



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

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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

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 ensuring 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 relevant for teacher training, as the way teachers consider online teaching is clearly associated with higher-quality student learning processes and outcomes (Shea, Li, & Pickett, 2006). Besides, this knowledge may benefit developers to design online learning environments, and it can also help to design programs to prepare faculties to teach online in order to understand and adapt them to the proper use of these new learning environments.

Approaches to teaching online

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3 The research carried out to date on approaches to teaching online has been conducted both
4 in blended learning courses – in which teachers are expected to balance their teaching
5 between face-to-face and virtual learning environments – and in online courses.
6 Phenomenographic methods have been those most commonly used to collect and analyse
7 data, and as a result, research findings have typically been qualitative.
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9
10 The pioneer study carried out by Roberts (2003) analysed teachers' approaches to the use
11 of the Web for learning and teaching in blended environments. Using a mixed
12 methodology that combined data from questionnaires and interviews from 256
13 participants, three different approaches were identified: a) the Web used as a source of
14 subject information, which would be used to promote some form of interaction between
15 the learner's existing knowledge and new information; b) the Web used independently of
16 other learners or the teacher, for individual, self-paced learning; and c) the Web used for
17 group analysis, decision making and dialogue.
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20 As regards blended teaching settings, Ellis, Steed and Applebee (2006), and Ellis,
21 Hughes, Weyers and Riding (2009), analysing data from 19 teachers' interviews,
22 identified four approaches to teaching online in a virtual learning environment. In the
23 approach called "to manage student activity", teachers focused on whether students had
24 successfully completed the learning task following the instructions. In the second
25 category, called "trying things out", teachers encouraged students to experiment with
26 resources in order to learn with new technologies. With the third approach, "integrating
27 experiences of teaching", teachers wanted to leverage the benefits of the online learning
28 context to support students' acquisition of knowledge and their gaining of a better
29 understanding. Finally, in the fourth category, called "to encourage students' autonomy
30 in learning", teachers tried to help the students to take more responsibility for their
31 learning, creating situations in which students could take the initiative through their
32 engagement in research and inquiry.
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35 More recently, Lamas, Levy, Paraskakis and Webber (2012) conducted
36 phenomenographic research, interviewing 25 Computer Science teachers who used virtual
37 learning environments in a blended university. Approaches to teaching online were
38 described as a means to support: a) teachers transferring information to students, who
39 received the information, found the material, and memorized its content; b) teachers
40 promoting application and clarification of concepts, providing knowledge through
41 examples and online exercises, discussing with students, giving feedback, and proposing
42 different ways of thinking; c) teachers supporting the exploration of content resources, the
43 exchange and development of ideas through educational interactions, and sharing
44 knowledge among students; and d) teachers supporting collaborative knowledge creation
45 among the online community of students and the development of process awareness and
46 skills.
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50 In an effort to define how teachers envision teaching in online courses, Gonzalez (2009),
51 taking into account previous contributions from Roberts (2003), conducted research in
52 online courses in Health Sciences. Using a phenomenographic perspective, he collected
53 data from 7 teachers and suggested three approaches to teaching online: a) the Web used
54 for individual access to learning materials and information, and for individual assessment;
55 b) the Web used for learning-related communication (asynchronous and/or synchronous)
56 – teachers provided the content and set up spaces to facilitate educational interactions
57 among students; and c) the Web used as a means for networked learning. Teachers mainly
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3 set up virtual spaces to share information with students and guided the students'
4 knowledge construction process. In a further contribution, Gonzalez (2010) interviewed
5 18 university teachers from two research-intensive campus-based universities, and made
6 an alternative proposal with four approaches to teaching using e-learning: a) e-learning as
7 a means to provide information; b) e-learning as a means for occasional communication;
8 c) e-learning as a means to engage in online discussions; and d) e-learning as a means to
9 support knowledge-building tasks.
10

11 Also related to online courses, Jelfs, Richardson and Price (2009) developed a
12 questionnaire to investigate conceptions of a "good tutor". They identified four
13 approaches to teaching: a) student-oriented; they expected tutors to be concerned with
14 promoting learning through supporting students rather than through their grasp of the
15 subject matter; b) knowledge-oriented; they expected tutors to be concerned with
16 promoting learning through knowledge transfer; c) task-oriented; they expected tutors to
17 be concerned with promoting learning, they had no specific expectations about how this
18 might be achieved); and d) impersonal approach, not focused.
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21 In summary, the abovementioned studies indicate six different kinds of teachers'
22 approaches to online teaching (see Table 1), both in fully online and blended
23 environments: 1) managing learning tasks; 2) promoting self-learning; 3) facilitating
24 content acquisition; 4) supporting knowledge-building; 5) supporting collaborative
25 learning; and 6) creating community and networked learning.
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28 [Table 1]
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30 **Factors influencing the adoption of approaches to teaching online**

31 Little research has been done on the factors that may be affecting teachers' adoption of
32 approaches to teaching online, both at a contextual and individual teacher level.
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35 Gonzalez (2009) showed that some contextual aspects, such as specific faculty policies,
36 students' characteristics and curriculum development, have an impact on the online
37 teaching approach adopted. In regard to faculty policies, teachers distinguished positive
38 influences, such as the possibility of holding online teaching workshops and technical
39 support received by the institution, and negative influences, such as the failure of the
40 institution to recognise the extra workload related to online teaching. Some students'
41 characteristics, such as the level of maturity and engagement in the learning process, and
42 curriculum development, such as the way the course was designed and the learning
43 activities planned, were also important factors that affected the adoption of a particular
44 approach to teaching online.
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48 There are more teachers' individual characteristics that may also influence approaches to
49 teaching online. Jelfs, Richardson and Price (2009) pointed out that online teachers, with
50 various academic backgrounds, showed different approaches to teaching online. For
51 example, whereas Social Sciences, Health and Social Health and Science teachers
52 obtained high scores in student-oriented approaches, teachers of the Arts scored higher in
53 knowledge-oriented approaches. They stated that the epistemologies of a particular
54 academic background could promote different approaches to teaching online.
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57 Finally, teachers' roles in online teaching could also influence the adoption of a particular
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3 approach to said teaching (Baran, Correia and Thompson, 2011). Teachers' roles are
4 commonly defined as functions and tasks involving teaching, usually well established by
5 the educational institution, which indicate what teachers are allowed to do to carry out
6 their educational activity. Significant contributions (Álvarez, Guasch & Espasa, 2009;
7 Baran, Correia & Thompson, 2011; Guasch, Álvarez & Espasa, 2010; McShane, 2006;
8 Mishra, 2005; Thach & Murphy, 1995; Williams, 2003) underline five types of teachers'
9 roles in teaching online: 1) instructional design, which includes teaching activities related
10 to educational planning, before the beginning of the course; 2) managing the learning
11 activity, which refers to the organization of the learning tasks during the course; 3)
12 learning assessment, which refers to how to monitor students' learning; 4) managing
13 social interactions, which includes activities that promote appropriate social relationships
14 between the teacher and the students, and among the students themselves; and 5) design
15 and educational use of technology, which refers to teachers' actions to guide the
16 appropriate use of technology, especially in terms of the virtual campus, and its
17 adjustment to the specific needs of the virtual learning activity that is being developed.
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21 To sum up, some studies have identified several approaches to teaching online (Gonzalez,
22 2009), and other studies have provided some insights about several factors that may
23 influence teachers' adoption of a particular approach to teaching online (Baran, Correia,
24 & Thompson, 2011). Nevertheless, more research is needed in this field that builds upon
25 these efforts and considers all matters in a single framework in the special case of a fully
26 online university.
27

28 **Purpose and research questions**

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30 The aim of this paper is to provide a comprehensive overview of how teachers approach
31 their online teaching, and which factors affect their adoption of a particular approach. To
32 address these objectives, approaches to teaching online are outlined and individual teacher
33 characteristics and roles related to teaching online are considered. The following research
34 questions are explored:
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37 *RQ1.* What are the teachers' roles in teaching online?

38 *RQ2.* What are the teachers' approaches to teaching online?

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

44 *Institutional context of study*

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46 This research project was carried out at the Open University of Catalonia¹, which is a
47 fully online university. All courses conducted by this university are online. Undergraduate
48 and graduate programmes are provided using a virtual campus, which is based on
49 asynchronous written communication networks. It is important to emphasize that this
50 research is focused on just one university. The educational model of the Open University
51 of Catalonia puts the central focus on the student and the learning process. Educational
52 resources and instructional strategies are aimed at promoting content access, student
53 knowledge-building, and collaborative learning (Open University of Catalonia, n. d.).
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58 ¹ <http://www.uoc.edu/>
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4 The Open University of Catalonia (UOC) encompasses two kinds of teachers: The UOC's
5 own teachers' staff, and a large number of part-time associate teachers. The first group of
6 teachers, full-time workers, have responsibilities related to university management,
7 curriculum development, instructional design, and research, among others. The associate
8 teachers, as part-time workers, have a main job outside of the university, currently as a
9 teacher in another university, or in a professional field.
10

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12 The second group of teachers have responsibilities related to carrying out online teaching
13 using a virtual classroom, which is a Learning Management System developed by the
14 UOC itself (Open University of Catalonia, n. d.). The University expects associate
15 teachers to develop their online teaching according to student-centred pedagogy
16 (Knowlton, 2000), taking into account different teachers' roles in teaching: instructional
17 design, managing the learning activity, managing social interaction, the design and
18 educational use of technology, and learning assessment.
19

20 21 *Data collection*

22
23 Associate teachers of the Open University of Catalonia received an email from the
24 research team inviting them to participate in the study and asking them to complete an
25 online questionnaire, which could be accessed by a link embedded in the message itself.
26 The online version of the questionnaire was answered anonymously between November
27 2011 and February 2012.
28

29 30 *Participants*

31
32 There were a total of 965 survey respondents, a response rate of 46.13% of all online
33 associate teachers (a total of 2.092).
34

35 36 **Measures**

37 38 *Participants' individual information*

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40 Participants were asked to provide basic individual information. Among the 965 teachers,
41 56% were men and 44% were women. Their average age at the end of 2012 was 43 (SD =
42 7.6). Regarding teachers' level of education, 24.3% had a bachelor's degree, 36% had a
43 master's degree, and 39.7% a PhD, and they had an academic background in the
44 following fields: Social Sciences (59.9%), Humanities (11.4%), Health Sciences (6.9%),
45 Engineering (15.5%), and Sciences (6.2%). Most teachers taught at university at the
46 undergraduate level (85.5%), while the rest taught at a graduate/PhD level (14.5%).
47 Among the teachers surveyed, 33.5% had less than 3 years of experience in online
48 teaching, 46.6% had from 3 to 10 years, and 19.9% had more than 10 years of experience.
49 Finally, of the teachers surveyed, 24.5% dedicated less than 25% of their teaching time to
50 online teaching, 21% dedicated from 26% to 50%, 22.5% dedicated from 51% to 99%,
51 and 31.1% dedicated 100% of their time.
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53 54 *Teachers' roles in teaching online*

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56 Participants were asked to report on their perception of teachers' roles in teaching online
57 using a Likert-type scale of twenty items (see Table 2), ranging from "not important" (1)
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3 to “very important” (5). The measurement was constructed by taking into account
4 teachers’ roles in teaching online, identified by relevant contribution (Álvarez, Guasch &
5 Espasa, 2009; Baran, Correia & Thompson; 2011; Mishra, 2005; Thach and Murphy,
6 1995; Williams, 2003). Participants gave their valuation of the importance of several
7 teaching tasks, those usually carried out as a teacher of the Open University of Catalonia,
8 to teaching online.
9

10 *Approaches to teaching online*

11
12 Participants were asked to report on their perception of approaches to teaching online
13 based on a Likert-type scale of twelve items ranging from “strongly disagree” (1) to
14 “strongly agree” (5). The scale was constructed taking into account certain kinds of
15 approaches initially identified by Jelfs, Richardson and Price (2009), González (2009),
16 and Lamerás, Levy, Paraskakis, and Webber (2012). The selected items reflected three
17 kinds of approaches (see Table 3): the Collaborative Learning approach, the Content
18 Acquisition approach, and the Knowledge Building approach. All three approaches were
19 consistent with the aforementioned educational model of the Open University of
20 Catalonia.
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24 **Data analysis**

25
26 As a first step in the data analysis, two exploratory factor analyses on approaches to
27 teaching online and on teachers’ roles in online teaching were carried out, to reduce
28 item variability to a multidimensional semantic space representing teachers’ meanings.
29 Three scales were formulated for approaches to teaching online, and five scales for
30 teachers’ roles to online teaching. In both cases, the raw scores were added and divided
31 by the number of items included in each factor to retain the original scale (i.e. ranging
32 from 1 to 5, to facilitate its interpretation).
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35 In the second step, three multivariate regressions were developed to determine the
36 relationship between the three approaches to teaching online and every independent
37 variable. Regression coefficients (B), standard errors (S.E.), t-tests of significance, and
38 their corresponding standardized versions (Beta) were also calculated. F-tests and R^2
39 values were used to determine the significance and the overall fit of the three multiple
40 regressions and served as an indication of the explanation reflected in each model.
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43 **Results**

44 *RQ1. What are the teachers’ roles in teaching online?*

45
46 Principal component analysis showed an acceptable five-component structure
47 (KMO=0.853 and a significant Bartlett test, $p=0.000$), explaining 62.07% of the total
48 variance in the following teachers’ roles: *Managing Social Interaction* (29.78%),
49 *Instructional Design* (10.91%), *Guiding the Use of Technology* (9.22%), *Learning*
50 *Assessment* (6.65%), and *Learning Support* (5.52%). The five components showed an
51 acceptable reliability, with a Cronbach’s α of 0.807, 0.743, 0.837, 0.720, and 0.763,
52 respectively (see Table 2).
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56 Teachers scored higher on the *Learning Assessment role* and the *Instructional Design*
57 *role* scales than the other three scales: The *Learning role*, the *Guiding the Use of*
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Technology role, and the *Managing Social Interaction* role.

[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' approaches to teaching online?

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 three components showed acceptable reliability, with a Cronbach's α of 0.762, 0.812, and 0.682, respectively (see Table 3).

Teachers scored higher on the *Knowledge Building approach* scale than the *Content Acquisition approach* scale, and both scales scored higher than the *Collaborative Learning approach* scale.

[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. In *Content Acquisition* approach, 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. Finally, for *Knowledge Building* approach, 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,

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3 solving content doubts, and supervising the correct application of learning skills and
4 adequate task resolution.

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6 *RQ3. What are the factors influencing the adoption of a particular approach to teaching*
7 *online?*
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10 The influential factors are age, online teacher dedication, academic background, and
11 teachers' roles. However, sampling variables such as gender, education, studies taught,
12 and online teaching experience are not, in fact, associated with approaches to teaching
13 online.

14
15 Table 4 shows the results of three multiple regression models of the approaches to
16 teaching online. Taking into account the global adjustment of the three regression models,
17 findings indicate that all three provide an acceptable degree of explanation (adjusted
18 $R^2=0.332, 0.415, \text{ and } 0.332$, respectively).
19

20
21 [Table 4]

22
23 On the one hand, the variables with the largest explanatory power of *Content*
24 *acquisition approach* are *Guiding the Use of Technology* role, followed by *Learning*
25 *Support* role, *Instructional Design* role, and *Learning Assessment* role. On the other
26 hand, the variables with the largest explanatory power of *Collaborative Learning*
27 *approach* are *Learning Support* role, and *Managing Social Interaction* role, followed by
28 *Guiding the Use of Technology* role, and *Instructional Design* role. Finally, the
29 variables with the largest explanatory power of *Knowledge Building approach* are
30 *Learning Assessment* role and *Instructional Design* role.
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32
33 Our results show other significant variables, albeit their effects are comparatively smaller.
34 Age is also a factor in the adoption of any approach to teaching online. The older the
35 online teachers, the more likely they are to adopt each approach to teaching online.
36 Academic background and online teaching dedication are characteristics significantly
37 associated with some approaches. Teaching Humanities makes one more likely to adopt
38 the *Collaborative Learning* approach than teaching Social Sciences, and teaching Science
39 makes one less likely to adopt both *Collaborative Learning* and *Knowledge Building*
40 approaches than Social Sciences. Finally, one devoting 26% to 50% of their time to
41 teaching online is more likely to adopt *Content Acquisition* approach than one dedicating
42 less than 25% of their time, and to devote above of 51% of one's time makes one more
43 likely to adopt *Collaborative Learning* approach than an online teacher dedicating less
44 than 25% of their time.
45

46 47 **Discussion and conclusion**

48
49 The first research question explored teachers' roles in teaching online. Five teachers'
50 roles were identified, and among them *Instructional Design* and *Learning Assessment*
51 were the highest scored roles. The set of five teachers' roles in teaching online not only
52 integrate different existing contributions (Álvarez, Guasch, & Espasa, 2009; Thach &
53 Murphy, 1995), but also include a new role, named *Learning Support* role. Although it
54 was poorly defined in previous research in this field, *Learning Support* appears to be a
55 relevant role associated to teachers belonging to this university.
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3 In addressing the second research question, findings revealed three primary approaches to
4 teaching online: *Content Acquisition*, *Collaborative Learning*, and *Knowledge Building*.
5 Previous researchers reported similar categories using qualitative methods (Gonzalez,
6 2009, 2010; Lamas, Levy, Paraskakis, & Webber, 2012). These three approaches should
7 be regarded as different ways through which associate teachers facilitate students'
8 learning in the fully online university studied in this research. Contrary to what could be
9 expected in a completely online Higher Education institution, UOC's associate teachers
10 do not conceive students' self-learning as an approach to teaching online.
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12
13 Finally, in responding to the third research question, our results suggest that teachers
14 concentrate on various different roles, and their focus is related to their approaches to
15 teaching online. In this regard, the *Guiding the Use of Technology* role is the largest
16 explanatory variable of the *Content Acquisition* approach; the *Learning Support* role and
17 the *Managing Social Interaction* role are the best predictors of the *Collaborative Learning*
18 approach; and the *Learning Assessment* role and the *Instructional Design* role are the
19 main explanatory variables of the *Knowledge Building* approach. Additionally, other
20 variables such as age, time devoted to teaching online, and academic background are
21 related to approaches to teaching online, though their relationship is not as powerful as the
22 contribution of the teaching roles.
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24
25 All these findings taken together could be useful to encourage and facilitate further efforts
26 by researchers and practitioners. This research may be replicated by other research teams
27 in other educational scenarios, either in other fully online universities or in universities
28 involved in blended instruction, to improve our knowledge of the relationship between
29 teachers' roles and teachers' approaches. These new findings, likely to be characterized
30 by the arising of new both approaches to teaching online and teachers' roles in teaching
31 online, could be useful to establish new links between how these issues are decided at the
32 institutional level, and how they are finally developed by teachers.
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34
35 Our findings may also be considered by practitioners to help re-orientate the design of
36 technology-based learning environments, support programs, and course planning in three
37 specific directions. The development of the *Content Acquisition* approach may be actively
38 promoted by improving teaching environments based on technology-centred approaches
39 to learning (Mayer, 2010), such as computer-based training, multimedia, interactive
40 simulation, or hypertext and hypermedia. In addition, teacher training and support
41 programs aimed at developing and updating teachers' competencies on guiding
42 individual students in the use of technology should be developed. Additionally,
43 broadening in the design of more complex and powerful computer-supported
44 collaborative environments could encourage the growth of the *Collaborative Learning*
45 approach (Mayordomo & Onrubia, 2015). This initiative should be accompanied by
46 training courses that promote teachers' competencies in these roles. Finally, the
47 progress on the *Knowledge Building* approach could be promoted empowering the
48 teachers in the implementation of instructional design and learning assessment roles. This
49 process could be done by means of the design of complex open technology-based learning
50 environments (Hannafin, Hill, Land, & Lee, 2014) that would provide students with
51 opportunities to engage in problem-based learning. Training teachers in the performance
52 of these two roles and supporting them when online courses are planned and developed
53 would be also needed.
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57 Despite these strengths, this study has several limitations. Given that previous studies on
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3 approaches to teaching online are scarce, it is neither possible to build a more solid
4 theoretical background, nor to back up our findings with more studies that have focused
5 on this research topic. This lack of research caused initial problems when developing
6 some parts of the questionnaire. Until recently, only Gonzalez (2013) had developed and
7 tested a first questionnaire to collect information about university teachers' teaching
8 experiences in online university courses. Another limitation is that this study cannot be
9 used to generalize results because participants came from just one fully online university.
10 This fact may have caused a more narrow range of potential findings, especially in the
11 identification of online teachers' roles and teaching approaches. For instance, although the
12 literature reviewed (Gonzalez, 2009) identified the online teaching approach of "the Web
13 is used for individual access to learning materials and information and for individual
14 assessment", this approach to teaching online did not appear in our findings using the
15 principal component factorial analysis.
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18 Note about open data, ethics and conflicts of interest

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

- 32
33 Álvarez, I., Guasch, T., & Espasa, A. (2009). University teacher roles and competencies
34 in online learning environments: a theoretical analysis of teaching and learning
35 practices. *European Journal of Teacher Education*, 32(3), 321-336.
36 American Psychological Association. (2010). *Publication manual of the American*
37 *Psychological Association* (6th ed.). Washington, DC: American Psychological
38 Association.
39 Badia, A. (2015). Research trends in technology-enhanced learning. *Infancia &*
40 *Aprendizaje*, 38(2), 253-278.
41 Baran, E., Correia, A. P., & Thompson, A. (2011). Transforming online teaching practice:
42 critical analysis of the literature on the roles and competencies of online teachers.
43 *Distance Education*, 32(3), 421-439.
44 Ellis, R., Hughes, J., Weyers, M., & Riding, P. (2009). University teacher approaches to
45 design and teaching and concepts of learning technologies. *Teaching and Teacher*
46 *Education*, 25, 109-117.
47 Ellis, R., Steed, A. F., & Applebee, A. C. (2006). Teacher conceptions of blended
48 learning, blended teaching and associations with approaches to design.
49 *Australasian Journal of Educational Technology*, 22(3), 312 - 335.
50 González, C. (2009). Conceptions of, and approaches to, teaching online: A study of
51 lecturers teaching postgraduate distance courses. *Higher Education*, 57(3), 299-314.
52 González, C. (2010). What do university teachers think eLearning is good for in their
53 teaching? *Studies in Higher Education*, 35(1), 61-78.
54 González, C. (2013). E-Teaching in undergraduate university education and its
55 relationship to approaches to teaching. *Informatics in Education-An International*
56
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3 *Journal*, 12(1), 81-92.
- 4 Guasch, T., Álvarez, I. & Espasa, A. (2010). University teacher competences in a virtual
5 teaching/learning environment: Analysis of a teacher training experience. *Teaching*
6 *and Teacher Education*, 26, 199-206.
- 7 Hannafin, M. J., Hill, J. R., Land, S. M., & Lee, E. (2014). Student-centered, open
8 learning environments: research, theory, and practice. In J. M. Spector, M. D.
9 Merrill, J. Elen, & M. J. Bishop (Eds.), *Handbook of research on educational*
10 *communications and technology* (pp. 641–651). New York: Springer
- 11 Jelfs, A., Richardson, J. T., & Price, L. (2009). Student and tutor perceptions of
12 effective tutoring in distance education. *Distance Education*, 30(3), 419-441.
- 13 Knowlton, D. S. (2000). A Theoretical Framework for the Online Classroom: A Defense
14 and Delineation of a Student-Centered Pedagogy. *New Directions for Teaching*
15 *and Learning*, 84, 5-14.
- 16 Lamas, P., Levy, P., Paraskakis, I., & Webber, S. (2012). Blended university teaching
17 using virtual learning environments: conceptions and approaches. *Instructional*
18 *Science*, 40(1), 141-157.
- 19 Mayer, R. E. (2010). Learning with technology. In H. Dumont, D. Istance, & F.
20 Benavides (Eds.), *The nature of learning. Using research to inspire practice* (pp.
21 179–198). Paris: OECD.
- 22 Mayordomo, R. M., & Onrubia, J. (2015). Work coordination and collaborative
23 knowledge construction in a small group collaborative virtual task. *The Internet*
24 *and Higher Education*, 25, 96-104.
- 25 McShane, K. (2006). *Technology transforming academics: Academic identity and online*
26 *teaching* (Doctoral dissertation). Retrieved from University of Technology Sydney
27 (UTS) Digital Theses Collection.
- 28 Mishra, S. (2005). Roles and competencies of academic counselors in distance education.
29 *Open Learning*, 20(2), 147-159.
- 30 Open University of Catalonia. (n.d.). *Educational model. Characteristics*. Retrieved
31 from Open University of Catalonia website:
32 [http://www.uoc.edu/portal/en/universitat/model-](http://www.uoc.edu/portal/en/universitat/model-educatiu/caracteristiques/index.html)
33 [educatiu/caracteristiques/index.html](http://www.uoc.edu/portal/en/universitat/model-educatiu/caracteristiques/index.html).
- 34 Roberts, G. (2003). Teaching using the web: conceptions and approaches from a
35 phenomenographic perspective. *Instructional Science*, 31, 127-150.
- 36 Shea, P., Li, C. S., & Pickett, A. (2006). A study of teaching presence and student sense
37 of learning community in fully online and web-enhanced college courses. *The*
38 *Internet and Higher Education*, 9(3), 175-190.
- 39 Thach, E., & Murphy, K. (1995). Competencies for distance education professionals.
40 *Educational Technology, Research & Development*, 43(1), 57-79.
- 41 Trigwell, K., & Prosser, M. (2004). Development and use of the approaches to teaching
42 inventory. *Educational Psychology Review*, 16(4), 409-424.
- 43 Williams, P. E. (2003). Roles and competencies for distance education programs in
44 Higher Education, *The American Journal of Distance Education*, 17(1), 45-57.
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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	0.038	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	-0.066	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

- Until today, the study on approaches to teaching online has been carried out mainly by means of qualitative methods.
- Six different kinds of teachers' approaches to online and blended environments have been identified: managing learning tasks, promoting self-learning, facilitating content acquisition, supporting knowledge-building, supporting collaborative learning, and creating community and networked learning.
- Several research projects suggested that some contextual and individual factors, such as teachers' roles in teaching online, influence teachers' approaches.

What this paper adds

- Teachers teach in a fully online university using three primary approaches to teaching: content acquisition approach, collaborative learning approach, and knowledge-building approach.
- The most common and well-defined teachers' roles in a fully online university are: management of social interaction, instructional design, guiding the use of technology, learning assessment, and learning support.
- The perceived importance of each role in teaching online is the higher predictor of the adoption of each different approach.
- Age, academic background, and online teaching dedication also influence the adoption of each approach to teaching online.

Implications for practice and/or policy

- Online teachers could take advantage of both scales of approaches and teachers' roles in teaching online to make accurate self-assessments.
- Instructional designers of virtual learning environments could go further in their instructional models if they take into consideration the five main teachers' roles to teach online in fully online universities.
- Teachers' training could improve the competencies of online teachers if they take into account the close relationship between how online teachers perceive their roles in teaching online and how they approach their teaching online.