# Use of information and communication technologies (ICT) in medical and nursing training - the case of the Higher Institutes of Nursing and Health Technologies (HINHT) in Morocco

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## Abstract

The study aim: The objective of this study was to evaluate the modality of distance learning implemented at the Higher Institutes of Nursing and Health Technology during the Covid-19 pandemic. This is an exploratory study, the first of its kind in Morocco, conducted over a period of 09 months, from March to December 2022, at a set of Higher Institutes of Nursing and Health Techniques, with 592 students and 149 teachers belonging to these training institutions. The analysis of the results of the questionnaires filled out by the pedagogical managers, teachers and students of the Higher Institutes of Nursing and Health Techniques revealed a set of difficulties in the use of the platforms of their distance learning, and that notwithstanding these difficulties, through the use of distance learning the rates of progress of the courses at the level of these institutes are very high for example for the whole of these institutes, the rate of advancement of the theoretical courses is of 94%.

This study has attested to the importance of further developing the modality of distance learning at the level of Higher Institutes of Nursing and Health Techniques by using more new communication technologies and further improving the skills of stakeholders in the training process in the use of digital tools.

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## 1. Introduction

The COVID-19 pandemic has challenged all education systems because of its complex and unpredictable nature. Indeed, it has caused an unprecedented shock to these systems with the closure of schools and universities around the world [1]. In this picture, Morocco has not been an exception and has taken a range of measures to curb the spread of the virus, including the declaration of a state of a health emergency [2]. In addition, the Ministry of National Education, Vocational Training, Higher Education and Scientific Research has decided to stop face-to-face classes in all educational cycles from March 16, 2020, by introducing e-learning to avoid the spread of the virus in training institutions and also to fully adhere to the national effort to fight against the pandemic of COVID-19 [3]. The Moroccan Ministry of Health, by decision of the Minister of Health No. D/B.O.C/5709/MS of 13 March 2020, announced the cessation of face-to-face courses in the establishments under its supervision, in particular the Higher Institutes for Nursing and Health Technology (HINHT). The objective of the implementation of this system of e-learning within the latter was essentially the continuity of learning activities through the use of technology for teaching Moroccan [4].

As soon as the training system in Morocco moved from face-to-face to e-learning, the training institutes mobilized their pedagogical teams to implement an action plan based on e-learning measures based on information systems and networks. Within the framework of this action plan, the teaching staff used several methods in providing distance education, including recording videos and audios via social networks; sharing documents; and using Google Drive/Google doc/Google forms/Google Hangouts, and high fidelity capsules recorded at YOU CODE [5] .

In the context of the fight against COVID-19 and view of the role of e-learning in the continuity of education at the level of training institutes under the Ministry of Health during this pandemic, this study has outlined the objective of evaluating the e-learning modality set up at the level of the Higher Institutes of Nursing and Technical Health Professions [6]. Especially, the recommendation of e-learning as an alternative at the level of these institutes has raised a deep debate about its effectiveness and the prematurity of the teaching system to succeed in this new experience [7].

## 2. Materials and methods

This is an exploratory study, the first of its kind in Morocco, conducted over a period of 09 months, from March to December 2022, at a set of Higher Institutes of Nursing and Health Techniques, with 592 students and 149 teachers belonging to these training institutions [8].

### 2.1 Inclusion criteria:

In this study were included all the Higher Institutes of Nursing and Technical Health Professions that adopted e-learning during the Covid-19 pandemic.

### 2.2 Exclusion Criteria:

Excluded from this study were the Higher Institutes of Nursing and Technical Health Professions that did not adopt e-learning between during the Covid-19 pandemic.

### 2.3 Data collection:

This study is conducted through two questionnaires:
A questionnaire for teachers in training institutions under the Ministry of Health with questions on:
- Teachers' information (gender, training institution...) ;
- Assessment of the e-learning platform ;
- Course materials used ;
- Assessment of teaching practices.
- A second questionnaire for students in training institutions under the Ministry of Health asking questions on:
- Teachers' information (gender, training institution...) ;
- Assessment of the e-learning platform ;
- Appreciation of the tools and materials used in the course ;
- Appreciation of teaching practices.

### 2.4 Ethical considerations

Informed consent was obtained from each individual at the time of study entry. Participation in the study was free of charge, respecting confidentiality and anonymity.

### 2.5 Some definitions

### 2.5.1 Higher Institutes of Nursing and Technical Health Professions

The Higher Institutes of Nursing and Technical Health Professions are higher education institutes that do not belong to universities, they are under the supervision of the Ministry of Health, and they are specialized in training in nursing and health techniques.

### 2.5.2 Modality

Using the term "modality" this work aimed at studying the way of adoption of e-learning by the higher institutes of nursing and technical health professions during the health crisis generated by the Covid-19.

### 2.5.3 Evaluation

The aim is to objectively assess the e-learning method used in the Higher Institutes of Nursing and Technical Health Professions, in order to determine its relevance and the extent to which its objectives have been achieved.

### 2.6 Statistical analysis

The collected data were coded and subjected to computerized analysis using (SPSS V20 software). The variables were expressed as percentages.

## 3. Results and Discussions
## 3.1. Results

### 3.1.1. Number of students benefiting from e-learning at the level of Higher Institutes of Nursing and Technical Health Professions:

During the period from March 16 to April 17, 2022, the number of students who benefited from e learning amounted to 7751 who are distributed as follows (Table 1):

### 3.1.2 Number of teachers collaborating in e-learning at the level of Higher Institutes of Nursing and Technical Health Professions:

The number of teachers who have been among the main actors in the process of e-learning education is 568, distributed according to the table 2:

### 3.1.3 Status of e-learning courses at the Higher Institutes of Nursing and Technical Health Professions:

The results below reflect the state of progress of e-learning courses at the level of the Higher Institutes of Nursing and Technical Health Professions and allow a preliminary quantitative evaluation of this mode of teaching (Table 3). Since the beginning of the lockdown and until April 17, the HINHT pedagogical staff has ensured 53% of the planned courses with a considerable disparity between the different types of courses (theoretical courses, practical courses, and internships). That is 78%, the rate of progress of the theoretical courses at the level of all HINHT, followed by 56% of realization of the practical courses of all the options, and finally, the lowest rate is for the training modules, with 25%. However, it should be mentioned that the internships carried out concern only the period preceding the confinement and since the internships were postponed until a new order, we can recalculate the rate of progress while excluding the rate of progress of the internships, to obtain a

rate of approximately 67% of the courses carried out (Table 4). At the same time, there is a convergence of the percentages for each institute, concerning the realization of courses, with a median that reaches 53%, while mentioning that HINHT of Errachidia reached the highest rate with 79%, and HINHT of Casablanca ranked last in terms of advancement in e-learning courses, with the lowest rate of 35%, while mentioning the disproportion of the number of options in each institute, notably the two mentioned above (Table 5) and (Table 6).

### 3.1.4 Progress of training programmes by institute during June and July of the academic year: 2021-2022.

The evaluation of the e-learning modality implemented at the level of Higher Institutes of Nursing and Technical Health Professions showed that during the second period of June and July, the pedagogical staff of HINHT has provided 64% of the courses planned throughout the current semesters, with a considerable disparity between the percentages entered at the level of different types of courses (theoretical courses, practical courses, and internships) and at the level of the semesters (S2, S4, S6) (Table 7). That is to say 94%, the rate of progress of the theoretical courses at the level of all the HINHT, followed by 62% the rate of realization of the practical courses of all the options, and finally, the lowest rate returns to the modules of the training course and which remained stable, with 25%. However, it should be mentioned that the training courses carried out concern only the period before the confinement and since the training courses were postponed until a new order, the rate of progress can be recalculated while excluding the rate of progress of the training courses, to obtain a rate of approximately 78% of the courses given. At the same time, there is a convergence of the percentages for each institute regarding the completion of courses, with a median of 64%.

### 3.1.5 Teachers' and students' appreciation of the e-learning modality

On the teachers' side, 64.43% claimed that their training institutes did not provide them with an institute-specific platform. Although a majority (60.4%) of the teachers claim that they have used platforms available online to provide e-learning courses. 65.77% of the teachers confirm that the platforms used are useful for training, and 59.73% of the teachers claim that the use of the platforms was easy for them [9]. For the students, 84.3% had access to the platforms to follow their online courses. Moreover, 60.1% confirm the usefulness of these platforms for teaching and 52.4% consider that the use of the platforms was easy for them. It should be noted that about 79.87% of the teachers questioned said that the use of digital tools changes their way of teaching. At the same time, 66.90% of students indicate that e-learning changes their way of learning. Indeed, 71.14% of teachers believe that overall the student does not learn better through e-learning. Similarly, 68.60% of the students do not think that e-learning contributes to the improvement of teaching. Among the tools most used by students during their e-learning, we note Zoom in 28.75% of cases, Classroom in 25% of cases, Whatsap in 13.75% of cases, Google Meet in 10% of cases, Microsoft teams in 6.25% of cases, and others in 16.25% of cases.

Among teachers, the results of the survey showed that social networks are used in 66.44% of cases and platforms in 43.62% of cases. While, among students, this rate reached 63.01% for social networks and 59.80% for platforms. In addition, the results of the questionnaire revealed that 73.15% of the teachers prefer the use of a platform dedicated to e-learning, and almost 70% favor the technique of video conferencing. Similarly, 46.11% of the students surveyed said that they are interested in pursuing e-learning via platforms and 35.98% opt for audio and video resources as course materials. With regard to the course materials that were developed and disseminated to students, it is noted that 57.72% of the teachers stated that their courses were both interactive and static in a fairly balanced way, it should also be noted that the courses were mainly static (PDF, paper document) in 24.16% of cases. Whereas, 44.80% of the students said that the e-learning courses were simultaneously static and integrative and 32.60% confirmed that the courses made available to them were integrative. Almost 70% of the teachers prefer to provide their students with multimedia courses (hypertext link, audio, and video). While 39.90% of the students surveyed want to continue, their e-learning using multimedia courses and 36.30% chose paper documents as course materials.

The evaluation made within the framework of this study showed that in spite of the efforts carried out to succeed in the adoption of the e-learning modality at the level of HINHT to ensure the continuity of studies at the level of these establishments in the context of the pandemic of the COVID-19 several obstacles were raised [10]. In this case, the non-use of an e-learning platform before [1]. Indeed, 39.60% of teachers and 15.7% of students interviewed said they had never used it. This causes problems of adaptation. The non-use of digital tools and e-learning platforms by teachers before the pandemic of COVID-19 are generally the complexity of their use in 31.54% of cases, the lack of support in 31.54% of cases, the problems of confidentiality in 30.87% of responses. The time when students do not use them for their complexity in 26.01% of the cases, of which 24.7% of the students state that they have encountered difficulties in accessing the platforms and electronic teaching materials. Corroborating the declaration of the inter-university federation of e-learning (2014). According to this guide, the support of teachers to achieve the objectives set for the e-learning planned for their students is very important. For a well-equipped teacher can in turn help students to overcome their own obstacles [11].

While the analysis of course completion by the institute, by option and by semester revealed that some institutes were able to achieve high percentages, notwithstanding the COVID context, through e-learning, the study of student satisfaction with the experience of this type of education revealed that 21.50% of students were dissatisfied and that about 78.6% of students were satisfied with the presentation of the content [12] and not with the length of the courses and the pace of the presentation. Confirming the statements of several studies [13] of which the study of Giret and al having reported in their article " How satisfied are distance and face-to-face students at French universities ? " that the students can be dissatisfied with their e-learning for several reasons, hence the importance to better understand their constraints and their motives of dissatisfaction to be able to arrive at the objectives of the taught module [14].

**Table 1:** The number of students benefiting from e-learning at the level of Higher Institutes of Nursing and Technical Health Professions

| HINHT (Headquarters) | HINHT (headquarters + annex) | Students in S2 | Students in S4 | Students in S6 |
|---|---|---|---|---|
| Agadir | Agadir | 205 | 175 | 170 |
| | Guelmime | 60 | 60 | 42 |
| | Tiznit | 60 | 60 | 65 |
| Beni Mellal | Beni Mellal | 95 | 81 | 85 |
| Casablanca | Casablanca | 185 | 200 | 163 |
| | Settat | 60 | 67 | 58 |
| Errachidia | Errachidia | 90 | 78 | 70 |
| | Ouarzazate | 60 | 45 | 45 |
| Fès | Fès | 225 | 195 | 197 |
| | Meknès | 110 | 110 | 102 |
| | Taza | 80 | 80 | 74 |
| Laayoune | Laayoune | 115 | 120 | 96 |
| | Dakhla | 20 | 20 | 20 |
| Marrakech | Marrakech | 235 | 214 | 213 |
| | Essaouira | 60 | 58 | 58 |
| | Safi | 80 | 80 | 58 |
| Oujda | Oujda | 185 | 175 | 152 |
| | Nador | 80 | 70 | 43 |
| Rabat | Rabat | 375 | 325 | 321 |
| | Kenitra | 80 | 67 | 71 |
| Tétouan | Tétouan | 120 | 82 | 103 |
| | Al-Hoceima | 60 | 58 | 52 |
| | Tanger | 95 | 80 | 58 |
| Total | | 2735 | 2500 | 2316 |

**Table 2:** The number of teachers collaborating in e-learning at the level of the Higher Institutes of Nursing and Technical Health Professions

| HINHT (Headquarters) | HINHT (Headquarters + Annexes) | Permanent teachers |
|---|---|---|
| Agadir | Agadir | 37 |
| | Tiznit | 13 |
| | Guelmim | 9 |
| Casablanca | Casablanca | 70 |
| | Settat | 14 |
| Fès | Fès | 46 |
| | Meknès | 32 |
| | Taza | 17 |
| Laayoune | Dakhla | 1 |
| | Laayoune | 18 |
| Errachidia | Errachidia | 13 |
| | Ouarzazate | 7 |
| Marrakech | Marrakech | 49 |
| | Essaouira | 8 |
| | Safi | 14 |
| Rabat | Rabat | 118 |
| | Kenitra | 23 |
| Oujda | Oujda | 33 |
| | Nador | 8 |
| Tétouan | Tétouan | 14 |
| | Tanger | 14 |
| | Al-Hoceima | 10 |
| **Total of teachers** | | **568** |

**Table 3:** Status of e-learning courses for semester 2

| HINHT (Headquarters) | HINHT (Headquarters + annexes) | S2 | | | |
|---|---|---|---|---|---|
| | | By options | By theoretical courses | By practical course | Training courses before the end of the course |
| Agadir | Agadir | 52% | 77% | 80% | 0% |
| | Tiznit | 63% | 88% | 100% | 0% |
| | Guelmim | 55% | 86% | 0% | 0% |
| Casablanca | Casablanca | 26% | 65% | 14% | 0% |
| | Settat | 38% | 55% | 60% | 0% |
| Beni Mellal | Beni Mellal | ----- | ----- | ----- | ----- |
| Fès | Fès | 43% | 73% | 56% | 0% |
| | Meknès | 49% | 76% | 72% | 0% |
| | Taza | 49% | 67% | 30% | 0% |
| Laayoune | Dakhla | 48% | 63% | 86% | ----- |
| | Laayoune | 63% | 100% | 90% | 0% |
| Errachidia | Errachidia | 75% | 72% | 69% | 84% |
| | Ouarzazate | 33% | 90% | 10% | 0% |
| Marrakech | Marrakech | 56% | 85% | 76% | 5% |
| | Essaouira | 50% | 64% | 85% | 0% |
| | Safi | 45% | 85% | 50% | 0% |
| Rabat | Rabat | 40% | 90% | 31% | 0% |
| | Kenitra | 53% | 80% | 80% | 0% |
| Oujda | Oujda | 56% | 92% | 75% | 0% |
| | Nador | 38% | 71% | 100% | 0% |
| Tétouan | Tétouan | 47% | 95% | 47% | 0% |
| | Tanger | 27% | 42% | 11% | ----- |
| | Al-Hoceima | 72% | 80% | 90% | 45% |
| **Status by type of course** | | 49% | 77% | 60% | 7% |
| **Status without internship** | | **68%** | | | |

**Table 4:** Status of e-learning courses for semester 4

| HINHT (Headquarters) | HINHT (Headquarters + annexes) | S4 | | | |
|---|---|---|---|---|---|
| | | By options | By theoretical courses | By practical course | Training courses before the end of the course |
| Agadir | Agadir | **50%** | 73% | 50% | 29% |
| | Tiznit | **54%** | 66% | ----- | 42% |
| | Guelmim | **42%** | 89% | 100% | 37% |
| Casablanca | Casablanca | **40%** | 59% | 35% | 27% |
| | Settat | **45%** | 60% | 75% | **0%** |
| Beni Mellal | Beni Mellal | ----- | ----- | ----- | ----- |
| Fès | Fès | **45%** | 72% | 35% | 28% |
| | Meknès | **58%** | 77% | 77% | 21% |
| | Taza | **31%** | 49% | 0% | 12% |
| Laayoune | Dakhla | **57%** | 84% | 33% | 51% |
| | Laayoune | **44%** | 87% | **0%** | 45% |
| Errachidia | Errachidia | **78%** | 89% | 72% | 73% |
| | Ouarzazate | **43%** | 80% | 50% | **0%** |
| Marrakech | Marrakech | **68%** | 87% | 85% | 31% |
| | Essaouira | **40%** | 90% | **0%** | 29% |
| | Safi | **74%** | 83% | 100% | 40% |
| Rabat | Rabat | **51%** | 89% | 46% | 19% |
| | Kenitra | **67%** | 90% | 100% | 10% |
| Oujda | Oujda | **70%** | 95% | 87% | 30% |
| | Nador | **29%** | 40% | 20% | 26% |
| Tétouan | Tétouan | **32%** | 82% | **0%** | 13% |
| | Tanger | **45%** | 60% | ----- | 29% |
| | Al-Hoceima | **74%** | 75% | **100%** | 47% |
| **Status by type of course** | | **52%** | **76%** | **53%** | **29%** |
| **Status without internship** | | **65%** | | | |

**Table 5:** Status of e-learning courses for semester 6

| HINHT (Headquarters) | HINHT (Headquarters + annexes) | S6 | | | |
|---|---|---|---|---|---|
| | | By options | By theoretical courses | By practical course | Training courses before the end of the course |
| Agadir | Agadir | 68% | 91% | 67% | 46% |
| | Tiznit | 72% | 91% | ----- | 53% |
| | Guelmim | 42% | 98% | ----- | 46% |
| Casablanca | Casablanca | 38% | 59% | 27% | 28% |
| | Settat | 57% | 70% | 55% | 45% |
| Beni Mellal | Beni Mellal | ----- | ----- | ----- | ----- |
| Fès | Fès | 44% | 48% | 53% | 32% |
| | Meknès | 49% | 70% | 44% | 33% |
| | Taza | 47% | 62% | ----- | 32% |
| Laayoune | Dakhla | 59% | 100% | ----- | 49% |
| | Laayoune | 46% | 80% | 0% | 58% |
| Errachidia | Errachidia | 85% | 90% | 88% | 77% |
| | Ouarzazate | 38% | 60% | 25% | 28% |
| Marrakech | Marrakech | 60% | 87% | 50% | 44% |
| | Essaouira | 65% | 91% | ----- | 39% |
| | Safi | 73% | 100% | Pas de CP | 45% |
| Rabat | Rabat | 56% | 94% | 56% | 19% |
| | Kenitra | 58% | 79% | ----- | 37% |
| Oujda | Oujda | 61% | 73% | 75% | 35% |
| | Nador | 62% | 93% | 60% | 32% |
| Tétouan | Tétouan | 60% | 98% | ----- | 23% |
| | Tanger | 49% | 62% | ----- | 36% |
| | Al-Hoceima | 82% | 95% | 100% | 50% |
| Status by type of course | | 58% | 81% | 54% | 40% |
| Status without internship | | 67% | | | |

**Table 6:** Status of e-learning courses for the three levels

| HINHT (Headquarters) | HINHT (Headquarters + annexes) | Les Trois niveaux | | | |
|---|---|---|---|---|---|
| | | By options | By theoretical courses | By practical course | Training courses before the end of the course |
| Agadir | Agadir | 57% | 80% | 66% | 25% |
| | Tiznit | 63% | 82% | 100% | 32% |
| | Guelmim | 46% | 91% | 50% | 28% |
| Casablanca | Casablanca | 35% | 61% | 25% | 18% |
| | Settat | 47% | 62% | 63% | 15% |
| Beni Mellal | Beni Mellal | | | | |
| Fès | Fès | 44% | 64% | 48% | 20% |
| | Meknès | 52% | 74% | 64% | 18% |
| | Taza | 42% | 59% | 15% | 15% |
| Laayoune | Dakhla | 55% | 82% | 60% | 50% |
| | Laayoune | 51% | 89% | 30% | 34% |
| Errachidia | Errachidia | 79% | 84% | 76% | 78% |
| | Ouarzazate | 38% | 77% | 28% | 9% |
| Marrakech | Marrakech | 61% | 86% | 71% | 27% |
| | Essaouira | 52% | 82% | 43% | 23% |
| | Safi | 64% | 89% | 75% | 28% |
| Rabat | Rabat | 49% | 91% | 44% | 13% |
| | Kenitra | 59% | 83% | 90% | 16% |
| Oujda | Oujda | 62% | 86% | 79% | 22% |
| | Nador | 43% | 68% | 60% | 19% |
| Tétouan | Tétouan | 46% | 91% | 23% | 12% |
| | Tanger | 40% | 55% | 11% | 33% |
| | Al-Hoceima | 76% | 83% | 97% | 47% |
| **Status by type of course** | | 53% | 78% | 56% | 25% |
| **Status without internship** | | 67% | | | |

**Table 7:** Status of training programs by institute during June and July (Academic year: 2021-2022)

| HINHT | S2 | | | | S4 | | | | S6 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Status of the option | Status of the theoretical courses Theoretical courses | Status of the practical courses practical courses | Status of the training courses before the end of the course | Status of the option | Status of the theoretical courses Theoretical courses | Status of the practical courses practical courses | Status of the training courses before the end of the course | Status of the option | Status of the theoretical courses Theoretical courses | Status of the practical courses practical courses | Status of the training courses before the end of the course |
| Agadir | 76% | 93% | 50% | 12% | 68% | 93% | 70% | 36% | 66% | 96% | 75% | 46% |
| Tiznit | 71% | 100% | 100% | 0% | 59% | 100% | ------- | 42% | 66% | 100% | ------- | 53% |
| Guelmim | 67% | 98% | 0% | 0% | 64% | 98% | 100% | 25% | 54% | 99% | ------- | 46% |
| Casablanca | 58% | 69% | 14% | 0% | 54% | 75% | 48% | 27% | 48% | 66% | 27% | 28% |
| Settat | 64% | 90% | 100% | 0% | 67% | 100% | 100% | 0% | 95% | 100% | 100% | 100% |
| Beni-Mellal | 56% | 96% | 34% | 0% | 56% | 94% | 34% | 13% | 50% | 96% | 80% | 26% |
| Fès | 76% | 98% | 54% | 0% | 81% | 95% | 48% | 50% | 87% | 99% | 89% | 77% |
| Meknès | 67% | 100% | 72% | 0% | 51% | 100% | 50% | 22% | 100% | 75% | 25% | 100% |
| Taza | 67% | 90% | 30% | 0% | 68% | 100% | ------- | 44% | 77% | 64% | 0% | 80% |
| Dakhla | 67% | 93% | 100% | 0% | 101% | 105% | 100% | 100% | 101% | 105% | Néant | 100% |
| Laayoune | 0% | 100% | 90% | 0% | 0% | 100% | 0% | 47% | 0% | 125% | 0% | ------- |
| Errachidia | 67% | 100% | 100% | 0% | 65% | 95% | 100% | 25% | 62% | 90% | ------- | 50% |
| Ouarzazate | 80% | 92% | 10% | 0% | 70% | 80% | 50% | 0% | 40% | 0% | 0% | 28% |
| Marrakech | 82% | 96% | 77% | 0% | 75% | 97% | 133% | 31% | 67% | 99% | 60% | 47% |
| Essouira | 63% | 99% | 85% | 0% | 53% | 100% | ------- | 29% | 44% | 100% | ------- | 39% |
| Safi | 85% | 95% | 60% | 0% | 80% | 93% | 100% | 40% | 85% | 100% | 100% | 45% |
| Rabat | 0% | 90% | 50% | 0% | 53% | 89% | 46% | 19% | 55% | 94% | 62% | 21% |
| Kénitra | 70% | 100% | 80% | 0% | 42% | 100% | 100% | 10% | 70% | 80% | 100% | 37% |
| Oujda | 85% | 100% | 100% | 0% | 93% | 100% | 100% | 30% | 82% | 100% | 100% | 35% |
| Nador | 72% | 100% | 100% | 0% | 40% | 85% | 100% | 26% | 49% | 100% | 60% | 32% |
| Tétouan | 60% | 100% | 65% | 0% | 47% | 98% | ------- | 16% | 42% | 100% | 100% | 23% |
| Tanger | 70% | 100% | 70% | 0% | 65% | 90% | 85% | 28% | 77% | 100% | 100% | 36% |
| Al hoceima | 63% | 100% | 90% | 0% | 76% | 100% | 95% | 33% | 65% | 100% | 100% | 13% |
| Status by type of course | 64% | 96% | 67% | 1% | 62% | 95% | 69% | 30% | 64% | 91% | 49% | 46% |
| Status by Semester | 57% | | | | 64% | | | | 62% | | | |
| Status by general | 61% | | | | | | | | | | | |

## 4. Conclusions

This study attested to the importance of further developing the e-learning modality at the level of Higher Institutes of Nursing and Technical Health Professions by using more and more new communication technologies and by further improving the skills of the participants in the training process in the use of digital tools. In the same order of idea, it is important to think about setting up an e-learning platform that will enable these institutes to manage their e-learning courses through an electronic space that ensures secure access and data exchange.

## Conflicts Of Interest

None.

## References

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