The Internet and Higher Education 38 (2018) 36–46

Contents lists available at ScienceDirect

The Internet and Higher Education

journal homepage: www.elsevier.com/locate/iheduc

A model for aligning assessment with competences and learning activities in online courses

Ana-Elena Guerrero-Roldán*, Ingrid Noguera

Faculty of Psychology and Education Sciences, Universitat Oberta de Catalunya, Barcelona, Spain

ARTICLE INFO

Keywords:
Alignment
Competences
E-assessment
Learning activities
Model
Online higher education

ABSTRACT

This article presents a model for designing e-assessment processes aligned with competences and learning activities. The authors examined assessment in student-centered, competence-based learning in online contexts. We analyzed the importance of alignment for properly selecting the learning activities that best guide students towards the desired level of competence acquisition (i.e. learning outcomes). We explored the leading types of assessment and new opportunities for assessment derived from the use of technologies. The model developed takes advantage of the potential for technologies to go beyond traditional assessment approaches and proposes a classification of e-assessment activities organized by competences. When the model was applied in a real online course, results suggested it can help teachers and students better understand the meaning of competence-based learning and how the formative assessment approach is useful for helping students attain the desired competence levels.

1. Introduction

In recent decades there have been great changes in the structure, function and funding of higher education, which have resulted in an increase in student diversity. This new context has highlighted the failure of traditional approaches to university teaching and boosted student-centered teaching methods (Biggs & Tang, 2011). In relation to this, 1999 saw jointly coordinated educational reform among European countries (the Bologna process) to increase internationalization and assure the quality of higher education systems. This process resulted in the creation of the European Higher Education Area (EHEA) in 2010. The EHEA has helped to bring the two core premises of the Bologna process to the fore: student-centered learning and competence-based curriculum (European Ministers of Higher Education, 2012).

Teaching at European universities has evolved from a teacher-centered approach – involving teaching objectives – towards a student-centered approach focused on students' learning outcomes (Gil-Jaurena & Kucina Softic, 2016). Consequently, the role of students has changed from passive (content-based approach) to active (learning-centered approach). The differences between the teacher-centered and the student-centered paradigms have been investigated extensively (Bennett, Davis, & Weddel, 2010; Hannafin, Hill, & Land, 1997; Slunt & Giancarlo, 2004). In essence, in the teacher-centered paradigm, instructors define courses based on the actions they have to perform and are responsible for all decisions regarding the course (Armstrong, 2012). In the student-centered paradigm, instructors concentrate less on what they know and more on student learning (Gunderman, Williamson, Frank, Heitkamp, & Kipfer, 2003). Teachers have shifted from instructors to facilitators, while students have moved from listeners to active participants (Barman, 2013; Baxter & Gray, 2001; Freire, 2010).

Several attempts have been made to define student-centered learning (SCL) (Cannon & Newble, 2000; Freire, 2010; Gibbs, 1992; Hooks, 2010; McCombs & Whisler, 1997; Tsegay, 2015; Zabit, 2010). SCL refers to “student responsibility and activity in learning” (Cannon & Newble, 2000:16) which results in “greater autonomy and control over choice of subject matter, learning methods and pace of study” (Gibbs, 1992:23). This approach to learning is apparently beneficial both for students (motivation, peer communication, student-teacher relationships, active learning) and for teachers (evolution of the teacher's role, response to large class sizes) (Barman, 2013; ESU, 2010a).

Research over the past fifteen years has explored the translation of this theoretical paradigm into practice in higher education (e.g. Edwards & Thatcher, 2004; Kinchin, De-Leij, & Hay, 2005; Livingstone & Lynch, 2000; Montgomery, 2008; Rust, 2002). Findings demonstrated that SCL poses many challenges when it comes to creating the desired atmosphere and students still play a passive role, either because of teachers' continued dominance, or students' resistance or insecurity (Estes, 2004; Farrington, 1991; Fishman et al., 2013; Freire, 2010; Lea, Stephenson, & Troy, 2003; Liu, Qiao, & Liu, 2006; Lizzio & Wilson,

* Corresponding author.
E-mail address: aguerreror@uoc.edu (A.-E. Guerrero-Roldán).

https://doi.org/10.1016/j.iheduc.2018.04.005
Received 21 April 2017; Received in revised form 20 April 2018; Accepted 20 April 2018
Available online 23 April 2018
1096-7516/

2005; Lu, 2012). In contrast, a recent study conducted by Tsegay (2015) showed that some teaching methods, including learning by doing, lead to less dominant attitudes from teachers and an effective implementation of SCL.

The literature suggests that successful implementation of SCL requires changes in the function of content, the role of the instructor, the responsibility for learning, the personalization of learning, the processes and purposes of assessment, and the balance of power (ESU, 2015; Weimer, 2002). In online courses, this means establishing positive interpersonal relationships, facilitating the learning process, adapting to the individual, social and class learning needs, and encouraging students to take on responsibility and personal challenges (McCombs, 2015). These considerations regarding the need to improve SCL show that plenty of effort is still required to design courses that truly put students at the center of the learning process.

Perhaps not surprisingly, similar difficulties have been encountered when implementing another core premise of the Bologna process: competence-based curriculum (CBC) (Wesselink, Dekker-Groen, Biemans, & Mulder, 2010). Much of the research on CBC warned of the ambiguity of the concept and the difficulties for putting it into practice (Kafyulilo, Rugambuka, & Moses, 2013; Mulder, Gulikers, Biemans, & Wesselink, 2009; Struyven & De Meyst, 2010; Wesselink et al., 2010; Yanhua & Watson, 2011). Theoretically, CBC is characterized by competences (instead of objectives), outcomes (instead of content), learner-centered teaching activities (instead of teacher-centered), and formative assessment (Sudsomboon, 2008).

SCL is a fundamental concept in CBC. (Gervais, 2016; Le, Wolfe, & Steinberg, 2014). As Wagenaar (2007,11) said, “the use of the concept of learning outcomes and competences requires study programmes and its course units or modules to be student-centered/output oriented”. Indeed, SCL is perceived as “more suitable than traditional forms of education when it comes to the development and acquisition of generic competences” (ESU, 2010b:38). Therefore, organizing the curriculum by competences entails recognizing that different students learn at a different pace and have different needs, interests, experiences and knowledge (ESU, 2015). For instruction, this requires paying attention to each student's ability, learning style and learning pace (Gervais, 2016) – in other words, centering instruction and assessment on the student rather than the group.

CBC requires certain steps to place the student at the center of curricular design. First, the competences that students will acquire through the learning activities need to be established. This involves describing the competence, defining a means for measuring or assessing the competence, and a standard to judge competences (Barman & Konwar, 2011). Second, the course needs to be organized in terms of the learning outcomes that students will acquire rather than in terms of the contents that the teacher will provide. Third, active learning methodologies and activities that involve students in the learning process need to be promoted. Fourth, assessment needs to be designed not simply to see whether students can reproduce any given content but whether they can demonstrate their command of the subject.

Competence-based assessment requires focusing on the evolution of each student's abilities, measuring their performance and providing individual feedback to help them progress with their learning process. Research has demonstrated that orientating learning towards competences and learning outcomes makes assessment more transparent for students and aids quality assurance and course design. Nevertheless, it represents a challenge for teachers in its application (ESU, 2015).

A recognized solution for effective implementation of CBC involves “alignment” – what the teacher does with the learning activities to help students achieve the learning outcomes (Anderson & Krathwohl, 2001; Biggs & Tang, 2007; Boud & Falchikov, 2006; Gil-Jaurena & Kucina Softic, 2016; Koenen, Dochy, & Berghmans, 2015). Over the last decade, the idea of alignment has been widely advocated in educational research to strengthen the relationships between different areas of course design: competences, learning outcomes, objectives, learning activities, teaching approaches, assessment/tasks/criteria, and resources (Biggs & Tang, 2011; Kouwenhoven, 2009; Morcke, Dornan, & Eika, 2013; O'Farrell, 2009). A recent study demonstrated the utility of alignment for increasing both the effectiveness of teaching methods and student engagement (Al Husban, Al Husban, & Al Betawi, 2016).

Alignment may be even more relevant and fruitful in online education (Lawrence & Snyder, 2009; Raeburn, Muldoon, & Bookallil, 2009), where students learn autonomously. It can help guarantee that courses are student-centered and competence-oriented, and students are informed about the actions they need to carry out to achieve their goals. Unfortunately, while researchers stress the benefits of alignment in course design, it is unclear how this procedure is put into practice. Many studies have shown that curriculum alignment can be very challenging for teachers who lack expertise in assessment design and advanced pedagogy; this explains why there can be difficulties understanding and developing these kinds of processes (Dilmore, Moore, & Bjork, 2013; Ebert-May et al., 2011; Holt, Young, Keetch, Larsen, & Mollner, 2015; Kennedy, Hyland, & Ryan, 2012; O'Neill, Birol, & Pollock, 2010).

This literature review's discussion of the challenges regarding implementation of SCL and CBC highlights the need for guidelines for online course design, to enable true adaptation to the student-centered and competence-based learning advocated by the EHEA. This paper describes a model for aligning assessment with competences and learning activities in online course design. The model proposes a prototypical assessment design process in which teachers select and create the most appropriate e-assessment activities for the previously defined competences and the desired learning outcomes. These elements are combined coherently with assessment criteria, indicators and feedback, and defined by the preferred type of assessment.

A range of approaches to competences, learning activities and assessment will be discussed in the following sections. Section 2 gives a brief overview of the relationship between teaching goals, competences and learning outcomes. Section 3 examines the learning activity concept and various classifications of e-assessment activities. Section 4 summarizes different types of assessment and analyzes the impact of online technologies on assessment practices. Section 5 presents a model for aligning assessment with competences and learning activities in online scenarios, including a classification of e-assessment activities. The final section puts forward a number of conclusions.

2. The relationship between goals, competences and learning outcomes

Traditional modes of assessment mainly focus on learning products instead of learning processes and do not fit the needs of current job demands in which individuals need to be able to apply their knowledge. The EHEA promotes competence-based learning with the aim of better responding to job market demands. Instead of simply paying attention to content, current graduates are trained to be reflective practitioners and to develop higher order thinking (Myyry & Joutsenvirta, 2015).

To understand the concept of competence and to redefine the learning process based on competences has been – and still is – a challenge in higher education. “Competence” means “the proven ability to use knowledge, skills and personal, social and/or methodological abilities in work or study situations and professional and/or personal development” (European Commission, 2008, para.1). It represents a combination of attributes relating to knowledge and its application, attitudes, skills, and responsibilities, and it describes the degree of capability for performing them (González & Wagenaar, 2003). Two types of competences can be distinguished: *generic* (at bachelor's degree level) and *specific* (at course level). *Generic* competences are those that many different bachelor's degrees can have in common (e.g. the ability to communicate in a second language, the ability to plan and manage time). *Specific* competences, on the other hand, are those that are unique to each field (e.g. in Mathematics, the ability to comprehend