Cloud Computing Platform for Mentoring Trainees: The Case of the Professional Training of Midwives in Morocco

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Abstract:
The digital transformation invites several solutions to optimize professional training. Its particularity lies in the management, conservation and securing of their data to each of the players. The use of the electronic learning booklet with Cloud computing aims to be simple and intuitive, it creates interaction and makes it possible to strengthen the links of the trinomial (Student, Educational tutor, supervisor on a training)

We thought of using a online platform tool using Cloud Computing Technology to overcome the limitations of the "paper" learning booklet. This technical-pedagogical system makes it possible to save all data of the apprentice through evaluation grids and follow-up sheets, both during training periods and in theoretical training, according to periods decided by the training institution. The adoption of this imperative of qualification and technological integration retains the role of each of the actors: the student, the pedagogical supervisor and the supervisor on a training course. In this strategic vision, we have conceptualized and implemented an Electronic Learning Booklet (ELB) for integrative professionalization.

Our Research Methodology is based on an engineering of the training devices. Initially we will present the context of the research project ELB. In this framework, we will present our problematic centered on the management of technical invention and pedagogical innovation in the framework of training of Midwives in Morocco. In a second step, we will discuss the qualitative and quantitative results of the statistical analysis of our target sample.

By crossing the results of the study with the validation interviews, which confound and invalidate our starting hypothesis. LEA is a powerful vector of quality and academic performance of midwifery training.

Keywords: Cloud computing, Online platform design, Monitoring – Evaluation, Intelligent tutoring.

1. INTRODUCTION

The introduction of new ICT information and communication technologies in the education and training process raises many teaching disciplines such as those of higher education on the value and usefulness of these technologies Effectiveness and efficiency of training.

In the framework of the E-learning booklet for midwives ELBM project, we have assumed as a basic assumption that "participatory user-user design favors the relevance, specificity and originality of the system used". In this perspective, the implementation of an Electronic Learning Booklet (ELB) is supported by participatory design sessions. This tool is widely used today for the pedagogical follow-up of apprenticeship students in different universities.

However, the ways of appropriating the ELB lead us to question the consideration of the institutional context in which a new tool will be implemented. If the taking into account of the users plays a very significant role, we will find that the ownership of the design and innovation by the institution itself

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can either encourage the adoption and appropriation of the tool, On the contrary, slow down the actors-users of the tool.

The usages of the tool have led us to highlight various aspects: a malleability of the tool confirmed, a time of appropriation important but necessary to implement modifications of teaching scenarios, and finally a number of elements Institutions to foster innovation and adoption of the tool. It is on these last two aspects that we will mainly focus our remarks.

First, we will present the context of the EAA research project. In this context, we will present our problematic centered on the management of technical invention and pedagogical innovation in the institutional bodies. In a second step, we will present the first results of our study on the uses of ELB within Higher Institute of Nursing and Health Professions HINHP.

2. REFERENCE AND CONCEPTUAL FRAMEWORK

The framework of our study is based on a systemic approach identical to that of "systems analysis", which is part of a functional paradigm, that Jacques Wallet (2010) [1] "PADI: pedagogy - Actors - Device (media, technology, program) - institution ". The conceptual model is therefore based on the theoretical foundations of the general framework of research in the computing environments for human learning EIAH presented by [2].

The research work consisted in carrying out a state of art of the standards of the formalization and scriptwriting of this computerized tool for the training of future midwives. The four foundations of the theoretical foundations revolve around the theories of information and systems. The second framework deals with the engineering of training devices and skills seeking to design and implement a platform for socio-professional evaluation and support. The third foundation accomplishes by highlighting the corpus of modeling skills according to the course of higher education courses. The fourth field makes a major reference to the managerial principles (monitoring, piloting and evaluation), organizational activities of the community of actors involved (Pedagogical Community - Tutor - Learner and Administrator). Our meta-model aims to articulate harmoniously the models and principles of ergonomic design

and the pedagogical requirements of the profession.

3. RESEARCH METHODOLOGY

The methodological approach focuses on the use of components of a virtual training system in order to accompany the process of building and developing medical skills in the areas of care. The computerized learning system also allows the validation of previous experiences and experiences VPE. This instrumentalization highlights the impact and effects of the conceptualized computer artefact in the pedagogical practices of the professional training of future Midwives. The electronic and didactic device designed in a perspective of online collaborative supervision Agence Wallonne des Telecommunication's 2008) [2]. The model exploits three approaches to the technical-pedagogical formalization of the virtual environment: the Learning Design (LD) model of the IMS (Instructional Management System) consortium, the Unified Modeling Language (UML) and the pedagogical scenarios of artificial intelligence.

This methodological approach emphasizes the efficient harmonization of the different processes involved:

- The Technical Orchestration
- Scenarios of the andragogic, pedagogical and didactic activities
- The managerial and organizational drifts of actors and training activities

The technical-pedagogical design of the scripting, digitization and initialization of the modules of initial formation can be described as iterative, incremental and collaborative. We choose to advocate an Andragogical engineering approach in the virtual environment, which has led us to highlight the design (or pedagogical design) of the sequences, the pedagogical scenarios constituting the training proper. The initial positioning test makes it possible to customize learning activities with the collective and individual needs of adult learners [3]. The conceptualized platform meets not only the pedagogical criteria, but also the technical and institutional requirement.

3.1   Procedures and approaches for instrumentation and instrumentalization of the platform
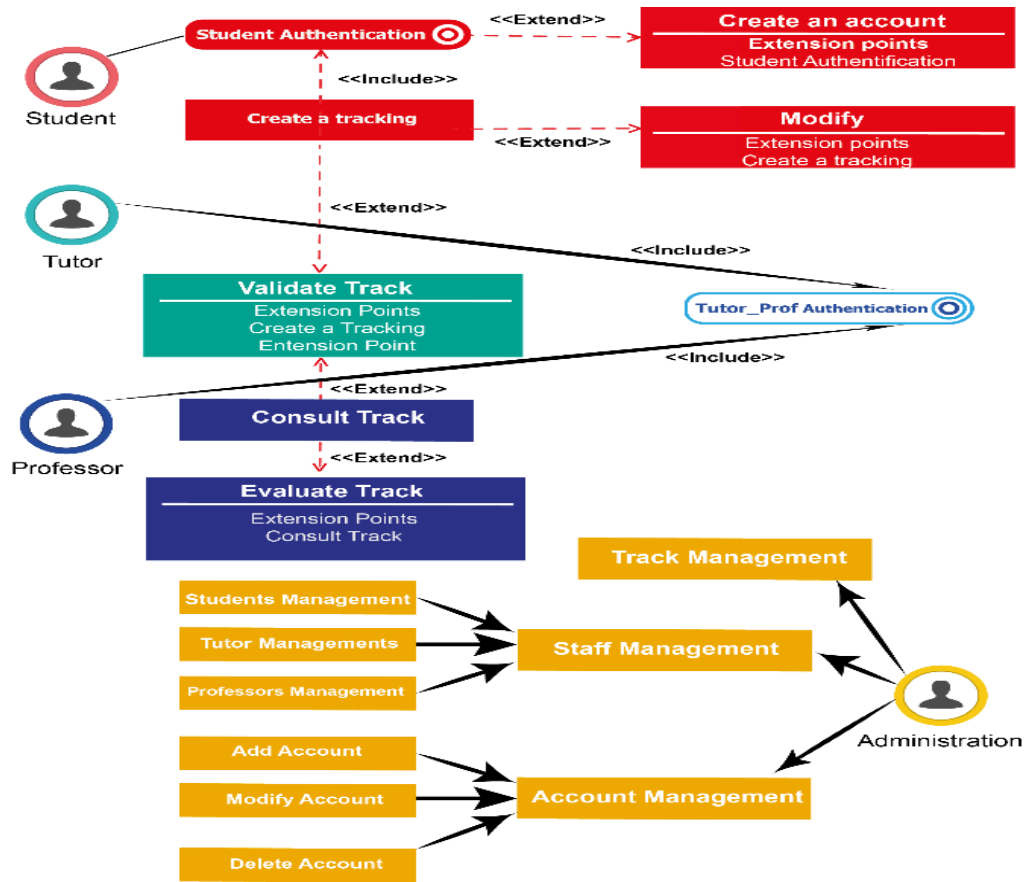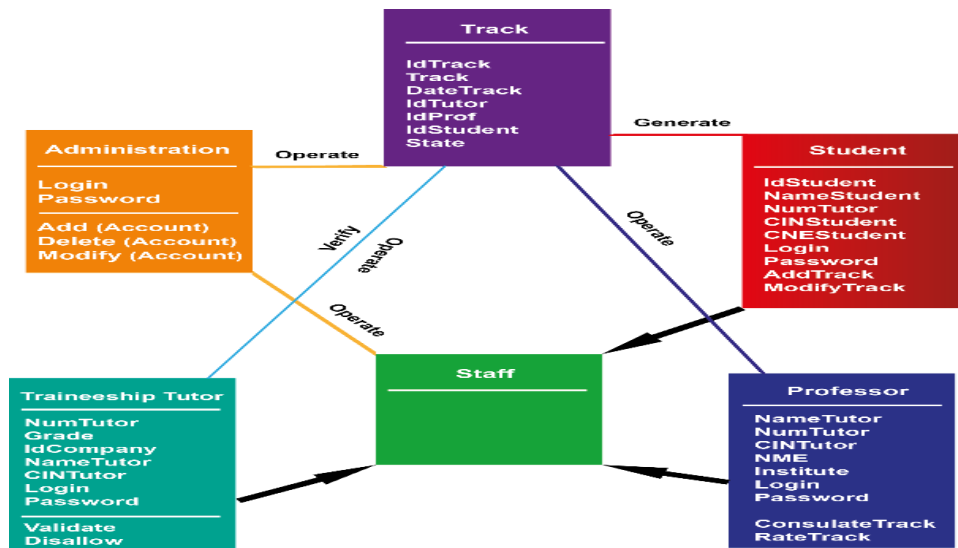
Figure 1-*Design of platform with UML*

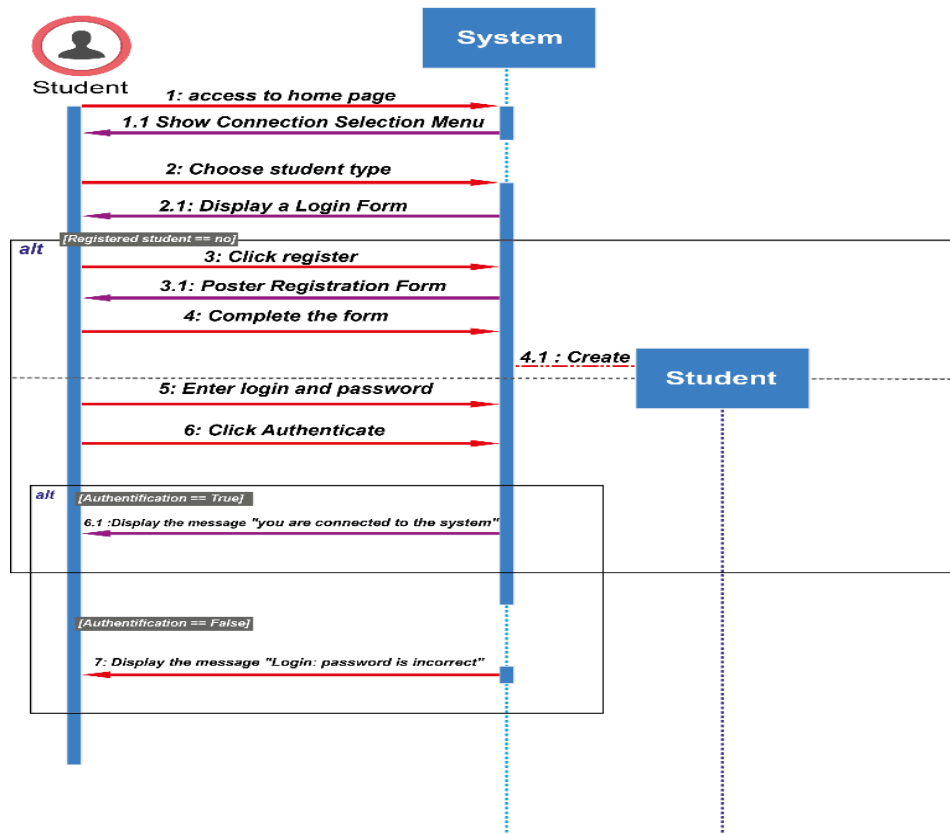**Figure 2-**Class diagra

Figure 3 -*Diagram of the sequences*

3.2   Sampling population :

   The sample of our research is a promotion of 3rd Year of Midwives TAZA Annex of 150 midwives trainees who are heterogeneous in terms of knowledge, profile, specialty or experience.
We present the characteristics in the following table:

Table 1-Old of the target population

Age range	Number	Percentage
From 19 to 21 years old	67	44,7%
From 22 to 24 years old		
From 25 to 26 years old	23	15,3%
More than 27 years old		
	42	28%
	18	12%

4.   RESULTS AND DISCUSSIONS

During the experimentation, we collect statistical records from which we have obtained very pertinent results in the context of accompanying and evaluating learning within the Higher Institute of Nursing and Health Professions HINHP.
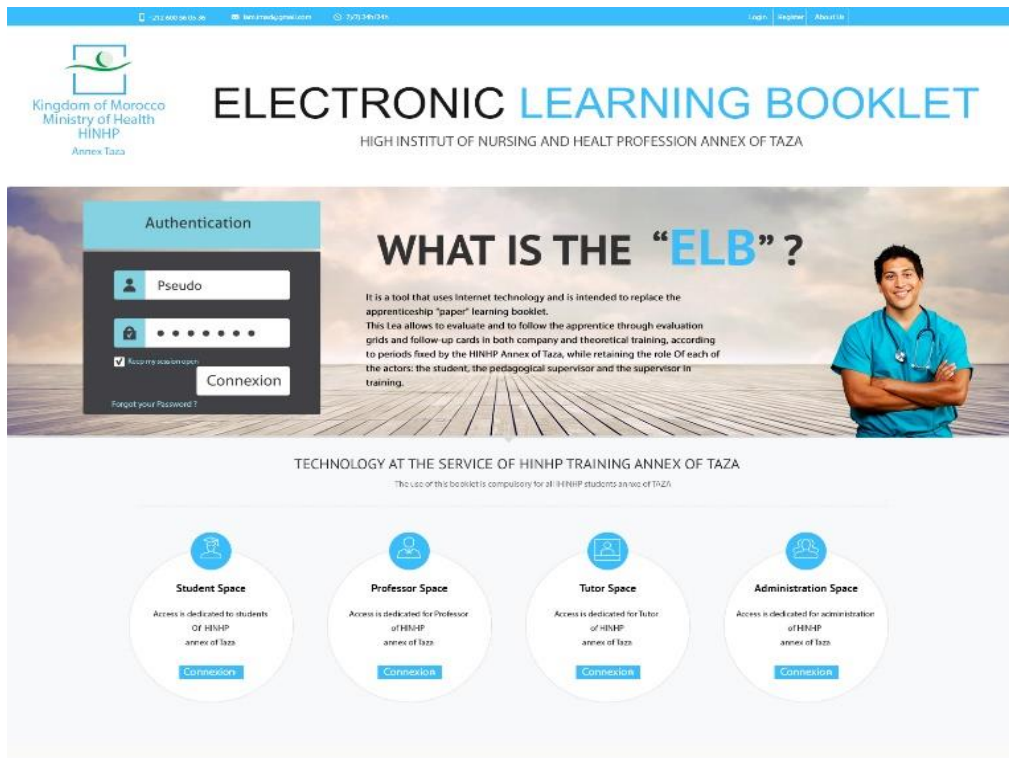
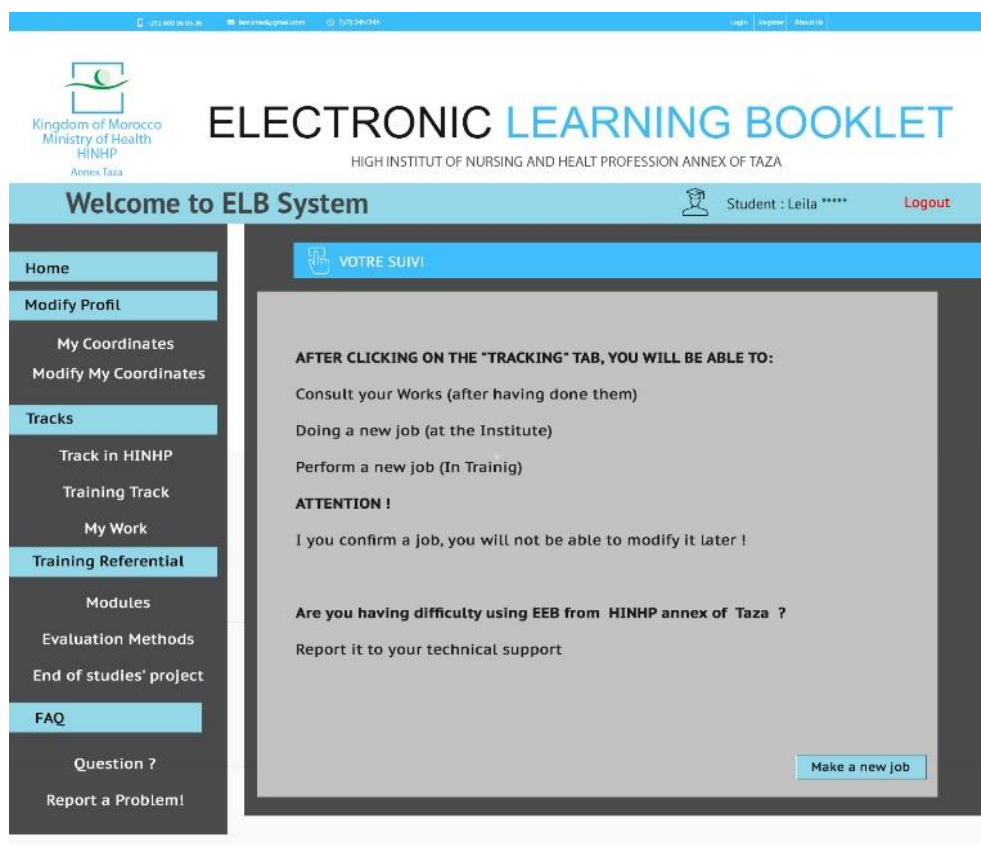**Figure 4-***Home page for the HINHP ELB Annex to Taza.*
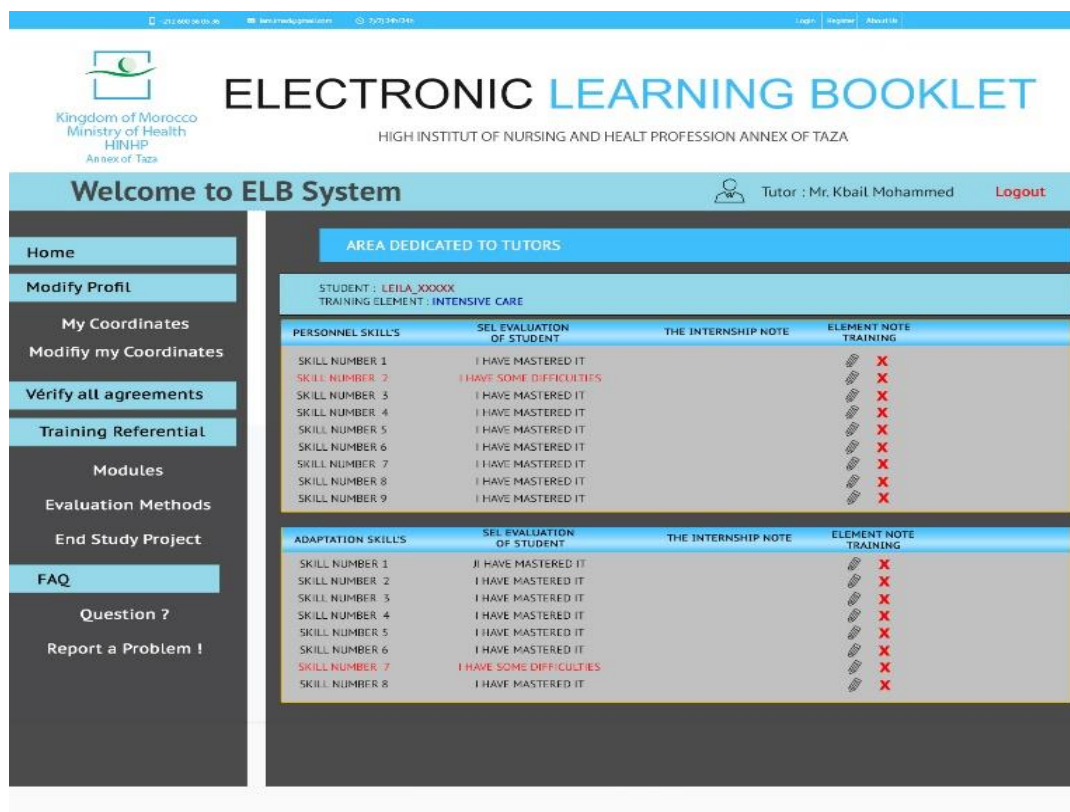

Figure 5 -*Interface of HINHP Trainees.*

Figure 6 -Interface of the supervisors

Table 2-Number of users: trainees

| Tools	March	April	May	June
Training booklet paper's	100%	11,3%	7,8%	2%
E-Learning Booklet	0%	88,7%	92,2%	98%
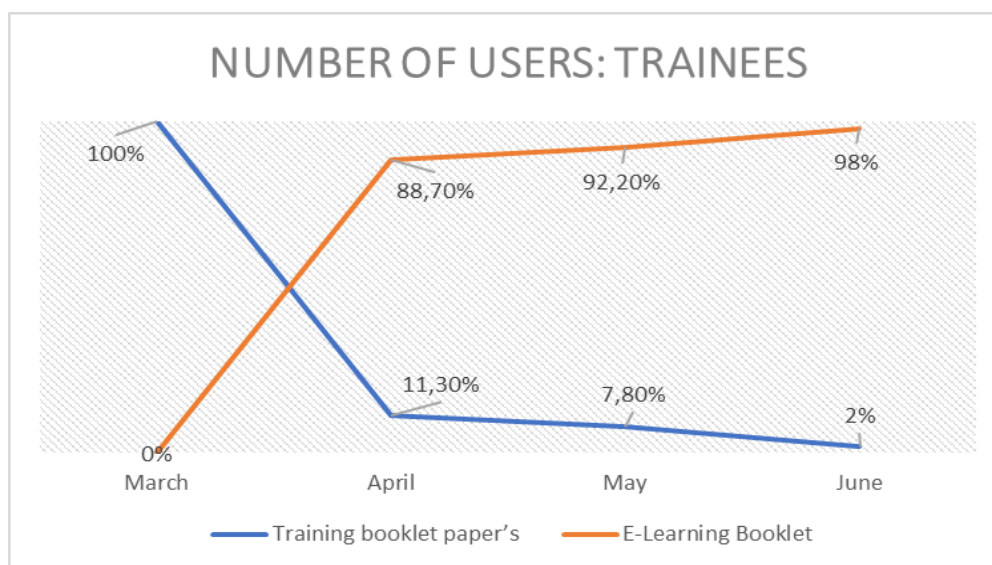
Before the launch of ELB, we initiated a training sessions for the use of this computer tool but we found in the first month an absolute resistance to immigration by the learners they kept using the electronic booklet paper. Faced with this resistance, we organized training sessions for the use of LEA

in collaboration with the administration and the tutors of the internship, which expresses the spike of more than 88% up to 98% in the fourth month of launch. Learners have adopted the tool the remaining 2% have a difficulty of access (lack of material, and minimal prerequisites for the use of computer supports).

Table 3-Number of users: tutors

Tools	March	April	May	June
Training booklet paper's	100%	48%	11,2%	0%
E-Learning Booklet	0%	42%	88,8%	100%
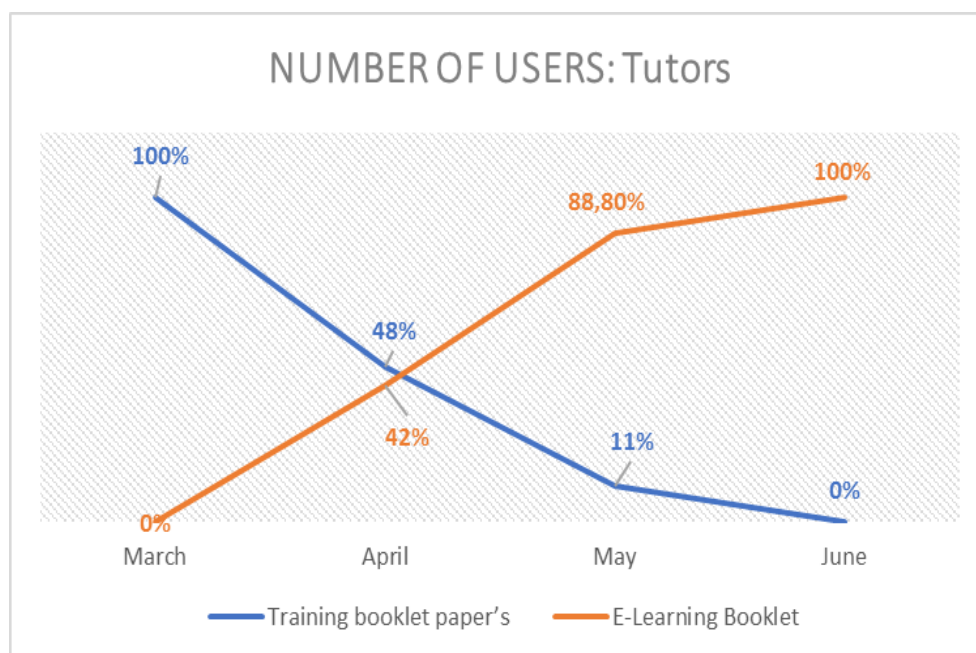
Teachers also benefited from a training unit on the organization and operation of the LEA before the launch. The results of the cold evaluation (first two months) reveal a less significant evolution. This is why we have opted for a personalized tutoring approach. The consolidation of support and follow-up assistance by the active actors in the training process (trainer and tutor in clinical training).

Table 4-Frequency of use: trainees

	The average month of March	The average month of April	The average month of May	The average month of June
E-Learning Booklet	0 Times per day	4 Times per day	2 Times per day	1 Times per day
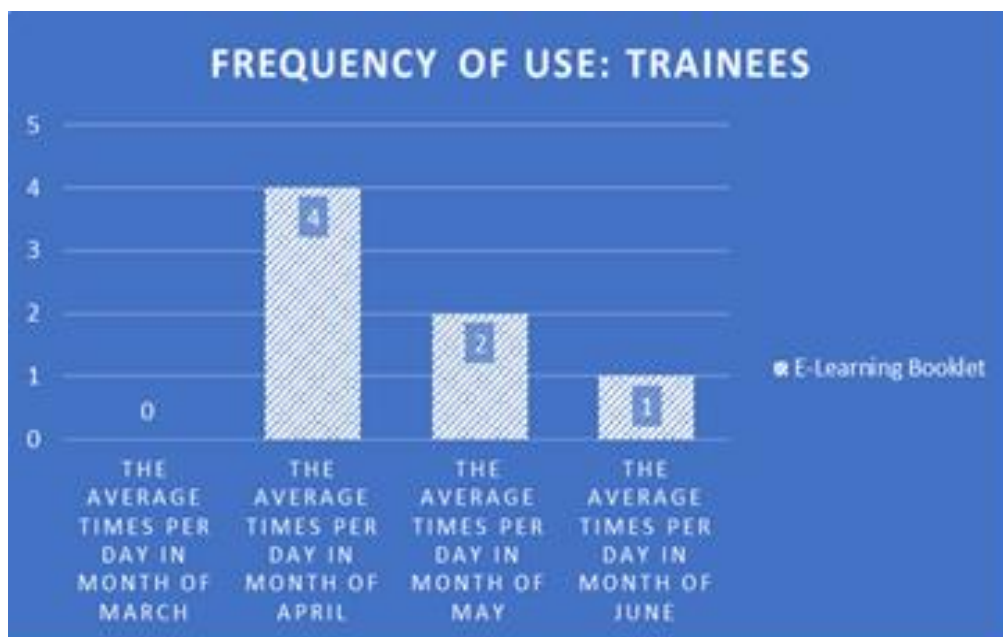
The month of April observed as a discovery phase, then there was a sudden increase in the number of consultations through the ELB platform in the months that followed, then consultations are done daily with a means of one access per day, which explains the acceptance and total immigration to the ELB.

Table 5-Frequency of use : tutors

	The average month of March	**The average month of April**	**The average month of May**	**The average month of June**
E-Learning Booklet	2 Times per day	4 Times per day	5 Times per day	3 Times per day

The number of ELB uses has increased significantly in comparison to the diagnostic evaluation. Acceleration of Needs Dynamics and the quality of remote monitoring via the virtual environment, monitoring and validation of Professional projects through milestones or sprints, make the ELB a tool for socio-professional integration and self-management of learning

Table 6-Skills rate evaluated by students through ELB

	March	**April**	**May**	**June**
The competencies assessed by E-Learning Booklet	0%	79,1%	91,7%	98,4%
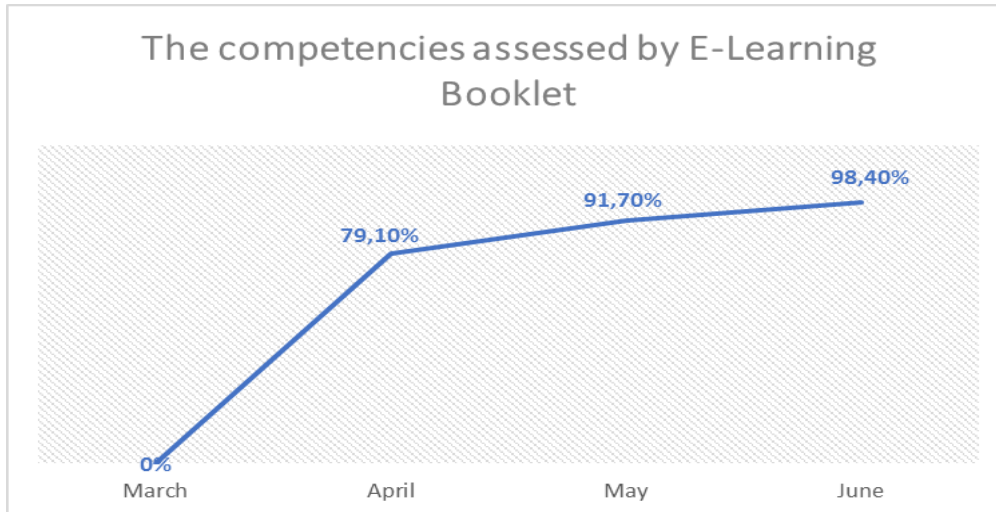
Skill assessment is growing from the start of ELB use this has become faster and more fluid, the evaluation recorded in the platform involves Formative Evaluation, Stage Validation, and self-assessment of Learners.

Table 7-Rate of skills evaluated through e-learning booklet

	March	April	May	June
Mastered	0%	66,33%	82%	90%
Not mastered	0%	33,67%	18%	10%

Skill assessment is growing from the start of ELB use this has become faster and more fluid, the evaluation recorded in the platform involves Formative Evaluation, Stage Validation, and self-assessment of Learners.

5.   CONCLUSION

The ELB project has enabled us to gain experience in the follow-up of students in two different situations during training and on a probationary period, in which task allocation, assignment and user management are the major challenges.

The utility of LEA is well demonstrated within the HINHP through tangible results obtained, thanks to this project we were able to resolve the breakdown of communication between the host institution and the training establishment 24h / 24 hours a day and 7 days a week. Thus, the regulation of learning is rapidly effected by the efforts and the commitment expressed by the supervisors, as well as the evolution of the capacity of self-evaluation through ELB among the learners.

As a result, we can confirm that the e-Learning Booklet promotes learning in higher education institutions, which is widely accepted in evaluation and support actions.

Finally, this web application will remain open for possible development in the perspective of adding other functionalities (alert notification, ELB Mobile, ELB Vision, ELB Assistance ...).

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