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Learning outcomes based assessment in distance higher education. A case study

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ABSTRACT

This study focuses on an analysis of assessment methods according to expected learning outcomes in courses taught at the Universidad Nacional de Educación a Distancia (UNED) in Spain. Based on the European Higher Education Area and its learning-centred approach, the TALOE webtool has been used to analyse the internal coherence of 10 Bachelor's and Master's courses. The TALOE tool was developed in a European project and is free and publically available. The article gives a detailed explanation of how the courses' analysis has been carried out. The results indicate that, in general, the courses analysed are internally coherent. Nevertheless, we do indicate the mismatches in both the way the learning outcomes are written and the choice of assessment methods, conditioned by the mass character of certain courses. Finally, we give an example of improvements made in a course and we evaluate the utility of the TALOE tool in course design.

KEYWORDS

Assessment; learning outcomes; assessment method; higher education; distance education

Introduction

Learning assessment is one of the most sensitive processes in online and distance learning. The lack of face-to-face contact with the student means that certifying certain basic principles for assessing the achievement of expected skills requires specific methods, in addition to technological mediation. Additionally, the differences between the multitude of outcomes to be achieved during the learning process –for example, gaining theoretical knowledge, acquiring practical skills, being able to reason, etc.– make it necessary to combine different methods and technologies to effectively assess student learning.

As well as assessing teaching objectives, organisational and institutional components are also central to evaluation processes in distance higher education. Teaching organisation depends on aspects such as the configuration of the learning spaces, the distribution of students in the courses, the type of teaching support received by the students, and the time sequence of the learning process. In the case of a university that offers distance education at a national or international level, these issues are compounded by the necessity of applying scalable methods that have a mass reach, allowing service to be provided to the thousands of students who register.

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To research distance learning assessment, we undertook a study to explore the specific assessment methods applied in courses[1] that lead to official degrees, taught in a mass distance university like the Universidad Nacional de Educación a Distancia (UNED) in Spain. Specifically, we analysed the alignment between the expected learning outcomes in the courses and the methods employed to assess the achievement of those outcomes. By doing this, we aimed at obtaining evidence that could be used as the basis for improving assessment methods in a way that responds to the challenges of UNED's mass education system, taking into consideration the organisational characteristics of this university. To analyse the alignment between learning outcomes and assessment methods, we used the TALOE webtool (an acronym for the project 'Time to Assess Learning Outcomes in E-learning'), which groups together a variety of assessment techniques and resources particularly suited to digitally mediated learning (Gil-Jaurena & Kucina, 2016).

Assessment framework in European distance universities

A critical feature of contemporary assessment in formal higher education is the use of assessment to guide and frame student learning (Hills & Hughes, 2016). In e-learning courses, the influence of assessment on teaching design is even more pronounced (Gregory, 2013). This is because the learning sequence in a digitally mediated environment must be more carefully planned, taking into account the limitations of the technology used. In the same sense, the configuration of the institution supporting the course is also a determining factor in establishing an adequate approach to assessment. According to Kirkwood and Price:

> 'Where a teaching-centred approach is dominant, information and communication technologies (ICT) will be used for transmissive purposes, with students retrieving information presented in a variety of forms. Where there is a prevailing learning-centred approach, ICT will be used to encourage active exploration and manipulation/experimentation, with communications software fostering dialogue, collaboration, reflection and the building of understanding'. (Kirkwood & Price, 2008, p. 11)

One of the factors determining the quality of assessment in a distance-learning course is the alignment between the teaching objectives, or expected learning outcomes, and the evaluation techniques. In the first generations of distance education (Anderson & Dron, 2011; Nipper, 1989) the course design was preferentially based around content, instead of using the expected learning outcomes to determine what the students were expected to achieve or demonstrate. The arrival of the Internet and the use of digital technologies as a teaching support, offered the possibility of proposing richer designs from the perspective of communication between agents, as well as student interaction with learning resources. This led to alternative models being applied to online course designs, where learning outcomes determined the necessary and appropriate content, pedagogical approach, and assessment.

Kirkwood and Price (2008) demonstrated this transition by characterising a series of features that differentiated content-based and learning-based teaching approaches (see Table 1). According to this perspective, a good education system aligns the teaching method and assessment with the learning activities established in the objectives, so that all aspects of the system work together to support appropriate student learning.

Table 1. Two contrasting sequences of course design for distance education.

Teaching approach A	Teaching approach B
Determine the content (knowledge, skills, etc.) and how it will be taught – including selection of media.	Determine what learners are expected to achieve (knowledge, skills, etc.) from taking course and how that can be demonstrated.
Produce teaching materials, exploiting the media available.	Design teaching with appropriate media to enable learners to achieve those outcomes.
Construct assessment items to test/simple students' understanding.	Assess that teaching and learning have been successful.

Source: Kirkwood and Price (2008), p. 13.

In the context of European universities, with the Bologna Process ('European Higher Education Area and Bologna Process, 2018) there has been a shift from a content-based approach to a learning-centred approach; from teaching objectives to student learning outcomes. The learning method promoted by the Bologna Process is based on a student-centred learning approach. Student-centred teaching provides learning opportunities that are determined by the needs and interests of the students. Using this approach, the students become active learners, and the teachers work to facilitate student learning (Shear et al., 2009).

For instructional design, this means directing and encouraging the planning of courses towards student learning outcomes and, specifically, using these learning outcomes in student assessment ('European Higher Education Area and Bologna Process, 2018). Assessment based on learning outcomes is so important that the main lines of action of the Bologna Process, such as the European Credit Transfer and Accumulation System (ECTS), student-centred learning, qualifications frameworks, and internal quality assurance, depend on it being correctly implemented within higher education institutions (European Commission/EACEA/Eurydice, 2015).

The precondition for properly introducing learning outcomes and assessment processes is a paradigm shift from teacher-centred to student-centred learning. Effective teaching and learning requires constructively aligning teaching and assessment, using a learning outcomes-based approach (Biggs & Tang, 2011). To develop a student-centred learning system within the European framework of the Bologna Process, it is necessary to recognise the value of student assessment in teaching, independent learning by the student, and the use of learning outcomes as a framework for designing courses. In fact, in many European universities it has been found that the shift to a student-centred approach based on learning outcomes is difficult to achieve if attaining the learning outcomes and the ECTS credits associated with them are not consistently and transparently assessed (Structural Reforms Working Group, 2014).

Assessing learning outcomes in e-learning

Part of the immediate background for this paper included participation in the TALOE project (Soeiro et al., 2014), 'Time to Assess Learning Outcomes in E-learning', funded by the European Union (Lifelong Learning Programme, Reference No. 543097-LLP-1-2013-1-PT-KA3-KA3MP, more info at https://taloe.up.pt). This project involved the development of the TALOE webtool in 2015, which is available publically and free of charge at http://

Table 2. The cognitive process dimension, revised Bloom's taxonomy.

Lower order thinking skills – > Higher order thinking skills					
Remember	Understand	Apply	Analyse	Evaluate	Create
Recognising (Identifying) Recalling (Retrieving)	Interpreting (Clarifying, paraphrasing, representing, translating) Exemplifying (Illustrating, instantiating) Classifying (Categorising, subsuming) Summarising (Abstracting, generalising) Inferring (Concluding, extrapolating, interpolating, predicting) Comparing (Contrasting, mapping, matching) Explaining Constructing, models)	Executing (Carrying out) Implementing (Using)	Differentiating (Discriminating, distinguishing, focusing, selecting) Organising (Finding, coherence, integrating, outlining, parsing, structuring) Attributing (Deconstructing)	Checking (Coordinating, detecting, monitoring, testing) Critiquing (Judging)	Generating (Hypothesising) Planning (Designing) Producing (Construct)

Adapted from L.W. Anderson and Krathwohl (2001, pp. 67–68). Source: Iowa State University (2015).

taloetool.up.pt. It is a tool for identifying and reviewing appropriate assessment methods for achieving the expected learning outcomes in a course (Gil-Jaurena & Kucina, 2016).

The TALOE project used the 'Aligning Learning Outcomes and Assessment' (ALOA) model (Falcão, 2013), which highlights the connection between the intended learning outcomes and the assessment strategies used during a course. It also uses the revised version of Bloom's Taxonomy of the cognitive domain – remember, understand, apply, analyse, evaluate, and create – (L.W. Anderson & Krathwohl, 2001) to differentiate a total of 19 verbs to state the learning outcomes in a continuum of increasing cognitive complexity (see Table 2).

On the other hand, the ALOA model identifies six general assessment methods based on Brown et al. (1997), and provides examples of specific assessment methods for each of these (see Table 3).

According to Evans et al. (2016), in the cycle of course assessment practices the first step is to determine the learning outcomes, then decide the assessment strategy and, finally, the assessment tasks. The TALOE webtool can support this process, guiding the teacher in defining the expected learning outcomes and making decisions about the most appropriate assessment strategies for each learning outcome. Specifically, the TALOE webtool can be used in two ways: (1) to check if the assessment methods for an existing course are aligned with the stated learning outcomes; and (2) to help users decide on the most appropriate assessment methods for a new course (author, 2016). In our case, we have used the TALOE webtool for the first purpose.

Method

To advance on the study of assessment based on learning outcomes in an e-learning context, we initiated this research focused on UNED, which has a mass-education system

Table 3. General assessment methods identified in the TALOE tool.

Assessment method	Description
1. Multiple choice questions.	Multiple choice questions (MCQ) consist of a question followed by alternative answers from which the student has to choose the most correct alternative. Even though MCQ are commonly associated with assessing 'remember knowledge', they may be used for assessing most cognitive processes and types of knowledge.
2. Essays.	In an essay the student is expected to produce a structured text that responds to the question or challenge posed by the teacher. Essays allow for assessing deep learning instead of rote learning. Essays promote understanding, analysis and evaluation as well as the integration of different types of knowledge and skills.
3. Problem solving.	Problem solving is a response to a question that requires thought and/or planned action. Problems vary in complexity and openness and, consequently, assessing problems also varies in complexity.
4. Practical work.	Practical work is related to work developed in laboratories or equivalent environments. Practical work plays an important role in Engineering and other areas of education and it is generally understood that students will learn more effectively when they are engaged in practical tasks.
5. Short-answer questions.	Short-answer questions (SAQ) are a usual component of tests and exams, used for formative and summative assessment. An online discussion tool may also be used to deliver the SAQ to an individual student or group.
6. Reflective practice assignments.	Reflective practice is an approach to measure the capacity to analyse and evaluate experiences. Reflective practice assignments aim at motivating students to understand and critically think about their own learning and development.

Source: Based on Brown et al. (1997).

providing a service to 160,000 students. The study, funded by UNED's Vice-Rectorate of Methodology and Innovation in the 1st Call for Teaching Innovation Projects, consisted in applying the TALOE tool to a set of courses in this university. The research involved two stages: the first (year 2016–17) was a study, using the TALOE tool, of the aspects that could be improved in courses delivered by the six lecturers[2] participating in the project; and the second (year 2017–18) was focused on implementing the changes arising from the conclusions of that analysis.

The general aim of the first stage was to analyse the framework within which UNED's course assessment takes place, and to determine its coherence in accordance with the Bologna Process objectives of aligning learning outcomes and assessment methods. In addition, we hoped to achieve two specific objectives: (1) to check the usefulness of the TALOE tool; and (2) to identify elements to improve, both in the definition and specification of learning outcomes and in the choice, design, and development of assessment methods for courses taught in mass distance learning.

We analysed a sample of 10 courses from 3 undergraduate Bachelor's degrees (Pedagogy, Social Education, and Social Work) and 5 Master's degrees [Secondary Education Teaching (Philosophy speciality), Web Communication and Education, Innovation and Research in Education, Educational Intervention in Social Contexts and a Euro-Latin American Master's in Intercultural Education]. Table 4 provides a description of the typology of the courses comprising the sample, the number of students enrolled in the 2016–2017 academic year, and whether it was a theoretical and/or an applied course.

According to the workflow of the TALOE tool (see Figure 1), the analysis of the sample courses consisted of reviewing the design of each course to determine the fit between the learning outcomes proposed in the initial design and the assessment methods employed to assess their achievement. Using a wizard process, the TALOE tool guides the user through a series of steps. For each learning outcome, firstly the user defines the expected achievement (text box) and then selects the verbs that best describe it (see Figure 1). Next, the tool gives the result as a set of assessment methods considered appropriate, according to the ALOA model (see Figure 2).

To facilitate the analysis, all the information from the set of courses that constituted the sample was compiled into a table (data provided by each of the six lecturers taking part in the project on their respective courses). The information in the table was organised as follows:

- Full name of the lecturer responsible for the course, who provided the information.
- Name of the course.
- Level (Bachelor's or Master's degree).
- Number of students in 2016–17.
- Learning outcomes (as they appear in the course study guide or syllabus).
- Verbs selected in the TALOE webtool (maximum 3).
- Assessment of the drafting of the learning outcomes and utility of the verbs from the TALOE tool.
- Assessment methods used (as they appear in the course study guide or syllabus).
- Assessment methods recommended by the TALOE webtool.
- Evaluation of the methods recommended by TALOE (if they agree with those actually used, if they seem suitable, viable, etc.).
- Other observations.

Table 4. Courses analysed in the study.

Name	Number of students	Justification of the theoretical-practical character
Bachelor's degree courses		
1. Sociocultural animation	1026	Theoretical-practical. This course aims to provide a basic, general, and articulated vision of Sociocultural Animation, which is a transverse method of socioeducational intervention, fundamental for social educators.
2. Intercultural education (Bachelor's)	164	Theoretical-practical. The intercultural approach makes cultural diversity the focus of reflection on education; this is conceived as a cultural construct, a dialectic between different visions of society and people.
3. Diversity and equality in education	833	Theoretical. The issues in the programme propose the articulation of human diversity and equity/social justice in the field of education, as well as in the context of democratic societies.
4. Permanent education	569	Theoretical. The general objective of this course is to explain the general framework of lifelong learning and how it is applied in professional training and open areas on the internet characteristic of the digital society.
Master's courses		
5. Design and evaluation of programmes and projects	18	Theoretical-practical. This course involves an approach to project design and evaluation with special emphasis on knowledge of the overall process and the management of tools for designing, managing, and evaluating projects.
6. Citizenship and democratic participation	14	Theoretical. Citizenship is explored as a practice oriented towards developing collective capacities and powers to encourage emancipation and social transformation.
7. Intercultural education (Master's)	36	Theoretical-practical. This course delimits intercultural education; the practical implications of adopting an intercultural approach in education are analysed, and ideas and strategies are offered for reviewing and proposing practical exercises and research in education.
8. Online Knowledge Management	55	Practical. This provides tools that enable adequate methods to be applied in various contexts (educational, organisational, community, etc.) to create, manage, and evaluate knowledge generated in the digital arena.
9. Logic and methodology in the teaching of philosophy	39	Theoretical. This course focuses on the forms of reasoning, as well as examples of incorrect usage of these forms ('fallacies'), and the criteria that can allow people to distinguish between rationally established knowledge and ideas that are transmitted with no rational foundation.
10. Methods of qualitative research	167	Practical. This looks at the practice of alternative qualitative methods in socioeducational research for addressing complex and unique problems, the study of which enables us to construct meaning.

As an example of the way the information was collected, Table 5 shows some of the dimensions for two courses (those numbered 1 and 10 in Table 4).

The information collected individually by each of the six lecturers was shared with the group, and served as the basis for two discussion groups among the six lecturers. The dimensions that became the basis for reflection were:

(1) Analysis of the way the learning outcomes are written and the utility of the verbs from the TALOE tool.
(2) Analysis of the methods recommended by TALOE (if they agree with those we actually use, if they seem suitable and viable).
(3) Other observations.

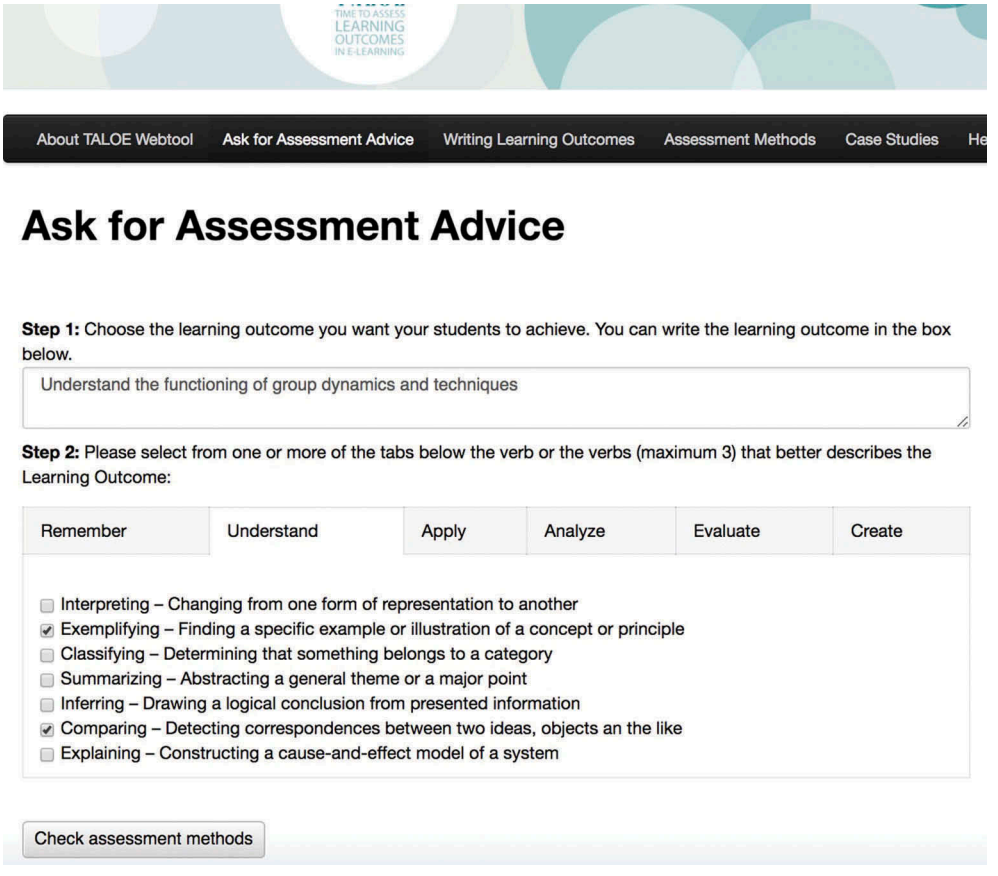

Figure 1. Steps 1 and 2 in the TALOE webtool applied to the course 'Sociocultural Animation'.

The first dimension was discussed by the six lecturers in the first working group meeting; the second dimension, along with other observations such as implications of the findings in our current teaching practices, were discussed in the second group meeting. In both meetings, which took place in April 2017 and lasted 3 hours approx., each lecturer explained the analysis undertaken in his/her respective course(s), which had been shared electronically in advance, and we discussed the findings; first in pairs and then in the whole group. The information collected in the group discussions completed the analysis and led to the results we present in the next section, including the quotations from the lecturers.

With regards to the implementation of changes in the second stage of the study (year 2017–18), a source of data on the improvement these changes bring about is the course evaluation survey that all students fill out at the end of the course. Designed and managed by the University Quality Office, the evaluation survey contains 3 items that refer to the assessment process: (1) usefulness of the information and examples of examinations provided by the lecturers; (2) usefulness of the information provided about the assessment criteria; and (3) how well the assessment system evaluates the learning of content in the course. Of these three items, the latter has the most direct relationship with the changes

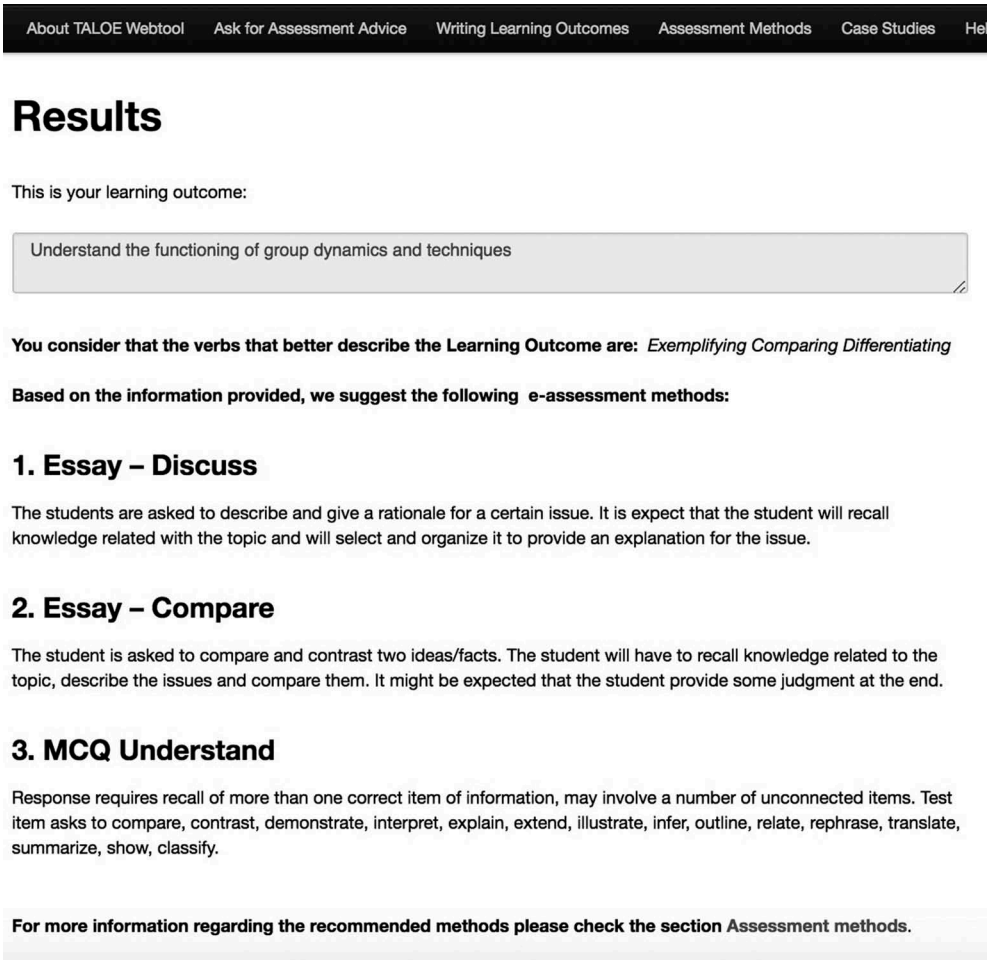

Figure 2. Results of the TALOE webtool applied to the course 'Sociocultural Animation'.

introduced to the course within the framework of this research; it is the indicator we have used to analyse the changes introduced in a course in this study.

Results

The TALOE tool suggests two types of guidance in the field of outcomes-based learning design. On the one hand, it offers guidance on how to formulate learning outcomes, using the verbs that best suit the expected learning outcomes. And on the other hand, it suggests which assessment methods better respond to specific learning outcomes, formulated using suitable verbs. The results of the study for these two dimensions are shown below. The verbatim quotations from the lecturers indicate which course among those in Table 4 they refer to. A third section narrates the changes introduced in a course, considering the findings obtained in the first stage of the study.

Table 5. Example of information collection for two courses.

Course	Learning outcomes (from the study guide)	Verbs selected in the TALOE webtool	Assessment methods (from the study guide)	Assessment methods recommended by the TALOE webtool
Sociocultural animation (Bachelor's)	Understand the functioning of group dynamics and techniques	Exemplifying (understand), Comparing (understand), Differentiating (analyse) (See Figure 1)	Final test-type exam + continuous assessment assignment: case study – relate the case to the course syllabus, in the context of each student search for cases similar to that described	1. Essay – discuss 2. Essay – Compare 3. MCQ – Understand (See Figure 2)
Methods of qualitative research (Master's)	Assess the possibilities of applying qualitative methods in the field of education	Exemplifying (understand), Checking (evaluate)	Final development exam: theoretical questions and two practicals + continuous assessment: 2 mandatory assignments, one relating to information analysis; another, relating to the planning and development of a small research project; voluntary activity: contribution to the *qualitas* blog	1. Practical work – structured enquiry 2. Short answer – explain methods, procedures and relationships 3. MCQ – Understand

Formulation of suitable learning outcomes

An analysis of the learning outcomes formulated in the various course guides compared to the verbs suggested by the TALOE tool reveals a high degree of agreement. Even so, some 'partial solutions' denote a certain lack of reflexivity in the course design. The main mismatches between the initial course design and the proposed verbs indicated by the TALOE tool are:

(1) Multiplication of verbs whose meaning implies numerous higher cognitive skills, multiplication of tasks and, consequently, multiplication of assessment methods. This infers that the learning design for the course is excessively ambitious: it proposes a high number of learning outcomes that, additionally, when considered individually, are complex and, therefore, difficult to assess.

'(…) there are too many learning outcomes in the course' (course 1).

'(…) too much diversity and complexity in the formulation of the objectives/learning outcomes for the course' (course 4).

(2) Use of generic terms that do not help to communicate the specific nature of what should be gained by the students. In this sense, we recognise the importance of referring to more specific cognitive skills that allow more precise assessment. For example, the meaning of 'design' is more suited to the intended learning outcome than verbs like 'execute' or 'plan'.

'The verbs "understand" and "analyse" seem more precise than "delimit", which is used in the course' (course 2).

'The verb "understand" is useful, but very generic. It would be advisable to employ others provided by the tool, such as "summarising" and "comparing", "interpreting" and "paraphrasing"' (course 3).

'The tool has allowed me to associate "identify" with "differentiating", "organising", and "attributing"' (course 7).

Suitable methods for assessing the learning outcomes

(3) In relation to the analysis of the assessment methods, there is a general level of suitability and coincidence between the proposed tests and assignments and the recommendations made by the TALOE tool. This agreement is justified mainly by the nature and content of the continuous assessment assignment in each course:

'The [TALOE] proposals seem very appropriate to me and coincide to a large extent with the course proposals. Solving logic problems from statements (sending them solved) and writing two essays: one commenting on a book and the other a didactic proposal on a course from logic or the philosophy of science' (course 9).

'The suggested methods are related to those proposed insofar as the exam is considered to be a further way of evaluating aspects related to the continuous assessment assignment' (course 10).

Likewise, for assessment activities that request the development of a topic (essay), the tool suggests specifying how to develop this assignment more extensively and in a clearer way. For example, describing and directing the way the essay should be developed implies the students have to become aware that they are being asked to demonstrate their knowledge and skills in relation to interpreting, demonstrating, highlighting, and comparing.

(3) Despite the entire Bachelor's degree-level courses proposing a final exam as the main method for assessing learning, the TALOE tool does not suggest an exam as an assessment method at any point (exams are not included in the webtool). Using exams in the courses is justified because of the peculiarity of UNED's distance-learning system: it needs to validate the identity of the students through a face-to-face exam and, in addition, the high number of students in some courses make it unfeasible to undertake continuous student follow-up through tutors.[3] Formative assessment – which is a core element of the Master's courses, where there is continuous feedback from lecturers throughout the semester (Gil-Jaurena et al., 2015; Gil-Jaurena & Pérez, 2013) –, is still a challenge in Bachelor's degree courses that have many students. As happens in other mass distance-learning universities across the globe, such as Indira Gandhi National Open University (IGNOU), The Open University in the UK (OU-UK), or The Open University of China (OUC), 'more weight has been given to summative assessment to certify the students' performance' (Chaudhary & Dey, 2013, p. 211).

Implementation of changes in a course

Inasmuch as this is an applied research, the evaluation of the results should be contrasted in practice. This contrasting has been conducted in the second stage of the study (year 2017–18), where the objective is to modify the sample courses according to the guidance provided by the TALOE tool. In the absence of further analysis, the course in which the process of change has been initiated and the most important modifications introduced is 'Sociocultural Animation', a compulsory course in the Bachelor's Degree in Social Education and an elective course in the Bachelor's Degree in Social Work.

On the one hand, the learning outcomes have been simplified to more explicitly adjust them to Bloom's revised taxonomy, and on the other hand, the final assessment method has been modified; we have introduced changes in the exam to reduce the memory-based component and better assess higher-level cognitive and practical skills. Following the assessment method recommendations from the TALOE webtool (see Table 5), the MCQ test-type exam in the 2016–17 academic year and earlier was changed to a mixed-type exam in the 2017–18 academic year. The new mixed exam incorporates an MCQ section (ten questions) to evaluate the skills 'remember' and 'understand' with regard to basic concepts, together with a section of four open questions to assess the abilities 'analyse', 'evaluate' and 'create'. In addition to the final examination, the course incorporates an optional continuous assessment assignment that consists in analysing a sociocultural animation experience. This activity involves applying all the skills included in Bloom's revised taxonomy, in particular 'apply', 'analyse', and 'evaluate'. This activity is

conceived as an 'authentic assessment' task, 'designed to actively engage students in their own learning by using real-life situations' (Conrad & Openo, 2018, p. 56).

Considering the information from the institutional course evaluation survey in relation to the item 'how well the assessment system evaluates the learning of content in the course', the student evaluation in the course 'Sociocultural Animation' improves in the year in which the assessment system changes were introduced, changing from 65.79 to 70 (students from the Social Work Bachelor's degree), and from 70.32 to 72.11 (students from the Social Education Bachelor's degree) who attended the course in 2016–17 and 2017–18, respectively (maximum = 100 points; source: UNED Data Processing Office).

Discussion and conclusions

This paper presents a study aimed at improving teaching design in the context of a mass distance-learning university such as UNED. To do this, we have analysed a set of 10 courses according to the framework of the Bologna process and the cycle of course assessment proposed by Evans et al. (2016), which suggests a learning outcomes based assessment. The analysis was supported by the TALOE tool, which also responds to the principles of outcomes-based assessment. The coherence analysis of the assessment procedures used in the sample courses demonstrates that there is an alignment between the expected learning outcomes and the assessment methods used. This is consistent with research from authors such as Brunton et al. (2016), who proposed a strategy for aligning learning outcomes not only for individual courses, but also at programme level. The TALOE webtool has shown it is helpful for improving the alignment between learning outcomes and assessments methods in the mass courses we have analysed. Nevertheless, the results also reveal a series of mismatches in the initial course design, in two particular aspects: the suitability of the way the learning outcomes were formulated; and the methods used to assess the learning.

The implementation of changes in the assessment methods used in the course 'Sociocultural Animation' in the light of the findings of the study has improved the internal coherence of the course, allowing the assessment of more complex skills than in previous years. The new mixed exam (MCQ + open questions) and the optional assignment bring the assessment methods closer to more 'authentic assessment' tasks. The results from the institutional course evaluation survey indicate that the improvement in the design of the learning sequence with regard to accuracy in the formulation of the learning outcomes and adjustment of the assessment methods to the expected learning performance, is positively valued by the students.

Ballesteros et al. (2010, p. 465) pointed out the trend to increase and/or substitute exams with continuous assessment assignments and identified certain challenges in assessment in distance systems, such as the improvement of online assessment or self-assessment tools and student co-evaluation or peer-assessment procedures. The potential of learning analytics (Domínguez et al., 2016) for improving teaching-learning processes based on the study of behavioural trends in mass online environments is another field to be considered. In general, increasing and enriching the feedback given to students through more sophisticated assessment instruments, such as rubrics or complex technological tools, is a consolidated trend and proposed as the main initiative to be implemented in the courses with relation to improved assessment. In this regard, the TALOE tool could benefit from an

update in order to include more examples of assessment methods adapted to the digital context (Gil-Jaurena & Kucina, 2016).

Finally, this research also looks at how well the TALOE tool fits educational situations that require scalable methods, such as mass distance-learning education. On the one hand, the TALOE tool is very interesting for meta-evaluation, both for the teaching staff and a support unit that could direct the planning and assessment of student learning. Nevertheless, it also leads to a complex recommendation of multiple assessment methods for each learning outcome; and this can be hard to apply in courses that have various learning outcomes. In the context of mass education, such as that of UNED, it is more appropriate to think about simple, scalable assessment methods that serve to assess the scope of various learning outcomes at the same time throughout the continuum of Bloom's revised taxonomy.

Notes

1. A course refers to a subject. It corresponds to 5 or 6 ECTS (European Credit Transfer and Accumulation System) credits and lasts one semester.
2. The lecturers are the teachers responsible for the design and delivery of the courses. The six lecturers who participate in the study constitute a teaching innovation group at UNED.
3. Tutors are teaching support staff who are based in the regional centres and participate in the marking of the continuous assessment assignments in the Bachelor's Degree courses.

Disclosure statement

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