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# Approaches to teaching online: Exploring factors influencing teachers in a fully online university



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# Approaches to teaching online: Exploring factors influencing teachers in a fully online university


## Abstract

In recent years there has been widespread interest in the implementation of online courses in universities. While most studies about online learning environments primarily focus on technology-related issues or instructional methods, little attention has been given to online teachers and their teaching approaches. The aim of this paper is to provide an overview of how teachers approach online teaching and the factors affecting individual teachers' approaches to teaching online, particularly in a fully online university. Nine hundred and sixty-five (965) online teachers belonging to the Open University of Catalonia were surveyed. The dependent variables include three approaches to teaching online: the Content Acquisition approach, the Collaborative Learning approach, and the Knowledge Building approach. The explanatory variables are socio-demographics, academic background, online teaching experience, studies taught, online teaching dedication, and teachers' roles in teaching online. Multiple regression analyses are used to make inferential judgements and test the effects of the independent variables. Findings suggest that age, academic background, online teaching dedication and, especially, teachers' roles in teaching online are important predictors of the adoption of a particular approach to teaching online.


**Keywords:** approaches to teaching online; teachers' roles in teaching online; virtual learning environments; fully online university.

## Introduction

The number of universities offering online studies has continued to grow in the last ten years. According to Allen and Seaman (2014), in the autumn of 2012, almost 35% of students in the USA were enrolled in online courses. In Spain, the last report published in 2013 by the Ministry of Education indicated that about 15% of all higher education students were enrolled in a fully online university.

Teaching presence is a key aspect of the educational quality of online studies (Shea, Li, & Pickett, 2006). Teaching presence includes developing curriculum content, learning activities and timelines; monitoring and managing collaboration; and insuring that students reach their learning outcomes. Teachers' approaches to teaching are an appropriate concept for characterizing different kinds of teaching presence. According to Trigwell and Prosser (2004; p. 413), teachers' approaches to teaching "were constituted in terms of the strategies they adopt for their teaching and the intentions underlying the strategies".

In the field of technology-enhanced learning, *approaches to teaching online* has been a little-explored topic, both in blended learning and in online education research. The most widely investigated themes were related to *technology environments and applications*, *instructional methods,* and *learning processes* (Badia, 2015). Increasing our knowledge of approaches to teaching online is important, because certain ways of conceiving online teaching are highly associated with higher-quality student learning processes and outcomes.

**Approaches to teaching online**

The research carried out to date on approaches to teaching online has been conducted both in blended learning courses – in which teachers are expected to balance their teaching between face-to-face and virtual learning environments – and in online courses. Phenomenographic methods have been those most commonly used to collect and analyse data, and as a result, research findings have typically been qualitative.

The pioneer study carried out by Roberts (2003) analysed teachers' approaches to the use of the Web for learning and teaching in blended environments. Using a mixed methodology that combined data from questionnaires and interviews from 256 participants, three different approaches were identified: a) the Web used as a source of subject information, which would be used to promote some form of interaction between the learner's existing knowledge and new information; b) the Web used independently of other learners or the teacher, for individual, self-paced learning; and c) the Web used for group analysis, decision making and dialogue.

As regards blended teaching settings, Ellis, Steed and Applebee (2006), and Ellis, Hughes, Weyers and Riding (2009), analysing data from 19 teachers' interviews, identified four approaches to teaching online in a virtual learning environment. In the approach called "to manage student activity", teachers focused on whether students had successfully completed the learning task following the instructions. In the second category, called "trying things out", teachers encouraged students to experiment with resources in order to learn with new technologies. With the third approach, "integrating experiences of teaching", teachers wanted to leverage the benefits of the online learning context to support students' acquisition of knowledge and their gaining of a better understanding. Finally, in the fourth category, called "to encourage students' autonomy in learning", teachers tried to help the students to take more responsibility for their learning, creating situations in which students could take the initiative through their engagement in research and inquiry.

More recently, Lameras, Levy, Paraskakis and Webber (2012) conducted phenomenographic research, interviewing 25 Computer Science teachers who used virtual learning environments in a blended university. Approaches to teaching online were described as a means to support: a) teachers transferring information to students, who received the information, found the material and memorized content; b) teachers promoting application and clarification of concepts, providing knowledge through examples and online exercises, discussing with students, giving feedback, and proposing different ways of thinking; c) teachers supporting the exploration of content resources, the exchange and development of ideas through educational interactions, and sharing knowledge among students; and d) teachers supporting collaborative knowledge creation among the online community of students and the development of process awareness and skills.

In an effort to define how teachers envision teaching in online courses, Gonzalez (2009), taking into account previous contributions from Roberts (2003), conducted research in online courses in Health Sciences. Using a phenomenographic perspective, he collected data from 7 teachers and suggested three approaches to teaching online: a) the Web used for individual access to learning materials and information, and for individual assessment; b) the Web used for learning-related communication (asynchronous and/or synchronous) – teachers provided the content and set up spaces to facilitate educational interactions

among students; and c) the Web used as a means for networked learning. Teachers mainly set up virtual spaces to share information with students and guided the students' knowledge construction process. In a further contribution, Gonzalez (2010) interviewed 18 university teachers from two research-intensive campus-based universities, and made an alternative proposal with four approaches to teaching using e-learning: a) e-learning as a means to provide information; b) e-learning as a means for occasional communication; c) e-learning as a means to engage in online discussions; and d) e-learning as a means to support knowledge-building tasks.

Also related to online courses, Jelfs, Richardson and Price (2009) developed a questionnaire to investigate conceptions of a "good tutor". They identified four approaches to teaching: a) student-oriented; they expected tutors to be concerned with promoting learning through supporting students rather than through their grasp of the subject matter; b) knowledge-oriented; they expected tutors to be concerned with promoting learning through knowledge transfer; c) task-oriented; they expected tutors to be concerned with promoting learning, they had no specific expectations about how this might be achieved); and d) impersonal approach, not focused.

In summary, the abovementioned studies indicate six different kinds of teachers' approaches to online teaching (see Table 1), both in fully online and blended environments: 1) managing learning tasks; 2) promoting self-learning; 3) facilitating content acquisition; 4) supporting knowledge-building; 5) supporting collaborative learning; and 6) creating community and networked learning.

[Table 1]

**Factors influencing the adoption of approaches to teaching online**

Little research has been done on the factors that may be affecting teachers' adoption of approaches to teaching online, both at a contextual and individual teacher level.

Gonzalez (2009) showed that some contextual aspects, such as specific faculty policies, students' characteristics and curriculum development, have an impact on the online teaching approach adopted. In regard to faculty policies, teachers distinguished positive influences, such as the possibility of holding online teaching workshops and technical support received by the institution, and negative influences, such as the failure of the institution to recognise the extra workload related to online teaching. Some students' characteristics, such as the level of maturity and engagement in the learning process, and curriculum development, such as the way the course was designed and the learning activities planned, were also important factors that affected the adoption of a particular approach to teaching online.

There are more teachers' individual characteristics that may also influence approaches to teaching online. Jelfs, Richardson and Price (2009) pointed out that online teachers, with various academic backgrounds, showed different approaches to teaching online. For example, whereas Social Sciences, Health and Social Health and Science teachers obtained high scores in student-oriented approaches, teachers of the Arts scored higher in knowledge-oriented approaches. They stated that the epistemologies of a particular academic background could promote different approaches to teaching online.

Finally, teachers' roles in online teaching could also influence the adoption of a particular

approach to said teaching (Baran, Correia and Thompson, 2011). Teachers' roles are commonly defined as functions and tasks involving teaching, usually well established by the educational institution, which indicate what teachers are allowed to do to carry out their educational activity. Significant contributions (Álvarez, Guasch & Espasa, 2009; Baran, Correia & Thompson, 2011; Guasch, Álvarez & Espasa, 2010; McShane, 2006; Mishra, 2005; Thach & Murphy, 1995; Williams, 2003) underline five types of teachers' roles in teaching online: 1) instructional design, which includes teaching activities related to educational planning, before the beginning of the course; 2) managing the learning activity, which refers to the organization of the learning tasks during the course; 3) learning assessment, which refers to how to monitor students' learning; 4) managing social interactions, which includes activities that promote appropriate social relationships between the teacher and the students, and among the students themselves; and 5) design and educational use of technology, which refers to teachers' actions to guide the appropriate use of technology, especially in terms of the virtual campus, and its adjustment to the specific needs of the virtual learning activity that is being developed.

To sum up, until today, there has been a small amount of research done on approaches to teaching online, and none in a fully online university. In addition, there have been no specific studies focused on factors that may influence teachers' adoption of a particular approach to teaching online.

**Purpose and research questions**

The aim of this paper is to provide a comprehensive overview of how teachers approach their online teaching, and which factors affect their adoption of a particular approach. To address these objectives, approaches to teaching online are outlined and individual teacher characteristics and roles related to teaching online are considered. The following research questions are explored:

*RQ1.* What are the teachers' preferences regarding their roles in teaching online?
*RQ2.* What are the teachers' preferences regarding their approaches to teaching online?
*RQ3.* What are the factors influencing the adoption of a particular approach to teaching online?

**Method**

*Institutional context of study*

This research project was carried out at the Open University of Catalonia[1], which is a fully online university that provides undergraduate and graduate programmes using a virtual campus based on asynchronous written communication networks. It is important to emphasize that this research is focused on just one university. The educational model of the Open University of Catalonia puts the central focus on the student and the learning process. Educational resources and instructional strategies are aimed at promoting content access, student knowledge-building and collaborative learning (Open University of Catalonia, n. d.).

Teachers at the Open University of Catalonia have responsibilities related to online teaching and do not have a responsibility as curriculum developers or researchers. They teach in an online learning environment and typically teach in a virtual classroom with a maximum of seventy-five students. The University expects teachers to develop their

[1] http://www.uoc.edu/

online teaching according to student-centred pedagogy (Knowlton, 2000), taking into account different teachers' roles in teaching: instructional design, managing the learning activity, managing social interaction, the design and educational use of technology and learning assessment.

*Data collection*

Faculty of the Open University of Catalonia received an email from the research team inviting them to participate in the study and asking them to complete an online questionnaire, which could be accessed by a link embedded in the message itself. The online version of the questionnaire was answered anonymously between November 2011 and February 2012.

*Participants*

There were a total of 965 survey respondents, a response rate of 46.13% of all online teachers (a total of 2,092).

**Measures**

*Participants' individual information*

Participants were asked to provide basic individual information. Among the 965 teachers, 56% were men and 44% were women. Their average age at the end of 2012 was 43 (SD = 7.6). Regarding teachers' level of education, 24.3% had a bachelor's degree, 36% had a master's degree and 39.7%, a PhD, and they had an academic background in the following fields: Social Sciences (59.9%), Humanities (11.4%), Health Sciences (6.9%), Engineering (15.5%) and Sciences (6.2%). Most teachers taught at university at the undergraduate level (85.5%), while the rest taught at a graduate/PhD level (14.5%). Among the teachers surveyed, 33.5% had less than 3 years of experience in online teaching, 46.6% had from 3 to 10 years, and 19.9% had more than 10 years of experience. Finally, of the teachers surveyed, 24.5% dedicated less than 25% of their teaching time to online teaching, 21% dedicated from 26% to 50%, 22.5% dedicated from 51% to 99%, and 31.1% dedicated 100% of their time.

*Teachers' roles in teaching online*

Participants were asked to report on their perception of teachers' roles in teaching online using a Likert-type scale of twenty items (see Table 2), ranging from "not important" (1) to "very important" (5). The measurement was constructed by taking into account teachers' roles in teaching online, identified by relevant contribution (Álvarez, Guasch & Espasa, 2009; Baran, Correia & Thompson; 2011; Mishra, 2005; Thach and Murphy, 1995; Williams, 2003). Participants gave their valuation of the importance of several teaching tasks, those usually carried out as a teacher of the Open University of Catalonia, to teaching online.

*Approaches to teaching online*

Participants were asked to report on their perception of approaches to teaching online based on a Likert-type scale of twelve items ranging from "strongly disagree" (1) to "strongly agree" (5). The scale was constructed taking into account certain kinds of approaches initially identified by Jelfs, Richardson and Price (2009), González (2009), and Lameras, Levy, Paraskakis and Webber (2012). The selected items reflected three kinds of approaches (see Table 3): the Collaborative Learning approach, the Content Acquisition approach and the Knowledge Building approach. All three approaches were consistent with the aforementioned educational model of the Open University of

Catalonia.

**Data analysis**

As a first step in the data analysis, two exploratory factor analyses on approaches to teaching online and on teachers' roles in online teaching were carried out, to reduce item variability to a multidimensional semantic space representing teachers' meanings. Three scales were formulated for approaches to teaching online, and five scales for teachers' roles to online teaching. In both cases, the raw scores were added and divided by the number of items included in each factor to retain the original scale (i.e. ranging from 1 to 5, to facilitate its interpretation).

In the second step, three multivariate regressions were developed to determine the relationship between the three approaches to teaching online and every independent variable. Regression coefficients (B), standard errors (S.E.), t-tests of significance and their corresponding standardized versions (Beta) were also calculated. F-tests and $R^2$ values were used to determine the significance and the overall fit of the three multiple regressions and served as an indication of the explanation reflected in each model.

**Results**

*RQ1. What are the teachers' preferences regarding their roles in teaching online?*

Teachers stated a preference for two roles in teaching online: *Learning Assessment* (M=4.44, SD=0.50) and *Instructional Design* (M=4.34, SD=0.54). At a secondary level, they preferred *Learning Support* (M=3.66, SD=0.70), *Guiding the Use of Technology* (M=3.60, SD=0.76), and *Managing Social Interaction* (M=3.52, SD=0.78).

Principal component analysis showed an acceptable five-component structure (KMO=0.853 and a significant Bartlett test, p=0.000), explaining 62.07% of the total variance in the following teachers' roles: *Managing Social Interaction* (29.78%), *Instructional Design* (10.91%), *Guiding the Use of Technology* (9.22%), *Learning Assessment* (6.65%), and *Learning Support* (5.52%). The five components showed an acceptable reliability, with a Cronbach's $\alpha$ of 0.807, 0.743, 0.837, 0.720 and 0.763, respectively. The rotated solution (Oblimin with Kaiser normalization) provided component loading ranging from 0.726 to 0.864, from 0.726 to 0.768, from 0.795 to 0.827, from 0.664 to 0.781, and from 0.679 to 0.820, respectively (see Table 2).

[Table 2]

The *Managing Social Interaction* role refers to tasks such as promoting relations of trust and mutual commitment between students, and between students and the teacher, resolving group conflicts, and enhancing mutual communication among participants. In the *Instructional Design* role, teachers' tasks refer to content selection and adaptation, setting objectives and competency, instructional design and the preparation of learning activities and assessment. The *Guiding the Use of Technology* role includes tasks related to the design of the technological learning tools, integration of new tools in the virtual classroom, student orientation in the use of the virtual learning environment, and giving aids to promote the use of specific technological tools. The *Learning Assessment* role highlights the tasks the teacher has to carry out in regard to formative and summative assessment, such as answering students' questions about content, correcting mistakes in students' understanding, monitoring and evaluating individual or group learning activities,

and communicating information to students regarding assessment (evaluation criteria, correct responses or qualifications). The *Learning Support* role corresponds to different teaching tasks, such as monitoring, guidance and evaluation of student participation in social interaction activities, orientation of individual study processes, control and monitoring of the learning pace, explanation of the methodology and the organization of study time, and the presentation and sequencing of learning activities.

*RQ2. What are the teachers' preferences regarding their approaches to teaching online?*

Teachers demonstrated a preference for the *Knowledge Building* approach (M=4.30; SD=0.53), while they had less of a preference for the *Content Acquisition* approach (M=3.67, SD=0.70) and the *Collaborative Learning* approach (M=3.65, SD=0.64).

Principal component analysis (PCA), displayed in Table 3, showed an acceptable three-component structure (KMO=0.834 and a significant Bartlett test, p=0.000), explaining 59.03% of the total variance. Three components were identified: *Content Acquisition* (33.98% of variance explained), *Collaborative Learning* (13.30% of variance explained), and *Knowledge Building* (11.75% of variance explained). The rotated solution (Oblimin with Kaiser normalization) provided component loading ranging from 0.739 to 0.827, from 0.723 to 0.756, and from 0.569 to 0.781, respectively. The three components showed acceptable reliability, with a Cronbach's $\alpha$ of 0.762, 0.812 and 0.682, respectively (see Table 3).

[Table 3]

With the *Collaborative Learning* approach, facilitating participation is the main aim of online teaching. Teachers who adopt this approach give priority to social activities and knowledge sharing. Teaching focuses on promoting learners' participation in collaborative learning activities, in order for students to share knowledge in virtual learning environments. On average, teachers put emphasis on encouraging students to share knowledge with other colleagues if they want to learn in a virtual context (M = 3.64). There appears to be agreement on the topic of assessing if new knowledge is used appropriately in social activities (M = 3.46).

In *Content Acquisition*, teaching focuses on the use of virtual learning environments to provide and acquire content. Most relevant to teachers is the use of technology as a medium for content delivery, to facilitate access to content and to guide students in completing tasks. On average, teachers agree on the need to use the right technology to track students' individual study processes (M = 3.96), however, a certain level of disagreement on the use of technology to transmit content information to students (M = 3.19) can be observed.

Finally, for *Knowledge Building*, teachers comment on the importance of ensuring that students are able, on their own, to complete successfully the activities outlined. So, teaching focuses on assuring the processes of knowledge construction: designing educational scaffoldings and learning supports, solving content doubts, and supervising the correct application of learning skills and adequate task resolution. Teachers mainly agree on ensuring that students are learning the content (M = 4.53). Although still high, less agreement can be observed on the topic of ensuring that students are properly applying their learning skills (M =4.14).

*RQ3. What are the factors influencing the adoption of a particular approach to teaching online?*

The influential factors are age, online teacher dedication, academic background, and teachers' roles. However, sampling variables such as gender, education, studies taught, and online teaching experience are not, in fact, associated with approaches to teaching online.

Table 4 shows the results of three multiple regression models of the approaches to teaching online. Taking into account the global adjustment of the three regression models, findings indicate that all three provide an acceptable degree of explanation (adjusted $R^2$=0.332, adjusted $R^2$=0.415, and adjusted $R^2$=0.332, respectively).

[Table 4]

There are three variables that influence the adoption of *Content Acquisition* by online teachers: a) age: (Beta=0.066, p<0.05) ; b) online teacher dedication – between 26% and 50% of time spent on educational matters (Beta=0.070, p<0.05) – with a moderate weight; and c) teachers' roles: *Guiding the Use of Technology* (Beta=0.388, p<0.001), with the highest level of influence, and *Instructional Design* (Beta=0.127, p<0.001), *Learning Assessment* (Beta=0.101, p<0.001) and *Learning Support* (Beta=0.157, p<0.001), with a lower degree of influence.

*Collaborative Learning* is influenced by four variables: a) age (Beta=0.068, p<0.05); b) online teacher dedication, with over 51% of time devoted to online teaching (Beta=0.062, p<0.05), (Beta=0.074, p<0.05); c) academic background: teachers with a Humanities background (Beta=0.053, p<0.01) adopt this approach, as opposed to teachers with a Sciences background (Beta=-0.074, p<0.01); and d) teachers' roles: *Learning Support* (Beta=0.298, p<0.001) and *Managing Social Interaction* (Beta=0.293, p<0.001) show the highest degree of influence, whereas *Instructional Design* (Beta=0.094, p<0.01) and *Guiding the Use of Technology* (Beta=0.101, p<0.01) are of moderate influence.

Finally, *Knowledge Building* is influenced by three variables: a) age (Beta=0.091, p<0.01); b) academic background: where teachers from the Sciences field of study (Beta=-0.061, p<0.05) tend not to adopt this approach; and c) teachers' roles: *Learning Assessment* (Beta=0.351, p<0.001) and *Instructional Design* (Beta=0.207, p<0.01) show the highest degree of influence, and *Managing Social Interaction* (Beta=0.073, p<0.05) and *Guiding the Use of Technology* (Beta=0.070, p<0.05) have a moderate degree of influence.

Teachers' roles in online teaching have a positive and very high impact on the adoption of different approaches to teaching online. *Guiding the Use of Technology* is related to *Content Acquisition*; *Learning Support* and *Managing Social Interaction* are related to *Collaborative Learning*; and *Instructional Design* and *Learning Assessment* are related to *Knowledge Building*. Furthermore, age is also an important factor in the adoption of an approach to teaching online. The younger the online teachers, the more likely they are to adopt each approach to teaching online. In addition, teachers who dedicate less than 50% of their time (and over 25%) to online education are more likely to adopt the *Content Acquisition* approach. However, teachers who devote more than 50% of their time to

teaching online are more likely to adopt the *Collaborative Learning* approach.

**Discussion**

The findings provide relevant information on the online teaching approaches adopted by teachers in higher education, which factors influence them and how important certain teachers' roles are in the adoption of an approach.

Our first research question explored teachers' preferences when it came to their roles in teaching online. Five teachers' roles were identified, but *Instructional Design* and *Learning Assessment* were the preferred roles. This research line is complementary to other existing contributions (Álvarez, Guasch, & Espasa, 2009), which emphasize the relationship between teachers' roles in teaching online and the competences of online teachers. Analysing more closely the links between the competences, roles and approaches of online teachers could be an interesting future research line. Fully online universities, as well as traditional ones that provide online courses, need to gain a better understanding of how all three issues could be developed in order to improve the quality of online teaching.

In addressing our second research question, we found that three kinds of approaches to teaching online, already acknowledged by previous researchers, were reported by teachers: facilitating content acquisition, supporting knowledge-building and supporting collaborative learning. *Content Acquisition* resembles previous approaches to teaching online identified by Roberts (2003), Lameras, Levy, Paraskakis and Webber (2012), and González (2013) in the sense that teachers use virtual learning environments as a means to deliver content and to supervise learning task development. Likewise, *Collaborative Learning* encompasses many features of several approaches to teaching online identified previously by Gonzalez (2009, 2010, 2013), Parisio (2010) and Lameras, Levy, Paraskakis and Webber (2012), which all have in common that teaching online is considered a means to promote learners' participation in virtual learning environments. Finally, *Knowledge Building* also has analogous features with approaches to teaching online identified by preceding contributions (Gonzalez, 2009, 2010; Lameras, Levy, Paraskakis, & Webber, 2012), as this approach is characterized by some aspects of teachers' interventions in online learning tasks, such as providing learning assistance, resolving content doubts, monitoring the implementation of learning skills, and assessing the correct resolution of learning tasks.

In responding to our third research question, some factors influencing approaches to teaching online were identified. Results are consistent with Jelfs, Richardson and Price (2009) in the sense that teachers' academic background influences the adoption of one particular approach to teaching online. Findings suggest that teachers from the Humanities are more likely to adopt *Collaborative Learning*, and teachers from the Sciences are more likely to reject *Collaborative Learning* and *Knowledge Building*. The most remarkable aspect among faculty of the Open University of Catalonia is the influence that different teachers' roles in online teaching have on certain approaches to teaching online. Taking into account that teachers' roles in teaching online are well-established by the institution, our findings reveal an obvious way to make changes in the area of online teaching. For example, if university authorities want to promote *Knowledge Building* in online teaching, they must increase efforts to give more support to the development of the teachers' roles of *Instructional Design* and *Learning Assessment*. This could be done by developing teacher training courses on new instructional design models

and implementing learning technologies that improve the learning assessment.

Despite these strengths, this study has several limitations. Given that previous studies on approaches to teaching online are scarce, it is neither possible to build a more solid theoretical background, nor to back up our findings with more studies that have focused on this research topic. This lack of research caused initial problems when developing some parts of the questionnaire. Until recently, only Gonzalez (2013) had developed and tested a first questionnaire to collect information about university teachers' teaching experiences in online university courses. Another limitation is that this study cannot be used to generalize results because participants came from just one fully online university. This fact may have caused a more narrow range of potential findings, especially in the identification of online teachers' roles and teaching approaches. For instance, although the literature reviewed (Gonzalez, 2009) identified the online teaching approach of "the Web is used for individual access to learning materials and information and for individual assessment", this approach to teaching online did not appear in our findings using the principal component factorial analysis.

**Conclusion**

Currently, the number of fully online courses in higher education is growing at a rapid pace. Therefore, quality in online teaching and learning is a concern for the majority of universities (Ginns & Ellis, 2007). One of the most important quality factors is how teachers address online teaching, with what approach they design their courses, and with what approaches they develop, deliver and evaluate their online courses.

The contribution of our study increases understanding of teachers' preferences in their roles in teaching online, teachers' preferences in their approaches to teaching online and the factors influencing the adoption of particular approaches to teaching online. Findings showed that age, academic background, online teacher dedication and teachers' preferences in their roles in teaching online are the main factors. In addition, findings also pointed out the great influence that preferred roles have on teaching online as well as the different degree of influence the preferred roles have on each approach to teaching online.

While the first three factors are outside the control of the university or institution, preferences regarding teachers' roles in teaching online could become the cornerstone for making changes to teaching online or for taking teachers' approaches to teaching to the next level. Universities can have a decisive influence on online teaching if they delimit the expected roles of their teachers. Although online teachers have to consider these roles in teaching online, they must be aware that they could develop their virtual teaching in very different ways.

**Note about open data, ethics and conflicts of interest**

This research paper has been developed in accordance with the ethical standards of the American Psychological Association (2010). Participants were informed in advance of the general aim of the research, its duration and the procedure to collect, store, and analyse the information provided by them. Following this notification, participants freely decided to answer the online survey. Data collected has been stored and managed observing the law on data protection and the right to confidentiality. Access to the database will be provided by the first author on the request of the interested party. Solicitations should contain information about the aim of the research and the type of analysis that researchers want to do. Applicants will be given a well-reasoned reply.

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## Tables

**Table 1.** Authors' contributions to defining kinds of approaches to teaching online

| | **Managing learning task** | **Promoting self-learning** | **Facilitating content acquisition** | **Supporting knowledge-building** | **Supporting collaborative learning** | **Creating community and networked learning** |
|---|---|---|---|---|---|---|
| **Roberts (2003)** | | Promote individual self-paced learning | Promote the use of the Web as a source of information | | Promote group analysis, decision making and dialogue | |
| **Ellis, Steed and Applebee (2006)** | Manage study activity, completing the learning task | Encourage students' autonomy in learning | Encourage students to learn content using new technologies | Support students' learning and understanding of content | | |
| **Gonzalez (2009, 2010)** | | | Promote individual access to learning content | Support knowledge-building tasks | Provide content and facilitate educational interaction among students | Share information among students and guide the process of students' knowledge acquisition |
| **Jelfs, Richardson and Price (2009)** | Task-oriented approach | | Knowledge-oriented approach | Student-oriented approach | | |
| **Lameras, Levy, Paraskakis and Webber (2012)** | | | Transferring information to students | Promoting clarification of content and proposing different ways of thinking | Supporting exploration of content resources and educational interaction among students | Supporting collaborative knowledge creation among the online community |

**Table 2.** Rotated component matrix (factor loadings) and descriptive statistics for teachers' roles in teaching online (N = 965)

| | Mean | SD | F1 | F2 | F3 | F4 | F5 |
|---|---|---|---|---|---|---|---|
| **Managing Social Interaction** | **3.52** | **0.78** | | | | | |
| Promotion of relationships of trust and mutual commitment among students. | 3.58 | 0.99 | **0.864** | 0.136 | 0.276 | 0.166 | 0.390 |
| Resolution of group conflicts among students. | 3.37 | 1.03 | **0.781** | 0.265 | 0.369 | 0.250 | 0.346 |
| Enhancement of cordial and warm relations between teacher and students. | 4.03 | 0.88 | **0.731** | 0.173 | 0.188 | 0.376 | 0.319 |
| Facilitation of personal or professional knowledge among students. | 3.11 | 1.01 | **0.726** | 0.125 | 0.487 | 0.085 | 0.377 |
| **Instructional Design** | **4.34** | **0.54** | | | | | |
| Design of the training proposal based on the training requirements. | 4.24 | 0.77 | 0.058 | **0.768** | 0.212 | 0.184 | 0.179 |
| Selection, design and/or content adaptation. | 4.35 | 0.69 | 0.125 | **0.759** | 0.181 | 0.191 | 0.053 |
| Establishment of learning objectives and competency to be developed. | 4.33 | 0.70 | 0.145 | **0.739** | 0.255 | 0.224 | 0.245 |
| Selection, design and/or adaptation of learning activities and assessment. | 4.43 | 0.65 | 0.224 | **0.726** | 0.123 | 0.355 | 0.150 |
| **Guiding the Use of Technology** | **3.60** | **0.76** | | | | | |
| Design of certain technological tools for learning. | 3.56 | 0.90 | 0.313 | 0.255 | **0.827** | 0.079 | 0.201 |
| Decision to integrate new technological tools into the existing virtual environment. | 3.58 | 0.91 | 0.238 | 0.186 | **0.817** | 0.113 | 0.227 |
| Guidance of students in the use of the virtual learning environment. | 3.72 | 0.93 | 0.264 | 0.248 | **0.808** | 0.231 | 0.281 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Regulation of an appropriate use of technology by students. | 3.55 | 0.98 | 0.315 | 0.199 | **0.795** | 0.202 | 0.337 |
| **Learning Assessment** | **4.44** | **0.50** | | | | | |
| Correction of students' misunderstanding of content. | 4.33 | 0.72 | 0.133 | 0.209 | 0.173 | **0.781** | 0.203 |
| Resolution of questions from students about the content. | 3.16 | 0.54 | 0.178 | 0.175 | 0.110 | **0.775** | 0.147 |
| Monitoring and evaluation of students' individual and group activities. | 4.38 | 0.70 | 0.281 | 0.377 | 0.149 | **0.677** | 0.389 |
| Providing students with information about assessment (grades, correct answers and/or evaluation criteria). | 4.37 | 0.72 | 0.316 | 0.375 | 0.222 | **0.644** | 0.262 |
| **Learning Support** | **3.66** | **0.70** | | | | | |
| Guidance and monitoring of students' participation in social interaction activities. | 4.38 | 0.70 | 0.470 | 0.171 | 0.213 | 0.085 | **0.820** |
| Monitoring and evaluation of students' participation in social interaction activities. | 3.41 | 0.98 | 0.577 | 0.158 | 0.245 | 0.154 | **0.755** |
| Guidance and regulation of students' individual study processes. | 3.62 | 0.87 | 0.262 | 0.114 | 0.400 | 0.268 | **0.746** |
| Control and monitoring of students' learning pace and learning periods. | 3.99 | 0.81 | 0.199 | 0.303 | 0.230 | 0.407 | **0.679** |

**Table 3.** Rotated component matrix (factor loadings) and descriptive statistics for approaches to teaching online (N = 965)

| | M | SD | F1 | F2 | F3 |
|---|---|---|---|---|---|
| **Collaborative Learning** | **3.65** | **0.64** | | | |
| It's clear that in a virtual context, learning should be an activity mainly for social participation in virtual groups, interacting with peers and building shared knowledge. | 3.59 | 1.01 | **0.827** | 0.054 | 0.071 |
| In order to assess knowledge acquired, I analyse the extent to which students have made appropriate use of new knowledge in social activities (e.g. virtual debates). | 3.46 | 1.07 | **0.776** | 0.117 | 0.113 |
| I encourage my students to share their knowledge with other colleagues in virtual spaces of communication if they want to learn in a virtual context. | 3.64 | 0.96 | **0.764** | 0.161 | 0.104 |
| I think we should make recommendations to students on how they can improve the way they participate in virtual communication activities with their colleagues. | 3.59 | 0.93 | **0.739** | 0.261 | 0.130 |
| **Content Acquisition** | **3.67** | **0.70** | | | |
| To develop properly my virtual teaching, I need to have technological environments that can guide students in how to carry out correctly their learning tasks. | 3.73 | 0.89 | 0.225 | **0.756** | 0.214 |
| To develop properly my virtual teaching, I need to have multimedia technology environments with interrelated digital content that help students to access content in a quick, easy and safe way (e.g. a website). | 3.81 | 0.99 | 0.187 | **0.745** | 0.150 |
| To develop an online course, I need to use the correct technology to transmit content information to students. | 3.19 | 0.94 | 0.114 | **0.728** | -0.005 |
| To develop an online course, I need to use the correct technology to track students' individual study processes. | 3.96 | 0.85 | 0.050 | **0.723** | 0.127 |
| **Knowledge Building** | **4.30** | **0.53** | | | |
| As a virtual teacher, I have to ensure that students are learning the content correctly, so I have to resolve all doubts that may arise, within an optimal response time. | 4.53 | 0.68 | -0.005 | 0.088 | **0.781** |
| As a virtual teacher, I have to ensure that students are properly applying their learning skills to complete the activities they are given. | 4.14 | 0.78 | 0.219 | 0.165 | **0.710** |
| In order to assess knowledge acquired by students, I appreciate how well students have completed the learning activities given. | 4.32 | 0.70 | 0.032 | 0.011 | **0.687** |
| As a virtual teacher, I think carefully about how to specify in detail the learning activities and educational scaffoldings that students may require. | 4.23 | 0.78 | 0.263 | 0.287 | **0.569** |

**Table 4.** Multiple regression models of approaches to teaching online (N = 965)

| | Content Acquisition | | | | Collaborative Learning | | | | Knowledge Building | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *B* | S.E. | Beta | t | *B* | S.E. | Beta | t | *B* | S.E. | Beta | t |
| **Intercept** | 0.105 | 0.238 | - | 0.443 | 0.871 | 0.203 | | 4.284 [c] | 1.173 | 0.177 | | 6.624 [c] |
| **Gender** | | | | | | | | | | | | |
| Female | - | - | - | - | - | - | - | - | - | - | - | - |
| Male | 0.047 | 0.040 | 0.033 | 1.174 | -0.010 | 0.034 | -0.007 | -0.282 | -0.062 | 0.030 | -0.059 | -2.095 |
| **Age** | 0.006 | 0.003 | 0.066 | 2.266[a] | 0.006 | 0.002 | 0.068 | 2.496[a] | 0.006 | 0.002 | 0.091 | 3.099[b] |
| **Education** | | | | | | | | | | | | |
| Bachelor's degree | - | - | - | - | - | - | - | - | - | - | - | - |
| Master's degree | 0.025 | 0.051 | 0.017 | 0.484 | 0.039 | 0.044 | 0.029 | 0.894 | 0.051 | .038 | 0.047 | 1.338 |
| PhD | -0.025 | 0.057 | -0.017 | -0.435 | -0.075 | 0.049 | -0.057 | -1.541 | -0.021 | 0.042 | -0.020 | -0.498 |
| **Academic background** | | | | | | | | | | | | |
| Social Sciences | - | - | - | - | - | - | - | - | - | - | - | - |
| Health Sciences | -0.074 | 0.076 | -0.027 | -0.985 | 0.032 | 0.065 | 0.013 | 0.496 | -0.099 | 0.056 | -0.048 | -1.760 |
| Engineering | 0.062 | 0.056 | 0.032 | 1.097 | -0.075 | 0.048 | -0.042 | -1.564 | -0.074 | 0.042 | -0.051 | -1.752 |
| Sciences | -0.041 | 0.079 | -0.014 | -0.520 | -0.197 | 0.068 | -0.074 | -2.914[b] | -0.132 | 0.059 | -0.061 | -2.247[a] |
| Humanities | .0066 | 0.061 | 0.030 | 1.082 | 0.107 | 0.052 | 0.053 | 2.050[a] | -0.073 | 0.045 | -0.044 | -1.602 |
| **Online teaching experience** | | | | | | | | | | | | |
| Less than 3 years | - | - | - | - | - | - | - | - | - | - | - | - |
| From 3 to 10 years | -0.062 | 0.044 | -0.044 | -1.411 | -0.059 | 0.038 | -0.046 | -1.559 | -0.042 | 0.033 | -0.040 | -1.289 |
| More than 10 years | 0.032 | 0.059 | 0.018 | 0.537 | -0.059 | 0.051 | -0.037 | -1.159 | -0.029 | 0.044 | -0.022 | -0.654 |
| **Studies taught** | | | | | | | | | | | | |
| Undergraduate | - | - | - | - | - | - | - | - | - | - | - | - |
| Graduate/PhD | -0.060 | 0.055 | -0.030 | -1.099 | -0.011 | 0.047 | -0.006 | -0.235 | -0.041 | 0.041 | -0.027 | -1.015 |
| **Online teaching dedication** | | | | | | | | | | | | |
| Less than 25% | - | - | - | - | - | - | - | - | - | - | - | - |
| From 26% to 50% | 0.121 | 0.056 | 0.070 | 2.174[a] | 0.065 | 0.048 | 0.042 | 1.369 | -0.019 | 0.042 | -0.015 | -0.449 |
| From 51% to 99% | 0.065 | 0.058 | 0.039 | 1.129 | 0.096 | 0.049 | 0.062 | 1.941[a] | -0.017 | 0.043 | -0.013 | -0.384 |
| 100% | 0.069 | 0.058 | 0.045 | 1.189 | 0.102 | 0.050 | 0.074 | 2.064[a] | 0.015 | 0.043 | 0.013 | 0.350 |
| **Teachers' roles** | | | | | | | | | | | | |
| Managing Social Interaction | 0.009 | 0.031 | 0.010 | 0.285 | 0.243 | 0.027 | 0.293 | 9.151[c] | 0.049 | 0.023 | 0.073 | 2.137[a] |
| Instructional Design | 0.164 | 0.039 | 0.127 | 4.264[c] | 0.111 | 0.033 | 0.094 | 3.380[b] | 0.200 | 0.029 | 0.207 | 6.963[c] |
| Guiding the Use of Technology | 0.358 | 0.029 | 0.388 | 12.557[c] | 0.085 | 0.024 | 0.101 | 3.485[b] | 0.048 | 0.021 | 0.070 | 2.276[a] |
| Learning Assessment | 0.143 | 0.044 | 0.101 | 3.262[b] | -0.024 | 0.037 | -0.019 | -0.652 | 0.369 | 0.033 | 0.351 | 11.327[c] |
| Learning Support | 0.157 | 0.034 | 0.157 | 4.668[c] | 0.273 | 0.029 | 0.298 | 9.489[c] | 0.031 | 0.025 | 0.041 | 1.218 |
| **Model summary** | | | | | | | | | | | | |
| $R^2$ (Adjusted $R^2$) | 0.345 (0.332) | | | | 0.426 (0.415) | | | | 0.345 (0.332) | | | |
| F for the model | 26.055 [c] | | | | 36.786 [c] | | | | 26.049 [c] | | | |
| Sample size | 960 | | | | 960 | | | | 960 | | | |

[a] $p<0.05$. [b] $p<0.01$. [c] $p<0.001$

## Practitioner Notes

### Approaches to teaching online: Exploring factors influencing teachers in a fully online university

What is already known about this topic

- Most studies about online learning environments primarily focus on technology-related issues or instructional methods.
- Six different kinds of teachers' approaches to online and blended environments have been identified: 1) managing learning tasks; 2) promoting self-learning; 3) facilitating content acquisition; 4) supporting knowledge-building; 5) supporting collaborative learning; and 6) creating community and networked learning has been identified.
- Online instructors with several academic backgrounds, showed different approaches to teaching online.

What this paper adds

- Instructors teach online using mainly three approaches: facilitating content acquisition, supporting knowledge-building, and supporting collaborative learning.
- Knowledge-Building approach is the most important teaching approach among teachers of Open University of Catalonia.
- Age, academic background, online teaching dedication and teachers' roles in teaching online are predictors of the adoption of a particular approach to teaching online.

Implications for practice and/or policy

- Fully online universities need to get a better understanding of how competences, roles and approaches of online teachers could be developed in order to improve the quality of online teaching.
- To make changes in how online teaching is developed, university authorities have to know the main characteristics of each approach to teaching online, and the associated teachers' roles.
- The quality of e-learning could be improved by developing teacher training courses about new instructional design models related approaches to teaching online.