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**RESEARCH ARTICLE**

# Perceptions, Practices, and Challenges of Formative Assessment in Initial Nursing Education

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**Abstract:**

*Background:*

Formative assessment is a pedagogical practice that improves teaching, as well as students' learning. There is a multitude of research demonstrating interest in this practice in the field of education. However, this assessment practice is poorly integrated by teachers despite its great pedagogical potential, in addition to the tensions existing between formative and summative assessment that its implementation is more formal by the institutions.

*Objective:*

The purpose of this research is to explore, as a first step, how nursing teachers conceptualize formative assessment and how they judge its usefulness in the teaching/learning process. Secondly, the study seeks to identify the main challenges that could influence the practice of formative assessment in the context of nursing education.

*Methods:*

The study used a descriptive quantitative research design. The target population of the study was composed of nursing teachers (N = 50) from the Higher Institute of Nursing and Health Techniques of Casablanca (ISPITS).

This target population includes all permanent nursing teachers working at the ISPITS of Casablanca, divided into the various existing fields. They are responsible for the initial training and practical supervision of nursing students and health technicians enrolled in the cycles of the professional license.

To meet our research objective, we conducted a survey using a questionnaire with 37 items divided into five dimensions based on William and Thompson's (2007) model of formative assessment.

*Results:*

The results revealed that, in teachers' practice, the informal approach to formative assessment takes precedence over formal approaches based on planned assessment tools. In addition, their perception of the usefulness of formative assessment is oriented towards a diagnostic function of students' learning difficulties rather than a function of teaching guidance.

Furthermore, the study showed that the time commitment of formative assessment and the diversity of activities required of teachers might be obstacles to a broader practice of formative assessment.

*Conclusion:*

This study offers suggestions that may help teachers facilitate and innovate the implementation of formative assessment in the field of nursing. Our research perspective is to demonstrate the effect of formative assessment on student learning outcomes through the implementation of a field experiment in collaboration with nursing teachers.

**Keywords:** Formative assessment, Nursing, Teachers, Perception, Practice, Challenges.

## 1. INTRODUCTION

In terms of training, the effects of teaching on students' achievements are often uncertain [1, 2]. However, formative assessment is intended as a means by which practitioners can make judgments about the learning attained during the teaching sequences [3, 4]. More specifically, this pervasive approach in pedagogical practices provides the teacher and the students with information on the progress of learning [5, 6]. The purpose of formative assessment is to improve students' learning, not to judge their performance [7, 8]. Bloom's initial conception, as part of mastery pedagogy, defines formative assessment as an approach that allows students to remediate their learning difficulties. Moreover, the expanded concept states that this is indeed an approach that allows the regulation of both learning and teaching [9].

In the field of education, formative assessment is carried out in both formal and informal manners, based on class interactions [10, 11]. The formal version of formative assessment allows for retroactive regulation of learning difficulties that could not be corrected by interactive regulations resulting from informal approaches [9]. Moreover, through self-assessment and peer evaluation activities, formal approaches allow for the self-regulation of students' learning and the development of their autonomy [3, 6].

Although formative approaches to evaluation affect practitioners and managers, there are barriers to a more developed practice. Implementing this type of assessment may be difficult due to the increase in the number of students and the diversity of activities required of teachers, which leaves less time for the implementation of this evaluative practice [12, 13]. Furthermore, practitioners may be hesitant to implement the practice because of the tensions between formative and summative evaluations and the fear that formative evaluation consumes too many resources [14]. Contrary to the formative assessment, summary assessment is mandatory, as it is formally integrated into the planning of the teachings [15].

## 2. LITERATURE REVIEW

### 2.1. The Role and Importance of Formative Assessment

Formative assessment is the subject of several publications that examine this pedagogical practice and its effects on student learning and the quality of teaching [16 - 19]. This form of assessment allows students to be informed about the quality of their work and how to self-regulate [20]. More specifically, formative assessment helps students to develop their learning through feedback provided by teachers [21]. Black and William (1998) [22] recommend that teachers integrate formative assessment into their teaching practices in the classroom given the benefits it offers. Moreover, the formative approaches to the assessment give rise to three main types of regulation of teaching: interactive regulation, retroactive regulation, and proactive regulation. Interactive regulation is based on classroom questioning and group interactions. This type of regulation allows for continuous

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adaptations of teaching; retroactive regulation is carried out at the end of a teaching phase and is based on formal steps of formative assessment. It, therefore, aims to verify the achievement of learning objectives by all learners. Proactive regulation is an approach based on the concern of pedagogical differentiation, taking into account the needs of learners [9, 10].

### 2.2. Practice of Formative Assessment

The concept of formative assessment was first introduced by Scriven as part of the assessment of training programs to enable adjustments. Bloom subsequently applied this concept to student learning in the master's pedagogy model [9]. Research in the French language further broadened Bloom's original view by focusing on aspects of formative assessment [9] The main stipulations of this enlargement were: a) Integrating formative assessment into all learning situations; b) Using various means of data collection; c) Regulation of teachings; d) Active participation of students in the formative assessment,; e) Differentiating teaching; f) And continuous improvement in teaching. Regarding the implementation of the formative assessment, the authors [9 - 11, 23,24 ] states that this practice can be formal or informal. Formative assessment is formal when teachers use planned instruments such as exercises, online tests, questionnaires, and self-assessment form. In the absence of tools, formative assessment is informal when using group exchanges, classroom questioning, and observation during teaching sequences. The formal version of formative assessment allows teachers to propose retroactive regulations for students' learning difficulties [9]. Informal formative assessment allows interactive regulation to be conducted throughout the teaching/learning process [10, 25].

### 2.3. Reference Framework for the Practice of Formative Assessment

Formative assessment is the subject of several theoretical guidelines and developments. Thus, and in view of the large number of existing models that have dealt with this concept, we have chosen to use the William and Thompson model [26], which was derived from the original model of Leahy [27] in conducting this study. This framework develops the main elements of formative assessment apprehended by the literature. William and Thompson's model conceptualizes formative assessment using five key strategies based on three teaching/learning processes. Leahy [27] concluded that these strategies are beneficial in all classes and in different fields.

Table **1** outlines the five key strategies by linking them to the three teaching/learning processes.

A first reference strategy is to clarify and share learning intentions and success criteria. This strategy requires communicating to students the objectives and criteria of assessment in a clear way, while taking into account the requirements of certain disciplines. A second strategy is to organize effective classroom discussions and other learning tasks to demonstrate learners' level of understanding. These include pedagogical actions that could lead to clues for the regulation of education. The third strategy is to provide feedback that advances learners. This includes feedback that

focuses on the self-regulation process in which the learner is engaged. The fourth strategy is to encourage the learner to be responsible for their learning. This refers to a shared responsibility between the teacher and the learner. The latter participates in his learning through self-assessment processes, taking into account the required evaluation criteria. The final strategy is to encourage students to be resources for their peers. The teacher's job is to offer self-assessment and peer evaluation activities.

## 2.4. Barriers to Formative Assessment

Although formative assessment promotes learning and improving teaching, there are nevertheless obstacles to a wider practice of this form of assessment. A number of studies have investigated factors that may influence its implementation in the classroom [28 - 30]. Quyen's review [31] analysed several studies that concluded that the key factors impeding the implementation of formative assessment were teachers' belief in the practice, student learning and commitment to assessment tasks, time required for formative assessment activities, and teacher workload. Other factors identified were teacher training and lack of knowledge on effective formative assessment. The same review showed that, with a large number of students in the classroom, it is difficult for teachers to set up formative assessment activities. Kazman's model, as presented by Fulmer [32], classified the factors influencing the practice of formative assessment into three levels (micro, meso and macro). The first level refers to the context of the class and the individual factors of the teacher and the student, such as the number of students per class, the commitment to the tasks of formative assessment, and the evaluative skills of teachers. This level could also include access to educational materials that can be used for this practice in its innovative form. The meso level is linked to institutional factors, including the support provided by the administration and the institutional policies on formative assessment. The macro-level mainly includes national education policies, which can influence the practices of classroom formative assessment.

Based on the above facts, we use these theoretical models to build our conceptual framework for research (Fig **1**).

## 2.5. Context

In the nursing profession, several studies have explored the formative assessment and raised interest in this practice for improving nursing learning. The study [33] focused on formative assessment in the paramedical field and demonstrated that students participating in formal formative assessment held positive perceptions of this approach at each assessment event. A study conducted by Elliott [34] concluded that self-assessment and peer assessment strategies increase nursing students' motivation to participate in class project groups. Furthermore, the study [35] demonstrated that the use of a formative assessment with well-planned quality feedback leads to effective learning, and that it is an essential component in nursing education. In Morocco, there is a lack of literature on the assessment of nursing learning and health techniques. It is important to explore this relevant aspect of the training of nurses, and there is important work to be done in this regard in light of the important developments in this discipline. Keeping

in mind, this contribution aims to explore one of the crucial aspects of teaching activities: the formative assessment of learning at the Higher Institute of Nursing Professions and Health Techniques in Casablanca. This institute has the status of a higher education establishment not belonging to universities. This is after the recent introduction of the Master Doctorate system in 2015 within these institutes. The mission of ISPITS is the initial and continuous training of nurses and health technicians, guaranteeing a quality of training that meets the recommended educational and professional requirements

## 3. METHODOLOGY

Our questioning focused on formative assessment practices as they are developed by allied health teachers at the Institute. This version of formative assessment plays an important role in the second cycle of the paramedical studies training program, Line: Paramedical Education, which refers to the design of formative assessment. It largely illustrates the contributions of this practice on student learning. In addition, official texts governing the training of nurses in Morocco recognize formative assessment as a method of assessing learning.

Specifically, our research objective was to answer the following questions:

• How do nursing teachers design formative assessments?

• How do they view the usefulness of this practice?

• What are the obstacles associated with the practice of formative assessment?

### 3.1. Study Design

This research is quantitative and descriptive, and the study occurred during 2019 at the ISPITS of Casablanca. The target population of the study was composed of permanent teachers from the nursing professions of ISPITS Casablanca (N =50). The sample is therefore exhaustive.

The permanent teachers, according to their basic training (polyvalent nurse, midwife, neonatology nurse... *etc*.) are assigned to the different options within the institute (Table **2**).

### 3.2. Materials and/or Subjects

To meet our research objective, we conducted a survey using a questionnaire. We chose the questionnaire as a data collection tool because it is a suitable method for quantitative studies. The questionnaire was developed according to the guidelines of the theoretical framework developed by William and Thompson [26], taking into account the purpose and context of our study. In addition to a section reserved for demographic data, the questionnaire includes five dimensions: functions of formative assessment and perception of its usefulness, sharing and discussing learning attentions and success criteria, how to implement the formative assessment, the temporality of formative assessment and regulation, teacher training, and barriers to the practice of formative assessment. The questionnaire consists of 37 statements with a single answer on a scale of measurement ranging from 1 to 5. Once written, the questionnaire was validated by work managers and resource people. Prior to being administered to participants, we
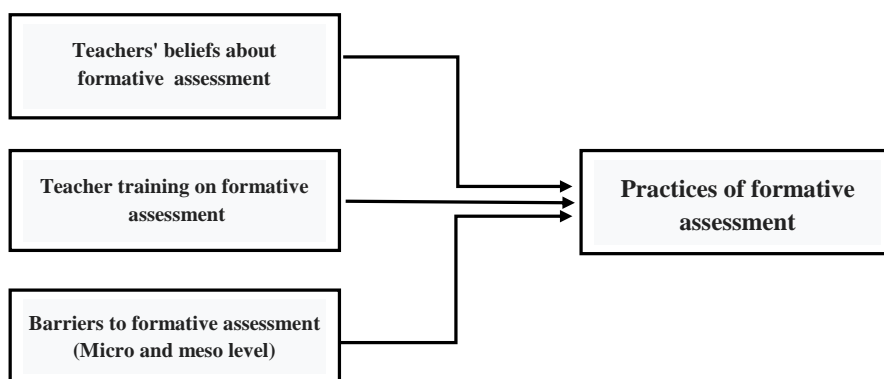
**Fig. (1). Conceptual framework for research**.

**Table 1. Aspects of formative assessment according to William and Thompson (2007).**

|  | Where the learner is going | Where the learner is now | How to get there |
|---|---|---|---|
| Teacher | Clarifying, sharing and understanding learning intentions and success criteria | Engineering effective discussions, tasks and activities that elicit evidence of learning | Providing feedback that moves learning forward |
| Peer | | Activating students as learning resources for one another | |
| Learner | | Activating students as owners of their own learning | |

conducted a pre-test with ten nursing teachers to verify the relevance, clarity, and understanding of the issues. The internal consistency of the survey was measured to confirm its reliability. The Cronbach α for the questionnaire (37 items) was 0.854.

### 3.3. Statistical Analysis

We analysed the data using statistical software (Microsoft office Excel and SPSS version 20). The results are presented in the form of tables and figures. The analysis of the data was based on the description of frequencies, percentages, means, and standard deviations.

### 3.4. Ethical Statement

Before distributing the questionnaire, respect for ethical aspects was taken into consideration. For this purpose, we obtained an authorization issued jointly by the Regional Directorate of the Ministry of Health of Casablanca and the Directorate of ISPITS of Casablanca. The application for authorization included clarifications around the objectives of

the research and its conduct. We also received consent from the study participants after explaining the commitment to respect anonymity and data confidentiality.

### 4. RESULTS

#### 4.1. Demographic Characteristics of the Participants

Forty teachers participated in the study. The response rate was (80%) (N: 40 of 50)(Table **3**).

#### 4.2. Key Results

Table **4** illustrates a comparison of scores obtained for each response. The dimensions with the greatest amount of positive responses were, respectively, 'identifying the students' strengths and weaknesses' with 87.5% positive responses, 'guiding student progress' with 85% positive responses, 'increasing the students' autonomy' with 75% positive responses. The 'directing teaching planning' dimension received only 45% positive responses with (Mean 3.08 ± 1.559).

**Table 2. Distribution of permanent nursing teachers according to their attachment options.**

| Training options | Number of permanent teachers |
|---|---|
| Polyvalent nurse | 5 |
| Midwife | 6 |
| Anesthesia nurse intensive care | 4 |
| Psychiatric Nurse | 6 |
| Technician of Radiology | 5 |
| Technician of Laboratory | 7 |
| Biomedical technician | 2 |
| Emergency nurse | 4 |
| Neonatology nurse | 4 |

*(Table 2) contd.....*

| Training options | Number of permanent teachers |
|---|---|
| Community health nurse | 1 |
| Studies Directorate | 6 |
| Total | 50 |

**Table 3. Demographic characteristics of participants.**

| Teachers' demographics | No. (%) |
|---|---|
| Teachers' demographics | |
| Gender | 32 (80%) |
| Female | 8 (20%) |
| Male | |
| Age range (yr) | |
| 20-29 | 1 (2.5%) |
| 30-39 | 23 (57.5%) |
| 40-49 | 9 (22.5%) |
| Over 50 | 7(17.5%) |
| Teaching experience (yr) | |
| Less than 5 years | 3 (7.5%) |
| 5- 10 | 23 (57.5%) |
| Over 10 | 14 (35%) |
| Education level | |
| First cycle of paramedical studies | 13 (32.5%) |
| Second cycle of paramedical studies | 23 (57.5%) |
| Diploma of management school | 3 (7.5%) |
| Doctorate | 1 (2.5%) |

Table **5** shows that 85% of teachers reported sharing learning goals with students 'quite often.' Similarly, 62.5% reported discussing learning goals 'very often'. Regarding the criteria for success, 45% of teachers reported discussing them 'quite often'. The results of the questionnaire also indicate that 45% of teachers said they are discussing the modalities of the summative assessment with the students 'very often'. On the other hand, 47.5% 'rarely' discussed the terms of the formative assessment with (Mean 2.88 ± 1.436).

Regarding the implementation of the formative assessment, Table **6** provides a ranking of the modalities practiced by the teachers interviewed.

**Table 4. Functions of formative assessment and perception of its usefulness (4 items).**

| Item | Strongly Agree (%) | Agree (%) | Unsure (%) | Disagree (%) | Strongly disagree (%) | Mean | Std. Deviation |
|---|---|---|---|---|---|---|---|
| Identifying the students' strengths and weaknesses | 65 | 22.5 | 2.5 | 7.5 | 2.5 | 4.4 | 1.033 |
| Guiding student progress | 62.5 | 22.5 | 12.5 | 2.5 | 0 | 4.45 | 0.815 |
| Increasing the student's autonomy | 32.5 | 42.5 | 7.5 | 12.5 | 5 | 3.85 | 1.167 |
| Directing teaching planning | 30 | 15 | 5 | 32.5 | 17.5 | 3.08 | 1.559 |

**Table 5. Sharing and discussing learning attentions and success criteria (5 items).**

| Item | Never (%) | Rarely (%) | Occasionally (%) | Quite often (%) | Very often (%) | Mean | Std. Deviation |
|---|---|---|---|---|---|---|---|
| I share the objectives of each course with my students | 2.5 | 2.5 | 10 | 85 | 0 | 4.75 | 0.742 |
| I explain the learning goals to achieve with my students | 2.5 | 5 | 5 | 25 | 62.5 | 4.4 | 0.982 |
| I discuss the criteria for success with my students | 2.5 | 7.5 | 20 | 45 | 25 | 3.83 | 0.984 |
| I discuss the modalities of the summative assessment with my students | 2.5 | 12.5 | 5 | 35 | 45 | 4.08 | 1.118 |
| I discuss the modalities of formative assessment with my students | 12.5 | 47.5 | 2.5 | 15 | 22.5 | 2.88 | 1.436 |

-Class questioning ranked first among the various modalities proposed: 65% of teachers 'very often' offered questioning in class to verify students' understanding (Mean 4.53 ± 0.816).

-Group discussions ranked 2nd among the modalities practiced: 25% of teachers proposed this formative approach 'quite often', 25% proposed it 'occasionally', and 17.5% proposed it 'very often'. (Mean 3.2 ± 1.224).

More than half of those surveyed (40%) 'rarely' offered exercises and tests for formative assessment (Mean 3.05 ± 1.176). Few teachers said they propose the other modalities: self-assessment, peer evaluation, and digital assessment.

Table **7** shows that 52.5% of teachers declared that they 'never' carry out the formative assessment after each teaching activity (Mean 2.13 ± 1.436). 40% reported performing formative assessment 'very often' towards the end of a course session and 40% also used the assessment 'very often' at the end of a course. Also, more than 30% reported either using formative assessment 'often' or 'quite often' before the summative evaluation of a course. The majority of teachers surveyed (over 80%) reported giving feedback to their students. 47.5% reported giving individual feedback 'quite often' after formative assessment activities. A review of teachers' responses to the types of regulations proposed revealed that 'giving more explanations' was used most often and that 40% reported doing it 'quite often' (Mean 3.9 ± 1.297). (Table **8**)

With regard to teacher training, the results show that more than 60% of teachers felt that the initial training was not sufficient to carry out the formative assessment. Furthermore, more than 70% believed that ongoing training on this practice will be useful to them (Mean 4.50 ± 0.934), and 62.5% of participants expected ongoing training on digital formative assessment (Mean 4.10 ± 1.464).

**Table 6. How to implement the formative assessment (6 items).**

| Item | Never (%) | Rarely (%) | Occasionally (%) | Quite often (%) | Very often (%) | Mean | Std. Deviation |
|---|---|---|---|---|---|---|---|
| Classroom questioning | 2.5 | 0 | 5 | 27.5 | 65 | 4.53 | 0.816 |
| Exercises and tests | 2.5 | 40 | 25 | 15 | 17.5 | 3.05 | 1.176 |
| Group discussion | 7.5 | 25 | 25 | 25 | 17.5 | 3.2 | 1.224 |
| Self evaluation | 40 | 30 | 7.5 | 7.5 | 15 | 2.25 | 1.45 |
| Peer evaluation | 45 | 32.5 | 7.5 | 10 | 5 | 1.98 | 1.187 |
| Digital assessment | 72.5 | 10 | 7.5 | 5 | 5 | 1.6 | 1.15 |

**Table 7. Temporality of formative assessment and regulation (11 items).**

| Item | Never (%) | Rarely (%) | Occasionally (%) | Quite often (%) | Very often (%) | Mean | Std. Deviation |
|---|---|---|---|---|---|---|---|
| I do the formative assessment after each teaching activity | 52.5 | 15 | 10 | 12.5 | 10 | 2.13 | 1.436 |
| I do the formative assessment at the end of a session of the course | 12.5 | 5 | 5 | 37.5 | 40 | 3.88 | 1.343 |
| I do the formative assessment at the end of a course | 17.5 | 2.5 | 10 | 30 | 40 | 3.73 | 1.467 |
| I do the formative assessment before the summary evaluation of a course | 5 | 7.5 | 17.5 | 37.5 | 32.5 | 3.85 | 1.122 |
| I give formative feedback to my students after the formative evaluation activities | 7.5 | 7.5 | 20 | 22.5 | 42.5 | 3.85 | 1.272 |
| I give individual feedback after the activities of the formative evaluation | 10 | 7.5 | 12.5 | 47.5 | 22.5 | 3.65 | 1.21 |
| I propose a regulation such as 'remaking one or more sequences of teaching' | 12.5 | 37.5 | 22.5 | 17.5 | 10 | 2.75 | 1.193 |
| I propose a regulation such as 'change the teaching material' | 10 | 10 | 27.5 | 32.5 | 20 | 3.43 | 1.217 |
| I propose a regulation such as 'increase the hourly volume of a course' | 10 | 20 | 7.5 | 40 | 22.5 | 3.45 | 1.319 |
| I propose a regulation such as 'give more explanations' | 10 | 7.5 | 5 | 37.5 | 40 | 3.9 | 1.297 |
| I propose a regulation such as 'do additional exercises' | 17.5 | 7.5 | 12.5 | 45 | 17.5 | 3.38 | 1.353 |

**Table 8. Teacher training (6 items).**

| Item | Strongly Agree (%) | Agree (%) | Unsure (%) | Disagree (%) | Strongly disagree (%) | Mean | Std. Deviation |
|---|---|---|---|---|---|---|---|
| My initial training is not sufficient to practice the formative assessment | 32.5 | 37.5 | 7.5 | 7.5 | 15 | 3.65 | 1.406 |

*(Table 8) contd.....*

| Item | Strongly Agree (%) | Agree (%) | Unsure (%) | Disagree (%) | Strongly disagree (%) | Mean | Std. Deviation |
|---|---|---|---|---|---|---|---|
| Ongoing training on formative assessment will be useful to me | 70 | 17.5 | 7.5 | 2.5 | 2.5 | 4.5 | 0.934 |
| I expect further training of theoretical contributions on this practice | 40 | 27 | 15 | 2.5 | 15 | 3.75 | 1.41 |
| I expect training to work on the practicalities of this practice | 47.5 | 30 | 12.5 | 0 | 10 | 4.05 | 1.239 |
| I expect continuous training to provide regulatory procedures | 47.5 | 30 | 10 | 2.5 | 10 | 4.03 | 1.271 |
| I expect continuous training on how to make a digital formative assessment | 62.5 | 17.5 | 2.5 | 2.5 | 15 | 4.1 | 1.464 |

**I,** "Lack of support from administration to use formative assessment**"**

**II,** "Number of students in class"

**III,** "Activities required for the teacher"

**IV,** "Time required for formative assessment activities"
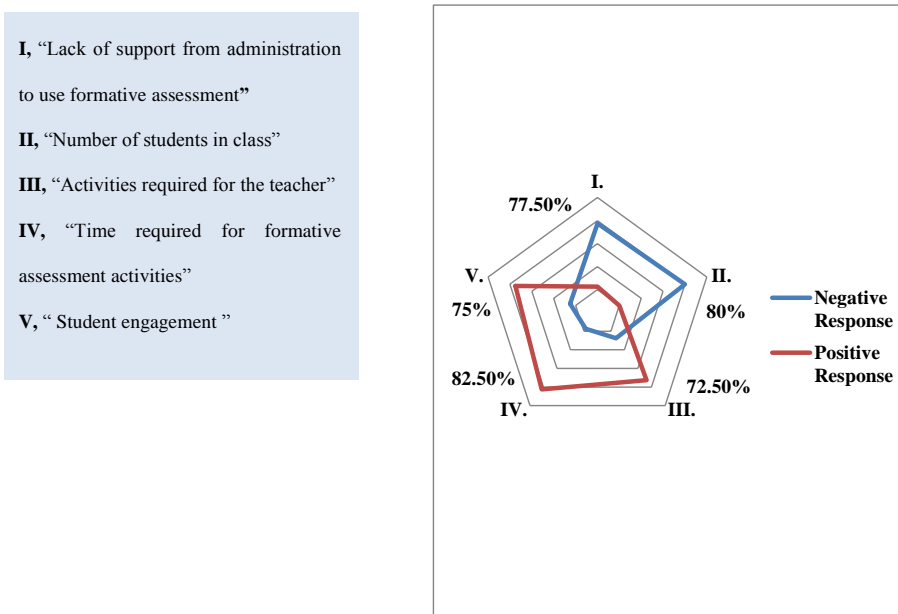
**V,** " Student engagement "



**Fig. (2).** Barriers to the practice of formative assessment (5 items).

This study explored the barriers that influence the practice of formative assessment. Fig. (**2**) shows that, according to teachers, the barriers involved in using this approach are the time required for formative assessment activities (82.5% positive response), the activities required for the teachers (72.5% positive responses), and the commitment of students (75% positive responses). The other two identified barriers, the lack of support from the administration to use formative assessment and the number of students, did not score significantly among the positive responses.

## 5. DISCUSSION

In this chapter, we will discuss the most striking results of the study.

### 5.1. Interpretation and suggestion

As part of our study, we analysed teachers' reported practices on integrating formative assessment, while searching for possible obstacles to the implementation of this form of assessment. The study showed that teachers integrate formative assessment into their practice, but their knowledge does not fully correspond to the broad theoretical guidelines for formative assessment. Teachers perceive this tool to be a useful diagnostic function for identifying students' learning difficulties and guiding their learning, but do not understand that formative assessment has two inseparable functions: a diagnostic function used to identify learning difficulties and a regulatory function aimed at regulating teaching [22].

Compared to the strategy of formative assessment in relation to sharing, discussion of learning attentions, and criteria for success, this behaviour seems to be shared by more than half of the teachers. However, compared to the summative assessment, the discussion of the modalities of the formative assessment is not universal. This may be related to the formal that the summative assessment occupies in the modalities of the assessment of learning at ISPITS Casablanca.

Regarding the modalities of formative assessment, the practices of the teachers interviewed also varied in their implementation. A comparative analysis of the responses clearly demonstrated a lack of the use of formal approaches to formative assessment calling for the use of tools such as exercises and tests. Teachers seem to be contented with a

formative assessment based on classroom questioning and group interactions. Furthermore, modalities for involving the student in the process of regulating learning through self-assessment and peer evaluation are rarely mobilized. In their review, Black and William [22] encourage teachers to use classroom questioning and discussion as an opportunity to improve students' understanding. They also stress the value of using formal approaches with exercises and tests. This data is inconsistent with the broader conception of formative assessment apprehended by Allal [9], where it is necessary, as part of innovative approaches, to combine interactive regulatory modalities based on informal evaluation approaches with instrumented formal modalities designed for retroactive regulatory procedures.

This study revealed that the majority of teachers believed that their training remains insufficient for the practice of formative assessment. Thus, their expectations of continuous training on formative assessment relate, in particular, to the practical modalities of formative assessment, the modalities of regulation, and how to make a digital assessment. We assume that these results suggest avenues for continuing education. Thus, it is necessary to set-up training programs at the ISPITS level of Casablanca on the evaluation of apprenticeships. It is also possible to encourage professional reading in the field of formative assessment and to provide teachers with access to educational, scientific databases specializing in the field of assessment. In addition, it would be interesting to offer teachers the ability to incorporate innovative approaches to educational evaluation, such as the use of new information and common technologies.

This initial study, which was conducted to identify teacher's knowledge and perceptions about the practice of formative assessment, has noted potential difficulties in implementation. According to the results, three obstacles are the most significant: the time required for formative assessment activities, the activities required of teachers, and the commitment of students. Many requirements in terms of curricula are being faced by the paramedical teacher in Morocco. At the same time, he is a trainer in the academic environment and is responsible for the supervision of clinical internships. In addition to these responsibilities, various tasks are also involved concerning the organization of internships, teaching planning activities, and exam supervision.

### 5.2. Comparison with Previous Studies

Previous research has sought to understand teachers' perceptions and knowledge of the practice of formative assessment. In this sense, the study [36] found that teachers lack expertise and skills in formative assessment strategies, which has negative implications when integrating this form of assessment into their teaching. A study conducted by Fahez [37] demonstrated that teachers use summative evaluation more frequently than formative assessment in the classroom. The study also displayed incorrect practice of this form of evaluation with a low mobilization of formal formative assessment procedures, such as classroom testing, self-assessment, and peer review. In addition, a recent study [38] indicated that teachers view formative assessment in a

traditional manner and lack knowledge about the usefulness of the practice and how to use it. This research demonstrated the need to develop teachers' knowledge and skills in formative assessment. On the other hand, the study [39] showed that the teachers interviewed share positive perceptions about formative assessment and its use for improved learning and training. The teachers interviewed also believe that classroom training is essential for planning teaching and for having effective evidence of student progress.

### 6. LIMITATIONS

It is also important to mention the imitations of our study. The data presented are the results of an initial diagnosis conducted as part of a doctoral research project on the use of digital technology for formative assessment in the field of nursing. This diagnosis provided a general picture of the orientations of teachers' formative assessment practice in relation to expert theories. This first study can serve as a starting point for further research based on observation of class practices, as it will be necessary to consider how this assessment is actually put into practice.

### CONCLUSION

The study shows that teachers incorporate formative assessment into their practice. However, their expertise did not fully match the directions in the William and Thompson (2007) model. Furthermore, teachers are contented with an informal practice of formative assessment, with an under-employment of app-mobilization supporting self-regulation of learning, such as self-assessment and peer evaluation. The study also revealed a need for continuing education in this area, as well as challenges to the practice.

Thus, as a part of the continuity of our research project, we will try to:

• Offer nursing students, via a theoretical course, an online formative assessment to formulate interest in the assessment process.

• Measure the effect of the implementation of formal training assessments on students' learning and motivation for learning.

### ETHICS APPROVAL AND CONSENT TO PARTI-CIPATE

This study was approved by the local ethics committee of The Higher Institute of Nursing and Health Techniques of Casablanca (ISPITS). Morocco.

### HUMAN AND ANIMAL RIGHTS

Not applicable

### CONSENT FOR PUBLICATION

Informed consent has been obtained form all the participants.

### AVAILABILITY OF DATA AND MATERIALS

The data supporting the findings of the article are available

from the corresponding author [H.L] upon request.

## CONFLICT OF INTEREST

The author declares no conflict of interest, financial or otherwise.

## REFERENCES

[1]   Black P. Formative assessment – an optimistic but incomplete vision. Asess Educ 2015; 22(1): 161-77.
[http://dx.doi.org/10.1080/0969594X.2014.999643]

[2]   Black PJ. Formative and Summative Assessment by Teachers. Stud Sci Educ 1993; 21(1): 49-97.
[http://dx.doi.org/10.1080/03057269308560014]

[3]   Wiliam D. What is assessment for learning? Stud Educ Eval 2011; 37(1): 3-14.
[http://dx.doi.org/10.1016/j.stueduc.2011.03.001] [PMID: 22114905]

[4]   Bennett RE. Formative assessment: a critical review. Asess Educ 2011; 18(1): 5-25.
[http://dx.doi.org/10.1080/0969594X.2010.513678]

[5]   Luft JA. Formative assessment and science education. Sci Ed 2002; 86(5): 733-6.
[http://dx.doi.org/10.1002/sce.10053]

[6]   William D. The role of formative assessment in effective learning environments The Nature of Learning: Using Research to Inspire Practice 2010. OECD Publishing
[http://dx.doi.org/10.1787/9789264086487-8-en]

[7]   Bright and Joyner . The Importance of Formative Assessment. (2005, p. 2). Using Classroom Assessment to Improve Student Learning Available at: http://oregonmathematicsmethods.weebly.com/uploads/2/4/5/4/24544359/nctmformative_assessment_part_1.pdf[8] 2012

[8]   Clark I. Formative Assessment: Assessment Is for Self-regulated Learning. Educ Psychol Rev. juin 2012; 24(2): 205-49.

[9]   Allal L, Mottier Lopez L. Formative assessment of learning: A review of publications in French. In J. Looney (Ed.), Formative assessment: Improving learning in secondary classrooms 2005, ISBN-92-64-00739-3 © OECD. Available at: http://www.oecd.org/education/ceri/34488354.pdf

[10]  Bell B, Cowie B. The characteristics of formative assessment in science education Inc Sci Ed 2001; 1 sept85: 536-.
[http://dx.doi.org/10.1002/sce.1022]

[11]  Yorke M. Formative Assessment in Higher Education:Its Significance for Employability, and Steps Towards Its Enhancement. Tert Educ Manag 2005; 11(3): 219-38.
[http://dx.doi.org/10.1080/13583883.2005.9967148]

[12]  Yorke M. Formative assessment in higher education: moves towards theory and the enhancement of pedagogic practice. Higher Education.2003;45 (4):477-501. Stable URL: http://www.jstor.org/stable/3447452

[13]  Quyen NTD, Khairani AZ. Reviewing the challenges of implementing formative assessment in Asia: The need for a professional development program. JSSS 2016; 64(1): 160.

[14]  OECD (Organisation for Economic Co-operation and Development). (2005). Formative Assessment: Improving Learning in Secondary Classrooms. Assessment (Vol. 29). Pairs, France: Centre for Educational Research and Innovation/Organization for Economic Cooperation and Development. Paris. Available at https://www.oecd.org/education/ceri/35661078.pdf

[15]  Looney J. Integrating Formative and Summative Assessment. OECD Education Working Papers [Internet]. [cité 26 mars 2020]; Disponible sur:
https://www.academia.edu/3727583/Integrating_Formative_and_Summative_Assessment_Progress_Toward_a_Seamless_System

[16]  Marden NY, Ulman LG, Wilson FS, Velan GM. Online feedback assessments in physiology: effects on students' learning experiences and outcomes. Adv Physiol Educ 2013; 37(2): 192-200.
[http://dx.doi.org/10.1152/advan.00092.2012] [PMID: 23728137]

[17]  Pla-Campas G, Arumí-Prat J, Sene-Mir AM, Ramirez E. Effect of Using Formative Assessment Techniques on Students' Grades. Procedia Soc Behav Sci 2016; 228: 190-5.
[http://dx.doi.org/10.1016/j.sbspro.2016.07.028]

[18]  Andersson C, Palm T. The impact of formative assessment on student achievement: A study of the effects of changes to classroom practice after a comprehensive professional development programme. Learn Instr 2017; 49: 92-102.
[http://dx.doi.org/10.1016/j.learninstruc.2016.12.006]

[19]  Kulasegaram K, Rangachari PK. Beyond "formative": assessments to enrich student learning. Adv Physiol Educ 2018; 42(1): 5-14.
[http://dx.doi.org/10.1152/advan.00122.2017] [PMID: 29341810]

[20]  Wiliam D. Formative assessment and contingency in the regulation of learning processes. In Annual Meeting of American Educational Research Association,. Philadelphia, PA. 2014.

[21]  Nicol DJ. Macfarlane. Dick D. Formative assessment and self-regulated learning: a model and seven principles of good feedback practice. Stud High Educ 2006; 31(2): 199-218.
[http://dx.doi.org/10.1080/03075070600572090]

[22]  Black P, Wiliam D. Assessment and classroom learning. Asess Educ 1998; 5(1): 7-74.
[http://dx.doi.org/10.1080/0969595980050102]

[23]  Mertler CA. Preservice Versus Inservice Teachers' Assessment Literacy: Does Classroom Experience Make a Difference? 2003.

[24]  Grob R, Holmeier M, Labudde P. Analysing formal formative assessment activities in the context of inquiry at primary and upper secondary school in Switzerland. Int J Sci Educ 2019; 1-21.
[http://dx.doi.org/10.1080/09500693.2019.1663453]

[25]  Ruiz-Primo MA, Furtak EM. Exploring teachers' informal formative assessment practices and students' understanding in the context of scientific inquiry. J Res Sci Teach 2007; 44(1): 57-84.
[http://dx.doi.org/10.1002/tea.20163]

[26]  Wiliam D, Thompson M. Integrating assessment with instruction: What will it take to make it work? In: Future of assessment: Shaping teaching and learning. 2008. p. 53-82. https://discovery.ucl.ac.uk/id/eprint/10001162/1/Wiliam2006Integrating.pdf

[27]  Assessment C, by Minute M, by Day D, Leahy S, Lyon C, Thompson M, Wiliam D. continually adapt instruction to meet student needs. Assessment 2005; 63(3) Available at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.554.8751&rep=rep1&type=pdf

[28]  Gallo AM, Sheehy DA, Patton K, Griffin L. Assessment benefits and barriers: What are you committed to? J Phys Educ Recreat Dance 2006; 77(8): 46-50.
[http://dx.doi.org/10.1080/07303084.2006.10597926]

[29]  DeLuca C, Luu K, Sun Y, Klinger DA. Assessment for learning in the classroom: Barriers to implementation and possibilities for teacher professional learning. :25. https://www.nzcer.org.nz/system/files/AM2012_4_005_0.pdf

[30]  Singh B. Barriers to formative assessment in school science: A Critical Realist perspective. :388. 2015 Doctoral thesis , UCL Institute of Education.
https://discovery.ucl.ac.uk/id/eprint/10021764/1/Thesis%20%20BS%20final%20copy_new%20.2.pdf

[31]  Quyen NTD, Khairani AZ. Reviewing the Challenges of Implementing Formative Assessment in Asia: The Need for a Professional Development Program. jsss 2016; 6 nov4(1): 160.

[32]  Fulmer GW, Lee ICH, Tan KHK. Multi-level model of contextual factors and teachers' assessment practices: an integrative review of research. Asess Educ 2015; 22(4): 475-94.
[http://dx.doi.org/10.1080/0969594X.2015.1017445]

[33]  Houston, Don and Thompson, James N., Blending Formative and Summative Assessment in a Capstone Subject: 'It's not your tools, it's how you use them'. j Univ Teach Learn Pract 2017; 14(3)http://ro.uow.edu.au/jutlp/vol14/iss3/2

[34]  Elliott N, Higgins A. Self and peer assessment - does it make a difference to student group work? Nurse Educ Pract 2005; 5(1): 40-8.
[http://dx.doi.org/10.1016/j.nepr.2004.03.004] [PMID: 19038177]

[35]  Koh LC. Refocusing formative feedback to enhance learning in pre-registration nurse education. Nurse Educ Pract 2008; 8(4): 223-30.
[http://dx.doi.org/10.1016/j.nepr.2007.08.002] [PMID: 17959416]

[36]  Heeralal PJH, Dessie AA. Formative assessment and learning: Science teachers' perception at east gojjam preparatory schools, Amhara Regional State, Ethiopia. Int J Innov Educ Res 2016; 4(10): 70-80.

Available at: https://ijier.net/ijier/article/view/599/512

[37]    Fahez M. Teachers' perception and practice of formative assessment: Challenges in implementing formative assessment in kabul primary schools [Internet] 2013 [cité 26 mars 2020] Disponible sur: http://urn.kb.se/resolve?urn=urn:nbn:se:kau:diva-32130

[38]    Pastore S, Manuti A, Scardigno AF. Formative assessment and teaching practice: the point of view of Italian teachers. Eur J Teach

Educ 2019; 42(3): 359.
[http://dx.doi.org/10.1080/02619768.2019.1604668]

[39]    Miller nb. Administrators' and teachers' perceptions of the formative assessment process used to evaluate students' level of proficiency and ongoing instruction in reading. :168. 2016. Available at: https://scholarworks.montana.edu/xmlui/bitstream/handle/1/9844 /MillerN0516.pdf?sequence=1