Measuring teachers and learners’ perceptions of the quality of their online learning experience

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ABSTRACT
This article explores the quality of the online learning experience based on the Sloan-C framework and the Online Learning Consortium’s (OLC) quality scorecard. The OLC index has been implemented to evaluate quality in online programs from different perspectives. Despite this, the opinions of learners are ignored, and it is built using feedback from experts and panelists while ignoring the factors that teachers consider important during their lectures. We propose an alternative way of measuring the quality of online learning programs by analyzing the satisfaction of the learning experience and using teachers and students’ perceptions. The 11 categories composing the index were weighted in the teacher and student indices using principal component analysis, and finally these two indices were linearly combined with a parameter that defines the importance of each body. Findings show that while teachers perceive collaborative learning variables as crucial, learners are more concerned with their own learning benefits.

Introduction

With the rapid worldwide growth of teaching and learning online, more attention is being paid to the quality of online educational programs. Defining quality in online learning is not an easy task because there is no real consensus on its true meaning (Shattuck, 2014). In fact, quality is evaluated differently depending on the organization in charge of measuring it, for instance:

- management systems, for example, the European Association for Distance Learning (Jung & Latchem, 2012)
- agencies, for example, the Institute for Higher Education Policy, which created the benchmarks for success in Internet-based distance education universities, for example, the Central Michigan University (Krause, Dias, & Schedler, 2015)
- educators (by the creation of indices such as the Online Learning Consortium (OLC, 2016) quality scorecard).

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Within the vast amount of literature relating to quality in education, the concept of quality has been evaluated with three goals in mind, which typically are quality control, quality assurance, and quality improvement (Deepwell, 2007).

Different approaches, such as the 24 benchmarks for success in Internet-based distance education, Khan’s eight dimensions of e-learning framework, Sloan Consortium’s (Sloan-C) five pillars of quality, Osika’s concentric model, and Moore and Kearsley’s assessment recommendations, are all examples of frameworks that have defined standards for quantifying the quality of online educational programs (Shelton, 2011). From among all these different approaches for evaluating quality in online education, the Sloan-C five pillars of quality (Moore, 2002) was selected as a quality standard in this research, based on its capability to model the entire educational process. It considers not only the most important educational input and output variables but also includes the processes involved in asynchronous learning network environments. The Sloan-C model uses a quality framework that focuses on five pillars and supports quality learning environments in both academic and industry sectors. Its five pillars are access, learning effectiveness, scale, faculty satisfaction, and student satisfaction.

There are several studies that have implemented the Sloan-C five pillars of quality framework. For example, the OLC quality scorecard was created using the five pillars of quality as the base framework and 70 quality indicators organized in nine categories. The indicators were obtained through a Delphi study that was undertaken with a wide range of seasoned administrators of online education programs (Shelton, 2010). Stube et al. (2013) used the Sloan-C five pillars model as the guiding framework to evaluate the quality of the outcomes of an online transitional master’s of occupational therapy degree program. A post-graduation survey was designed to measure four of the five Sloan-C pillars (effectiveness, cost effectiveness, access, and student satisfaction). Faculty satisfaction, the fifth pillar, was measured through use of the online faculty satisfaction survey. Finally, Fey, Emery, and Flora (2014) adopted the Sloan-C model to verify whether students enrolled in multi-institutional master’s programs perceive more difficulties (or not) in their learning than those enrolled in master’s programs run by one university.

The best example of the implementation of the Sloan-C framework is the OLC quality scorecard index developed by Shelton (2010), which won the 2010 Sloan-C Effective Practice Award. In the study, 45 additional quality indicators were added to those proposed by the benchmarks for success in Internet-based distance education study (Phipps & Merisotis, 2000). The 70 quality indicators were organized into nine categories: institutional support, technology support, course development and instructional design, course structure, teaching and learning, social and student engagement, faculty support, student support, and evaluation and assessment. Finally, each quality indicator has a potential range of 0–3 points with a perfect score on the scorecard resulting in 210 points.

Despite the usefulness of the OLC quality scorecard, the model has the following drawbacks:

(1) First, the opinions of learners, who are the final customers of a learning process, are ignored in the OLC quality scorecard index construction; that is, the OLC Quality Scorecard does not include users’ (learners) perceptions of online programs in any of its categories – the core element in the ‘learner-centred’ learning paradigm (Schweisfurth, 2015). This fact is reflected throughout the literature in a lack of
studies that examine the quality of e-learning environments from the learner’s perspective (Jung, 2011, 2012; Picciano, 2002; Sahin & Shelley, 2008; Unal, Unal, & Bodur, 2013; Young & Norgard, 2006) and an abundance of works based on experts, governments, and professionals’ perspectives (Jung & Latchem, 2012; Shelton, 2010, 2011).

Second, the OLC quality scorecard is built using feedback from experts and panellists. Through a Delphi study, each expert or panellist scored the importance of each category for the construction of the final index. It is important to mention that there may be significant differences between the factors that experts and panellists consider important and the factors that teachers implement as important factors during their lectures.

Motivated by these two facts, we propose an alternative procedure of measuring the quality of online programs based on the Sloan-C framework and the OLC quality scorecard. We measure the quality of the online program through the degree of satisfaction with the learning experience. The proposed instrument takes into account the dual cognitive social nature of learning and, therefore, evaluates satisfaction with the learning experience, combining both the cognitive and social aspects, but without subordinating either to the other (Borthick, Jones, & Wakai, 2003). There are several research works that have evaluated the quality of online learning experience. For example, Ward, Peters, and Shelley (2010) used students and instructors’ perceptions to measure the quality of the learning experience in a synchronous interactive online environment. The study focused mainly on the social part of learning, ignoring the cognitive aspects and the learning outcomes. Holzweiss, Joyner, Fuller, Henderson, and Young (2014) interviewed 86 graduate students enrolled in a fully online Master of Arts program in higher education administration, aiming to understand what helped students to learn in the online environment. Findings suggest that students desired a deeper level of learning, which requires more instructional forethought and planning.

The instrument proposed in this study includes the main educational variables that define a complete educational process. Furthermore, the instrument considers both the students and instructors’ perceptions. These two facts differentiate this study from state-of-the-art research works, which focus on specific parts of the course or evaluate the quality of the learning experience using learners or instructors but not a combination of both. The proposed instrument overcomes the above-mentioned limitations of the OLC quality scorecard in the following manner:

1. First, the instrument combines both teachers and students’ perceptions, as they are in the best position to evaluate the learning process. This methodological approach limited us in the selection of variables because both teachers and students should be able to evaluate them. For example, the institutional support category of the OLC quality scorecard cannot be evaluated by students and, therefore, it cannot be included in our repository of variables. Hence, the quality indicators selected were chosen according to two criteria: (a) they can be assessed by the main participants of our study and (b) they cover the whole educational process as the Sloan-C framework does.

2. Second, the participants were not asked to rank the importance of educational variables but to provide a value for the variable according to how this variable was implemented during the course. For example, they were not asked to rank the
importance of social presence in an online program. Instead, they were asked to rate how the social presence variable was implemented in their course. Analyzing the variances among the different variables allows us to rank the educational variables according to this criterion. Principal component analysis (PCA) method was used to extract learning factors and rank their importance.

**Categories of the online learning quality index by using teachers and learners’ perceptions**

The online learning quality index based on teachers and learners’ perceptions (OLQ-TLP) has been constructed using 36 quality indicators in 11 categories: learning support, social presence, instruction, learning platform, instructor interaction, learner interaction, learning content, course design, learner satisfaction, knowledge acquisition, and ability to transfer. The first eight categories were measured using three indicators, while the last three were measured using five indicators. A brief description of each category is presented below:

- **Learning support:** In online programs, teachers and technical bodies must support students during the course to guide them through their learning process. Providing support for learners in order to successfully carry out any of their tasks in online programs is positively associated with course satisfaction, as shown by Bhuasiri, Xaymoungkhoun, Zo, Rho, and Ciganek (2012).

- **Social presence:** This is defined as the degree to which a customer (learner) feels that there is always someone behind the screen; it is measured with educational variables such as the level of concern the teacher shows for the student or the extent to which the teacher encourages student participation. Thus, findings from Joo, Lim, and Kim (2011) and Leong (2011) suggest that social presence is a significant predictor of learner satisfaction.

- **Instruction:** Due to the diversity of online learners, teachers should provide them with multiple perspectives and use different teaching strategies. This could be straightforward for teachers if they have in-depth knowledge of their field. Kuo, Walker, Belland, and Schroder (2013) pointed out that there is a positive influence on students’ satisfaction when teachers have up-to-date knowledge, either linked to knowledge or the type of instruction.

- **Learning platform:** The e-learning environment has an important role since students have meaningful educational experiences with well-designed courses and learning materials and it is important to match the right technology with the right curriculum and learning objective (Kidd, 2009). Chiu, Chiu, and Chang (2007) found that functionality, ease of use, reliability, flexibility, data quality, portability, and integration all have a positive effect on learner satisfaction.

- **Instructor interaction:** While instruction alludes to the way of teaching and presenting the content, the instructor interaction variable refers to the role that a teacher takes during the learning process. Findings from Kuo et al. (2013) suggest that learner-instructor interaction is a good predictor of student satisfaction.

- **Learner interaction:** Swan (2002) found that interaction among students and between them and teachers influenced students’ satisfaction and their perception of knowledge
in the course. Along these lines, LaPointe and Gunawardena (2004) pointed out that students who interact more frequently show a high level of satisfaction.

- **Learning content:** In order to attract students, the content should be linked to the objectives of the course and be matched to the students’ interests and level. Furthermore, due to the diversity of online learners, the content must also be accessible to all learners regardless of their connection capabilities and/or disabilities. For example, a study from the literature which is linked to this factor is the work of Levine (2005), who highlighted that content should allow students to express their interests and interpretations.

- **Course design:** Achieving effective online education requires both effective instructional design and a process involving adequate principles of educational practice. If the design is correct, it will have a positive influence on instruction. Due to the nature of online environments, the design of online courses must take into account time flexibility, location, methods, participation in activities, and presentation of the materials, with the aim of creating a more cooperative learning environment (Simonson & Zvacek, 2014).

- **Learner satisfaction:** This category should evaluate learners’ motivation and what they consider to be the strengths and weaknesses of their learning experience. This variable has been used in-depth in the literature as a predictor variable of students’ success in online learning programs. For instance, Levy (2007) highlighted that the importance of measuring satisfaction in e-learning is the major driver of success or failure. He also noted the impact of student satisfaction on dropout rates from e-learning courses.

- **Knowledge acquisition:** This factor refers to the information that students learn on the course. Linked with this factor is the study by Mayer (2002), which identified two important educational goals connected to knowledge acquisition (retention and transfer). Moreover, knowledge acquisition is also connected with instructional design, teaching strategies, and enhanced competences (Şendağ & Odabaşı, 2009).

- **Ability to transfer:** This factor is defined as the expectation that learners will apply the knowledge gained in the course to future situations. For example, Mayer (2002) included transfer as the second of the two most important educational goals. Transfer takes knowledge acquisition a step further, requiring students to make enough sense of the new information to apply it to different contexts. The author explained that this leads to a greater sense of meaningful learning, where students collaborate in the construction of knowledge to solve a problem and make sense of future experiences.

These 11 variables cover three out of the five pillars proposed by the Sloan-C quality standard (access, learning effectiveness, and student satisfaction). There are two pillars (scale/cost effectiveness and faculty satisfaction) which are not covered by the categories employed in the OLQ-TLP index. As explained in the Introduction section, both students and teachers evaluate the categories, and unfortunately these two pillars are designed only for administrators’ evaluation. Finally, just like the OLC quality scorecard, the OLQ-TLP index was measured using a 4-point Likert scale (ranging from totally disagree to totally agree).

**Data collection and participants**

The OLQ-TLP index has been designed taking into account results from four culturally diverse universities: the Open University of Catalonia (UOC) in Spain, the University of New Mexico (UNM) in the USA, the University of Peking (PKU) in China, and the Autonomous Popular
University of the State of Puebla (UPAEP) in Mexico. A secure online questionnaire with structured questions was administered to instructors and learners in the four countries of study. The questionnaire and accompanying consent forms were originally written in English and then translated into the official language(s) of the university by an individual chosen by the researcher representing the university. It was then built using Opinio and hosted on the secure UNM Health Sciences application server. The questionnaire was sent at the end of the course. Participants were invited via email to respond to the online questionnaire and were given 4 weeks to respond. One reminder was sent to all respondents after the first two weeks. All factors in the questionnaire were scored on a 4-point Likert scale. The instructions and the complete set of questions (items) as well as the reliability results of each of the educational variables are included in the Appendix.

The teachers’ sample was purposive and was selected by the researchers in the study, who contacted the teachers in the four universities to ask them to collaborate in the project, whereas the learners’ sample was selected by stratified random sampling. Specifically, a total of 210 full-time teachers lecturing in online social science courses with more than 6 years of teaching experience in online learning environments and 6278 online senior students enrolled in online social science courses were contacted to participate in the study. Unfortunately, only 153 out of the 210 full-time teachers contacted and 709 out of 6278 students finally decided to participate in the study. Table 1 shows a description of the sample by institutions and the response rate per university.

### Table 1. Number of participants involved in the study disaggregated by university.

<table>
<thead>
<tr>
<th>University</th>
<th>Teachers</th>
<th>Learners</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Contacted</td>
<td>Participants</td>
</tr>
<tr>
<td>UOC</td>
<td>132</td>
<td>86</td>
</tr>
<tr>
<td>UNM</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>PKU</td>
<td>25</td>
<td>18</td>
</tr>
<tr>
<td>UPAEP</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Total</td>
<td>210</td>
<td>153</td>
</tr>
</tbody>
</table>

**Methodology**

PCA and factor analysis group together categories which are linearly correlated to develop a composite indicator that maximizes the data variance. Therefore, the accuracy of the composite index does not depend on the dimensionality of the data but on the statistical dimensions of the data. Each PCA factor is a linear weighted combination of the initial categories. The factors are ordered so that the first factor accounts for the largest possible amount of variance in the original categories. The second factor is completely uncorrelated with the first one, and accounts for the maximum variance that is not explained for the first factor, and so on.

PCA has traditionally been employed to construct economic indices (Boelhouwer & Stoop, 1999). Acknowledging the inappropriateness of simple aggregation procedures, Lai (2003) modified the UNDP human development index by using PCA to create a linear combination of indicators of development. Several researchers have used PCA, especially since late 1990s, to implement socioeconomic indices (Antony & Rao, 2007; Fotso & Kuate-Defo, 2005). To our
knowledge, the PCA algorithm has not yet been employed to develop educational indices.

The OLQ-TLP index was constructed using the following algorithmic sequence:

1. Computing the categories’ scores: As previously mentioned, each category is defined through a set of indicators. Each category must be defined using a single score prior to executing the PCA algorithm; otherwise, categories defined with more indicators will have a greater impact on the final OLQ-TLP index. In this research work, it is assumed that each indicator defining each category has the same importance within its category. In this scenario, the estimation of the categories’ scores is reduced to the computation of their arithmetic means.

2. Determination of the number of factors: One of the most commonly used approaches is Kaiser’s criterion or the eigenvalue rule (only those factors with an eigenvalue of 1.0 or more are retained). For the present study, we also used the scree test graphical method.

3. Calculating the composite index: Once the number of factors has been estimated, the factors are linearly combined according to their relative variance explained (considering the global variance explained and the cumulative variance explained for all the factors).

4. Importance of teachers and learners’ perspectives: Finally, the OLQ-TLP index is constructed by linearly combining both teachers and learners’ indices using $\alpha \in \mathbb{R}^+$ parameter to weight the importance of each part. The value associated to the alpha parameter will modify the perceptions used to estimate the quality of the program under evaluation. Thus, this parameter will allow educational institutions interested in measuring the quality of their online programs to choose the importance that teachers’ and learners’ perceptions have in the programs evaluated. For example, if a score is close to zero ($\alpha = 0$), the person/institution that is evaluating a specific program’s quality considers teachers’ perceptions to be the most important factor. On the other hand, if the score tends toward infinity ($\alpha \to \infty$), the person/institution that is evaluating the program gives greater importance to the learners’ perception. Finally, if $\alpha$ is close to one, the two types of perceptions are considered equally important.

Results

After computing the categories’ scores, the number of factors to be retained is determined. In this research study, our data revealed two factors using Kaiser’s criterion and also using Catell’s scree test. The results of the PCA using the varimax rotation are presented in Table 2 using teachers’ and learners’ perceptions.

Thus, the next step is to analyze the statistical results obtained according to the evaluators of this study (teachers and learners). On the one hand, two factors accounted for 64.277% of the total teachers’ variance in the data. Considering loadings up to .555, for the first factor social presence, instruction, instructor interaction, and learner interaction showed a strong positive factor loading, while for the second factor learning support, learning platform, learner content, course design, learner satisfaction, knowledge acquisition, and ability to transfer had a strong positive factor loading. On the other hand, two factors accounted for
70.317% of the total learners’ variance in the data. Considering loadings up to .555, for the first factor learner content, course design, learner satisfaction, knowledge acquisition, and ability to transfer showed a strong positive factor loading, while learning support, social presence, instruction, learning platform, and instructor interaction were included in the second factor with strong positive factor loadings.

The importance of the factors in measuring overall quality of the online learning experience is not the same because they explain different amounts of variations. Using the proportion of these percentages as weights on the factor score coefficients, the OLQ-TLP index was developed using the following formula:

\[
\text{OLQ-TLP} = \left( \frac{54.277}{64.277} \right) F_1 + \left( \frac{10.000}{64.277} \right) F_2 + \alpha \left[ \left( \frac{59.329}{70.317} \right) F_1 + \left( \frac{10.949}{70.317} \right) F_2 \right]
\]

Below, we will discuss some differences and commonalities between the OLC quality scorecard index and the OLQ-TLP index proposed in this study. The OLC quality scorecard gives crucial importance to the categories related to the inputs and outcomes of the educational process. Hence, it ranks as the most important categories student support (mostly related to the inputs of the educational process) with 48 points and evaluation and assessment (related to the outcomes of the educational process) with 33 points. The first category is related to our variables Learning Support and Learning Platform, while the second one is linked to the variables Learner Satisfaction, Knowledge Acquisition and Ability to Transfer. The Student Support category is the most important one in the OLC quality scorecard, whereas, for the OLQ-TLP index this category is almost irrelevant independently of the value of \( \alpha \), that is, it was considered irrelevant by both teachers and students. On the other hand, the Evaluation and Assessment category was included as a very important one both in the OLC quality scorecard and in the OLQ-TLP index (especially using the student’s perceptions).

Figure 1 depicts the projections of the quality scores of each university considering the teachers’ index (Figure 1(a)) and the students’ index (Figure 1(b)). Note that the results of the countries, which have been represented in the box-plot of Figure 1, may or may not represent the overall perception of the country under study as universities selected in this study represent a small subset of the final population. To obtain these scores, the input values of the
Figure 1. Box plot projection of the quality scores of each university. (a) Box-plot projection of the quality scores per university considering the teachers’ perceptions. (b) Box-plot projection of the quality scores per university considering the students’ perceptions.
11-D original input space were projected to the reduced 2-D space proposed in Table 2 and the final score was obtained by weighting the scores of the 2-D space by its corresponding variances. The box-plots diagrams are used to display the distribution of the teachers and students’ scores in the four universities of study. American and Chinese teachers perceived a slightly worse learning experience than their corresponding students in contrast to the case of Spain and Mexico, where students were less or equally satisfied with the learning experience than their instructors. In fact, outlier students with negative perceptions are from UOC and UPAEP universities, while outlier teachers with negative perceptions are from UNM and PKU universities. These findings are aligned with results obtained in studies such as Hofstede’s (1986) framework in which American and Chinese subjects are used to working in open-minded learning environments, that is, they are acclimatized to flexible structures, while Mexican and Spanish subjects are used to lecturing in rigid learning environments.

UOC and UNM instructors and students reported being more satisfied with the learning experience than PKU and UPAEP instructors and students, which could be connected to the Hofstede (1986) individualism dimension. McFeeters (2003) noted that motivation and achievement are strongly linked to individualism and collectivism, which is also consistent with our results. As suggested by Paechter, Maier, and Macher (2010), motivation and achievement are actually good predictors of the final perceived satisfaction. Finally, the greatest degree of heterogeneity in quality perceptions of the learning experience is found in the Spanish and Mexican students. From a teachers’ perspective, the American instructors reported the greatest degree of homogeneity in their quality perceptions compared to their Spanish, Chinese, and Mexican peers.

Research implications

Analysis of the OLQ-TLP index considering teachers’ perceptions (α = 0)

Despite the fact that the first two factors (F1 and F2) were retained as representative factors using the PCA algorithm (both are represented by eigenvalues equal or greater than 1), it is worth mentioning that F1 is the factor which has the highest weight of variance and, therefore, the results obtained in F2 should be considered as complementary findings. Thus, the most important variables in the OLQ-TLP index from a teachers’ point of view are: social presence, instruction, instructor interaction and learner interaction.

Teachers value the social presence variable because they can obtain valuable information related to the learning process when learners interact with each other. Furthermore, the more learners feel personally connected with other students in an online learning community, the more they will interact with their peers. As suggested by Sung and Mayer (2012), encouraging social presence could foster the development of the following five factors: social respect (e.g., receiving timely responses), social sharing (e.g., sharing information or expressing beliefs), open mind (e.g., expressing agreement or receiving positive feedback), social identity (e.g., being called by name), and intimacy (e.g., sharing personal experiences). Furthermore, the extent to which students have assimilated, understood, and learned the course content could be revealed by tracing this internal communication between students.

Instructor interaction is also highly valued from a teachers’ point of view. Online education demands special attention from teachers due to the nature of the environment. Although
students do not receive their learning process in a face-to-face way, they need to feel that someone is close to them, that is, that someone is constantly guiding their learning process. For that reason, teachers are aware that they need to frequently give feedback to students, reply to them promptly and provide individual guidance for each learner. This instructor interaction can motivate students during their learning process and could help reduce the high dropout rate in online learning.

Finally, teachers’ objectives involve using effective instructional strategies in order to successfully deliver the online program. Thus, instructors must pay attention to their teaching styles because different types of learning activities are required for the different types of learning models (behavioral, constructivist or connectivist perspectives) (Anderson & Dron, 2010). To sum up, according to the teachers’ perceptions, an effective, efficient, and engaging teaching style (instruction variable) should be adopted to achieve successful social presence, learner interaction and instructor interaction (variables that have been positively assessed by the teachers in online programs).

Analysis of the OLQ-TLP index considering learners’ perceptions ($\alpha \rightarrow \infty$)

The same holds true in the learner analysis. Despite the fact that the first two factors ($F_1$ and $F_2$) were retained as representative ones, in a similar way to what was explained in the previous section, $F_1$ will be studied as the critical factor. Thus, the most important variables in the OLQ-TLP index from a students’ point of view are the ability to transfer, knowledge acquisition, learner satisfaction, course design, learner content, and learner interaction.

As could be guessed, students will be satisfied if they acquire useful knowledge that they are able to transfer to their daily lives. This type of competence can be acquired through metacognitive practices (Ford, Smith, Weissbein, Gully, & Salas, 1998). Metacognitive practices increase students’ abilities to transfer or adapt their learning to new or future contexts. Therefore, we encourage instructors from higher education institutions to use metacognitive practices in their lectures to improve their students’ ability to transfer knowledge and, therefore, their satisfaction levels and the knowledge acquired (all these variables were found as critical to defining the quality of online programs).

To meet the previous objective, online institutions should also pay special attention to course design (Chin & Williams, 2006). The autonomous learning that characterizes this type of scenario seems to require prior and careful planning (Diaz & Cartnal, 1999). Thus, designers and instructors should work hard before the course has even started.

Additionally, the learning content is also positively valued from a student point of view. If students feel that the content is directly related to their interest and level they will have positive expectations during the course. This motivation could help reduce the high dropout rate in online learning.

Finally, learners also rate the learner interaction category as crucial. Students prefer to interact with their peers rather than with instructors. For this reason, enabling the creation of a student community (on the institution’s platform for instance) could prevent student communities being set up outside the institutional environments.

This study has empirically shown that variables such as learning support, social presence, instruction, learning platform and learner interaction are complementary variables for students when evaluating the quality of learning, despite several previous research papers
having identified these categories as essential for online learning success (Picciano, 2002; Young & Norgard, 2006).

**Differences and commonalities between teachers and learners’ perceptions**

The main differences found in the corresponding indices built using teachers and learners’ perceptions are the following:

(1) First, results show that teachers are aware of the importance of learner–learner and teacher–learner interaction, that is, teachers try to promote a collaborative way of learning in their online programs. This finding is consistent with the literature, which shows the permanent interest of online instructors in encouraging collaborative activities in their programs (Barkley, Cross, & Major, 2014; Slavin, 2011). We hypothesize that this could be due to the fact that organizations like UNESCO have recently warned of the importance of learners not only being educated as knowledge/information achievers but also as citizens capable of facing the challenges of the competitive twenty-first century (Sayed & Ahmed, 2015).

(2) Second, students positively rate those variables that have an individual influence in their learning. Thus, learners have a more individual perception of the learning. Again, we hypothesize that this could be due to the fact that the profile of students enrolling in online programs is mainly limited to adults with several commitments (family and work) and few hours left over for their learning and, therefore, they have serious difficulties in participating in group learning activities.

On the other hand, teachers and students’ perceptions also have somethings in common: they both consider the learning support and learning platform variables as irrelevant in determining the quality of an online program. This is probably a reflection of the perception that we are now dealing with a digital native society and that this kind of support is maybe not so important (Beetham & Sharpe, 2013).

**Conclusions**

This article reports on an attempt to measure the quality of the online learning experience by using four universities (all culturally different) and a sample of 153 teachers and 1175 students. The Sloan-C quality framework was used as a base framework for this purpose but extended according to the characteristics of our problem and the variables considered for the construction of the expanded index. The extension of the framework was to accommodate learners’ perceptions of their online learning experience.

The inclusion of these two stakeholders (teachers and learners) in constructing the index has helped us to empirically demonstrate that the quality of the learning experience is usually influenced by the body in charge of conducting the assessment. While teachers perceived social presence, instruction, instructor interaction, and learner interaction variables as crucial, learners considered the ability to transfer, knowledge acquisition, learner satisfaction, course design, and learner content as the core variables in defining quality in online programs. In other words, teachers are more aware of the importance of including group activities in their lectures whereas students prefer those variables that focus the learning on their own benefit.
For that reason, we consider that it is very important to incorporate different educational stakeholders when the quality of the online learning experience is being evaluated. In our study, the perceptions of the stakeholders considered have been combined linearly using an alpha parameter to weight the importance of each body. This parameter could help the person/institution who is evaluating the quality of the online learning experience to determine the importance assigned to each stakeholder. In this way, the proposed index allows each institution to set its own standard for measuring the quality of the online learning experience. Moreover, findings from a cultural perspective have shown that teachers and learners in the case of the UOC (Spain) and UNM (USA) are more satisfied with the quality of the online learning experience than teachers and learners in the case of PKU (China) and UPAEP (Mexico).

Missing from this analysis is the views of administrators, which will be considered in future research, thus enabling all of the pillars proposed in the Sloan-C quality framework to be covered. Additionally, the number of countries participating in the study could be extended to cover more cultural differences and to propose a culturally sensitive quality index.

**Disclosure statement**

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**References**


Appendix

Questionnaire instructions

Table A1.1 shows the instructions provided to the teachers and students involved in this study.

Table A1.1. Questionnaire instructions.

<table>
<thead>
<tr>
<th>Questionnaire instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dear instructor/student,</td>
</tr>
<tr>
<td>We would like to understand you as a teacher/student in the context of the subject you are teaching/enrolled on. This questionnaire is being conducted by the Open University of Catalonia (UOC) in Spain, the University of New Mexico (UNM) in the USA, the University of Peking (PKU) in China and the Autonomous Popular University of the State of Puebla (UAE) in Mexico. If you have more than one online course experience, please select the subject you would like to base your answers on for this survey. Question scores range from 1 (when you totally disagree with the statement) to 5 (when you totally agree with the statement). Your answers are confidential. Thank you for your cooperation.</td>
</tr>
</tbody>
</table>

Educational variables used in this study and reliability results

Table A1.2 (teachers’ questionnaire) and A1.3. (students’ questionnaire) include the questions (items) defining the educational variables included in the study. The reliability (Cronbach’s alpha) results of the instrument for the teachers and learners’ survey are .930 and .910, respectively.
<table>
<thead>
<tr>
<th>Table A1.2. Teachers’ questionnaire.</th>
</tr>
</thead>
</table>

**Learning support**
Learners have received adequate training on the platform
Learners had access to adequate tools and resources (library, modules, etc.) to learn in this course
Learners have received the technical support they needed when they had a problem

**Social presence**
Learners know that I am concerned about their needs as learners
I have actively encouraged learners to participate in the course
I have developed a sense of community among learners in this course

**Instruction**
I have used effective teaching strategies
I have encouraged a variety of perspectives
I have broad knowledge about my field

**Learning platform**
All important site content was easy to locate and identify
The platform provided a clear means of obtaining technical help
The technological media used were appropriate for the content

**Instruction interaction**
I returned all assignments with useful feedback
I responded promptly to learners’ questions
I provided individualized guidance that met learners’ needs

**Learning interaction**
Online comments by other participants helped students to learn
Learners contributed to the learning environment by responding their peers
Students learned to value other points of view

**Learning content**
Content was presented at an appropriate level for learners
Content was relevant to the objectives of the course
Content was stimulating for learners

**Course design**
The objectives of this course were evident in the learning activities
The course material was presented in ways that suggested future application
Grades were directly related to learning objectives, activities and application of resources

**Learner satisfaction**
Learners seemed motivated to do well in this course
Apart from the marks learners expected on this subject, this course was a useful learning experience
It is very likely that learners will recommend other people to enrol on this online course
Students learned from the activities assigned in the course
The course was relevant to learners’ needs

**Knowledge acquisition**
Learners did well on assignments and tests
Learners can explain the content covered in this course to others
I have noticed the difference between learners’ prior knowledge and the knowledge they had gained by the end of the course
During the course, learners were aware of their strengths and weaknesses in their learning
Learners can make correct decisions and solve problems with the knowledge they have gained in this course

**Ability to transfer**
Learners know how to use the course knowledge in new situations
Learners have opportunities to apply the course knowledge
As a result of this course, learners are able to apply their learning to other similar courses
With the knowledge learners have gained from this course, they can more broadly explore a problem in the field of study
As a result of this course, learners are able to apply their knowledge to a different context, such as their personal or professional life
Table A1.3. Students’ questionnaire.

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Learning support</strong></td>
<td>I received adequate training on WebCT Vista</td>
</tr>
<tr>
<td></td>
<td>I had access to adequate tools and resources (library, modules, etc.) to learn on this course</td>
</tr>
<tr>
<td></td>
<td>I received the technical support I needed when I had a problem</td>
</tr>
<tr>
<td><strong>Social presence</strong></td>
<td>The instructor seemed concerned about my needs as a learner</td>
</tr>
<tr>
<td></td>
<td>The instructor actively encouraged me to participate in the course</td>
</tr>
<tr>
<td><strong>Instruction</strong></td>
<td>The instructor used effective teaching strategies</td>
</tr>
<tr>
<td></td>
<td>The instructor encouraged a variety of perspectives</td>
</tr>
<tr>
<td></td>
<td>The teacher was knowledgeable about his/her field</td>
</tr>
<tr>
<td><strong>Learning platform</strong></td>
<td>All important site content was easy to locate and identify</td>
</tr>
<tr>
<td></td>
<td>The site provided a clear means of obtaining technical help</td>
</tr>
<tr>
<td></td>
<td>The media used were appropriate for the content</td>
</tr>
<tr>
<td><strong>Instructor interaction</strong></td>
<td>All assignments were returned with useful feedback from the instructor</td>
</tr>
<tr>
<td></td>
<td>The instructor responded promptly</td>
</tr>
<tr>
<td></td>
<td>The instructor provided individualized guidance that met my needs</td>
</tr>
<tr>
<td><strong>Learner interaction</strong></td>
<td>Online comments by other participants helped me learn</td>
</tr>
<tr>
<td></td>
<td>I contributed to the learning environment by responding to my peers</td>
</tr>
<tr>
<td><strong>Learning content</strong></td>
<td>I learned to value other points of view</td>
</tr>
<tr>
<td><strong>Course design</strong></td>
<td>The objectives of this course were evident in the learning activities</td>
</tr>
<tr>
<td></td>
<td>The course material was presented in ways that suggested future application</td>
</tr>
<tr>
<td><strong>Learner satisfaction</strong></td>
<td>My grades were directly related to learning objectives, activities and application of materials</td>
</tr>
<tr>
<td></td>
<td>I was motivated to do well in this course</td>
</tr>
<tr>
<td></td>
<td>This course was a useful learning experience</td>
</tr>
<tr>
<td></td>
<td>I learned from the activities assigned on the course</td>
</tr>
<tr>
<td><strong>Knowledge acquisition</strong></td>
<td>The course was relevant to my needs</td>
</tr>
<tr>
<td></td>
<td>I did well on assignments and quizzes</td>
</tr>
<tr>
<td></td>
<td>I can explain the material covered in this course to others</td>
</tr>
<tr>
<td><strong>Ability to transfer</strong></td>
<td>I have noticed a difference between my prior knowledge and the knowledge I had gained by the end of the course</td>
</tr>
<tr>
<td></td>
<td>During the course, I was aware of my strengths and weaknesses in my learning</td>
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<tr>
<td></td>
<td>I can make correct decisions and solve problems with the knowledge I have gained on this course</td>
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<tr>
<td></td>
<td>I know how I will use the course material in new situations</td>
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<tr>
<td></td>
<td>I have opportunities to apply the course material</td>
</tr>
<tr>
<td><strong>As a result of this course, I am able to apply my learning to other, similar courses</strong></td>
<td>With the knowledge gained from this course, I can more broadly explore a problem in the field of study</td>
</tr>
<tr>
<td></td>
<td>As a result of this course, I am able to apply my learning to a different context, such as my personal or professional life</td>
</tr>
</tbody>
</table>