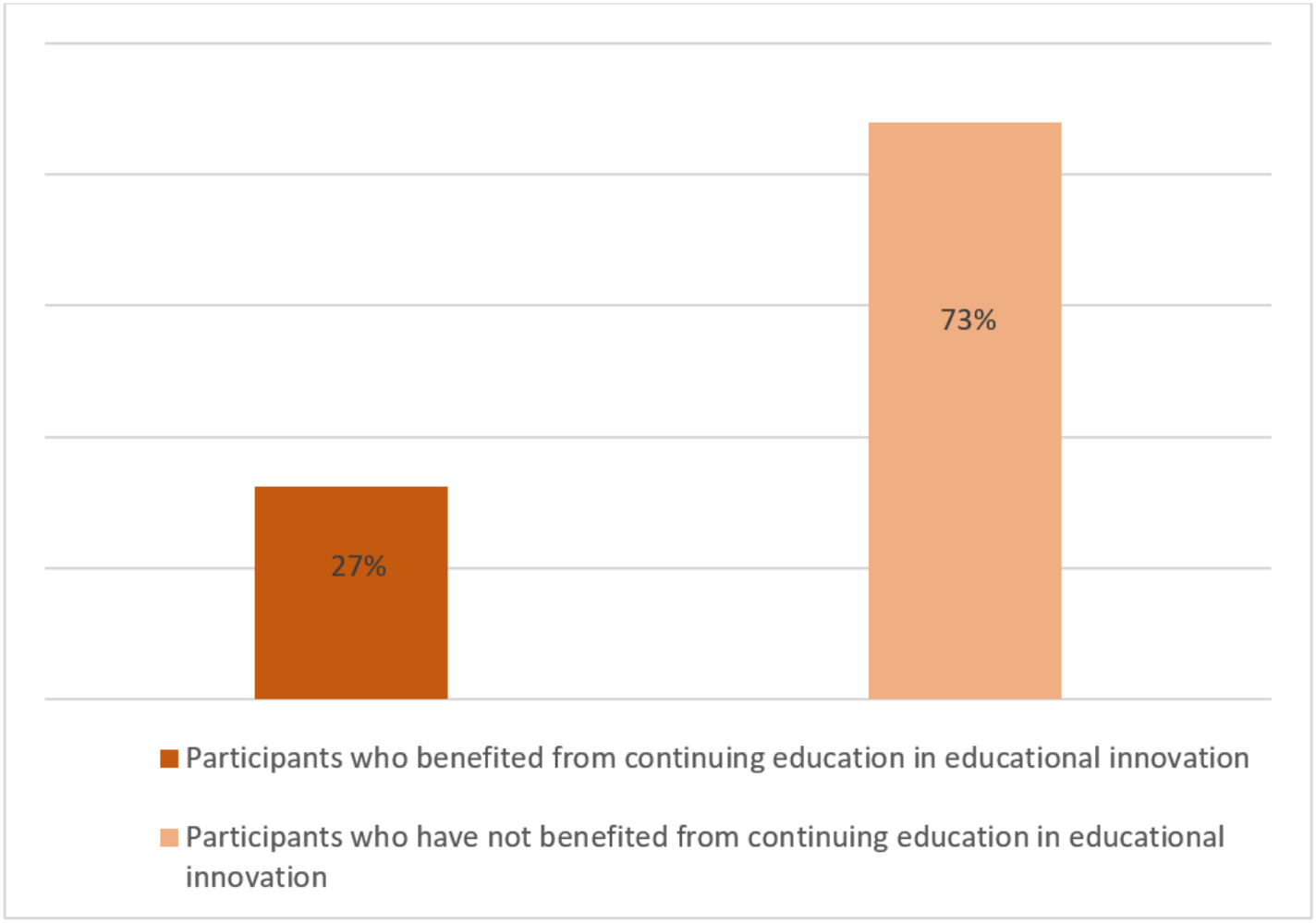


Figure 1

Teacher training in educational innovation within HINHP