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# University education in Tunisia: The impact of an online course on Learning: for students in food Masters

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***ABSTRACT :*** *At present, and with the invent of new digital technologies, the Virtual University of Tunis (VUT) as all Virtual universities around the world continues to develop learning programs supported by devices E-learning. This raises the development of techno-educational engineering learning systems (LS) online "online courses" (Paquette, 2002) focused on the model (ADDIE) (Basque, 2004). It is in an E-learning environment supported by the VUT, which we present in this article an experience design and evaluation of online learning systems "online courses" addressing the concept of biology "photoperiod its role in the control of reproduction of goats. ". The analysis of data from a questionnaire delivered online, 35 first year students of Master in food via the Forms application from Google Drive, highlights constraints to learning related to the communicational interactions with chat and discussion forum and planning, the shortcomings of feedback from the teacher, incompetence in using the tools of the platform, etc. Moreover, through this investigation, learners participated in the improvement of deficient aspects of (LS) online by communicating their proposals for solutions to the difficulties already enacted (introduce some digital planning tools of synchronous and asynchronous meetings, enhance training in the use of digital tools of the platform , valuing the contributions of synchronous and asynchronous discussions in boosting the collaboration, foster greater peer evaluation ...). Based on the results of the questionnaire, with a view to improving (LS) said online and in view reuse, we proceed to a second round of re-design, testing and evaluation. This work defines an iterative design approach that Wang and Hannafin (2005) confirm its role in the ongoing development and refinement of theories.*

***KEYWORDS****: E-learning, Model ADDIE, Online Learning System, pedagogically techno-engineering, iterative design*

## I. INTRODUCTION

With the development of modern societies, the use of ICT in education is becoming increasingly important in the design of learning arrangements and in evaluating said digital artifacts. With the phenomenal evolution of the use of digital technologies in education, the Virtual University of Tunis (VUT) and since its inception in June 2002, is actively involved in the design, dissemination and evaluation of learning programs online. It provides teachers online courses spaces and tools for the design, dissemination and evaluation of learning. It is in this context of university distance learning supported by the VUT that arises our research in didactics of biology that includes the design, testing and evaluation of an online learning system (OLS) Paquette (1999) that defines come as "*the apprenticeship system is characterized essentially by three models: a*

*knowledge model, learning object; a pedagogical model specifying the processes of learning and training; a media model defining educational materials and infrastructure that support learning* "(Paquette, 1999, P.133). This is actually a process of instructional design (Basque, 2004) which summarizes the life cycle of an online learning system (online course) in five successive phases designated by the acronym ADDIE (Basque , 2004). This is the analysis of the need for learning phase, Design phase, development phase, phase Implementation and Evaluation phase. As part of the work undertaken, we will adopt this model ADDIE model as a theoretical reference for the design, testing of a learning system (LS) online that addresses the concept of "*photoperiod and its role in the mastery breeding goats*". In this article, we first present the structure of (LS) said online and then through the analysis of 35 students answers to questions in a satisfaction survey, we will try to evaluate certain aspects of (LS) namely online management courses, communicative interactions, knowledge assessment, compliance of the set learning objectives, the availability of learners and teachers for synchronous interactions (in real time) and mastery of digital tools of the platform

## II. Development of an online learning system "online courses"

When undertaken instructional design process, we will refer to the ADDIE model. We present below in the order the features of the five phases of the ADDIE model tailored to the (LS) that we will build.

During the analysis phase, is supposed to analyze certain number of components that can guide the development project of the learning system (Basque, 2004). In the context of university education in Tunisia, learning face-is influenced by the high absenteeism of students with different learning sessions, a masterful teaching, for a limited teaching painted paper and whiteboards as support for education, by the difficulties related to travel for students join the learning sessions, etc ...The phenomenal evolution of Web 2.0 where social communication interfaces (Twitter, Face book, LinkedIn ...) empreignent the daily lives of students, has revolutionized communications. In these virtual spaces of communication, the time or space constrain sharing and mutuality of knowledge, sharing personal experiences and even collective. All already enacted factors have guided our choice of university distance learning as a method of teaching / learning substituting face teaching. During the design phase, where design, we are called to specify some key points to know the objectives of learning, all elements of the learning content, teaching strategies and choice of digital tools. After the undertaken Open University, students in food Master will be able to know “the rhythms of seasonal reproduction, the involvement of short days in seasonal rhythms and photoperiodic mastery of breeding goats”. Students develop the spirit of teamwork through participation in sessions of chat and discussion forum. In addition they display the spirit of self-reflection on their own knowledge and criticism of the work of others by engaging in self-assessment and evaluation process by peers. The course has four learning activities: A sequence lasted Video (15 min) that processes already enacted concepts. A second activity of synchronous communication with chat, combined with asynchronous discussion via the discussion forum tool. The third activity that seeks knowledge assessment where learners participate in an evaluation process by peers with four phases namely completing assignments phase, phase of allocation of duties, the peer review stage and the verification phase of the notes by the teacher. The development of the apprentice ship system is accompanied by the development of educational strategies and choice of digital tools. As part of this online course, the learner's work includes viewing a video, participation in discussions via "chat" tools and "forum" and a knowledge assessment process peer through the digital tool "Atelier". During the peer review process each student menu of an evaluation grid to criteria developed by the teacher evaluates the duty was assigned. It was during the phase of development that we can put the (LS) online by specifying the learning content, digital tools, instructional strategies and assessment mode. We use the digital tools we provides the VUT via MOODLE for the production of online learning system. These tools include us, the forum tool, the chat, the Workshop tool, the label tool, the glossary tool, etc. During the Implementation phase, once the course is developed, it will be distributed to food Masters Students. Students after their enrollment in the organizational platform, get data access to the platform of the VUT and then enroll in online courses via an access key in the teacher has awarded them. Evaluation is a key step in the instructional design process. Rate this is a judgment on the different characteristics of the learning system (LS). Thus form an opinion about online training to success .We can assess the quality, effectiveness, relevance and reliability (LS), and its impact on learning online. The goal is to improve in the final phase of the instructional design process, some aspects of SA online namely, compliance of the set learning objectives in each learning activity, the importance of communication and synchronous asynchronous in the co-construction of knowledge and the stimulation of collaborative work, the Feedback from the teacher, and their importance in the construction of knowledge and overcoming the problems faced by students in online learning situations. The evaluation work also focuses on the relevance of the peer review. Therefore, the relevance of the chosen media tools are in consistency and structure of SA online.

## III. METHODOLOGY

### 3.1. Sample

The experience of university distance learning which we explain in this article is to the online broadcast of a course for teaching device / Learning to 35 students in first food in Master's year at the faculty Bizerte. These learners are available to attend education / learning via the MOODLE platform that has the Virtual University of Tunis (UVT). The "course" line item of our research defines a (LS) online (Paquette, 2002) which addresses the concept of "The photoperiod and its role in the mastery of breeding goats." The contents of the *"course"* is designed by Mr Mossadok (Professor of Animal Physiology at the Faculty of Bizerte) and written and posted by myself (the researcher). Remote tutoring is provided jointly by Mr Mossadok and me.

### 3.2. Investigative Tools

Much of the work was undertaken deals with the evaluation of an online learning system after experimenting with 35 students in master food. Our study is limited to the evaluation of some aspects of said learning system namely the synchronous and asynchronous communicative interactions, the management of the learning rate over time and space, the availability of students and teachers for synchronous communications, the knowledge assessment after learning.

For the evaluation of different aspects already enacted, we first collect and analyze the different responses of 35 students to the 9 questions in the satisfaction survey (see annex). For each question the student is asked to choose one of the following proposals as a response "*I totally agree*", "*Not agree at all* " and "*I do not know*". In addition, we asked the students justifications for choice on the last two proposals. The survey is presented to learners after completing the online course. For better organization and consistency issues, we have grouped all the questions that have the same objective in a single class of matter with theme. Then we have assigned to each theme a title specific to it.

## IV. RESULTS

In what follows, we present in the order of their appearance in the satisfaction survey, the various themes associated respectively with the various constituent questions and different answers of the 35 food Masters students.

### 3.3. Themes (1): synchronous and asynchronous communicative interactions

Under this theme, we asked two questions (Q1 and Q2) on the roles of synchronous discussion via chat and asynchronous discussions through the discussion forum of a share in the development and revitalization of collaborative work online and the other in the co-construction of scientific knowledge. Analysis of the responses of students advocating the importance of Tchat in boosting the collaboration shows that 57.6% (19 students out of 35) students are in agreement with the statement already dictated. Some of them (3) state that "*instant discussion was perfect because it helped me understand the course and to master some difficulties in using the platform*" However 6 among 16 remaining students express their disagreement. Among the justifications statements of these we cite as examples the three justifications "*efficiency chat in collaborative work depends on the person with whom you speak*", "*certain topics of chat are not connected over*", "*unrelated comments to the subject of discuss*". We noted that the remaining 10 students who ticked the proposed answer "*do not know*" have evoked no justification of their statements. In answering the second question of this theme, we counted 20 affirmations of the importance of the forum in the development of collaborative work and 6 disagreements with the same statement. These state that "*asynchronous collaboration is not effective in learning because the answers to the problems take time*", "*the forum does not allow collaborative work to address problems shared by their resolution because this requires time dependent deadlines for responses*". We also identified three of seven students who checked "do not know" who say they have encountered problems when using the discussion forum tool.

### 3.4. Themes (2): The management of the learning rate over time and space

For this theme, we will analyze student responses to two questions (Q3 and Q4) about the opportunity that can promote followed by online courses in management learning rhythms in time and in space. The results bear that 87.9% of students (29 from 35) are in complete agreement on the two statements which imply that the online course is a perfect opportunity to manage the pace of learning in time and in space. Two students approve their respective agreements, saying that "*I have had enough time to answer questions from operations*", "*it's a good experience, and it allowed me to access the course at any time*". However, 3 students among 35 push these two statements saying that "*I do not agree because the students leave the course online and are interested in other things*", "*time spent for the course is short*", "*too much homework on other modules to do in conjunction with the online course, I do not have too much time to share*". One student checked the statement "*I do not know.*" He

expressed his affirmation of this choice by saying "*I do not know if the online course is an opportunity to manage my pace? Because I'm not available the time of dissemination of the course*".

**3.5. Themes (3): The availability of students and teachers for synchronous communications**

In this theme, we asked two questions (Q5 and Q6) designed to respectively determine the availability of the students and the teacher's availability for synchronous discussions. The first question to the responses shows that only 16 students said their peers were present for the chat. While 13 say the opposite. Some of these state that "*my friend is not available at the same time for discussion*", "*my friend is very busy with her studies, she is not there to discuss", "Comrade cannot be always her requires planning meetings "" it is not available at the same time "," we must consider the availability of each "" each person's availability that differs in time from that of his comrade* "... Note also that the four students who ticked "*I do not know*," did not provide justifications for their choices. By asking students about the teacher's availability for synchronous discussions, we have shown that two thirds (75%) of students say the teacher was present during the discussions by chat to communicate their feedback. Opponents of this view (4 students) say that "*the teacher was not available all the time*," "*the teacher can not be always available at the same time as when the student needs it*", " *the teacher is not available at the desired time, we must then arrange the meeting in advance with the teacher*", " *when I question the teacher, he ignores me and does not answer. The course contains scientific notes that require direct explanation by the teacher*".

**3.6. Themes (4): Knowledge assessment after learning**

We asked two questions (Q7 and Q8). The first concerns the role of self-assessment in identifying gaps generated by the course. The second question is to highlight the importance of peer review in the diagnosis of "*knowledge anomalies*". The analysis of responses to the first question gives rise 15 agreements with the assertion that self-evaluation is only capable of allowing the identification of knowledge gaps relating to acquired learning. However, 13 students expressed their opposition to the same assertion. Some of these say: "*The evaluation by myself (self-assessment) is insufficient to identify any gaps in my learning activities contrarily to collective evaluation which is richer and allows to know the new information and correct its unknown nonsense*", "*self-assessment is inadequate because I cannot identify and correct all my shortcomings*", " *student looking to have a good rating even matter if the answer is wrong*", "*always corrections must be accompanied by the teacher's instructions*", " *I do not agree to the self-assessment because we do not know the right answers*", "*self-evaluation can be subjective*". In our analysis of the second question answers, we managed to identify 16 supporters of the idea that claims that the peer review allows identifying gaps procreated by learning activities. Some opponents (9 students) of that idea explain their disagreement by saying that "*The co-evaluation is not objective because we evaluate our friend*", "*sincerely, I do not like the assessment of my colleagues in my work*", "*students are not yet suitable where able to correct the leaves of examinations (duty) even if they know the correct answer, because it could have an intimidating*", "*sometimes the notes are swollen where the opposite*", "*the co-evaluation can be subjective ; no connection between the mark awarded and content of the duty to assess* ". We also noted that four students from the 8 who checked the proposed answer "*I do not know*" respectively connect their ignorance of the answer to the question posed to technical failures affecting access to the course where access to the assessment activity (tool "Workshop"). They explain this by saying "*I did not do co-assessment as there are some technical faults in the online course*", "*I do not know because I have not evaluated the duty of my comrade*"

**3.7. Themes (5): Mastery of IT tools to the platform**

In their educational pathways to university, students of the first food in year Master have never taken a course online. In result they have neither theoretical nor practical knowledge for digital tools integrated into educational platforms and their use in the context of education / distance learning. In these circumstances, we have conducted training sessions before learning the profile of these students. The objective is that the student develops theoretical knowledge about the utility of digital tools to integrate into the courses and practical competence in terms of mastery of the use of such tools in the online course followed. After learning, we want to assess the contribution of training sessions in developing mastery of digital tools of the platform by students. This is actually the objective of the question "*The theoretical and practical training before learning, enabled us to master the use of various tools of the platform when monitoring online courses?*". When analyzing the responses of 35 students to the question already stated (Q9), we identified 26 (78.8%) students who had developed a better use of the Model platform after attending training sessions in the use of digital tools platform. However it was not the case for some students (4 from the 9 remaining students) who expressed their disagreement through a set of supporting sentences that we have listed in three categories according to the object of the response. The first category of sentences whose common purpose is "*insufficient time allocated for training*" *among the phrases of that class as an example we cite*", "*the number of practical training sessions is inadequate*", "*Time spent in the training sessions is insufficient to discover the digital tools integrated in the money*", "*the number of training sessions is enough for good practice to use the platform*". Some sentences forward the idea "*IT equipment failure to properly conduct the training*" Among these sentences, we cite the

following examples: *"The conditions are unfavorable: the number of computers is inadequate in the room*", "*There is a lack of computers in the computer room," "the room is not sufficiently equipped with computers*", "*unfavorable training conditions because the number of computers is low*" The third category of response which entitled "*Massification of computer use*" includes phrases like "*conditions are unfavorable for practical training: Computer-student enrollment is high*", "*the number of participants high, which exceeds the number of computers*", "*because the number of students per computer is high*".

## V. Conclusion

The exploration of the experiences of students with online courses certainly shows that it was an opportunity for the revitalization of the spirit of collaboration via synchronous and asynchronous discussions. Surely, analyzing the content of these discussions discloses that the student has reached on the one hand to develop scientific knowledge and practical concepts namely "*biological rhythms*", "*photoperiod*", "*cash on short days*" and "*salary photoperiod breeding goats in against season*" and also to examine their own thinking and to question its scientific reasoning relating to concepts already enacted. Irrevocably, individual knowledge of the learner is "*fed*" by those shared in discussions with chat and discussion forum. In the process of summative evaluation of scientific knowledge, the peer review is for the learner an opportunity firstly to test its achievements and also to correct errors produced during his apprenticeship.

The opportunity to assess the duty of his comrade offered by the online course enables learners to acquire new skills and the ability to compare its products with those of his comrade. This ability allows the learner to develop his self-reflection capabilities. In addition, during the peer review, every student publishes comments duty to assess. These comments help peers during reemissions errors that have their productions. However, this course has generated several problems that are actually observable at two levels of the online learning teaching process. The first level is online pre-learning. It is at this level that we conducted training sessions using the tools of the platform. The weak link in this training is the lack of time allocated for training, the lack of individual manipulation of the platform's digital tools and the lack of material equipment to support the training. The second level describes the pedagogical, didactic and media characteristics of the learning system itself. Gaps at this level can be generated by the choice of media tool settings without taking into account the specific learning objectives. In fact, synchronous communication activities whose course is random can not allow the co-construction of knowledge and the overcoming of obstacles to learning. These activities require real-time dating planning. Gaps are also related to the choice of the summative evaluation path. Indeed, if the evaluation process (assignment of homework, assignment of homework, assessment) only includes self-evaluation or peer evaluation, it is confronted, respectively, with the subjectivity of the self-assessment and the evaluation. the peer review that reveals "*the crony effect*". These last two aspects limit the credibility of the evaluation.

## VI. PERSPECTIVE

In our day there is a rich literature on methods of design of learning systems (Alessi & Trolop (2001); Top (2006); Lebrun, M., Docq, F., & Smidts, D. (2010 ); Paquette, G. (2002) ...). All methods can be reported to the generic model ADDIE (Analysis, Design, development and implementation -Evaluation) distinguishes a conventional manner the 5 phases of the development process of teaching device / learning namely analysis, design, development, implementation and evaluation. Note also that each phase is associated with a number of spots to be made by the designer of the learning system (Basque, 2004). Integrating the general Design Based Research (DBR) methodological paradigm (Wang & Hannafin, 2005) based on the iterative and participative design of e-learning systems, we envisage a new iterative design cycle of the online course subject of the experimentation described in this contribution. During this iteration, we think to take into account the constraints generated by this online course as well as the different improvements communicated by the learners. This iterative design approach could allow the improvement of technopedagogical aspects and thus enhance the success of E-learning.

## VII. ANNEX

**(Q1): The "chat" tool allows effective collaboration in learning.**

□I totally agree.

□I do not know.

□Not agree at all.

**(Q2): During the discussion forum by the answers of your classmates your questions are relevant (guarantee provision of knowledge).**

□I totally agree.
□I do not know.
□Not agree at all.

**(Q3): The online course allows you to have more freedom to regulate (master) managing the pace of learning in time.**

□I totally agree.
□I do not know.
□Not agree at all**.**

**(Q4): Distance learning allows you to have more freedom in space (it allows access at no obligation presence in the classroom)**

□I totally agree.
□I do not know.
□Not agree at all**.**

**(Q5): Each tchat use of some of your fellow online are always present to answer your questions.**

□I totally agree.
□I do not know.
□Not agree at all.

**(Q6): The feed back from the teacher via the chat and discussion forum are sufficient to solve problems encountered during your learning.**

□I totally agree.
□I do not know.
□Not agree at all**.**

**(Q7): The assessment by yourself (self-assessment) is sufficient to identify any gaps in your answers during learning activities.**

□I totally agree.
□I do not know.
□Not agree at all**.**

**(Q8): The assessment of the duty to your fellow (peer review), helped you identify any gaps in your answers during learning activities.**

□I totally agree.
□I do not know.
□Not agree at all**.**

**(Q9): Practical training on the use of the platform before learning gave you a know-how to master the different tools of the platform.**

□I totally agree.
□I do not know.
□Not agree at all**.**

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