

## **A systematic review: foundations for online course design in higher education**

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### ***Abstract***

*The purpose of this study was to select specific best practice indicators for improving online course design based on the recent research findings shared during and post COVID-19 pandemic. PRISMA guidelines were used during the search process to identify qualifying studies. EbscoHost, Academic Search Ultimate, Educational Research Information Center (ERIC), Google Scholar and JSTOR were the six databases searched for selecting articles that met the following criteria: a) written in Spanish or English, b) peer-reviewed studies and indexed journals c) higher education level and d) online courses design best practices. The database searches identified a total of fifteen relevant studies. The findings of this study demonstrate four core indicators of online course design: planning course alignment, using templates for framework design, developing articulated connections and continuous cyclical review. These essential indicators are critical for online course planning as they have shown to be vital to student achievement, retention, and satisfaction.*

***Keywords:*** *Online course; course design; best practices; higher education.*

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## **1. Introduction**

Trends in higher education suggest that distance learning is the most rapidly growing sector, in great part due to the COVID-19 pandemic. For this reason, online course design is a topic of growing importance since inefficient online course design has been shown to result in poor student achievement, low retention rates, and dissatisfied students (McMahon, 2021, Joosten & Cusatis, 2019). While online course models are not a new phenomenon (Abdous, 2020), the growth of online teaching experience over the past three years has broadened the amount of research regarding effective online courses and positive student outcomes around the world; therefore, creating a need for an updated review of the literature.

Distance education refers to learning where the participants are not required to be in the same location but are dependent on either technology to engage in educational activities synchronously or asynchronously (Traboulsi, 2008). Online course design is fundamental to student success as it is the framework that connects the student at a distance to course materials, recorded lectures, assignments, assessments, and collaboration with the instructor and classmates (Fischer, et al., 2022). For this reason, educators creating online courses are tasked to approach online course design from a different paradigm than traditional pedagogy. The purpose of this study was to select specific best practice indicators for improving online course design based on the recent research findings shared during and post-pandemic.

## **2. Methodology**

PRISMA guidelines include a 27-item checklist to facilitate the clarity of systematic reviews (UNC University Libraries, 2020). Following the PRISMA guidelines, six databases were selected in this study. These databases were chosen because of their international scope and alignment with topics in education and technology to answer the research question of what current best practices in online course design are as identified during and after the pandemic. Different keywords with combinations including higher education and online courses, best practices, and distance learning were used during the search process.

Articles were selected using the following criteria: a) written in Spanish or English, b) peer-reviewed studies and indexed journals c) higher education level and d) online courses design best practices. The initial search yielded 928 matches. Through the identification process 274 studies were duplicated and therefore eliminated, 539 studies were ineligible due to not meeting eligibility criteria, 67 studies were removed for other reasons such as not being a research article. This resulted in 28 studies that were screened for eligibility, resulting in a total of 15 international studies that met the selection criteria. Articles were initially categorized according to the following dimensions: country of origin, purpose of the study, data collection methodology and key findings. Studies referenced in the journal articles used qualitative, quantitative, or mixed methods research methodology. This international sample

helps to minimize bias, as the results are not likely to be attributed to a specific geographic location. The applied searches and results from each database are shown in Figure 1.

### 3. Results

Participating studies included asynchronous, synchronous learning and/or hybrid model courses. Journal articles were chosen internationally and included Spain, Malaysia, Taiwan, India, USA, Turkey, Jordan, and Sri Lanka. Eligible studies focused on the challenges with transitioning from face to face learning to distance education, online course design characteristics, online course instructional practices, student and faculty experiences and perceptions of the online experience. The results revealed that effective online course design frameworks are the principle requisite for positive student learning outcomes, which also encouraged improved concentration and independence.

An emergent theme from this study has been the articulation that the shift to online learning in higher education has been uncertain due to the lack of adequate design, planning & development (Adedoyin & Soykan, 2020; Oliviera, et al. 2021). These deficiencies were attributed to a lack of clear institutional policies that clearly address their vision of the online classroom (Haider & Al-Salman, 2020). Without a structure to follow, courses within the same institution could be presented in a variety of organization patterns leading to confusion among students. Student frustration with course design was correlated with poor learning outcomes, and perceived lack of course quality, both of which lead to the reduction in course effectiveness (Nambia, 2020; Bradley & Vigma, 2016).

Online course design is the organization of course content so that it aligns with student learning outcomes resulting in effective learning. (Ceballos, 2018; McMahan, 2021; Sanga, 2019, Sandanayake, et al., 2021; Tamilarasan, et al., 2021). The contribution of this study is to inform institutional policies, positively affecting future online course creation and providing clearer guidelines for course creators to follow.

The first essential indicator in best practices for online course design was planning. Planning begins with a needs analysis to choose a delivery model (synchronous, asynchronous, or blended) suited to the content of the course & to the audience. Once established, the determination of learning objectives can take place, which are then aligned with assessments (McMahan, 2021). Objectives are defined to mark specific learning goals to be met as the course progresses; course articulation refers to the transparency regarding the relationship these individual objectives have among them and how they contribute to achievement of the learning outcomes expressed at the onset of the course. LaForge (2022) found that improving course organization, transparency, objective-assignment alignment and developing instructor feedback opportunities, resulted in improved student retention, better learning outcomes and higher student satisfaction. Providing clearly stated learning objectives and their

interrelationship, facilitates students' understanding of what they should be learning is often overlooked.

The lack of articulated course was another emergent theme uncovered within the literature. The benefits of course articulation is that it results in manageable targets for students to achieve (Hsu, et al., 2017). Nave (2020) found that student effort to persevere is aided by dividing longer-term goals into short-term objectives. When class content is presented in logical chunks of information, it promotes greater student concentration (Bao, 2020). Using themes, lessons or modules presents learning outcomes by segmenting or chunking course content, which aids in the next foundational indicator: course framework design.

Course framework design has been defined as the organization and presentation of course materials. This type of organization requires the course structure to be clear and consistent (Fischer, et al. 2022). At the institutional level, having a model further supports students' abilities to navigate in different courses due to the use of a uniform model (Garcia-Penalvo, 2021, p.12; Oliveira, et al., 2021). Consistency can be implemented using a standard framework in the form of module templates (Ralston-Berg & Braatz, 2021). Module templates would support lesson structure transparency by having a clear and logical sequence that is student friendly, consistent and intuitive for each module that is repeated throughout the course. For example, each module would begin with the presentation of the objective and how it fits within the course objectives, followed by required content materials, videos, texts, practice activities, assignments, and end with a module evaluation. Intuitive design supports the learner by predicting potential problems or needs a learner may encounter and designing solutions to minimize these problems. In a study conducted by Fischer, et al. (2022), they found course transparency in organization had significant positive effects on students' independence, which is a required skill for student success in online courses.

Once planning and a design framework are in place, instructors should articulate content connections to facilitate students' recognition of the importance of that unit or module in meeting course objectives (Martin, et al, 2019). The connections between objectives and learning outcomes should be explicitly expressed to students as a means of facilitating the big picture image that students are creating as they progress (Sandanyake, et al, 2021; Kharagpur, 2016). Nave (2020) found that students were more engaged when they understood why they were learning the content, understanding its relevance in real-life contexts. This was a motivator of efficient learning which reduced course abandonment rates. Development of methods & materials will direct the student from the course objectives to learning necessary content to achieve learning outcomes. Learner-content interaction, learner-learner interaction and learner-teacher interactions are three areas of interaction to be considered when developing course materials (Moore, 1989). Course materials can be in the form of videos [screencasts & lecture recordings], audios, texts, animations, drawings & graphics and more as new platforms and interactive technologies are being developed to

support interaction with the content, instructor, and classmates. In distance education, environments ideally there would be a balance among tasks that are done independently and those that encourage collaborative learning for greater student interaction and persistence in the course (Bilgiç, et al., 2020; García-Peñalvo, 2021).

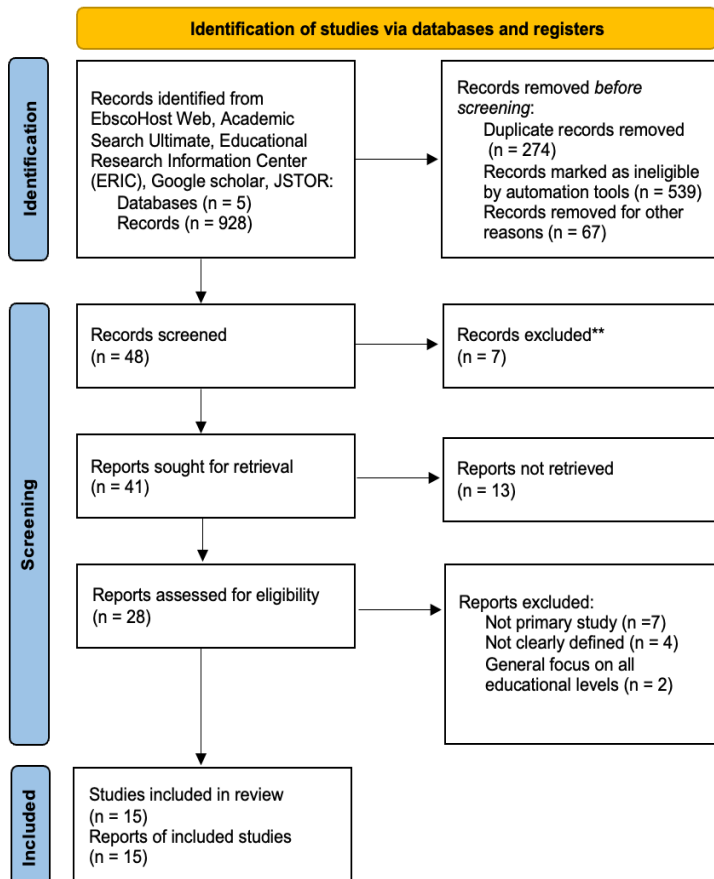
Formative assessments can support students' self-reflection by acting as checkpoints for the students' understanding of their progress. In the study conducted by Holzmann-Littig, et al. (2023), students expressed that assessments motivated them to monitor their understanding and maintain focus on the material. In terms of summative evaluations, rubrics provided ahead of time add clarity of the instructors' expectations. Additionally, Lorente-Ruiz, et al. (2021) recommend identifying standard feedback strategies to increase student-teacher communication that may increase participation. Students that receive frequent and specific feedback tend to stay connected to the course (Nave, 2020). Communication, despite distance, is facilitated when communication channels are explicitly expressed for students to initiate contact with the instructor (LaForge, 2022; Hsu, Baldwin, & Ching, 2017).

Course review in its entirety is the final indicator found in the research for best practices in online course design. During this stage, best practice includes identifying opportunities for student feedback, guides for self-reflection and evaluation of the course after completion (Nave, 2020). McMahon (2021) recommends creating a framework for self-assessment as well as peer review processes to continue refining course quality. Once student and instructor feedback have been reviewed, the instructor would return to the planning stage to enhance identified areas of improvement. Ralston-Berg & Bratz (2021) recommend refining design and course structure after each completion of the course. Prior experience has been the greatest predictor of positive online teaching experience, thus supporting the importance of a cycle of continuous improvement and growth (Marek, Chu & Wu, 2021). This final indicator is crucial to the instructor's professional development in online course design. Ongoing evaluation and reflection could also inform institutional policies regarding the production of quality online courses.

#### **4. Conclusion**

This systematic literature review has identified four essential indicators to improve online course design, rooted in recent research of best practices in distance education. The following indicators are (1) to plan aligned course objectives, (2) use module templates to facilitate consistency and transparency within the design framework, (3) develop articulated connections within the course to share with students regarding how the material is connected within the course and its relevance to their future and (4) conduct continuous cyclical reviews of the course after each completion to include feedback from the instructor and students. By including these indicators, students are more likely to navigate efficiently for effective

learning, participate in activities, and successfully complete the course thereby improving student retention rates. However, if not included in online course design potential consequences are lack of achievement of learning outcomes, disengagement, and course desertion. Institutions and educators can use these findings to inform formal policies regarding online course design. Based on each institution's particular needs, resulting policies could in turn provide direction for relevant professional development topics for online course instructors. While the focus of this study was on higher education online course design, further research may consider differences in public versus private institutions. An online course design model is crucial to student success, and by incorporating these fundamental indicators, instructors are better equipped to support student achievement at a distance. This study provides evidence to support standard indicators to be included in online course design models and in decision-making relating to online course policies.



*Figure 1. Details of selection of studies for review.*

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