

BUILDING AN AUTHENTIC E-LEARNING ENVIRONMENT: THE CASE OF FINANCIAL STATEMENTS ANALYSIS

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Abstract

Higher education in Europe, but especially in Spain, faces the challenge of increasing the employability of its graduates. Some stakeholders argue that there is a substantial gap between the application of knowledge in the real work environment and the theoretical learning in the formal instruction in the classroom, where students are taught in a largely decontextualized manner. According to [1] a way to bridge the gap is to use a model of cognitive apprenticeship. Authentic learning is a growing interest in authentic activities as the basis for learning in both face-to-face and web-based courses. Some authors [2] have argued that only real-problem contexts should be presented to guarantee authenticity. However, other authors [3], [4] have shown that maximum fidelity, does not necessarily lead to maximum effectiveness in learning. The cognitive authenticity, rather than the physical authenticity, is the key principle in designing of authentic learning environments [5], [6], [7]. Authenticity emerges in the interaction of various components, such as the learner, the learning environment and the task [2].

Following this approach, we consider the characteristics of the authentic learning task [8] as theoretical framework to provide an authentic context that reflects the way the knowledge will be used in real life. We apply this theoretical framework to improve the instructional design of the subject *Financial Statements Analysis*. This subject is compulsory in the degree of Business Administration and Management of the Open University of Catalonia (Universitat Oberta de Catalunya, UOC). UOC is a fully online university and thus it develops its activity in a virtual learning environment. The subject *Financial statement analysis* is recommended to be coursed in the second year, around 300 students enroll this subject each semester. It is a synthesis of other accounting subjects previously studied.

We have redesigned this subject considering the different elements that characterize authentic learning [8]. These are as follows: (1) provide authentic context that reflects the way the knowledge will be used in real-life, (2) provide authentic activities, (3) provide access to expert performances and the modelling of processes, (4) provide multiple roles and perspectives, (5) support collaborative construction of knowledge, (6) promote reflection, (7) promote articulation, (8) provide coaching and scaffolding, and (9) provide for authentic assessment of learning within the tasks.

This article focuses on the changes made in the subject trying to meet all these criteria. During the implementation several difficulties have arisen regarding some of the above mentioned elements. Finally, the suitability of each one of the criteria to the specific subject's context and the online environment is discussed.

Keywords: Employability, Authentic learning, Financial statement analysis.

1 INTRODUCTION

Since its conception, an education for employability became de mantra of the European Higher Education Area (EHEA). The keystone of this reform process launched with the Sorbonne 1998 and the Bologna 1999 declarations is the emphasis on a career-oriented university education that enhances graduates' employability [10].

The Sorbonne declaration of 25th of May 1998, which was underpinned by these considerations, stressed the Universities' central role in developing European cultural dimensions. It emphasised the creation of the European area of higher education as a key way to promote citizens' mobility and employability and the Continent's overall development.

(The EHEA Joint Declaration of European Ministers of Education convened in Bologna on the 19th of June 1999).

The Bologna reform turned up in Spain in the late 2000s, when universities began offering new courses adapted to the EHEA. Since then, substantial changes have taken place in the socioeconomic

environment that has reinforced the relevance of this founding principle. The most important element is the last economic recession that has hit the country very hard, causing a dramatic increase of unemployment rates levels. In fact, since the start of the economic crisis in 2008 youth unemployment has become one of Europe's greatest challenges.

Within this scenario, the emphasis on education for employability is especially relevant in the case of graduates in Business Administration. Not only because it keeps on being leader in the ranking of more demanded careers in 2016 (their graduates get to opt to 10.65% of the total offers published [11], but also because it involves an essential leadership role for managing the transition towards a knowledge-based society [12], [13], [14] [15].

Once the implementation of the EHEA has become a reality, the gap between the fast-paced demands for new skills in the European labour markets and the slow evolution of the diverse European educational systems to meet these demands persists [16]. At the policy level, the solutions are ambitious: the 2014 Education and Training Monitor [17] calls for all learners in all European countries to be equipped with the required skills to successfully participate in society and the labour market.

Specifically, the report calls for: (a) strengthening the quality and relevance of higher education programmes, focusing on boosting graduates employability; (b) involving employers in the development and quality assurance of programmes as a means for linking more closely the worlds of education and work; (c) combining innovative pedagogies with an effective use of digital tools and content to foster more innovative methods of learning, and far-reaching access to learning resources and learning opportunities.

Indeed, the "High Level Group on the Modernisation of Higher Education in Europe" [18] goes further: *"Curricula should be developed and monitored through dialogue and partnerships among teaching staff, students, graduates and labour market actors, drawing on new methods of teaching and learning, so that students acquire relevant skills that enhance their employability"* (p. 41).

The will to strengthen the connection between higher education curricula with the demands of the labour market has modified the design of the programs and the learning strategies. In a macro level learning perspective, the most important change that supposed a Copernican turn in the curricula design, was the new competence-based orientation. Competencies came into a dynamic point of reference that gives universities the necessary flexibility for them to address the demands of a changing society [19], [20], [21]. Other features introduced were the internship programmes, the final project competence-oriented, and the inclusion of specific subjects designed to reinforce the employability of the student, among others.

In a micro level learning perspective, the challenge has been the reorientation of the different subjects or courses towards a more labour connected performance. For this purpose, the design of the learning process through authentic learning scenarios is becoming a successful approach. While real businesses, together with traditional course teaching methods primarily have served as tools for the development of skills and authentic learning processes. It is a more radical approach in building an entire course of studying on authentic activities and tasks [22].

To assess if this methodological approach is appropriate and which is its impact on the learning design and performance we have redesigned a subject (Financial statements analysis, included into an online bachelor of Business Administration) under the precepts established by authentic learning scenarios theory. The structure of the remainder of the paper is as follows: Section 2 exposes the background of the authentic learning scenarios theory, Section 3 presents context, Section 4 shows the redefinition of the course and Section 5 presents the conclusions and a discussion on the limitations of the study.

2 THEORETICAL FRAMEWORK

A large scale of employers argue that, in order to boost the employability of graduates, it is essential to reduce the gap between the application of knowledge in the real work environment and the theoretical learning in the formal instruction. Too often students are taught in a largely decontextualized manner in the classroom [23]. According to [1] a way to bridge this gap is to the use a model of cognitive apprenticeship. This model is designed to "enculturate students into authentic practices through activity and social interaction" (p.37). These authors outline three fundamental characteristics of cognitive apprenticeship: (1) Learners have continual access to models of expertise-in-use against which to refine their understanding of complex skills. (2) Apprentices often have several masters and have access to a variety of models of expertise which leads to the believe that there may be different ways to carry out a

task, and that no one individual embodies all the knowledge and expertise. (3) Learners have the opportunity to observe other learners with varying degrees of skill. So, meaningful learning only occurs while it is embedded in a social and physical context. Cognitive apprenticeship originates in the interaction of various components, such as the learner, the learning environment and the task [8].

Following this approach, different authors have made contributions on how learning should be developed through authentic practices based on authentic activities and social interaction. While some authors [24] have argued that only real-problem contexts should be presented to guarantee authenticity, other authors [3], [4] shown that maximum fidelity, does not necessarily lead to maximum effectiveness in learning. Rather than the physical authenticity, the cognitive authenticity must be the cornerstone of the learning design [5], [6], [7]. In any case, if the students are not learning in a context of internship in a real company, they must be provided with an authentic learning environment [25]. This context should reflect how knowledge will be applied in practice, through authentic activities. [9] have established that learning is best facilitated in learning environments that reflects the way the knowledge will be used in real life. They have identified nine elements of authentic learning as criteria for assessing the degree of authenticity of a learning environment. These criteria are [9]:

(1) Provide authentic context that reflects the way the knowledge will be used in real-life. The context need to be all-embracing, to provide the purpose and motivation for learning, and to provide a sustained and complex learning environment that can be explored in a large period of time. Authors recommend preserving the complexity of the real-life and not simplify it.

(2) Provide authentic activities. The e-learning courses need to provide ill-defined activities that have real-world relevance, and which present a single complex task to be completed over a sustained period of time, rather than a series of shorter disconnected examples. Greater complexity requires a sustained period for performing the activity, in which the research is necessary, the contents are used in an intensive and extensive manner, and the creation of new content is possible.

(3) Provide access to expert performances and the modelling of processes. Authors recommend methods which are not teacher-centric, but border-crossing and collaborative, facilitating the sharing of learning experiences and construction of a learning community. So, it is necessary for the students to access to expert thinking, to the modelling of processes, to access to the learning process at various levels of expertise, and access to the social periphery or the observation of real-life episodes as they occur. It is important for students to be able to compare their performance with others at various levels of expertise.

(4) Provide multiple roles and perspectives. It is important to enable and encourage students to explore the topics from various points of view, and to “criss cross” the learning environment repeatedly. Authors recommend to give opportunities to work with agents from other professions/disciplines who with they would be interacting at the workplace.

(5) Support collaborative construction of knowledge. The opportunity to collaboratively constructing knowledge is seen as an important element of an authentic learning model. This is considered especially relevant in an e-learning context.

(6) Promote reflection. The e-learning course needs to establish an authentic context and task to enable meaningful reflection and self-reflection. The learners must have the opportunity of comparing themselves with experts and other learners in several stages of accomplishment and to readily return to any element in the site if desired.

(7) Promote articulation. The authentic tasks to do need to incorporate inherent opportunities to articulate the public presentation of arguments to enable defence of a position.

(8) Provide coaching and scaffolding. The course needs to supply the opportunity for more able partners to assist with scaffolding and coaching. The teacher as a coach is a fundamental and integral part of an e-learning course. Means must be provided so that the teacher can exercise this role. The authors emphasize that this coaching and scaffolding role can be exercised not only by teachers but by peers and experts, for instance.

(9) Provide authentic assessment of learning within the tasks. The assessment should be seamlessly integrated with the activity and should provide appropriate criteria for scoring the varied and complex tasks of the students, taking into account that these tasks can be developed individually or collaboratively.

As we will see below, in the practical experience that we expose in this article, we try to take into account all these criteria in the redesign of a subject.

3 CONTEXT: THE UNIVERSITY AND THE SUBJECT

An educational initiative can only be analysed and valued if the context in which it takes place is taken into account. Thus, here we show the main traits of the university and the subject where the authentic e-learning took place.

3.1 The Universitat Oberta de Catalunya

The Universitat Oberta de Catalunya (UOC) (<http://studies.uoc.edu/en/study-at-the-uoc>) is a fully online university with headquarters in Barcelona (Spain). It was founded in 1995 and now have 54.000 students and 3.700 teaching staff.

At the UOC, the student learns actively, mentored at all times by the teaching staff and in cooperation with his or her fellow students, supported by tools and resources and competency-based assessment. UOC students have a particular profile, since they usually are not full-time students but have other professional or personal commitments to attend to.

The UOC has a user-centered educational model based on activities. The whole learning process takes place through its virtual learning environment, comprising a learning management system (LMS), learning materials, a digital syllabus, and assessment tools. The assessment is continuous and formative and has an impact on the continuous improvement of students' learning. The assessment activities help ensure that learning objectives are achieved and skills developed.

At UOC degrees in the field of economics and business play a significant role. All the degrees in this field have a clear professional orientation. Particularly, noteworthy is the degree in Business Administration and Management (ADE) that has more than 5.000 students. This degree is in a process of continuous improvement that includes both the incorporation of refinements in the work of skills that are valued by the labor market and the methodological design of the subjects themselves. In this last sense, it is proposed to incorporate improvements in a subject that plays a very relevant role for one of the professional profiles (Economic-Financial Director) to which the degree in ADE is addressed. The configuration of the Financial statement analysis subject as an authentic learning environment aims to enhance the training of the students for the labor market.

3.2 The Financial Statement Analysis

Financial Statement Analysis is a compulsory subject that is part of the bachelor's degree in Business Administration and Management. It's recommended to be coursed in the second year, around 300 students enroll in the subject each semester and it's a synthesis of other accounting subjects previously studied.

Financial statement analysis is the process of reviewing and evaluating a company's financial statements (such as the balance sheet or profit and loss statement), thereby gaining an understanding of the financial health of the company and enabling more effective decision making. In it the students pract the main techniques of analysis and interpretation of financial statements and its main objective is the diagnosis of the company: Strengths, Weaknesses, Opportunities and Threats (SWOT) from the financial perspective.

In the cognitive domain, the learning objective were the following:

- Understand the usefulness of financial statements for obtaining information and conclusions in relation to the history, situation and prospects of a company.
- Identify which is the information that cannot be obtained from the financial statements, and knowing how to access to extra-accounting sources to get that information.
- Know how to use the different types of analysis of the financial statements (structural, economic, financial, etc.) to diagnose the business situation.
- Think over how this analysis serves to forecast the economic and financial evolution of the company.

In the personal domain, students expected to develop their ability to generate relevant economic knowledge from data, applying the appropriate technical instruments, their ability to efficiently manage a company, taking into account its competitive situation and identifying its strengths and weaknesses, and their ability to interpret and evaluate information in a critical and synthetic way.

Table 1 describes the five learning activities of the course and the percentage on the final qualification of continuous assessment.

Table 2. Learning activity in the subject

Learning activity	Description	% final qualification
1	Analysis of Balance sheet to make a thorough and exhaustive analysis of the economic and financial situation of the company.	20
2	Analysis of profit and loss statement allows to know the capacity of the society to generate benefits or not.	20
3	In-depth analysis of liquidity allows to assess the company's ability to meet payment commitments, especially in the short term.	20
4	To end up the diagnosis of society, the measure of efficiency by excellence: profitability (economic and financial) is analysed.	20
5	Work up a thorough and rigorous financial and economic report on the company's situation in accordance with its financial statements.	20

All the activities are based on a real company, the same for all the learning activities, provided by teacher to students.

4 REDESIGNED THE SUBJECT

This section describes how the financial statements analysis course has been redesigned to implement authentic e-learning.

The adoption of authentic e-learning has involved changes in the virtual classroom and in the learning activities. Through the nine elements that characterize authentic learning, the modifications introduced in the subject are explained to adapt it to this approach.

(1) In the first place, the authentic context. We recreate a realistic situation where the student has just been hired as an assistant to the financial director of a real company. The student assumes the role of deputy financial director, whose responsibility is to report about the economic-financial situation of the company. We introduce a video in the virtual classroom (Figure 1) that reflects this situation and the first conversation between both. Here, the Director entrusts to deputy the preparation of the financial report to be presented in the next Board of Directors (deadline in learning activity 5). And they agree in some



periodic meetings, to contrast the progress of the report (learning activities 1 to 4).

Figure 1. Video first conversation

(2) Secondly, the authentic activities. The subject provides activities that have real-world relevance and which present a single complex task. As we show in table 2, the students have to perform authentic report with complex activities involved and they carry out an analysis of different real statements and

indicators. Also, the financial director formulates questions and provides orientations, generating an interaction with the student.

(3) In the third place, access to experts. Course instructors are experts in the field and they guide (as Financial Directors) the students and provide continuous feedback. The students can interact at any moment and they have access to similar reports prepared by experts.

(4) Fourth, multiple roles perspectives. The interdisciplinary perspective is incorporated by the financial director. In relation to each part of the report, he will raise questions, called uncomfortable questions, about the impact of the conclusions obtained in some decisions of the different departments of the company (general manager, production, human resources, marketing, etc.).

5) In the fifth place, support collaboration construction of knowledge. The collaboration is limited to the interaction with the "boss" who makes the assignment of the report and gives continuous feedback. And the student can interact with other classmates however collaborative work is not specifically encouraged.

6) In the sixth place promote the reflection. The reflexion of the student is a key task to transform the information provided by the financial statements in a SWOT analysis of the company.

7) Seventhly, promote articulation. After the initial conversation, there are four additional "meetings" with the financial director in which the student must present parts of the report as continuous assessment activities from one to four. Finally, student delivers the complete report with the diagnosis of the situation of the company.

8) Eighth, coaching and scaffolding. The instructor of the course, as the "boss" of the student who has just arrived at the company, performs a clear task as the student's coach. He provides continuous feedback and guidance to student.

9) And finally the ninth element, provides authentic assessment of learning within the tasks. There is a continuous assessment of part of the report. A qualification and personalized feedback are provided in every part. Moreover, the answers to the multidisciplinary questions are evaluated.

5 CONCLUSIONS

It is generally acknowledged that the transmission of disciplinary knowledge is insufficient in regards to preparing students for the workplace [26]. A crucial challenge for educators is to connect course design with technology and learners' needs to enhance an interactive learning environment.

According to some authors, useful learning for the labor market must be developed in a context of real practices. This approach limits the possibilities of improving the different subjects of a degree beyond incorporating dual learning practices into them. Without underestimating this reality, but on the basis that what is really relevant is cognitive authenticity, this article introduces a context of authentic learning in a specific subject that is carried out in e-learning mode. We employ the characteristics of the authentic learning task [9]. A Guide to Authentic e-learning. London: Routledge.as theoretical framework to provide an authentic context that reflects the way the knowledge will be used in real life, including: complexity, multiple roles and perspectives, collaboration, reflection, coaching and scaffolding, and authentic assessment.

As [27] highlight activity can be the course. In this case, actually activity is the course. Activity was designed around a complex task, the preparation of a financial report of a real company. In the design of the activity, it has been complex to incorporate some of the elements that, according to the authors, should characterize an authentic learning environment. The reasons are basically of two types. On one hand, the difficulty of making the reality of the job (deputy of financial director) suitable with the characteristics outlined by the authors. For example, teamwork with the level of intensity that is recommended. It must be taken into account that in reality this type of work is not usually performed as a team. In the same way, the evaluation system of the subject is much more regulated than it is in real work. On the other hand, the incorporation of certain elements means increasing the dedication of students in a course of 6 ECTS credits and with a high degree of difficulty for its own content. For example, this has affected the limited promotion of articulation and of teamwork.

Soon, we hope to have the evaluation of the new design of the subject by the students. With this assessment and other stakeholders, the design of the course will be refined with the final aim of further improvement of the learning of students towards their integration into the labor market.

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