Knowledge Management & E-Learning, Vol.14, No.3. Sep 2022

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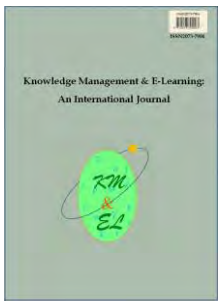

Knowledge Management & E-Learning: An International Journal (KM&EL)
ISSN 2073-7904

Recommended citation:
Konstantinidis, A. (2022). Analysis of design elements in universal course shell templates of high-ranking universities. *Knowledge Management & E-Learning, 14*(3), 344–359. https://doi.org/10.34105/j.kmel.2022.14.019

Knowledge Management & E-Learning, 14(3), 344–359

Analysis of design elements in universal course shell templates of high-ranking universities

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Abstract: Despite popular myths related to the design and development of an online course, the endeavor is rather complicated. Universal Course Shell Templates (UCSTs) can alleviate teachers' workload, support teachers in taking pedagogically sound decisions, and assist students in their engagement with the course. The study begins with a review of the widespread terms used for Online Learning Environments and then moves to debunk myths around online course design and analyze the potential benefits and challenges of establishing a UCST. The study employed quantitative content analysis to examine the design elements that are included in the UCSTs of high-ranking universities based on the theoretical framework by Baldwin et al. (2018) and Martin et al. (2021). The frequency of appearance of each element as part of the navigation menu and within the UCST is reported and the findings are discussed with a pedagogical lens focusing on the elements included in the navigation menu.

Keywords: Online learning environments; Learning management systems; Standardized course templates; Higher education

Biographical notes: Angelos Konstantinidis is educational advisor for online learning at the University of Groningen, Netherlands. He is a MirandaNet fellow and regular reviewer in academic journals and conferences. He has been actively involved in numerous international school projects that foster the integration of digital technologies in learning activities in meaningful ways and nurture student collaboration. His research interests lie in the areas of online course design, alternative assessment practices, student feedback literacy, virtual exchange, and teacher training and identity development. Angelos has published more than 20 articles in academic journals, conferences, and books. More info about Angelos' work, projects, research, and interests can be found on his blog: http://angelos.ict4all.gr/.

1. Introduction

The suspension of face-to-face classes due to the COVID-19 restriction measures forced many universities worldwide to abruptly migrate their courses online. In most of the cases, teachers had to assume this daunting task, often with minimal support from their institution (Marek et al., 2021; Weldon et al., 2021), while at the same time, the crisis paved the way for the spread and flourishing of some popular myths surrounding online course design and teaching.

To support teachers in online course design but also in order to offer a more standardized user interface in the look and presentation of the learning environment for students, some institutions provide Universal Course Shell Templates (UCSTs), which have pre-established elements in the navigation menu and in other parts of the template.

However, research on the design elements of online courses is fragmented and unsystematic as researchers and educators present the design of distinct online courses. No review has been conducted yet on the elements of multiple courses from different universities. This study aims to investigate which elements are included in the UCST of high-ranking universities, record their frequency of appearance and positioning, and discuss the structure of the navigation menu with a pedagogical lens.

The rest of the paper is organized as follows. First, the paper reviews the definitions and the various terms used when describing online environments. Next, myths about online course design are debunked, while the potential benefits and challenges of establishing a UCST are analyzed. Subsequently, the research methodology is reported, and the findings are presented. Finally, the findings are discussed and implications for practice are drawn.

2. Online learning environments: Definition and terms

Online Learning Environments (OLEs) are inescapable and often crucial when education is delivered through the internet. To draw an analogy with the 'traditional/offline' education, OLEs serve the role of the physical space of the classroom. However, besides offering an online space for hosting the activities, interactions, and resources within a course, a given OLE provides several tools that span from course administration, security, structuring, tracking, reporting, personalization, and delivery to automated content and activities development.

The term OLE is merely one of the terms used to describe the software that emulates the online 'classroom'. As Watson and Watson eloquently remark "With a mature history and varying approaches to utilizing computers for education, a veritable alphabet soup of terms and acronyms related to computers in education have found their way into the literature, most of them non-standardized." (Watson & Watson, 2007, p. 28) Besides OLE, other widely used terms are the Learning Management System (LMS), the Virtual Learning Environment (VLE), and the Course Management System (CMS). Each of these terms appear in tens of thousands of articles as of July 2022 according to Google Scholar, while other related terms rarely make it to more than a few thousand articles.

Although nowadays these terms are widely considered synonymous and are used interchangeably, they bear different connotations (Moore et al., 2011). At their outset they offered different technical functionalities (Carliner, 2005; Ismail, 2002; Moore et al., 2011; Watson & Watson, 2007) and they were also associated with different approaches to teaching and learning (Leidner & Jarvenpaa, 1995; Pinner, 2011; Weller, 2006). Indeed, due to the limited technological capacities but also influenced by behavioral and cognitive learning theories, initially the focus of these systems was on delivering the subject matter and on the management of the instructional process (Davis et al., 2009; Ismail, 2002; Leidner & Jarvenpaa, 1995), which is arguably the reason for the inclusion of the term *management* in both the LMS and CMS terms. With the advance of technology, the differences between the various software packages were minimized, while soon it was voiced that the different solutions "are relatively pedagogically-neutral and are merely shells in which to place content and activities." (Sclater, 2008, p. 5) In the

same vein, a study has shown that, although different OLEs seem to favor specific teaching approaches over others, the inherent design of an OLE is "not able to circumscribe the manners in which the professors utilize it," (Jarrahi, 2010, p. 268) and, thus, application of a range of different pedagogies is possible.

In this study, the term OLE is preferred over others for three reasons. First, in the broad field of technology-enhanced learning, the concept of the *learning environment* is better suited for studying and describing interactions between people and their environment (Sangrá et al., 2019). Second, the term *management* bears connotations with particular learning theories, whereas, as it is aforementioned, a range of different learning theories could be applied. Lastly, the term *virtual* is commonly related with the field of virtual reality and immersive computer simulated experiences, so its use may confuse people about the inherent features and application of this type of learning environment, whereas the term *online* better describes both the settings and the location of this learning environment.

3. The benefits and challenges of establishing a UCST

One of the most widespread myths about online education postulates that an online course can be developed by simply uploading the texts, the lectures, and the quizzes for the learners (Fischer & Fischer, 2018). Although the focal point of this myth is chiefly oriented towards the (ease of) designing and developing an online course, we can infer several other presumptions regarding other dimensions of online education. Hence, it could be drawn that hardly any extra time and effort is needed for the design and development of an online course, no specialized knowledge or skills are required from the teachers, teachers are already able to teach in online environments and there is no necessity for training or support, while no alteration or adaptation of the teaching methods is demanded due to the digital medium and the physical distance between teachers and students.

Only after debunking these misconceptions is one able to recognize the benefits and challenges of establishing a UCST. First of all, the design and development of an online course is far more complicated than merely uploading material online to the extent that for transitioning a face-to-face course to an online setting a complete redesign of most of its fundamental ingredients is required (Baldwin et al., 2018; Herman & Banister, 2007; Wang, 2021). In fact, rather than being easy, teachers more often than not find the role of designer for online settings at least a bit harder and more time-consuming than teaching face-to-face (Alonso Diaz & Blázquez Entonado, 2009; Jensen et al., 2020; Marek et al., 2021; Van de Vord & Pogue, 2012; Worley & Tesdell, 2009), while award-winning online teachers recommend following a systematic approach to course design (Martin, Ritzhaupt, et al., 2019). Second, even though some teachers may nurture more favorable attitudes towards online education and are better prepared to teach online, still many of their colleagues face a number of challenges when it comes to the design and development of a course in a digital environment ranging from pedagogical and teaching concerns to technological and institutional hurdles to insufficient knowledge and skills in online course design and teaching (Cutri & Mena, 2020; Jensen et al., 2020; Martin, Budhrani, et al., 2019; Scherer et al., 2021; Wingo et al., 2017), while it should be also taken into account that the COVID-19 restriction measures had a predominantly negative impact on teacher self-efficacy and emotional state (de Boer, 2021; Pressley & Ha, 2021; Watermeyer et al., 2021). Lastly, digital environments are qualitatively different from physical contexts, affording and promoting different pedagogies, teaching approaches, and ways of interaction (Jensen et al., 2020; Steinbronn & Merideth, 2008; Wiesenberg &

Stacey, 2008), while it has also been shown that the context (digital vs. physical) may trigger different sets of pedagogical beliefs resulting in the application of different teaching practices (Scott, 2016).

The discussion thus far has unveiled the true complexity of designing an online course, yet what still remains unresolved is how a UCST could support teachers in designing their online courses or address the aforementioned challenges; this topic is analyzed in the following paragraph.

First of all, the UCST provides a foundational structure on which teachers could build upon to develop their courses and even grow professionally. Hence, it could be argued that it reduces, even if to a small extent, teachers' workload and cognitive effort needed for course design and development. Presuming that the UCST is informed by sound pedagogical theories and bearing in mind that the teaching context and the type of technology used has the potential to influence teachers and teaching practices (Jensen et al., 2020), the UCST can serve as a guide that steers teachers' thinking and signals essential information regarding online course design and teaching. From this perspective it could be argued that the UCST supports teachers in building their understanding of the affordances of the OLE, which is more important even when compared to the actual affordances of the technological tool, as cognitive scientist and usability engineer Norman (1999) has long theorized. In the same vein, a study has shown that the provision of the UCST could facilitate the transition to a new OLE and support faculty in developing competence in using it (Judge & Murray, 2017). By effectively supporting teachers, the UCST has the potential to enhance their perceptions as regards the overall usefulness and easiness of use of the OLE, which are regularly found to be significant factors for OLE use among teachers (Almarashdeh, 2016; Bervell & Arkorful, 2020; Cigdem & Topcu, 2015; Scutelnicu et al., 2019). Furthermore, the establishment of a logical, uncluttered, and consistent layout makes navigation intuitive, which is a core criterion in all major evaluation instruments for quality online course design (Baldwin et al., 2018). In one of the few empirical studies on the use of UCSTs in higher education, it was found that consistency in terms of format and access was highly appreciated by both teachers and students (Scutelnicu et al., 2019).

In addition, the establishment of a UCST could have a number of benefits in terms of students' learning and engagement with the course. Hence, the existence of a university-wide template reduces students' cognitive load (Widyanti et al., 2020) as they move from course to course; after all, they do not have to relearn how to access course components, but instead, they face a consistent and clear course structure and interface (Borgemenke et al., 2013). Because students' cognitive load is reduced, their participation in the whole program of study is facilitated, as is their early engagement with the course (Borgemenke et al., 2013). This is corroborated by studies reporting that perceived ease of use and usefulness are significant factors for acceptance of the OLE among students (Al-Okaily et al., 2020; Dağhan & Akkoyunlu, 2016; Olasina, 2018; Stantchev et al., 2014). Similarly, it could be argued that the use of a UCST enhances the design of a course, which is also an important factor for acceptance of the OLE among students (Pham & Tran, 2020). Additionally, a consistent template that makes finding things easier has a significant impact on students' perceptions of teacher presence in the course (Rubin et al., 2013). By helping students understand the affordances of the OLE, the UCST has a significant impact on students' perceptions of teaching, as well as of their cognitive and social presence (Rubin et al., 2013). Hence, the UCST could be beneficial both for individual student's learning and for cultivating an online community of inquiry within the course (Scutelnicu et al., 2019).

Before moving to the challenges associated with the establishment of a UCST, it should be made clear that it is not a panacea for the problems related with online course design and teaching. Instead, it should be approached as one of the supportive mechanisms towards effective online course design. In addition, it should be taken into account that the establishment of a UCST does not necessarily make its use obligatory for the teachers (Judge & Murray, 2017) and the UCST could be adapted to the particular requirements or needs of a course.

Under this prism, it is not absurd to claim that the establishment of a UCST brings merely meager challenges. The few related empirical studies corroborate this claim. Hence, it was found that some students and teachers might feel that a course template (or perhaps the OLE per se) infringes their academic freedom (Scutelnicu et al., 2019). Moreover, not all teachers held positive perceptions regarding the template and its benefits (Scutelnicu et al., 2019). Lastly, it might be argued that the establishment of a UCST could lead to highly structured courses that do not cater to the needs of individual students (Shea et al., 2016) and that a UCST stifles teachers' creativity in course design, as teachers could become used to a standardized form of course structure rather than developing their own ideas (Martin, Ritzhaupt, et al., 2019).

4. Research methodology

Quantitative content analysis was employed to analyze the UCSTs. Directed content analysis was primarily used, which is guided by an existing theory or prior research (Hsieh & Shannon, 2005), but an inductive method was also used (Bengtsson, 2016). In this study, the work by Baldwin et al. (2018) and Martin et al. (2021) on essential elements for quality online courses was utilized as the theoretical framework for determining the coding scheme. Emergent coding was used to add elements that were not originally included in the theoretical framework.

4.1. Theoretical framework

Baldwin et al. (2018) reviewed six online course evaluation instruments and identified a set of essential elements for quality online courses. Based on their work and on the literature on online course design standards, Martin et al. (2021) established five categories of design standards and their respective elements. The five categories are: (a) overview, (b) content presentation, (c) interaction and communication, (d) assessment and evaluation, and (e) learner support. The elements that could be included in each of these categories are described in the following paragraphs.

4.1.1. Course overview

This category includes elements that provide general information about the course as well as elements related with the introduction of the course to the learners. Martin et al. (2021) specify four types of elements that could be included in this category: (a) course orientation, (b) instructor contact information and instructor expectations, (c) course goals and objectives, and (d) course policies.

4.1.2. Content presentation

This category is concerned with the ways the content is organized and presented in the course. Since this study examines UCSTs rather than actual courses, it is obvious that elements related with the variety of the course content, its adaptability for learners with disabilities, the alignment of the course content with the learning objectives as well as the provision of clear instructions are irrelevant. Instead, this category contains elements that provide the infrastructure for the deployment of course content, such as links for the modules, the course content, the reading list, the library course guide, and the media gallery.

4.1.3. Interaction and communication

This category deals with the provision for interaction and communication. Martin et al. (2021) includes in this category elements related with the qualities of the interaction and communication, such as the ways technology is used for supporting communication or the inclusion of collaborative activities, yet it goes without saying that these qualities are relevant only for actual courses and not for UCSTs. Therefore, this category contains elements that provide the infrastructure for interaction, communication, and working collaboratively (i.e., discussion boards, digital tools, conferences, etc.).

4.1.4. Assessment and evaluation

This category covers elements related with the provision for assessment and evaluation. As is the case for the previous categories, in the original framework, elements related with the qualities of assessment are included as well, such as the alignment of assessment with learning objectives and the provision of different types of assignments throughout the course, yet these are irrelevant for this study. Hence, this category includes elements that provide the infrastructure for assessment and evaluation (i.e., assignments, grading criteria, etc.).

4.1.5. Learner support

Finally, this category is concerned with the provision of support for the learners. In the original framework, intuitive and consistent course navigation is considered part of the learner support, yet it is a quality that cannot be evaluated in a UCST. Similarly, another type of element that is irrelevant to this study and it is included in the original framework is concerned with the accessibility of the resources. Thus, in this category are included elements that are related with supporting learners with technical or academic difficulties, as well as elements that are related with monitoring their learning (i.e., analytics).

4.2. Sample and data collection

To select UCSTs, the author explored the websites of the top 500 universities of the QS World University Rankings list (https://www.topuniversities.com/). From the search, it was revealed that the vast majority of the top universities either do not provide a course template or the access to it is password-protected, hence we collected only 23 UCSTs. Five of these could only be described rudimentarily, hence they were excluded from the analysis. Low retrievability and insufficient detail are recognized problems in the analysis of existing artifacts (Bowen, 2009).

4.3. Data analysis

Data analysis comprised four stages. First, the author studied the 18 UCSTs repeatedly in order to get familiarized with their content. While studying the UCSTs, notes were taken for issues of interest and some preliminary codes for the elements that appear in the UCSTs were assigned. Second, a spreadsheet was prepared based on the categories and elements of course design identified by Martin et al. (2021) and Baldwin et al. (2018). Third, the various elements included in each UCST were recorded while at the same time elements that appeared to have similar role and functionality (i.e., Start here!, Read me first, Your first steps; Staff information, Meet the faculty, Instructor information) were merged under the same code. Because of the use of different terminology for similar concepts and content, a fair degree of judgement was required when assigning elements to a code. In parallel, it was recorded whether the elements were part of the navigation menu or whether they were integrated within another element (i.e., 'Tutor information' and 'Syllabus' were sometimes integrated within the 'Start here!' element). Two rounds of independent coding with a second coder were conducted to check the consistency of the coding and estimate the reliability of the coding spreadsheet. In each round of the pilot coding, half of the data were coded; initially independently and then in a meeting to discuss and resolve any disagreements. The inter-coder agreement was at 73% in the first round and 91% in the second round. Fourth, the final codes were reviewed for parsimoniousness and meaningfulness. The final coding book consisted of five main categories and 30 codes.

5. Findings

Table 1 lists the five categories and the related elements for each category that were found in the 18 UCSTs and reports the frequency of appearance of each element as part of the navigation menu and within the UCST. The findings are described in detail in the following paragraphs.

Starting with the Course overview category, nine elements were identified in total. The majority of these elements are concerned with course orientation (*Announcements, Syllabus, Start here!, Course schedule, Tutor welcoming video*). Adding to that, the elements *Announcements*, *Syllabus*, and *Start here!* appear in more than two-thirds of all the examined UCST, more frequently than all the other elements in this category combined, and usually in the navigation menu. On the other hand, it can be observed that five elements (*Start here!*, *Course Goals*, *Teacher Information*, *Course Schedule*, *Academic Policies*) demonstrate a balance as regards the place of appearance as half of the times appear in the navigation menu and half of the times in other parts of the UCST. Lastly, two elements (*Expectations for Students' Communication*, *Tutor Welcome Video*) are never included in the navigation menu and appear only as part of the pages of other elements. Finally, in this category the majority of instances of elements was observed, nearly double as much as any other category.

Five elements related with the presentation of the content were identified. The element *Modules*, which is related with the chunking of the content into manageable segments, appears in nearly three out of four of the UCSTs and always in the navigation menu. Similarly, the element *Course Content* appear in two-thirds of the UCSTs, most of the times as part of the navigation menu. The elements *Media Gallery* and *Reading List* appear mostly in the navigation menu of approximately one-fourth of the UCSTs. Lastly, the element *Library Course Guide* appears only in the navigation menu, yet in few UCSTs.

Table 1
Frequency of appearance of the design elements in the menu and in other parts of the UCST

Categories	Elements	Part of the menu		Not part of the menu	
		n	%	n	%
Course Overview	Announcements	12	66.7	1	5.6
	Syllabus	10	55.6	2	11.1
	Orientation (i.e., 'Start here!')	9	50.0	6	33.3
	Course Goals	4	22.2	5	27.8
	Teacher Information	4	22.2	3	16.7
	Course Schedule	2	11.1	4	22.2
	Academic Policies	2	11.1	2	11.1
	Expectations for Students' Communication	0	0	5	27.8
	Tutor Welcoming Video	0	0	2	11.1
Content Presentation	Modules	13	72.2	0	0
	Course Content	10	55.6	2	11.1
	Media Gallery	4	22.2	0	0
	Reading List	3	16.7	2	11.1
	Library Course Guide	2	11.1	0	0
Interaction and Communication	Discussion Board	9	50.0	2	11.1
	Conferences	7	38.9	1	5.6
	Course Tools	6	33.3	0	0
	Collaborations	5	27.8	1	5.6
	Contacts	5	27.8	0	0
	Meet Your Classmates (Link to Discussion Board)	0	0	6	33.3
Assessment and Evaluation	Assignments	14	77.8	0	0
	My Grades	9	50.0	2	11.1
	Quizzes	4	22.2	1	5.6
	Attendance	3	16.7	1	5.6
	Grading Criteria	0	0	1	5.6
Learner Support	Home	10	55.6	0	0
	Help for Students (Technical)	5	27.8	3	16.7
	Help for Students (Academic)	4	22.2	3	16.7
	Analytics	4	22.2	0	0
	Minimum Technology Requirements	0	0	4	22.2

Six elements were identified in the Interaction and Communication category. In nearly two-thirds of the UCSTs a link to the discussion board appears most usually in the navigation menu. What comes next is the element *Conferences* which appears in over four out of ten of the UCSTs and, besides one exception, in the navigation menu. Next, in terms of appearance, are three elements (*Course Tools*, *Collaborations*, *Contacts*) that are included in approximately one-third of the UCSTs, almost always in the navigation menu. Lastly, there is one element in this category, the *Meet Your Classmates* element, which is more related with an activity rather with the available infrastructure for communication and interaction. It is not surprising, thus, that it was never observed in the navigation

menu of the UCST and it appeared only as part of other elements (e.g., it often appears in the *Start here!* Page).

Five elements related to assessment and evaluation were identified. The most frequently occurring, by far, is the *Assignments* element, which was found in over three-fourth of the UCSTs and always in the navigation menu. An element related with the learner's grades was found in more than half of the UCSTs, usually in the navigation menu. In nearly one out of four of the UCSTs, the elements *Quizzes* and *Attendance* were found. Lastly, in one UCST an element regarding the grading criteria was noted.

Six elements related to learner support were identified. In more than half of the UCSTs a *Home* button is provided in the navigation menu to facilitate navigation and orientation. In more than one-third of the UCSTs there is an element related with student support in technical and academic issues either in the navigation menu or elsewhere in the UCST. Lastly, the elements *Analytics* and *Minimum Technology Requirements* were found in approximately one-fourth of the UCST; the former always in the navigation menu, whereas the latter always in other places of the UCST.

6. Discussion

This study categorized and quantified the elements included in the UCSTs of high-ranking universities. In the following paragraphs the findings are discussed with a pedagogical lens focusing on the elements included in the navigation menu.

Starting with the Course Overview category, perhaps it comes to no surprise that many elements belonging to this category, nearly double as many as in any other category, were noted in the sample. It seems that UCSTs are particularly useful for setting up the elements that provide an overview for the course, such as the *Syllabus*, *Course Goals* and *Schedule*, and so on. The most commonly encountered element in this category is the *Announcements*. Its commonality might be attributed to the fact that it is one of the first tools that were incorporated in the OLEs as well as that it is a quite well-known tool since its use has been researched a few times (Lonn & Teasley, 2009; Rubin et al., 2013), yet that does not sufficiently explain the underlying rationale for its appearance in the navigation menu in two out of three UCSTs. When the *Announcements* are placed in the navigation menu, it could be argued that traditional, teacher-centered pedagogical models are perpetuated, since it is a tool that helps the teacher to transmit information to the students. Its position in the navigation menu signifies that students should be immediately attentive to what their teacher says. However, it should be also noted that the tool does not support interaction or dialogue, which further enforces one-way communication. The next element in this category in terms of frequency of appearance is the *Syllabus* (note that besides 'Syllabus' other terminology for the same item is also employed among the UCSTs). Undoubtedly, it is an essential element of a course, yet perhaps it should be integrated with other related elements, such as course goals and course schedule, in order to avoid a cluttered menu. If a more generic name is adopted, such as *Course Information*, then many elements could be incorporated (i.e., *Teacher Information* and *Welcome Video*, *Expectations for Students' Communication*, and *Academic Policies*), which will result in a simpler, less populated navigation menu.

Students are typically introduced to the course basics through an element labelled by something like '*Start here!*'. Although this element is important for opening up a course and presenting its regulations and functions to the students, its positioning in the navigation menu appears to be without substantial rationale as its function and value is diminished after the first week of the course. Therefore, in one-third of the UCSTs this

element was included in other parts of the template, rather than in the navigation menu. In some UCSTs, this element appears as the first module that introduces students to the course and may include other elements such as the *Tutor's Welcome Video*, *Expectations for Students' Communication*, and *Academic Policies*. Finally, an element that contains information about the teacher was found either in the navigation menu or in other parts of the template in four out of ten of the UCSTs. This element is important for enhancing teacher presence in the course (Garrison et al., 2010). It should be included in all templates, though its precise positioning, either in the navigation menu or in other parts of the template, could be better chosen according to the teaching methods employed in the course.

The next category, Content Presentation, has much fewer elements. Likewise, this comes to no surprise, since the UCST is not connected with any particular course and as such it is not possible to provide the content. Instead, the UCST is useful for establishing the underlying structure for deploying the curriculum, which is what was also observed through the use of the modules or the course content in practically all UCSTs of the sample. In addition, on some UCSTs, there was a provision for accessing multimodal content through the media gallery in the navigation menu, yet it is not clear why multimodal learning resources should be distinguished from text-based resources. The other two elements that were noted in this category, that is, the *Reading List* and the *Library Course Guide*, could be more intuitively positioned if presented as part of other elements, rather than as separate elements in a complex and populated navigation menu.

Regarding the category of Interaction and Communication, the analysis found that the majority of its elements are included in the navigation menu. On the one hand, this may be a good way to nurture social presence in courses (Garrison et al., 2010) and improve students' satisfaction and academic performance (Ejubović & Puška, 2019). On the other hand, it might result in a confusing, cluttered navigation menu. Although communication support may be the most important affordance of an OLE, students' perceptions about the organization of the OLE are connected with their perceptions about teaching presence (Rubin et al., 2013), therefore designers are encouraged to seek a solution that achieves a balance. For instance, grouping elements together or positioning only the most used ones in the navigation menu might do the trick. Finally, one-third of the UCSTs included a type of an ice-breaker activity (i.e., meet your classmates), which shows that templates could be also useful for pre-establishing some common socialization activities (Salmon, 2004). Pre-establishment of socialization activities within the template could support teachers in their efforts to nurture an online community and enhance teachers' and students' perceptions in regard to the communication support of the OLE (Rubin et al., 2013).

Most of the elements of the Assessment and Evaluation category were also found in the navigation menu. *Assignments* is the most frequently offered assessment type by the UCSTs as it is well suited for online and distance education (Grieve et al., 2016; Konstantinidis, 2020), whereas quizzes, which may bear deleterious effects on teaching and learning (Butler, 2018; Lesage et al., 2013), were found only in some UCSTs. Far from suggesting that quizzes should be excluded from UCSTs, it makes more sense to find this function grouped with other assessment-related elements (such as students' grades and the grading criteria), rather than promoting its use through the navigation menu. Lastly, it was jarring to find the element *Attendance* in the navigation menu of some UCSTs. Even if students' attendance is obligatory in some aspects of a course, positioning this element in the navigation menu is unnecessary and most probably distracts from the main educational aims of a course.

Finally, when it comes to the Learner Support category, most of its elements were also found in the navigation menu, yet substantially less compared to the previous two categories. The *Home* button is a common element in websites (Roth et al., 2010) and it seems that it is becoming a norm among UCSTs as well. Likewise, one might expect to see a *Help* button in all UCSTs, yet it was found in less than one-third of the templates in the sample. One plausible explanation might be that this function is offered somewhere else in the OLE rather within each course. The element *Analytics* was found in less than one out of four UCSTs, yet it could be assumed that this result is chiefly due to outdated software, since most contemporary OLEs provide this function. Lastly, in some UCSTs the minimum technology requirements for accessing the OLE were specified within the template, which is a good example of how the UCSTs could both lessen teachers' work and provide important information.

6.1. Implications for practice

Based on the outcomes of this study, a few implications for the design of a UCST could be suggested as follows:

- A UCST is particularly useful for setting up the infrastructure for online courses. Instructional designers could employ the UCST to establish an intuitive and clear underlying structure that will support university teachers in the development of their online courses. Although this study does not offer a complete framework for assisting instructional designers in their decisions towards the design of a UCST (i.e., which elements should be included, where they could be placed, etc.), a rather extensive list of the elements that could be incorporated in the UCST is provided in Table 1. This table could be used as a resource for discussing which elements could be placed in the navigation menu or in other parts of the UCST.
- Instructional designers should be cautious and refrain from succumbing to easy solutions when designing the navigation menu or the UCST in general. This study has shown that the UCST could also perpetuate traditional, teacher-centered approaches, incorporate elements that are questionable from a pedagogical perspective, and provide a somewhat cluttered navigation menu.
- The way elements are grouped is essential for providing a clear and uncluttered navigation menu for the UCST. Especially when it comes to elements that are related to communication and assessment, since modern OLEs offer many different options to support these functions.
- A UCST can provide suggestions for social and orientation activities. The vast majority of the UCSTs examined in this study included an orientation module or page (guided by an element such as 'Start here!'), which demonstrates that the UCST can be particularly useful for supporting teachers through this function. However, this study further suggests that the orientation module or page is best placed elsewhere than the navigation menu.

6.2. Limitations

The findings of this study should be interpreted in light of its limitations. Currently, there is no information available regarding which or how many universities have established a UCST and as such it is impossible to estimate the representativeness of the sample. Add to that, in the few universities that the UCST can be accessed online, no information is

shared as regards the number of teachers who utilize the UCST as it is or to what extent teachers adapt it to their needs, making opaque the importance of—or even necessity for—some of the elements included in each UCST. Lastly, the study is based on the analysis of the UCSTs, which offers little insight regarding the actual pedagogical use and value of the included elements.

6.3. Recommendations for future research

This study provides a platform for future research to delve deeper into the design and elements of UCSTs. First, future research could investigate the prevalence of UCSTs among universities as well as within the universities (i.e., how many faculties or teachers employ UCSTs, how many adapt it to their needs, which elements are more/less used, etc.). Second, it could be explored in depth how individual teachers use or adapt the UCST in their courses and which elements they find useful or not and why. Third, future research could compare students' experiences between courses that utilize a UCST and courses that adopt an alternative design. Finally, future research could work on towards the development of a framework and criteria for the pedagogical design of a UCST.

6.4. Conclusions

Despite popular myths related to the ease of designing and developing an online course, the endeavor is rather complicated and challenging. UCSTs can alleviate teachers' workload, support teachers in taking pedagogically sound decisions, and assist students in their orientation and engagement with the course.

The findings of this study are particularly useful for instructional and course designers, especially when it comes to designing a UCST. However, the findings contribute to any online teacher who wishes to make more informed decisions in selecting elements to include in the navigation menu and other parts of an online course.

Author Statement

The author declares that there is no conflict of interest.

Acknowledgements

The author would like to thank Dr. Sean White, University of Groningen, for reviewing a draft of this paper.

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