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DICHOTOMOUS KEY THROUGH MOODLE PLATFORM. BLENDED-LEARNING LIKE EDUCATIONAL STRATEGIES FOR TEACHER TRAINING EDUCATION

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ABSTRACT

The dichotomous keys have been traditionally used as an instrument of knowledge on field by some disciplines, such as biology, geology, etc., but in teaching education their use is more restricted. We propose that students elaborate an intervention model of practical activities using dichotomous keys as didactical teaching tools. For this they will produce all this work through a blended-learning scheme, using the Moodle platform.

Keywords - Dichotomous Key, Experimental and Social Sciences, Blended-Learning, Moodle platform, Teacher Training Education.

1. INTRODUCCIÓN

A quality training at university is developed by complementary, transverse and innovative academic activities. The European Space for higher education understands this as the relationship between teachers and students.

We consider that the production of the blended-learning work proposals like we introduce here, ease the training of future instructors according to the professional needs that the progressive implantation of information technologies demands in educational centres.

This activity has been elaborated and designed out of the experiences acquired in previous training courses for Physical Education and Primary Education teachers, in subjects related with the didactics for the experimental and social sciences through the WebCT platform, being implemented nowadays by the Moodle platform which we consider to offer major didactic possibilities in collaborative works.

The dichotomous keys have been traditionally used as an instrument of knowledge on field by some disciplines, so in training so in their professional activity, such as biology, geology, etc. As well as in their respective areas of expertise such as botany, zoology, mineralogy, etc., and its use in other areas of knowledge more restricted. In fact, we can see how some implicitly keys appear in Primary and Secondary education textbooks, but it promotes the students to memorize without actually using them as teaching tools for meaningful learning. Moreover, we found that in the crown decree (CD) 1513/2006 of December 7th, which establishes minimum education requirements, of primary education, as well as CD 1631/2006 of December 29th laying down minimum teaching Secondary Education thematic blocks which refers to the use of keys and identification guides for animals, plants, minerals and rocks. In CD is covered the use of dichotomous keys, but they tell us nothing about their development and construction. In the formation of education teacher, we only find these dichotomous keys like not didactic perspective. We could find how a tool for species identification of practical classes in subjects relevant disciplinary knowledge as "biological systems" so that your treatment is as a tool for identifying species in field job but not as tools for analysis and understanding of natural reality.

In this way, with this experience, we propose that students use field notebooks, index cards, viewing photos, virtual tours, etc. They have to prepare and create a dichotomous key which will serve to classify, identify, compare, etc., the trees of "*Campus del Carmen*" on the University of Huelva. This will be generated and updated in a blog where these studied species will appear. This will be generated and updated on a Blog in which these species will we are studying will be shown. They will produce all this work through a blended-learning scheme, using the Moodle platform. The intention is to elaborate an intervention model of practical activities linked with the Teacher official syllabus of the Teacher degree's subjects we instruct, and that has an innovative spirit in the eyes of the students; to experience new educational strategies with an equipment that links the classroom and the

natural, social and cultural environments of the education centre; finally to implement actions in which the students have a major responsibility and autonomy in the educational action.

At this point it is necessary a briefly explanation about what a dichotomous key is and which its functions are.

The dichotomous key is a tool that allows us to identify the bodies or elements that we are studying. There are clues to living beings; other keys reach the level of species, genus, family, or any taxonomic category. There are also keys for the identification of minerals and rocks.

A dichotomous key of the elements considered is based on the definition of macroscopic or microscopic morphologic. Normally, it has two solutions and they are based on whether or not they have a certain character, repeating the process definitions of characteristics to reach the element. As we said before, the key is organized into dichotomies (sometimes trichotomies) or dilemmas, pairs of conflicting claims (eg “plants with yellow flowers” against “plants without flowers”), having to decide between one and only one of these alternatives. We must first read the two statements and choose one of them, so that the claim was rejected does not get to be seen in the development of the determination. It is a usefully tool to classify organisms. It is interesting to note that, more information is entered into the dilemmas, we are providing more data to classify the element and therefore the one hand facilitates the decision of the path we choose and, secondly, it will have more documentation on the species that we are studding.

Mestres and Torres (2002) [1] consider of great interest that teachers train in dichotomies keys to fit the needs of his students and the agencies that interest them rated. To carry out this task, not enough to know the defining characteristics of each species to be classified, but they need to know to develop the key so they can go ahead with it as it is compared animal to sort through the features described. As they consider it important for students to handle dichotomous keys and dichotomous criteria for the differentiation of plant or animal species we are studying minerals. To do this, we consider the development of classification trees can be good resources for their achievement.

In this point, the use of dichotomous key helps us to work in the studying corpus. The importance of considering the gradual creation the concept of environment demonstrating the difficulty of overcoming an undifferentiated syncretism vision of reality (half as scenery, medium and harmony, medium and finite resource) to construct a concept of environment as complex and dynamic system. This idea was proposed by various authors, including Wamba and Jiménez (2005) [2]

2. OBJECTIVES.

A new educational concept related to use of methodological tools supported by ICTs leads us to consider the following goals for our field of study.

- To develop an intervention model of practical activities in line with official programs of the degrees of Master of the subjects they teach and which have an innovative character.
- New educational strategies and Experience with new equipment that serve as a liaison between the classroom and the natural, social and cultural environment development.
- To implement actions in which the students have greater responsibility and autonomy in educational work.
- To design guidelines for the development of criteria using simple dichotomous keys.
- To use the features described in the dichotomous key to learning as distinct from animals, plants or rocks as selected.

From these objectives we intend to promote students developed the following competencies:

- To develop the capacity of exploration and direct manipulation or virtual elements of their environment.
- To know and manage environmental resources, minimizing the use of traditional resources (eg. textbook) and explore the possibilities of natural objects

without involving spoliation of the elements or damage them, while we encourage creativity and curiosity.

- To achieve these targets set and to development skills proposals we have selected the corpus of trees content that allow us to specify the proposal. So we intend:

- To know the variety of trees in our environment, in our case, the “*Campus del Carmen*”, University of Huelva

- To know the general characteristics of the function relationship of plants response to environmental changes.

- To develop guidelines for the classification of these trees, observing either directly or through photographs or slides.

- To characterize and classify the selected specimens, distinguishing their differences and diversification.

- To promote interest in knowledge of the variety of plant life on our campus, through accurate descriptions and orderly.

- To develop necessary attitudes for the implementation of an investigative methodology that contributes to the acquisition of adequate training as curiosity, creativity and consistency.

- To develop an interest in gathering information about materials and their potential next intone

- To assess the possibilities of educational and recreational computer use both as a tool of communication and classroom work and leisure.

3. METHODOLOGY

Our proposal consists of 6 sessions of which 3 will be traditional (sessions 1, 5 and 6) and 3 face (2, 3 and 4).

Attendance Session:

We begin our proposal with a attendance meeting (session 1) which they recount each of the points that will affect the teaching-learning process: standards, teaching guide, the use of the platform, etc. Thus the role of teachers and students will highlight the key issues in this first session.

There are several resources available to service of process for that purpose, such as chat and virtual tutorials and a video-conference session will be distributed as needed throughout implementation.

In addition, there will be a forum to collect any doubts that the students present, including the opening themes to frequently asked questions that will emphasize the resolution of future problems that students may have and substantiating the normal development process.

The session 5 (2nd Attendance Session) clarified various issues and implementation of sessions 2 and 3 (Not- Attendance Session)

The last attendance Session (Session 6) will be a synthesis of the proceedings at Attendance and virtual session. It resolved the previous doubts about the evaluation process and every student can express their opinion and perception of the proposal. Therefore be taken into account the aspects that, according to participants, should be enhanced, supplemented, changed or, where appropriate, eliminated these practices of successive courses. These contributions are equally valued by the faculty in the session itself. Furthermore, the group class will discuss and agree what are the characteristics needed to identify the species, what characteristics identify a species over another, what features are those that come in the evolutionary tree and of those away.

The whole process of observation, comparison, identification, and the instrument itself, will be reflected in a Blog that the student may be updated, together with his companions as they arise and possible changes or developments thus stimulating work through collaborative interactions made in the virtual platform, or in group activities.

Not- Attendance Session

As regards to Not-Attendance Session will be carried out a series of collaborative activities which we define like reflecting the involvement of all students, although some of them to conduct the student individually. The groups will consist of two or three students and prior to these sessions must select a specific tree, belonging to a particular species that the student must identify, located in the Campus del Carmen, University of Huelva.

For the award on the species, groups must submit the scientific name of the

species they have selected so that if successful they are assigned to, excluding this species for the other groups and themselves on until all groups a distinct species. But if it is wrong or have selected a specimen that although a plant is not a tree (palm), IT will be shown the reason for their error and have to select another specimen. In principle, knowing the scientific name of plant species is not subject to our practical activity, but the less interesting thing is to recognize what taxonomic techniques experts use to describe species.

Once this process appears the relationship of students and species are set in a given forum for this purpose, so that species are not repeated and there was more diversified as possible.

In Session 2 (first session non-contact) each student (individually) should make the observation of a specimen of the species designated. To do this, we have a field notebook that tells them what the criteria for a detailed observation. Thus, the platform gives us the ability to create several links that may help students in their observation. Examples of these links are the types of leaves, virtual tours, etc., annexed later. Our intention is to make the observation, a more structured activity and promote more meaningful learning.

Having completed the individual observation, in session 3, the group should make a comparison of results between its members so as to be able to recognize the differences and similarities between individuals of the same species so we can characterize this species. They must take into account what are the characteristics which evolve over time and what not, which allows us a kind of benchmarks and what not, etc. These questions must be answered by students to learn, take into account and using criteria for classification, comparison, identification, etc.

After the observation, comparison, etc., in session 4, students will have to connect to the Web of course, where they had hung a virtual tour of the Campus del Carmen, where you have to locate all copies of the species that the group is assigned, information compiled in a dossier.

Schedule

The activity will take place over three weeks. Keep in mind the time in which to be engaged, IT shall coincide with the period when the plant is in full control of processes and changes. We must coincide with the period of spring, the month of

April being the most suitable for it, but for reasons of programming and / or temporary, can be made to coincide with the previous month and / or later.

Define each face meeting coinciding with a week and as stated in the methodology consist of three sessions. Keep in mind not face sessions and the student works outside the classroom to describe what the actual workload of the experience itself.

For the planning process, both temporally and organizationally, we propose an open forum which will last until the end of the proposal, which by way of tutoring, students may be asking the questions that arise during the process and the tutor with the help of other students, can go a clarification. Thus, when opened, the other students can benefit from the answers prepared by both an instrument of evaluation of the process alive. This instrument should be examined by the teacher or teachers after finishing the activity.

Resource requirements:

As for resources, we can differentiate between the ones provided by the platform and those provided by teachers.

As soon as you provide the platform, each student will have a series of tools to communicate synchronously (real time) or asynchronous (delayed time) with other classmates and teachers, typical of a collaborative approach, fostering form both vertical communication (student-tutors) and horizontal (student-student). These tools include email, electronic forums, chat, live classroom, newspapers, etc.

Among the resources we provide, there is a ready-made observation form and links to various useful tools for observation.

4. EVALUATION: EVALUATION CRITERIA AND INSTRUMENTS

The development of this project has included a proposal for continuous assessment, by different means and measures proposed, following the establishment of a timetable or Schedule of practical sessions and tutorial sessions, both attendance and non-attendance and participation in varying degrees and involvement in these proceedings. It is proposed to take account of aspects that, in view of the participants, should be enhanced, supplemented, changed or, where appropriate, eliminated these practices towards its implementation in successive courses.

Attendance sessions will serve to discuss in the course of business and, above all, to clarify concepts and enrich their content with input from students themselves.

The job done in these sessions, as well as the skills and knowledge will be evaluated through written reports to be drawn students. The quality and nature of these reports will be essential information to know the contributions to the knowledge of the training sessions, and to assess the course of the activity and consider whether we are succeeding or not the proposed objectives. The reports, its complexity and its contribution, and the results of the training sessions and the whole experience will be analyzed by the teacher, which will, in turn, to gather in a report, both the aspects that have tested positive and effectiveness, as those which can be substantially improved.

Furthermore we consider necessary an assessment tool that can help us to diagnose and therefore intervene in improving the teaching-learning processes, overcoming the unique learning assessment declared (tests, written tests, etc.). It presents an evaluation grid are developed in recent time as a resource for comprehensive assessment and training (Conde and Pozuelo, 2007[3]), tool orientation and evaluation of educational practice (Moskal and Leydens, 2000 [4]; Mertl, 2001 [5]; Hafner and Hafner, 2003 [6]; Tierney and Simon, 2004 [7]; Wamba et al, 2007 [8]), and in which the perspective of students on their validity has been considered in many papers (Andrade and Du, 2005 [9]).

| STRUCTURE | | CRITERIA OF EVALUATION FOR PRACTICE CLASSIFICATION OF TREES | | | |
|-----------|--------------------------------------|---|---|---|--|
| | | Poor | Good | Very Good | Desirable |
| PRACTICE | Plant species selection | Required | Required | Required | Required |
| | Development of bibliographic records | Not listed | Files are made but incorrectly | Files are made correctly but THEY propose few references | Files are made correctly and are contributing a significant number of references |
| | Development of the field notebook | You have not got any respect from those indicated by the observation form | some of the items listed in the schedule of observation Have been completed | all the items listed have been completed in the schedule of observation | We have collected all the items listed and have provided some new criteria |

| | | | | | |
|---------------------|---|---|---|---|--|
| | Using the platform: Forum and Chat | Not participate in any of the tools available | Participate in some forums, but superficially | Participate in all forums and the chat, though passively, with little relevance | Participate actively in all forums and the chat still very relevant interventions. |
| GENERAL CONCLUSIONS | Report Opinion | The report makes no conclusions. | Make the report but SLIGHTLY developed | Definite conclusions but worked together all aspects | Overall conclusions and related. |
| | Evaluation or suggestions for improving practices | Ratings do not | Some assessments are made with no suggestions for improvement | Assessments are made and presents some suggestions "superficial" | Assessments are made and they raise important and informed suggestions. |
| FORMAL ASPECTS | Presentation and writing on the Blog | Don't care formal aspects | Structure poor. Incorrect writing | Respect the formal aspects of writing and the structure of a job, but not in a consistent manner. | Respect the formal aspects of writing and structure of work in terms of index, introduction and conclusions. |

5. PERSONAL ASSESSMENT OF THE EXPERIENCE (POSSIBLE ISSUES AND DIRECTIONS):

We conclude with a number of aspects to consider for the development and analysis of this activity. Thus, we must take into account whether they are keeping the amount of information they are providing for our part, concerning the activities to be carried out and while you are assigned. Since we can consider over-ambitious targets, taking into account the realities of students.

another aspect to take into account and that should be examined is the need to organize in a proper way, and taking great care in planning the time they devote to developing our business as this should be limited, especially in relation to monitor the participation of students, because we can fall into the trap of inadvertently generating us having to be working around the clock according to your needs and demands resulting in a mutual interdependence. that is why we must devote (give) special attention to timing, so it must be clear among students and faculty involved, so that does not exist in some member misunderstandings or mistakes that it makes the process does not evolve properly.

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