

E- learning in Algerian Higher Education Institution and its Impact on Enhancing Self-Training: Padoc Platform for Doctoral Students Training (2022/2023) as a Model

التعلم الإلكتروني في مؤسسات التعليم العالي الجزائرية وأثره في تعزيز التدريب الذاتي: منصة بادوك لتدريب طلبة الدكتوراه (2023/2022) أنموذجاً

Dr.FERRAT Isma* Laboratory of Globalization and Economic Policies, Algiers 3University (Algeria) ismaferrat@gmail.com	MAGBI Mimouna Blida2 University (Algeria), Laboratory for the management of local communities and their role in achieving development m.magbi.etu@univ-blida2.dz
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Abstract

This study aimed to investigate the impact of e-learning on enhancing self-training among the doctoral students of 2022/2023. These students received supplementary doctoral training through various platforms, including the " Padoc " platform, which supports doctoral students in their training in Information and Communication Technology.

The study concluded that e-learning significantly enhanced self-training among doctoral students, as they received and engaged in various learning activities through the Padoc platform.

Keywords: E-learning; Self-training; Padoc platform; Higher education institutions; Information and communication technology.

المخلص

هدفت هذه الدراسة إلى التعرف على تأثير التعليم الإلكتروني في تعزيز التكوين الذاتي لطلبة الدكتوراه 2023 /2022 الذين تلقوا تكوين دكتورالي تكميلي عبر عدة منصات ومنها منصة مرافقة طلبة الدكتوراه بادوك لتكوين في مقياس تكنولوجيا الاعلام والاتصال.

وقد خلصت الدراسة إلى أن التعليم الإلكتروني ساهم بشكل كبير في تعزيز التكوين الذاتي لدى طلبة الدكتوراه وذلك بعد تلقيهم وإحاطتهم بجملة من المحتويات التعليمية عبر المنصة بادوك. الكلمات المفتاحية: التعليم الإلكتروني؛ التكوين الذاتي؛ منصة بادوك؛ مؤسسات التعليم العالي؛ تكنولوجيا الاعلام والاتصال.

* Corresponding author FERRAT Isma Email: ismaferrat@gmail.com

Introduction

The world is experiencing significant changes in various fields, especially in important sectors like education, due to rapid technological advancements and vast knowledge. This has led to developing technologies that can keep up with these changes and utilize them to benefit humanity. One of these technologies is e-learning, which has expanded globally through international networks and has seen advancements in its tools, systems, and programs. E-learning has become increasingly integral to the educational process, particularly after the COVID-19 pandemic, during which most education shifted online. While some countries have embraced e-learning, others have returned to traditional education due to insufficient preparation and necessary resources for its success.

Algerian higher education institutions have taken steps towards implementing distance learning even before the pandemic. They have offered certain courses remotely to enhance the quality of education and encourage self-directed learning. These efforts have been influenced by technological advancements and individuals' desire for personal development. In order to ensure effective training, the Ministry of Higher Education has introduced several platforms, starting with the Moodle platform. Additionally, they have implemented the "PADOC" platform to support third-cycle students in their doctoral training. These initiatives have been established to achieve specific goals.

Study Problem

From the above, we raise the following problem:

How did e-learning enhance self-training for doctoral students of 2022/2023 through the Padoc platform?

To address the previous issue, the following sub-questions can be formulated:

- How does e-learning impact the educational process?
- What are the intended objectives of additional doctoral training for doctoral students through digital platforms?
- How does doctoral training via the Padoc platform influence postgraduate students?

The importance of the study:

This study is important because it enriches knowledge about e-learning, a critical topic that significantly improves the learning process and the development of educational programs. It also helps solve the problem of knowledge explosion and attracts individuals seeking self-learning, crucial for success in their professional fields. Higher education and scientific research institutions focus on education through digital platforms to enhance the education system, expand scientific research activities, and encourage self-formation. E-learning and digital platforms strengthen teaching and learning and provide personal and professional development opportunities.

Study Objectives

The study aims to:

- Understand the importance of orientation and adoption of e-learning in higher education institutions.

- Explore the digital platforms for supporting doctoral students in complementary doctoral training.
- Present the key objectives of complementary doctoral training and the measures the Ministry of Higher Education and Scientific Research implemented to facilitate it.
- Explore the role of the platform "Padoc" in supporting doctoral students and enhancing learning through self-training.

The adopted approach:

To achieve the previous objectives and advance the various concepts of the study, we employed a descriptive-analytical approach in conducting this research. This method is considered the most suitable for effectively gathering, classifying, and analyzing data and information.

Study division:

To address the main aspects of the study and answer the research question, the study was segmented into the following axes:

The first axis: The Conceptual Framework of E-Learning

The second axis: The Padoc platform and its contribution to enhancing self-learning among students

1. The Conceptual Framework of e-learning:

E-learning, also known as online learning or digital education, has revolutionized the traditional teaching method, especially with the rapid advancement of information technology and the Internet. This contemporary educational approach has gained widespread popularity, enabling learners to conveniently access educational resources and courses and take charge of their learning journey.

1.1. Definitions of e-learning:

The definitions related to e-learning have varied and diversified. The following is the most common one:

According to Kalbi et al., "E-learning is a broad term that includes a wide range of educational materials that can be provided from CDs or through the local or global network. It includes education and training based on the computer and education and training based on the network. It also supports distance education, direct online education, and electronic private lessons" (Kabli, Mahmoud, & al, 2012, p. 225).

Some have defined it as "a type of education that relies on the use of electronic media for communication, receiving information, acquiring skills, and fostering interaction between the student and the teacher, as well as between the student and the school, and possibly between the school and the teacher." This type of education is associated with electronic means and information and communication networks, the most prominent of which is the Internet, which has become a powerful medium for e-learning. Education in this context occurs through communication and interaction between the teacher and the learner and through engagement with other e-learning tools

such as electronic lessons, electronic libraries, e-books, and more. (Al-Saqa and Al-Hamdani, 2013, p. 50) (Al-Hamdani & Al-Saqqa, 2013)

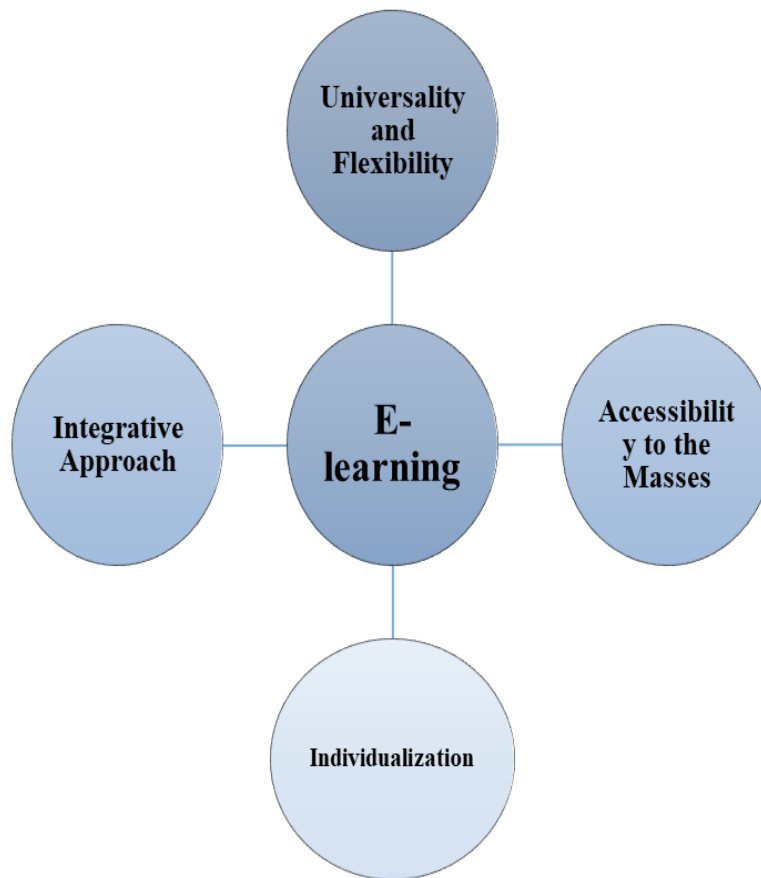
E-learning, "An educational system refers to programs available at any time and place using interactive technologies like the Internet and computers. These programs provide an interactive environment with multiple sources, synchronously in the classroom or remotely. They do not require a specific location and depend on self-learning and interaction between the learner and the teacher" (Mansi & Nasraallah, 2022, p. 57).

From the above, e-learning can be defined as follows: It is a change in learning and teaching methods using modern communication mechanisms, such as the Internet, whether in a remote or in-person format.

1.2. Characteristics of e-learning:

Among the most important characteristics of e-learning related to its nature are the characteristics shown in Figure (01) (Ziani, 2022, p. 12):

- **Universality and Flexibility:** E-learning is a flexible form of education that provides quick tools for transmitting and presenting information, learning activities, and various assessments customized to the learner's needs. It also allows learners to access resources anytime and anywhere without barriers.
- **Accessibility to the Masses:** E-learning is not limited to a specific group; learners and instructors can interact from different locations simultaneously.
- **Individualization:** E-learning adapts to the needs and desires of each learner and aligns with their academic level, allowing progress in the program or learning according to individual capabilities.
- **Integrative Approach:** E-learning ensures the integration of all components and elements of the educational process, facilitating collaborative work and achieving specific academic goals.

Figure (01): The most important characteristics of e-learning

Source: prepared by researchers

1.3. The difference between E-learning and traditional education:

Several key distinctions distinguish e-learning from conventional education. The table below highlights the most important differences between the two methods of learning:

Table (01): Clarify the difference between E-learning and traditional education

Aspect	E-learning	Traditional Education
Location	It can be accessed from anywhere through the internet	Requires physical presence in a specific location
Flexibility	Offers flexibility in time and pace of learning	Follows a fixed schedule and pace
Interaction	Interaction occurs via digital platforms and tools	Face-to-face interaction between students and teachers
Access to Resources	Digital resources are available anytime	Limited to class hours and physical materials
Assessment	Includes online quizzes and assessments, often adaptive	Typically includes in-class exams and assessments

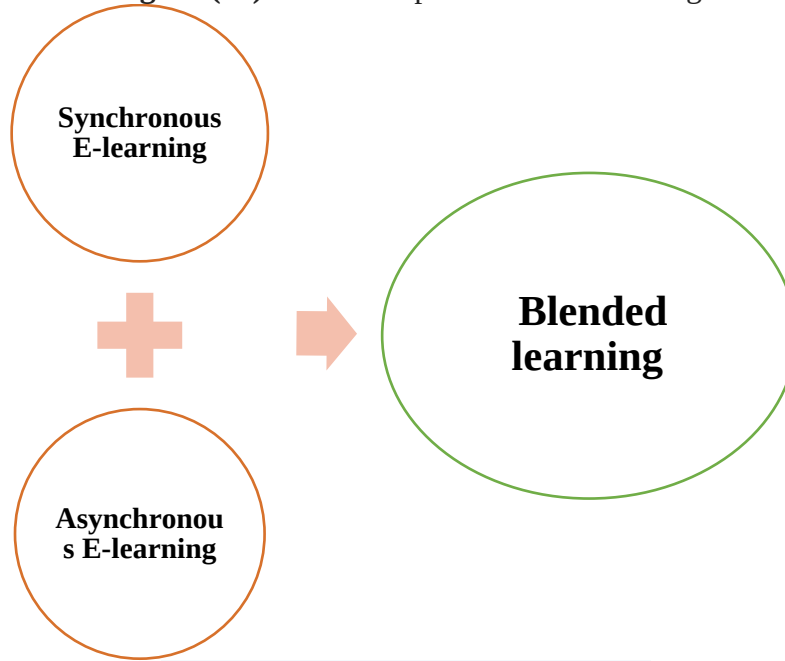
Cost	Generally lower costs due to fewer physical resources required	Higher costs associated with infrastructure and materials
Learning Style	Supports self-paced and individualized learning	Structured and guided by the teacher

Source: prepared by researchers based on (Ababou , 2022, p. 137)

1.4. Types of E-learning

E-learning can be divided into (Salem, 2017, pp. 92-93):

- ❖ **Synchronous E-learning:** This type involves real-time interactions between the student and teacher through chat rooms or virtual classrooms. It requires both parties to be online simultaneously, allowing for immediate feedback. It eliminates the need to commute to physical locations for study. However, it does require modern electronic devices and a stable internet connection.
- ❖ **Asynchronous E-learning:** This type of e-learning does not require the student and teacher to be online simultaneously. Instead, it relies on pre-recorded materials or resources provided on CDs or communication via email or educational forums. In this type of learning, the student cannot receive immediate feedback but can access the learning material at any time. It allows students to organize their study time as they see fit. This type of learning is considered indirect, as it does not require learners to be present at the same time or place.
- ❖ **Blended learning:** This type combines synchronous and asynchronous e-learning. The method involves real-time interaction between the teacher and students during training sessions, which are later transferred to CDs for self-study. This allows students to acquire knowledge at their convenience. Blended learning merges the advantages of both e-learning approaches, fostering interaction between the teacher and students while accommodating individual differences and the specific needs of learners. It provides information upon request, making it suitable for different age groups while considering individual differences. Blended learning programs can include various educational tools, such as virtual collaborative learning software, self-paced courses, and learning management systems (Ababou , 2022, p. 133)

Figure (02): The concept of Blended learning

Source: Prepared by researchers

1.5. Types of E-Learning Management Systems

E-Learning Management Systems are among the most essential components of e-learning. They represent an integrated platform responsible for managing the entire e-learning process through the Internet or local networks. This system encompasses various functions such as admissions, course registration, assignments, tracking student progress, overseeing synchronous and asynchronous learning tools, administering exams, and issuing certificates (Othman , 2010, p. 3)

❖ Learning Management Systems (LMS):

A Learning Management System is one of the key components of the e-learning ecosystem. It is defined as an integrated software package that forms a system for managing the cognitive content that needs to be learned or trained on, and it provides tools to control the learning process. LMS allows teachers to create and add content, monitor student participation, and assess performance. It also enables students to utilize interactive features such as discussions, conferences, and multimedia tools. This means the system facilitates student management and tracks their progress during educational activities. (Kabli, Mahmoud, & al, 2012, pp. 259-260)

Typically, these systems operate over the Internet but can also be deployed on local networks. LMS is a multi-user electronic learning environment designed for managing, tracking, and assessing educational activities and ongoing training. It combines synchronous and asynchronous learning modes, making it a flexible solution for managing diverse academic needs.

Figure (03): Examples of Learning Management Systems (LMS)



Source: (<https://padoc.univ-bejaia.dz>, 2024)

There is a wide variety of available systems, both commercially profitable and free open-source platforms :

Table (02): Examples of LMS Commercial and Open-source Programs

Open-source Programs	Commercial Programs
▪ ILIAS Learning Management System ▪ Moodle Learning Management System ▪ Claroline Learning Management System ▪ A Tutor Learning Management System	▪ WebCT Learning Management System ▪ ECollege Learning Management System ▪ Learning Space Learning Management System ▪ Blackboard Learning Management System

Source: (Salem, 2017, pp. 99-100)

❖ Learning Content Management Systems LCMS:

Learning Content Management Systems (LCMS) are systems designed to manage educational content. LCMS is a broader concept than Learning Management Systems (LMS), as it focuses specifically on academic content. Participants and experts can create, store, share, and modify content. The content should include interactive activities that enhance student motivation through their engagement with the material.

Additionally, this system enables the measurement of student performance, and based on these measurements, content can be developed and improved. The main difference between an LMS and an LCMS lies in their focus: the former manages students. It tracks their progress during educational activities, while the latter focuses on managing the academic content that should be provided to students and trainees, determining the appropriate time for delivery and the associated activities. Both systems

work hand in hand in an integrated manner, and neither should be separated during implementation or planning (Kabli, Mahmoud, & al, 2012, pp. 261-262):

The following table illustrates some similarities and differences between the two systems.

Table (03): Similarities and Differences between LMS and LCMS

Aspect	LMS	LCMS
Target Users	Trainers, managers, teachers, administrators	Educational content developers, designers, project managers
Classroom Management and Leadership	Yes, but not always	No
Learner Collaboration	Yes	Yes
Data Exchange Between Learners and System Resources	Yes	No
Skill Gap and Competency Analysis	Yes	Yes, sometimes
Reorganizing Educational Content	No	Yes
Dynamics and Adaptability to Learner	No	Yes
Control of Electronic Navigation Among Learners	No	Yes

Source: (Kabli, Mahmoud, & al, 2012, p. 246)

This comparison table clearly outlines the differences between LMS and LCMS. It focuses on target users, content management functionality, and learner adaptability. LMS primarily manages learning processes and student interactions, while LCMS is more oriented toward creating and managing dynamic, customizable educational content.

Establishing these internet-based platforms to create extensive learning networks has facilitated the adoption of remote learning approaches by higher education institutions, particularly through e-learning. This has experienced remarkable growth, especially following the COVID-19 pandemic, and its use has become increasingly widespread (Elbaraka, 2024, p. 81). Like other countries worldwide, Algeria has sought to keep pace with this development in higher education institutions, with numerous examples of such initiatives. One of the most recent examples is the Padoc platform for the training of doctoral students.

2. Padoc Platform and Its Contribution to Enhancing Self-Learning Among Doctoral Students

In line with the scientific advancements of our current era across various fields, particularly with the rise of digital technologies that have facilitated and streamlined

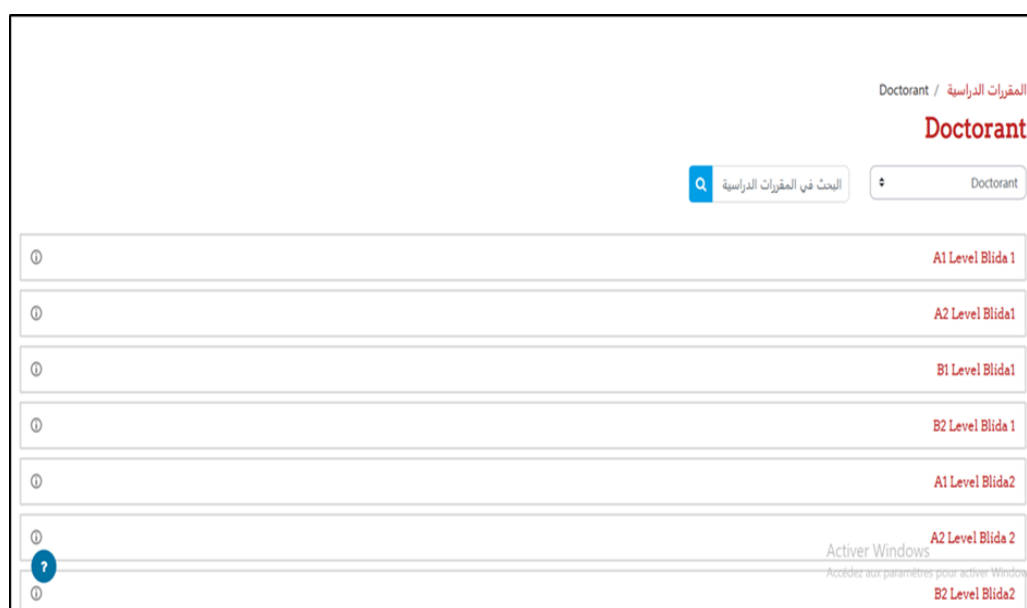
scientific research, Algeria, under the decision of the Minister of Higher Education, Kamel Baddari, has implemented a doctoral training program that is significantly different from previous ones. This new program incorporates interdisciplinary subjects such as philosophy, didactics, and the English language to advance scientific research in Algeria and develop self-reliant, competent students by adopting an outcome-based approach to drive progress and change in the country. Additionally, the program includes Information and Communication Technology, which is delivered through the Padoc platform.

2.1. Introduction to the Padoc Distance Learning Platform:

The Ministry of Higher Education and Scientific Research, under the supervision of the National Committee for Distance Learning, launched a complementary patriotic training program for doctoral students (2022/2023) in April 2023. The program under the slogan "Scientific Research in the Digital Age" covers interdisciplinary subjects such as philosophy, didactics, the English language, and information and communication technologies (ICT). It complements the in-person training that began in March and utilizes distance learning platforms.

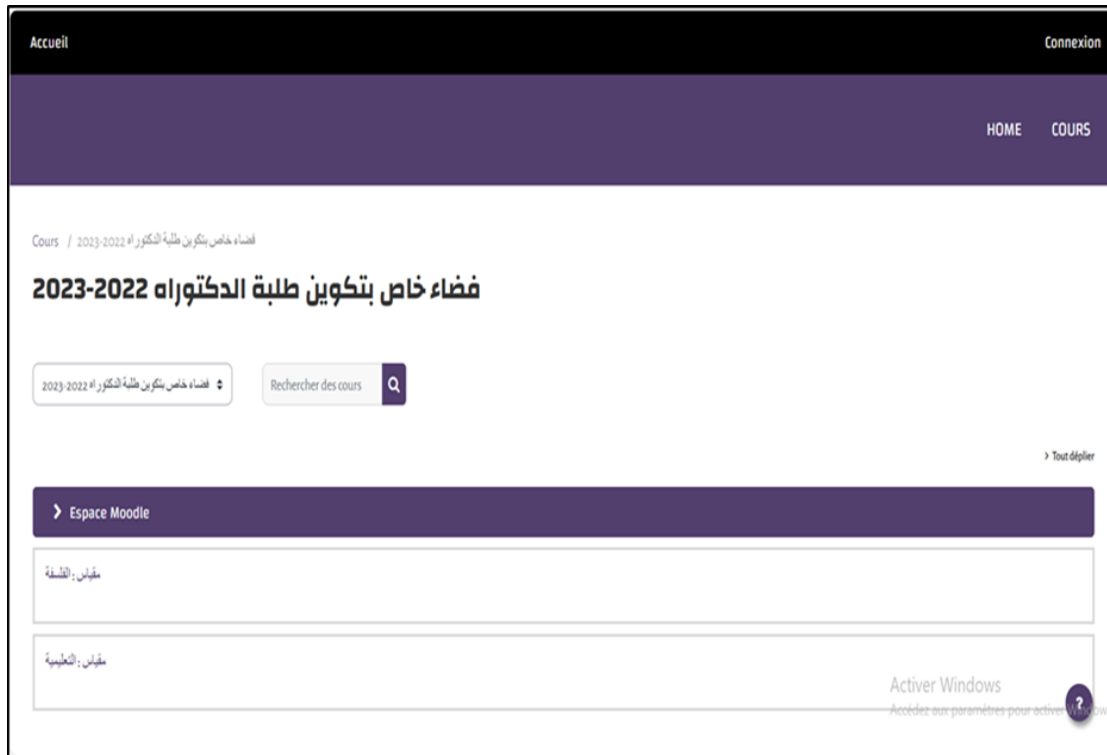
After students completed a level assessment exam in English, they were assigned to the appropriate level (A1, A2, B1, B2, C1) on the Moodle platform for English language training. Philosophy and didactic courses were also delivered through the Moodle platform. However, the ICT training was conducted by establishing a dedicated platform, **Padoc**, to support doctoral students. The platform was launched in collaboration with **Padoc Bejaia**, **Padoc Ouargla**, and **Padoc Oran**, with universities nationwide distributed among these three platforms (details provided in the Figures below).

Figure (04): Example of an Interface from the English Distance Learning Platform



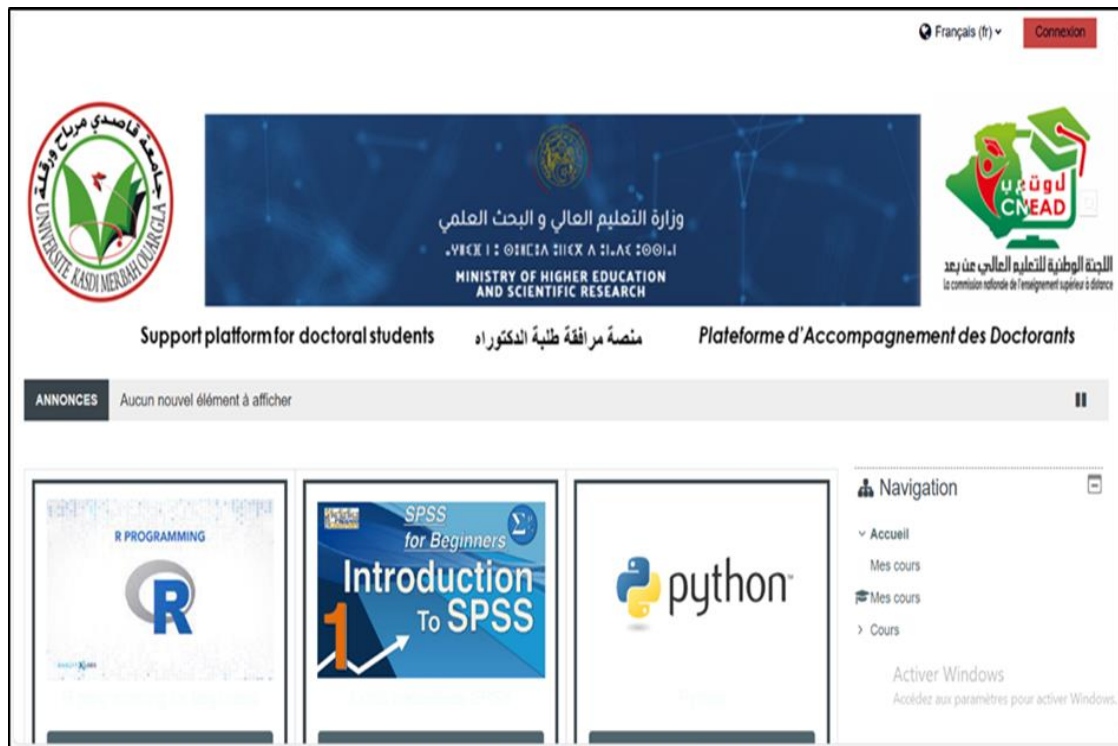
Source: (<https://elearning.univ-blida.dz>, 2024)

Figure (05): Example of an Interface from the Distance Learning Platform for Philosophy and didactic Courses



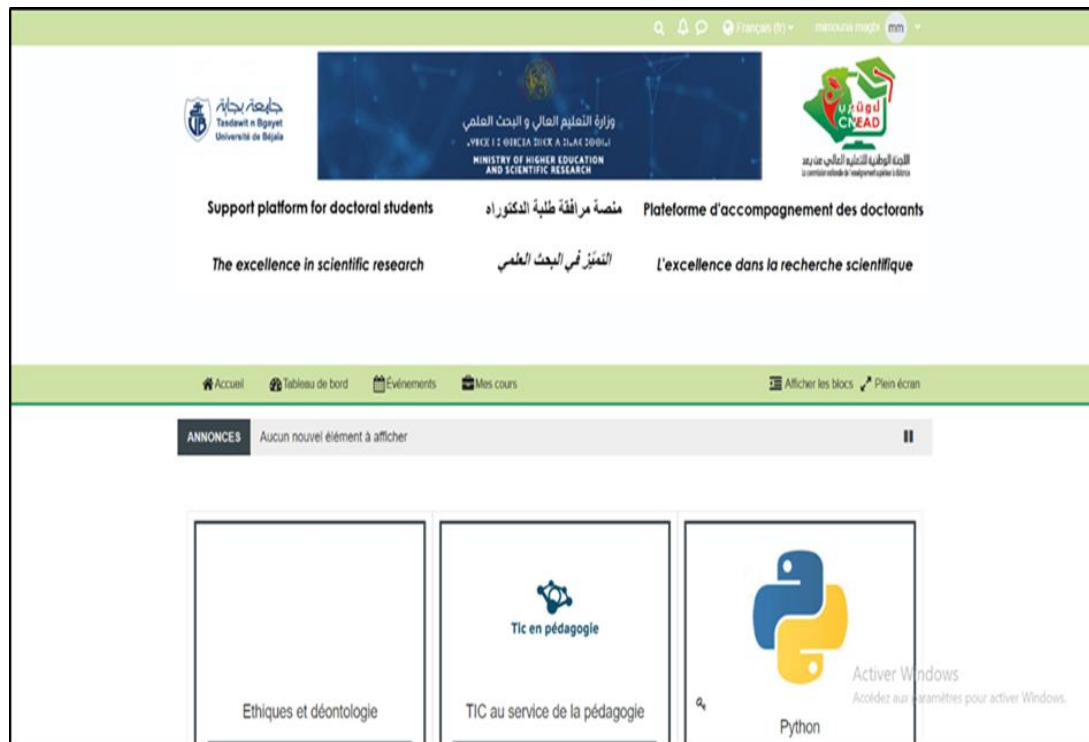
Source: (<https://padoc.univ-bejaia.dz>, 2024)

Figure (06): Interface of the Padoc Ouargla Platform



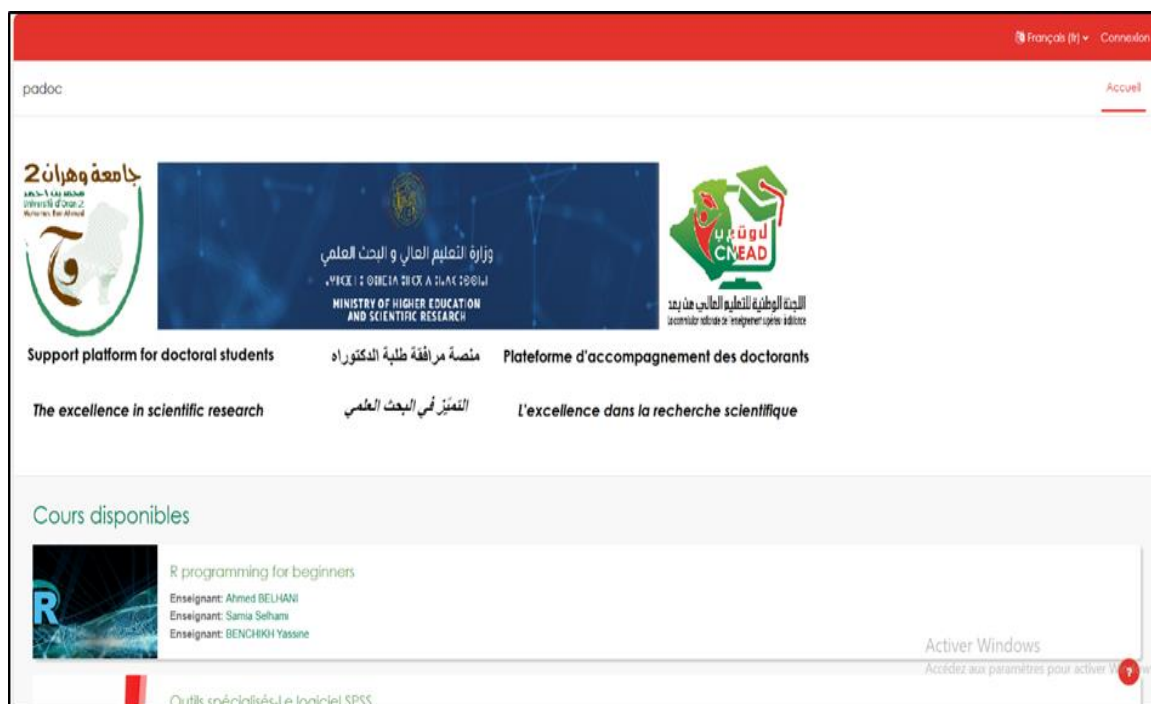
Source: (<https://padoc.univ-ouargla.dz>, 2024)

Figure (07): Interface of the Padoc Bejaia Platform



Source: (<https://padoc.univ-bejaia.dz>, 2024)

Figure (08): Interface of the Padoc Oran Platform



Source: (<https://padoc.univ-oran2.dz>, 2024)

2.2. Training Provided Through the Padoc Platform (Objectives, Targeted Skills, and Content):

❖ Objectives and Targeted Skills:

To fulfill the objectives of the supplementary training for doctoral students as outlined in the Information and Communication Technology (ICT) course by the Ministry of Higher Education, according to Annex No. 01 of Decision No. 1419, dated December 24, 2022, which defines the horizontal criteria for supporting third-cycle training in higher education institutions, the Skills Development Network has been established. This initiative aims to prepare future educators for remote teaching and improve the quality of scientific and documentary research carried out by doctoral students. A panel of experts has developed a set of skills for this purpose, which is the following:

- _ Respect for intellectual property and the use of digital tools;
- _ Writing reliable and high-quality scientific content;
- _ Joining academic networks (Google Scholar, Research Gate, etc.);
- _ Conducting in-depth scientific research on the web;
- _ Raising awareness of the importance of ethics in scientific research;
- _ Developing self-assessment skills and online work (promoting independence);
- _ Understanding the academic teaching and research system alongside university ethics.

❖ Content of the Training Program Provided via the Padoc Platform:

Through a coherent program and consistent units, doctoral students from the 2022/2023 cohort were trained in ICT via the Padoc platform, using a blended learning approach incorporating synchronous and asynchronous e-learning tools. The training covered the following key areas:

- ICT in support of documentary research;
- ICT in support of pedagogy;
- Specialized Tools.

This structure ensured that students gained theoretical knowledge and practical skills to apply in their academic and professional lives.

Figure (09): The content of the doctoral training program offered through the Padoc platform

Specialized Tools	ICT in the Service of Pedagogy	ICT in the Service of Documentary Research
• Introduction to Statistical Processing and Analysis Tools: SPSS, R • Introduction to Python Programming Language • Introduction to Text Processing: LaTeX	• Creating Online Courses • MOOCs • Basic Concepts in Online Mentoring	• Research Methodology • Research Tools • Documentary Monitoring • Collaborative Work and Participation Platforms • Managing Bibliographic References • Academic Networks and Platforms • Ethical Guidelines and Professional Ethic

Source: prepared by researchers based on. Annex No. 02 of Decision No. 1419, dated December 24, 2022, defining horizontal criteria for supporting third-cycle training in higher education institutions, Supplementary Program, p1.

2.3. The Positive Impacts of the Padoc Platform in Enhancing Self-Learning:

Self-learning is one of the most recent advancements in education. Through it, learners gain access to the knowledge, skills, and attitudes they need, allowing them to meet their personal and professional needs at their own pace and in a manner that suits their abilities and circumstances. Self-learning did not emerge from a vacuum; it is deeply rooted in several fields, particularly philosophy. For instance, Socrates emphasized the importance of *self-knowledge* and urged individuals to live meaningful lives within the bounds of their abilities.

Joffre Dumazedier has defined self-learning as the "self-development of knowledge and abilities with the help of educational resources and continuous self-learning to achieve effective training outcomes in all educational aspects." Self-learning also refers to the continuous pursuit of improving one's knowledge, skills, and personal and professional abilities without requiring the intervention of others. Self-learning involves acquiring knowledge and skills through reading, studying, experimentation, training, research and exploration, and hands-on learning.

Moreover, self-learning enhances performance across various aspects of life, whether personal or professional and is essential for personal growth and continuous development. According to Joel Carre, self-learning is "the fundamental tool for acquiring the capability for self-training to improve one's knowledge." This is because self-directed learners possess an exceptional ability to acquire knowledge. Before

engaging in self-directed training, they are inevitably involved in self-learning, a prerequisite for entering the professional world.

Self-learning requires motivation, commitment, willpower, and persistence in working towards the goals and challenges individuals face in their educational and professional journeys. The **Padoc platform** significantly supports this type of learning by providing flexible access to academic resources and fostering the autonomy necessary for self-directed learning among doctoral students.

The Padoc platform has transformed the traditional concept of learning into an electronic format for doctoral students, significantly encouraging self-learning. Below are some of the positive effects:

- ✓ **Breaking Educational Barriers:** The Padoc platform has encouraged e-learning by breaking down the barriers of traditional education and making educational materials available online. Students could access a wide range of resources, including lectures, videos, interactive modules, and reading materials, anytime they find convenient. This availability has allowed them to self-learn, explore topics of interest, and learn at their own pace. This is especially beneficial for students who are either working or have been away from academia for an extended period, as it allows them to stay updated on the latest developments in education, modern learning methods, and research practices such as documentation, storage, and sharing of scientific work.
- ✓ **Flexibility in Time and Place:** The Padoc platform provided flexibility regarding time and location, enabling students to create study schedules that fit their personal and professional commitments. Students could access educational content at their convenience, and the most suitable times for student-teacher interactions were determined through student voting, with the most popular time slot being selected. This flexibility empowered students to tailor their learning plans, allowing them to focus on the subjects that interested them the most and promoting self-directed learning.
- ✓ **Customized Learning Experience:** The Padoc platform provided a personalized learning experience, allowing students to choose courses and modules that matched their interests, goals, and skill levels. For example, all doctoral students in the 2022/2023 cohort had the opportunity to learn modern programs like SPSS, Python, Latex, and Statistical Analysis using R, regardless of their field of study. Using self-assessment tools, students could pinpoint their strengths and areas needing improvement, enabling them to tailor their learning and development paths accordingly.

Figure (10): Announcement for Students to Choose the Programs They Wish to Study

Chers doctorants :

Les cours optionnels (ne sont pas obligatoires) : Latex, python, langage R et SPSS sont disponibles sur la PF. Pour pouvoir les consulter, vous devez s'auto-inscrire dans le(s) cours que vous désirez comme suit :

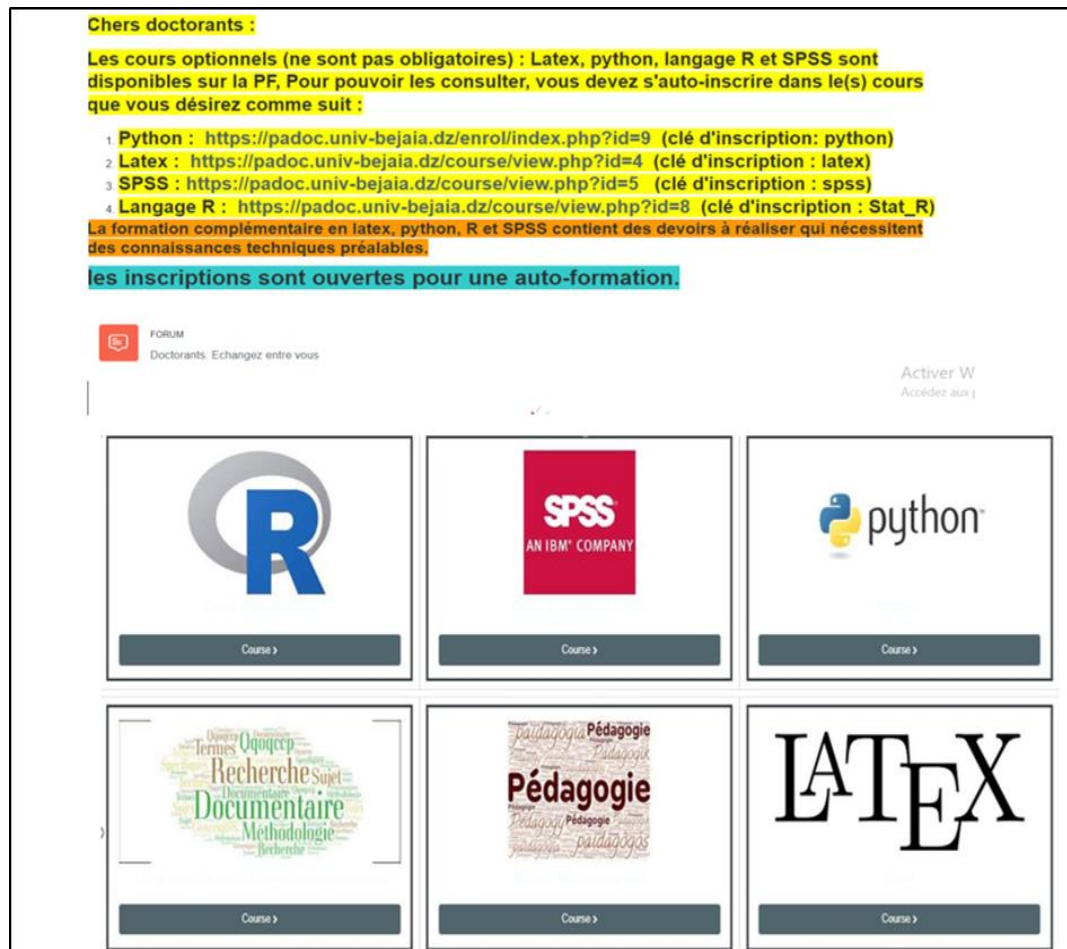
- 1 Python : <https://padoc.univ-bejaia.dz/enrol/index.php?id=9> (clé d'inscription: python)
- 2 Latex : <https://padoc.univ-bejaia.dz/course/view.php?id=4> (clé d'inscription : latex)
- 3 SPSS : <https://padoc.univ-bejaia.dz/course/view.php?id=5> (clé d'inscription : spss)
- 4 Langage R : <https://padoc.univ-bejaia.dz/course/view.php?id=8> (clé d'inscription : Stat_R)

La formation complémentaire en latex, python, R et SPSS contient des devoirs à réaliser qui nécessitent des connaissances techniques préalables.

les inscriptions sont ouvertes pour une auto-formation.

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Source: (<https://padoc.univ-bejaia.dz>, 2024)

- ✓ **Enhanced Student Autonomy:** The Padoc platform enhanced student autonomy by allowing students to navigate educational resources and complete assignments at their own pace. This empowered students to decide what, when, and how to learn, fostering a sense of responsibility in the learning and training process.
- ✓ **Encouragement of Self-Learning and Collaborative Learning:** While promoting self-learning, the Padoc platform also provided opportunities for collaborative learning and interaction through online discussion forums, virtual classrooms, and group projects. Students could connect with their peers across different disciplines and fields, as each group comprised students from various specializations. Additionally, the platform enabled communication with professors and experts, allowing students to share ideas and engage in scientific discussions with specialists within and outside their fields of study. These collaborative experiences enriched the learning and training by enhancing knowledge exchange, offering diverse perspectives, promoting critical thinking, and developing collective problem-solving skills.

Conclusion:

E-learning plays a significant role in enhancing self-learning and self-training. Digital platforms have made it easier to access, providing flexibility, autonomy, and collaborative aspects of e-learning. This enables students to take control of their learning experiences, pursue their interests, acquire new skills, and engage in lifelong learning and development. As technology advances, e-learning will increasingly promote self-training, transform education, and empower learners in unprecedented ways.

❖ Findings:

The main findings can be summarized as follows:

- E-learning is a modern approach to education that offers several advantages over traditional learning, making its adoption a necessity dictated by the demands of the current era.
- E-learning is divided into three types: synchronous, asynchronous, and blended learning, each utilizing specific tools to manage the educational process.
- Learning management systems and Learning Content Management Systems are integrated platforms that manage e-learning through the Internet or local networks.
- The Padoc platform provides an alternative to in-person training for doctoral students in interdisciplinary subjects.
- The positive effects of doctoral student training via the Padoc platform include improved autonomy and self-directed learning.

❖ Recommendations:

The main recommendations can be summarized as follows:

- Move towards fully adopting e-learning, especially in horizontal units.
- Expand the Padoc platform experience by creating platforms for training undergraduate and master's students in ICT, particularly in documentary research.
- Offer significant financial incentives and rewards to educators utilizing online platforms to ensure the success of e-learning and promote the adoption of remote teaching by professors in the future.
- Include ICT as a core subject in employment competitions within the higher education sector.
- Provide doctoral students trained in ICT with the opportunity to teach online courses, apply, consolidate, and develop what they have learned, and receive feedback on the supplementary doctoral training program.
- Introduce in-person courses for specialized programs such as SPSS, Python, Latex, and Statistical Analysis using R for doctoral students to evaluate their self-training and receive feedback on the supplementary doctoral training process.

- Opening courses for in-person teaching in specialized programs (Latex, Python, Spss, R using Statistical Analysis) for the benefit of doctoral students to evaluate their self-training and obtain feedback on the process of complementary doctoral training.
- Doctoral students should be allowed to teach, in person, modules related to specialized programs (SPSS, Python, Latex, and Statistical Analysis using R) to evaluate their self-development and receive feedback on the complementary doctoral training process.

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