

On-Line Formative Assessment used to Regulate Learning Curves

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Abstract – The main aim of formative assessment, conceptually and in terms of its implementation, is to improve learning curves for learners. This practice is, however, greeted with some reticence by teachers which stems from “the amount of time wasted in connection with the practice of formative assessment and the work load appertaining to corrections” [1]. Today information and communication technologies, thanks to their interactive capabilities, allow for the development of tools that make the practice of formative assessment easier.

The objective of this contribution consists in imagining and setting up a teaching scenario that serves to formative assessment through the interactive tools of the Moodle platform. To begin with we will describe the stages involved in the elaboration of a teaching scenario promoting proper functioning of formative assessment. After that we will introduce the interactive environment for a learning curve that allows for formative assessment with the aid of the Moodle teaching platform.

Keywords – Formative Assessment, Teaching Scenario, Teaching Innovation, Learning Technology, ICT, Moodle.

I. INTRODUCTION AND PROBLEMATICS

In Morocco, students in scientific disciplines, who are not specialists in languages, are required to continue their university studies in French despite a six-year pre-university training cycle in Arabic language. These students would not need to learn "French" but "the essential of French", the latter is necessary in order to enable them to continue their university studies in an optimal way.

The identification of difficulties facing these students prompted the Ministry of Higher Education, Scientific Research and Professional Training to propose a module of French language entitled «Language and Terminology», during the first two semesters of the university education, in order to help them better understand the change in language of instruction. The module is aimed at meeting the expectations and needs of students, especially regarding the learning of French in its functional aspect: to learn what is essential in French and not the entire French language, in order to make a specific use of it during their university education (understanding of courses, note-taking, interaction with teachers, writing of research papers, etc.).

Our problematics are defined by a strategy to improve the efficiency of the teaching of language and terminology at the heart of the Ben M'Sik Faculty of Sciences, to render it more dynamic, to promote a hands-on learning

curve and to develop the independence and the involvement of students in their learning of French.

In order to solve our problems we have envisaged an innovative teaching method that consists in imagining and setting up a teaching scenario that serves to formative assessment through the interactive tools of the Moodle platform.

Put more concisely, the present work has as its objective to answer the following questions:

1. To what extent can information and communication technology improve the process of formative assessment?
2. What teaching scenario may we adopt to imagine an on-line formative assessment?
3. To what extent does an on-line formative assessment lead students to alter their way of learning and promote their independence?

In order to answer our questions, we have posited two fixed objectives:

- To think up material that can be useful in formative assessment and to generate it on the operating platform;
- To test this formative assessment device.

II. THEORETICAL FRAMEWORK

A. Formative Assessment: A factor in the Development of Self-regulating Learning Curves

Formative assessment can be thought of as a lever to support and develop self-regulating learning curves on the part of learners [2, 3, 4, 5] and to constitute a relevant aid for teachers so as to regulate the teaching/learning process [6].

In the light of the texts consulted, there is evidence that it is by repeated formative assessment at various levels of difficulty that learners will come to develop their independence. The awakening of their own judgement invites learners to remake their learning curve and become involved afresh in their pursuit of it [7] p.167.

B. The Obstacles Linked with the Practice of Formative Assessment

A study by CERI¹ (Centre for Research and Innovation in Education) [8] carried out for the OECD shows that “teachers believe it is difficult to practise formative

¹ CERI may also stand for Centre d'Enseignement et de Recherche en Informatique [= Centre for Education and Research in Information Technology] apart from the interpretation of the acronym given here: Centre pour la Recherche et l'Innovation dans l'Enseignement [= Centre for Research and Innovation in Education].

assessment with big classes especially in view of the magnitude of matter to be processed”.

The works of [1] on the reticence of teachers with regard to formative assessment show that this reticence is above all due to “the amount of time wasted in connection with the practice of formative assessment, the work load appertaining to corrections and the fact that the pupils only take seriously what is written down”.

C. The Contribution ICT makes to the Evaluation Process

The main contribution noted by [9] is the fact that “by automating self-evaluation, ICT facilitates the setting-up of formative assessment”.

This automation of evaluation enables rapid remedial treatment, and, according to [10], rapid and efficacious remedial treatment is an important element to consider in the development of new tools for formative assessment so as to create enhanced learning curves. It also allows one to keep records of what learners do in real time and to analyse these records with regard to expected outcomes [11].

III. METHODOLOGY

Our main objective in this study is to implement a teaching scenario having recourse to ICT, so as to integrate formative assessment within a learning environment which will allow the learner to identify mistakes as valuable for the learning process.

A. The Creation of an on-line Teaching Space: the Moodle Platform

Moodle is a teaching platform offering the teacher a follow-up to activities carried out by learners as well as a statistical calculation appropriate for judging and analysing each question with a view to evaluation.

B. Teaching Scenario Promoting Proper Functioning of Formative Assessment

The concept of an on-line training space brings a different role to the teaching of a course referred to as traditional. By taking the works of [12] as our yardstick, we have retained the following desiderata in imagining our teaching scenario:

Taking Mistakes Into Consideration: Mistakes form a basis for learning;

The Device's Flexibility: Evaluating at a distance, at different times and/or according to a more personal type of processing;

Task Orientation: Retention of formative assessment in connection with the learning objectives aimed at by the end of the programme;

The Teacher's Role: Their main role is to go with learners through the learning processes;

The Source of Motivation: The learners are motivated by the learning environment itself;

Knowledge Management: The teacher himself controls what the learners will learn.

C. The Implementation of the Teaching Scenario: the Learning Process

In order to construct the teaching device wanted for this research we have kept the five aspects of the learning

process brought together in the pragmatic model of [13]: information, motivation, activity, interaction and production. The five aspects of the process have been adapted for the “language and terminology” course on the Moodle platform.

D. Suggested Activities

We suggested activities to the students in the form of Multiple Choice Questions (MCQs), True/False questions, open-ended questions with short answers, texts with gaps to slide and drop words into with the cursor, matching exercises.

IV. RESULTS AND ANALYSIS

In order to solve our problems, the praxis we use aims to bring learners to target gaps in their learning more easily and to remedy them immediately with the regulatory function applicable to formative assessment with the aid of the Moodle teaching platform. The latter has efficiently provided help to produce evaluative situations which allow each individual learner to know at all times where he or she is up to in building up their knowledge as the course goes on.

A. The Sample

The subjects that together make up our sample are university students undertaking initial training. There are 165 students in all, of whom there are 67 registered as being in their first year of SMAI (= Sciences Mathematiques Appliquees, Informatique)² for the university year 2016-2017 and 98 students registered to study of SVTU (= Sciences de la Vie, de la Terre et de l'Univers)³ for the year 2017-2018.

B. The Teaching Scenario

The formative assessment is based on Multiple Choice Questions in which it has a particular part to play. The teaching scenario is characterized by four stages:

Stage 1: Note Taking and Interaction with the Teacher Present

The first stage of the teaching scenario is based on setting up courses with the teacher present. The activity of the learners during a lesson on the course is elicited through the taking of course notes without any support being provided. This obliges the student to pay attention during the lesson.

Interaction with the teacher takes place in a pause, at the end of each lesson, to give students the opportunity to ask questions and clarify certain points in the course, so that they can be evaluated on-line.

Stage 2: Formative Assessment in the form of MCQs on Moodle

This stage of the teaching scenario is characterized by formative assessment. The activities suggested to students consisted in a series of self-correcting exercises (MCQs) provided by the Moodle platform without any feedback

² Applied Mathematical Sciences with Information Technology.

³ life sciences of the earth and the universe.

and only attempted once. This puts the onus on the student to work on his note taking during the lessons.

This evaluation tends to give the learner a clear and immediate idea of how well he has mastered the knowledge imparted by the course.

Access is limited by time available, so we have left the text accessible for one more week beyond the time when students were unable to have access to it.

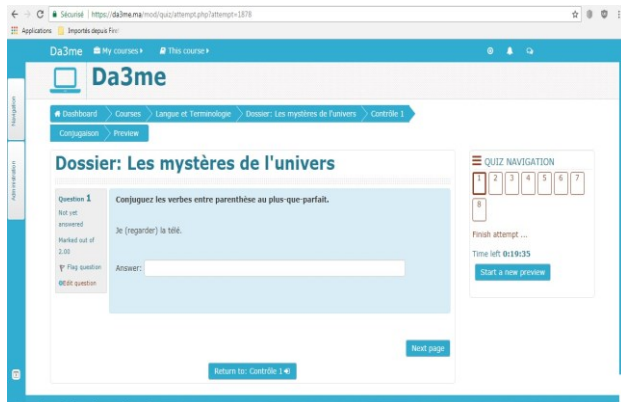


Fig. 1. Examples of activities suggested to the students (floder: the mysteries of the universe)

Stage 3: Training with MCQs before the Final Exam

Two weeks before the final exam, we put back the MCQs onto the Moodle platform, but this time feedback was available and several attempts were possible so as to give the student the opportunity to train for the final exam.

In parallel with this, we also suggested other activities to the students (texts, written comprehension questions, grammar, etc...) making it possible to sweep aside all the fundamental notions of the programme studied during the semester. These well thought-out teaching methods allowed us to place our (first year) students firmly on the road to success.

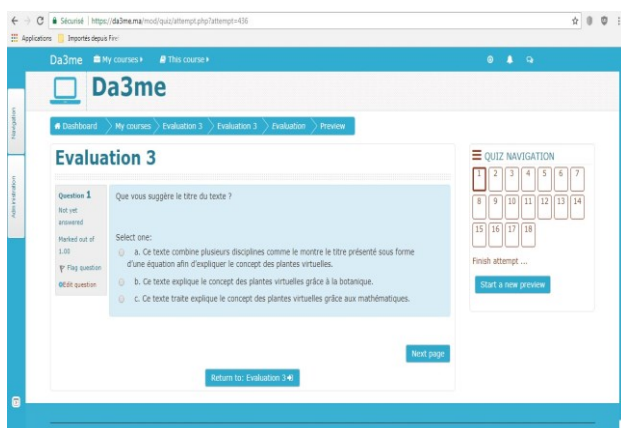


Fig. 2. Examples of activities suggested to students (assessment 3)

Stage 4: Downloading Course Support after MCQs

Once a student has completed his activities, he or she will be able to download the course on-line. This involves the student in making an evaluation and consequently in building up learning.



Fig. 3. Example of downloadable courses. (course of language and terminology. University year 2017-2018. Semester 1. The imperfect)

B. Discussing the Results

The results of this experiment show that the students took part in large numbers in this teaching method and responded to all the tests proposed. This device encouraged them to work on a regular basis asking questions whether at a distance or when the teacher was present in order to understand certain ideas raised in the course.

Formative assessment also allowed us to very quickly pick out students in need of support and remedial work.

We noted too that there was a high level of attendance on the part of the students during the lessons. The fact that they attended lessons and took notes allowed them to respond to the evaluative tests.

On the other hand, as far as the learning curve for learning a language goes, the overall picture is more positive. We can conclude that the amount of time spent by the students in doing MCQs, consulting external resources and ultimately exchanging knowledge are all things that potentially help in acquiring a language.

V. CONCLUSION

The object of this study was to imagine and set up an on-line formative assessment for a language and terminology course. This work relates the exploration of an innovative teaching strategy based on the on-line teaching platform Moodle and on MCQs as a tool for formative assessment. This teaching strategy is based on the setting up of courses with the teacher present and exercises in the form of MCQs on Moodle after each lesson.

We have noted real involvement and motivation on the part of the learners in which the history of learner actions in terms of taking part and making a contribution can be collected and analysed by the teacher for remedial purposes.

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