Learning Theories and Instructional Designs: Developing a Multimodal Quality and Student Support Service for Online Learning

Fetene Regassa Melka (fetenerg@gmail.com)

Assistant Professor, Department of Curriculum and Comparative Education, Addis Ababa University, Ethiopia

DOI: https://doi.org/10.63990/ejtel.v3i1.13135

Received: June 3, 2025; Revised: October 20, 2025; Accepted: December 24, 2025

Abstract

This work explores how prominent learning theories can be used to design online learning environments that prioritize quality and offer effective student support. Employing a bibliometric integrative review method, a comprehensive analysis was conducted on eighty-nine relevant articles refined from a pool of 357 sources. These sources explore (online) learning theories, practices and their associated instructional designs. Six prevalent learning theories were identified: Behaviorism, Cognitivism, Social Constructivism, Connectivism, Community of Inquiry, and Online Collaborative Learning. Each Theory was examined, highlighting its strengths, limitations, and its potential to inform effective online instruction. This analysis yields two crucial insights. First, the underlying philosophy of education and the chosen learning theory significantly influence the design of online learning environments. Second, existing online learning approaches often lack a strong integration of learning theories, particularly regarding assessment, student support strategies and quality learning within collaborative activities. By drawing on these insights, this Analysis proposes a model for online learning instructional design that emphasizes the multimodal, integrative, quality and student support service online learning model. This Model incorporates the concepts of different learning theories, and prioritizes quality and student support services, aiming to create engaging and effective online learning experiences that promote deeper learning and critical thinking skills.

Keywords: Higher education; instructional designs; learning theories; online learning

Introduction

Instructional design is a systematic process for planning and developing effective and efficient learning experiences. Instructional designers leverage various theories and models to guide the design and implementation of online learning (hereafter referred to as OL). This Paper presents a critical evaluation of different learning theories and their implications to designing online instruction within higher education institutions. Furthermore, it proposes a comprehensive and theoretically sound framework for online learning, particularly relevant to developing countries where the quality of traditional education is already under strain, let alone the OL modality.

A defining characteristic of OL instructional design involves delivering learning materials to students through a learning management system (LMS) (Pozzi et al., 2019), often designed by external entities like Google Classroom. This creates a physical separation among instructors,

institutions, and students, placing a greater responsibility on students to take responsibilities of their learning (Yilmaz 2019). The focus of a learning session may shift towards a student-centered approach depending on the subject matter, learning objectives, and student familiarity with the complexity of the topic. However, a core tenet of OL is to enhance the convenience and flexibility of student-teacher interaction (Bandara & Wijekularathna, 2017). Well-designed synchronous classes cater to both convenience and flexibility in OL environments. These sessions are scheduled at mutually agreeable times and recorded for asynchronous student review (Fish & Snodgrass, 2019; Qureshi, 2019).

Effective instructional designs necessitate adherence to relevant and sound pedagogical and learning principles. These principles, in turn, are grounded in various philosophies and theories of education and learning to ensure successful implementation. Instructional designs are influenced by diverse philosophical questions such as the nature of learning, teaching, and their purposes; the selection of valuable learning content; optimal learning methods for students; and strategies for instructors and institutions to verify student learning and goal achievement. The backgrounds of instructional designers, encompassing factors like socio-economic and technological factors like ethnicity, gender, research preferences, and educational attainment, can influence their philosophical and methodological orientations (Sheehan & Johnson, 2012).

The contemporary educational landscape is witnessing a transformative shift from traditional to modern teaching modalities. This shift is driven by advancements in communication technologies, coupled with the disruptions caused by COVID-19. These factors have compelled most higher education institutions worldwide to transition from traditional classroom instruction to online and blended learning approaches. This shift represents a radical and historic change for both education in general and higher education institutions specifically. However, this transition often lacks extensive research into teaching and learning theories and practices, particularly within the context of developing nations. Consequently, contextualizing instruction based on learner characteristics and learning theories remains an overlooked aspect. Notably, existing models or frameworks derived from various theories, such as the works of Garrison, Anderson & Archer (2000), Harasim (2012), Picciano (2021), and Siemens (2008), fall short of comprehensively addressing the unique nature of OL and its practices that lead to quality education.

Therefore, the subsequent sections explore and analyze different learning theories through the lens of course and instructional design for effective online teaching and learning, ultimately empowering learners to achieve the intended program outcomes. To guide this exploration and analysis of learning theories, instructional design, and their implications for online learning, the following key questions have been formulated:

1. How do various learning theories inform instructional design for online learning?

2. How can existing instructional design models for online learning be refined to create a more working multimodal, comprehensive, and inclusive framework that effectively address their current strengths, weaknesses, and limitations?

Objective

This research aims to build a new model for OL by analyzing existing instructional design and learning theories. It uses an integrative literature review, which means thoroughly examining past research to create a fresh conceptual framework (a "multimodal, integrative and quality student support service OL model"). By critically evaluating strengths and weaknesses of current OL models, the study synthesizes knowledge from various sources to build a robust and innovative model for OL. This approach is ideal for established topics like OL, where the goal is to refine existing knowledge and expand the theoretical foundation of the field.

Operational Definition

Instructional designs are defined as the systematic processes and methodologies employed to create effective and engaging learning experiences (Cennamo & Kalk, 2019; Rothwell & Kazanas, 2011). This includes the structured planning, development, implementation, and evaluation of online learning environments, materials, and activities.

Learning theories refer to the systematic frameworks and principles used to explain how individuals acquire, process, and retain knowledge and skills (Reddy et al., 2005; Saunders & Wong, 2020). In the context of the present study, these theories (e.g., constructivism, cognitivism, connectivism) are identified by their specific tenets and proposed mechanisms of learning, as evidenced by their application in the design of online learning activities, content sequencing, and assessment strategies within the developed service.

Multimodal quality refers to the provision of diverse forms of sensory and interactive content within the online learning environment, aiming at enhancing comprehension, engagement, and accessibility (Lu & Hanim, 2024; Sankeyet al., 2010). This is measured by the presence and integration of multiple media types (e.g., text, images, audio, video, simulations, and interactive quizzes), and the strategic use of various communication channels (e.g., discussion forums, virtual office hours, collaborative documents) within the online learning platform.

Online learning is defined as any educational process where instruction and learning activities primarily occur via digital networks and technologies, without the constant physical presence of an instructor or peers in a traditional classroom setting (Rhim & Han, 2020; Singh & Thurman, 2019). This is measured by the delivery format of courses (e.g., fully online, hybrid), the use of Learning Management Systems (LMS) for content delivery and interaction, and the reliance on internet-enabled devices for access to educational materials and communication.

Student support service refers to the structured provisions and resources available to online learners beyond direct instructional content, designed to facilitate their academic success, well-being, and retention (He et al., 2019; Simpson, 2013). This is measured by the availability and accessibility of specific support mechanisms such as technical assistance (e.g., help desk, FAQs), academic advising (e.g., virtual office hours, tutoring), mental health resources (e.g., counseling referrals), community-building initiatives (e.g., student forums, virtual study groups), and administrative guidance (e.g., registration help, financial aid information).

Method and Approach

The study uses a bibliometric analysis, a quantitative approach that examines publication data to identify influential researchers, their institutions, frequently used keywords, and more importantly, the connections between academic works. This form of study helps to identify the most important and influential papers in the field under investigation and track the development of ideas and methods over time (Mukherjee et al, 2021; Öztürk et al., 2024; Snyder, 2019) to analyze research on online learning. This method fits the research questions, which aim to synthesize existing knowledge, not for exhaustive coverage. This has allowed the author to strategically combine diverse perspectives to build a new theoretical model. Moreover, by including a wide range of evidence (case studies, meta-analyses, etc.), the author has gained a comprehensive understanding for model development.

This systematic literature review follows a six-step framework to ensure rigor and transparency.
1. Research questions and objective formulation: The review commenced with the formulation of specific research questions and objectives. These foundational elements, guided by Kitchenham and Charters (2007), have served as the cornerstone for subsequent stages, including literature searching, selection criteria, and data analysis.

2. Literature search and identification: A comprehensive search for relevant literature was conducted across three databases: Scopus, Web of Science, and Google Scholar, adhering to guidelines by Polanin et al. (2019). A systematic keyword and Boolean operator approach was employed, defining core concepts from "Learning Theories and Instructional Designs: Developing a Multimodal Quality and Student Support Service for Online Learning." These concepts were translated into refined search strings incorporating synonyms and variations. This process yielded an initial pool of 357 articles.

3. Article screening and inclusion process: The initial pool of articles underwent a multi-stage screening process (Booth, 2016). After having removed duplicates, 191 unique articles remained. These were then subjected to a rapid title and abstract screening by the primary author and two independent reviewers, reducing the selection to 125 potentially relevant articles. A thorough full-text review was then made against strict inclusion criteria, focusing on: *learning theories, instructional design, multimodality, quality assurance, and student support services in*

online learning. Peer-reviewed journal articles, conference papers, PhD dissertations and "other" published in English between 2014 and 2023 were included (Booth, 2016; Paré et al., 2015). This process resulted in 89 articles for in-depth analysis.

Table 1: *Article Screening and Inclusion Process*

Stage of Screening	N
Initial Pool	357
After Duplicate Removal	191
After Title/Abstract Screening	125
After Full-Text Review	89

The selection of the articles published between 2014 and 2023 is justified by the rapid evolution of online learning, encompassing the post-MOOC era and the accelerated innovation spurred by the COVID-19 pandemic, ensuring the inclusion of the most recent advancements and relevant technological developments (Valdiviezo, 2021). This focused ten-year window provides a manageable yet comprehensive scope that captures contemporary pedagogical considerations. Simultaneously, the specific focus on online learning theories and frameworks is crucial for adopting a systematic, evidence-based approach that directly addresses key research gaps and offers practical guidance for online education. This approach facilitates deeper analysis and synthesis of how these conceptual tools influence various aspects of online learning, ultimately contributing significantly to the body of knowledge (Booth et al., 2021; Ngulube & Mosha, 2023; Paul et al., 2024).

Distribution by Publication Type

The 89 articles included in this review represent a diverse spectrum of scholarly output, encompassing peer-reviewed journal articles, conference papers, PhD dissertations, and other publication types. As detailed in the Table below, peer-reviewed journal articles constitute the largest proportion, accounting for 71.91% (64 articles) . Both conference papers and PhD dissertations each contribute 3.37% (3 articles) to the overall distribution. The other category,

Table 2: *Articles by Publication Type*

Publication Type	**N**	**(%)**
Peer-Reviewed Journals	64	71.91
Conference Paper	03	03.37
PhD Dissertation	03	03.37
Others	19	21.35
Total	89	100

making up 21.35% (19 articles), includes a variety of scholarly materials such as books or book chapters, reports or white papers, online articles or blog posts from reputable sources, editorials or commentaries, and reviews of other works, along with preprints or working papers.

Publication trends over time (2014-2023)

Analyzing the publication years of the 89 articles reveals a clear trend of increasing research output in online learning, particularly in the latter half of the review period. As illustrated in Figure 1, there was a noticeable flow in publications from 2019 onwards, coinciding with the global shift to online learning modalities due to the COVID-19 pandemic. This trend underscores the heightened interest and accelerated research efforts in the domain of online learning theories and instructional design in recent years.

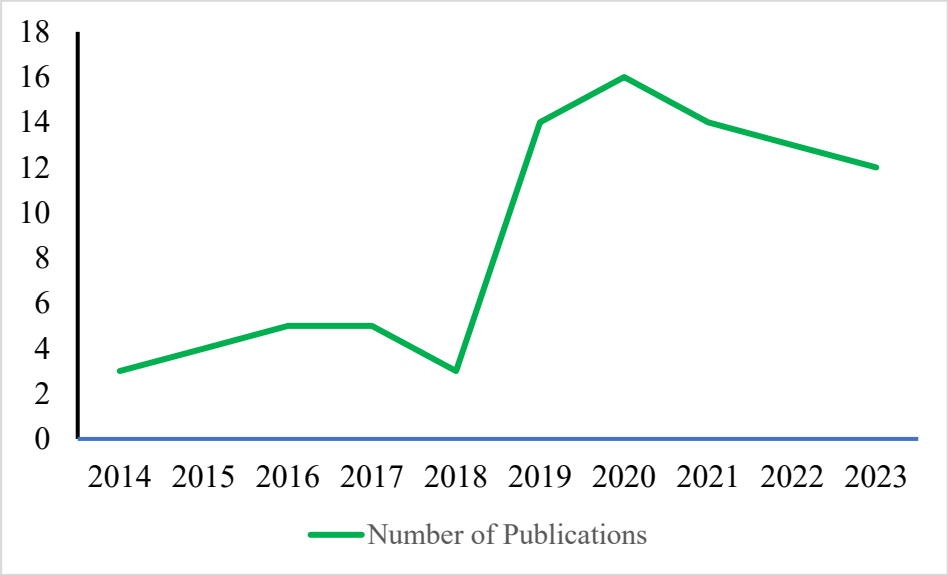

Figure 1: *Annual Publication Trend (2014-2023)*

4. Quality assessment of primary studies: The researcher subjected the 89 selected articles to a rigorous quality assurance procedure to assess their methodological soundness and research design (Petticrew & Roberts, 2008). This assessment was crucial for refining the final sample of articles, as it allows to identify any potential variations in quality that could influence the conclusions and to guide the subsequent data analysis and interpretation (Jesson et al., 2011; Petticrew & Roberts, 2008). To maintain objectivity and minimize potential biases, three independent reviewers from the author's institution participated in a multi-stage screening process (Levy & Ellis, 2006; Vom Brocke et al., 2009). Any disagreements that arose among these reviewers during the assessment were consistently resolved through consensus (Liberati et al., 2009; Shea et al., 2009), ensuring the integrity and reliability of the quality assessment outcomes.

5. Data extraction: Pertinent information was methodically extracted from each of the 89 included studies (Okoli & Schabram, 2010). The data extraction focused specifically on information relevant to learning theories, instructional design, and online learning, directly aligning with the pre-established research questions.

6. Data analysis and synthesis: The final step involved a comprehensive process of summarizing and organizing the extracted data. A comparative analysis was then conducted to identify patterns, themes, and potential contradictions within the evidence. The aim of this critical synthesis was to generate new insights and contribute meaningfully to the existing body of knowledge.

In essence, this study employs a rigorous and manifold approach to conducting a comprehensive literature review. By applying a bibliometric analysis and integrative review methodology and adhering to a well-defined six-step framework, the author was able to gather and synthesize the relevant literature. This analysis provided a solid foundation for the development of a novel theoretical framework for OL quality and student support, ultimately aiming to address the limitations identified within existing models.

Findings and Discussion

Analyses of Learning Theories and their Implications to Instructional Designs on Online Learning

Drawing on the research questions which guides the current study, this section critically analyzes and evaluates six prominent learning theories. The analysis explores the implications of the learning theories on OL design and effectiveness.

(1) Behaviorism: A stimulus-response approach to learning

Behaviorism (Bryant et al., 2013; May-Varas et al., 2023) is beneficial for designing OL for adults. It focuses on clear objectives, practice activities (drag-and-drop exercises), feedback, and rewards to reinforce desired behaviors. Behaviorist principles can inform online activities like discrimination (categorizing concepts), generalization (learning from examples), and association (connecting new information to real-world applications).

While Behaviorism provides a structured OL experience with clear objectives, frequent practice activities (discrimination, generalization, association, chaining), and strong feedback and reinforcement mechanisms, it overly focuses on rote memorization. This may limit the development of critical thinking skills essential in today's world. To create effective OL designs, instructional designers can apply behaviorist principles strategically to introduce new concepts and skills. However, these principles should be combined with approaches from other learning theories to encourage deeper exploration and analysis.

*(2) **Cognitivism: Emphasizing active knowledge construction***

Cognitivism stands in stark contrast to behaviorism, shifting the focus from passive stimulus-response to active knowledge construction. This theory posits that learning is a dynamic process driven by internal mental processes such as attention, memory, and problem solving. Pioneering work by Jean Piaget (1970) underscores this notion, highlighting the learner's active role in constructing knowledge through experiences and environmental interactions.

This perspective has profound implications on OL design. While traditional multiple-choice quizzes may gauge basic knowledge retention, they often neglect the crucial cognitive processes behind the answers (Cakir, 2008; Yilmaz, 2011). As content designers and course sponsors, we must move beyond a "test-centric" approach and prioritize assessing learners' reasoning skills and deeper understanding.

Cognitivism emphasizes individual learning paces and the need for a flexible OL environment. Arshavskiy (2018) highlights the importance of allowing learners to sequence content based on their needs, which aligns with adaptive learning software that personalizes instruction. These personalized approaches informed by cognitivism hold promise for enhanced OL effectiveness.

However, cognitivism can overlook the social and cultural aspects of learning (Zembylas, 2005). Learners benefit from interactions with peers and diverse perspectives. To address this, instructional designers can incorporate cognitivist principles for knowledge acquisition (Cakir, 2008) alongside strategies that promote metacognition ("thinking about thinking"), consider managing cognitive load during OL experiences and balancing between the individual and social levels of cognition (Hung & Nichani2001). Additionally, fostering social interaction through collaborative activities and discussions can enrich the OL experience (Jeong & Hmelo-Silver, 2016). By embracing these insights from cognitive research, educators can create OL environments that foster active knowledge construction, cater to individual needs, and ultimately lead to deeper understanding for all learners.

*(3) **Social constructivism: Learning through social interaction***

Social constructivism, rooted in Lev Vygotsky's (1978) social development theory, stands in stark contrast to both behaviorism and cognitivism. Vygotsky emphasizes the fundamental role of social interaction in cognitive development. Unlike Piaget's focus on individual stages and cognitivism's emphasis on solitary knowledge construction, social constructivism posits learning as a collaborative process heavily influenced by social interaction.

This theory emphasizes the importance of prior knowledge. Students build upon existing knowledge frameworks through active, collaborative, and socially constructed learning activities designed by educators (Akpan et al., 2020; Kelly, 2012; Olorode and Jimoh, 2016). Therefore, learning is seen as a collaborative endeavor where the environment shapes the

individual, and learning itself leads development (Secore, 2017). In contrast to a solitary journey of discovery, Vygotsky argues that learning is inherently social (Amineh and Asi, 2015).

A key concept in Vygotsky's theory is the Zone of Proximal Development (ZPD) (Margolis, 2020). The ZPD represents the gap between what a learner can achieve independently and what they can accomplish with adult guidance or collaboration with more capable peers (Eun, 2019; Valsiner & Van der Veer, 2013). The ZPD underscores the importance of social interaction in propelling learners from potential to actual development. This highlights the learning process as a journey from the unknown to the known, where learners are encouraged to use the social aspects of learning to demonstrate their capabilities (Moll, 2013). Social constructivism acknowledges the influence of social interaction (family, peers, culture) on how knowledge is constructed (McLeod, 2019).

Social constructivism thrives in online environments where collaborative learning flourishes (Olorode & Jimoh, 2016). Online learning, e-learning and the open-source movement share roots in the constructivist approach to learning, where knowledge is built through active participation and collaboration (Koohang & Harman, 2005). Instructional design can use online simulations, discussions, and peer review activities to promote active engagement, guidance, reflection, and knowledge co-creation (Kirschner, et al., 2006; Evanick, 2023). This fosters higher-order thinking as learners grapple with diverse perspectives through hands-on activities and problem-solving. However, a crucial balance is needed. While social constructivism excels at collaborative learning, neglecting individual knowledge acquisition can be a pitfall (Alanazi, 2016). Effective online courses should incorporate clear structures and resources to support independent learning alongside opportunities for collaborative knowledge building.

(4) ***Connectivism: Learning in a Networked Age***

Connectivism emphasizes connections and networks as central to learning in the digital age (Dunaway, 2011; Evanick, 2023). Learners use technology to build personal learning networks and critically engage with information from diverse sources. Learning is fundamentally about connections among people who share knowledge and help each other learn (Sangrà & Wheeler, 2013). New technologies are being utilized to create models that facilitate informal learning. This shifts the role of educators to facilitators, empowering learners to manage their journeys and build strong personal learning network skills (Siemens, 2008).

This theory translates to OL environments rich in digital tools like online courses, social networks, and blogs. The internet becomes the platform for networked learning and developing digital literacy. Online social networks connect learners and online curation tools empower them to explore complex information landscapes (Dunaway, 2011; Siemens, 2008).

Connectivism emphasizes acquiring knowledge through connections and real-world application (Kop & Hill, 2008; Siemens, 2008). Collaborative activities and learner encourage exploration of diverse viewpoints and problem solving in a digitally connected world (autonomy (Boyraz & Ocak, 2021; Sahin, 2012). However, connectivism may downplay critical thinking (Verhagen, 2006). Online courses informed by this theory can apply technology to connect learners and foster knowledge creation, but should also integrate activities that teach students to critically evaluate information.

(5) ***The Community of Inquiry (CoI) framework: Fostering deep learning***

The Community of Inquiry (CoI) framework, developed by Garrison, Anderson, and Archer (2000, 2001), is a prominent theory designed specifically for online learning. Unlike approaches focused on surface-level learning, CoI emphasizes deep, collaborative learning experiences achieved through critical discussion and reflection (Nor et al., 2012). The framework underscores that building OL communities is crucial for effective OL (Palloff and Pratt, 2007). They argue that a sense of community fosters student engagement, collaboration, and ultimately, deeper learning. This framework has a strong philosophical and epistemological foundation, setting it apart from many other OL theories.

CoI, as shown in Figure 2 (next page), conceptualizes OL as driven by three interdependent elements: *social presence, cognitive presence, and teaching presence* (Akyol & Garrison, 2008). These presences interact dynamically to create effective collaboration and meaningful learning experiences, and results in learning presence as a moderator ((Shea & Bidjerano, 2012). Social presence refers to the ability of learners to interact meaningfully with each other. This sense of community fosters emotional, cognitive, and motivational support, which is crucial for successful online learning. Cognitive presence focuses on how learners construct and confirm meaning through communication (Garrison & Archer, 2000; Garrison et al., 2000). This involves critical analysis, exploration of diverse perspectives, and collaborative knowledge building.

Teaching presence encompasses the design, facilitation, and direction of both social and cognitive processes to promote meaningful learning (Garrison et al., 2000). The instructor acts as a guide, creating a structured learning environment that fosters critical inquiry.

Therefore, the CoI framework emphasizes social, cognitive, and teaching presences as interdependent elements for successful OL(Garrison, Anderson & Archer, 2000). A strong online community fosters deeper engagement and critical inquiry (Akyol & Garrison, 2008; Cleveland-Innes et al., 2019). Instructional design informed by CoI principles can create opportunities for collaboration, feedback, and shared learning through discussion boards and other online tools (Priest, 2020). This fosters a sense of community and promotes meaningful learning experiences.

Figure 2. Model of Social, Cognitive and Teaching Presences to bring Effective Collaboration for Better Elements of an Educational Experience. Source: Community of inquiry by Garrison, Anderson and Archer (2000, p.88)

However, scholars like Annand (2011, 2019) recognize the CoI framework as a theory for online learning. He argues that CoI research relies on assumptions that prioritize fixed knowledge and measurable outcomes, which contradicts the social constructivist view of knowledge building through social interaction. Additionally, the framework emphasizes constant communication for learning, which might not be necessary for effective online learning. Finally, Annand criticizes the use of surveys in CoI research, suggesting they fail to capture the complexities of how knowledge is socially constructed in online environments. Overall, Annand argues for a theory that better considers the subjective, social, and potentially less communication-driven aspects of online learning.

(6) **Online Collaborative Learning (OCL): Building knowledge together:** Online collaborative learning stands out as a method for collaborative knowledge creation using technology (Harasim, 2012). Unlike rote memorization, online collaborative Learning encourages students to work together, explore, and innovate using modern technology. This fosters a deeper understanding of concepts and the ability to solve problems, rather than simply rehearsing facts. Online collaborative learning promotes student engagement and teacher involvement to facilitate group discussions and ultimately enhance learning outcomes (Breen, 2013; Gaad, 2022; Kali et al., 2009; Ng et al., 2022; Reeves et al., 2004).

Harasim (2012) positions OCL as a transformative approach that reshapes education across formal, non-formal, and informal settings within the knowledge age. It integrates seamlessly with existing learning organizations, such as universities, by incorporating online components into the student experience. Online collaborative Learning draws upon and integrates various

learning theories, including cognitive development (Pask, 1975), deep learning (Entwistle, 2000; Marto & Saljø, 1976), academic knowledge development (Laurillard, 2001), and knowledge construction (Scardamalia & Bereiter, 2006).

Online Collaborative learning offers a versatile approach to online learning, integrating with formal and informal settings (Harasim, 2012). It uses established learning theories (Entwistle, 2000; Pask, 1975) and emphasizes a structured discourse for knowledge co-creation. This structured approach, involving *idea generation, organization, and intellectual convergence*, fosters deep learning and critical thinking (Harasim, 2017). Instructional design informed by OCL can incorporate group projects, discussions, and peer review activities to promote collaborative knowledge construction and self-reflection (Chiong & Jovanovic, 2012).

Technology plays a supportive role in OCL by enhancing communication and knowledge construction (Harasim, 2012). However, the teacher remains crucial. Teachers act as a link to the knowledge community and a facilitator of learning, ensuring core concepts and best practices are integrated into the learning cycle (Bates, 2022; Salmon, 2000).

Learning Management Systems (LMS) are a common platform for promoting OCL, often featuring online discussion forums (Bates, 2022). These forums are typically text-based, asynchronous (allowing participation at any time), and often threaded (enabling responses to specific comments). Effective online discussions center on several instructional design principles outlined by Govindasamy (2001) and Hodges et al. (2020). By adhering to these principles, OCL can achieve its intended benefits. Online collaborative learning can foster deep learning, critical thinking, analytical thinking, synthesis, and evaluation skills – all valuable for success in the digital age (Carr, 2022). However, OCL is not without limitations. Scalability can be a challenge, as it often requires highly skilled instructors and smaller learning groups (Bates, 2015). Additionally, OCL may resonate more readily with disciplines in the humanities, social sciences, education, and some areas of business.

Discussion

This analysis explores the strengths and weaknesses of current online learning (OL) models and frameworks as applied in higher education. It emphasizes the importance of critical considerations for an effective OL instructional design model and examines how existing models fall short in providing a multimodal and integrative system for quality instruction and effective student support.

Within the scholarly discourse on OL, prominent figures like Anderson (2011) and Picciano (2021) have proposed foundational models. Anderson's integrated theory of OL laid early groundwork, acknowledging its own limitations. Picciano's multimodal model builds upon this, emphasizing pedagogical aspects and broadening Anderson's scope by incorporating self-paced

learning and distinguishing OL from mere distance education. This model proposes six blended learning modalities: content, interaction, questioning, assessment, collaboration, and reflection, with self-paced learning added later. Recognizing learner diversity, Picciano advocates for a multifaceted approach integrating face-to-face methods and online technologies. Grounded in established learning theories like behaviorism, cognitivism, and social constructivism, Picciano's model acknowledges the evolving nature of online education and the potential relevance of other theoretical frameworks.

While Picciano's multimodal model offers a rich pedagogical toolbox, it *implicitly* addresses aspects of student success rather than providing *a strong and explicit framework* for quality and student support services in OL. *It tends to overlook the diverse and specific needs and engagement strategies essential for online learners* (Meda & Waghid, 2022; Selvaraj et al., 2020). Additionally, its primary focus on instructor and designer-centric pedagogical approaches can overshadow student voices and comprehensive quality assurance measures, both vital for ensuring effective OL experiences (Rotar, 2022; Stewart et al., 2013).

To address these shortcomings, this article proposes incorporating sound student support systems encompassing admissions, academic advising, technical assistance, personal counseling, and career services. Furthermore, it advocates for a comprehensive quality assurance framework that includes strong leadership commitment, adequate resource allocation, continuous review and improvement, all with a student-centered focus (Holt et al., 2014). By prioritizing student needs and fostering a quality-focused environment, OL can fulfill its potential for effective and engaging education.

Through combining the strengths of Anderson's and Picciano's models and explicitly addressing their limitations, OL can be designed to be both pedagogically sound and supportive of student success. A holistic approach that considers all facets of OL, from pedagogical principles to comprehensive student support systems, is essential for creating effective and engaging (quality) OL experiences in higher education, as depicted in Figure 3 (next page).

Figure 3 depicts a framework for OL design where learning objectives serve as the central guiding force. These clear and concise statements outline the specific knowledge, skills, or understanding learners will gain by the end of a course, acting as a compass directing all other design choices towards a successful learning journey (Chen, 2016). This framework emphasizes that learning objectives are not set in isolation but are continually informed by an understanding of the diverse needs and characteristics of online learners, ensuring a learner-centered paradigm where outcomes are purposeful and measurable.

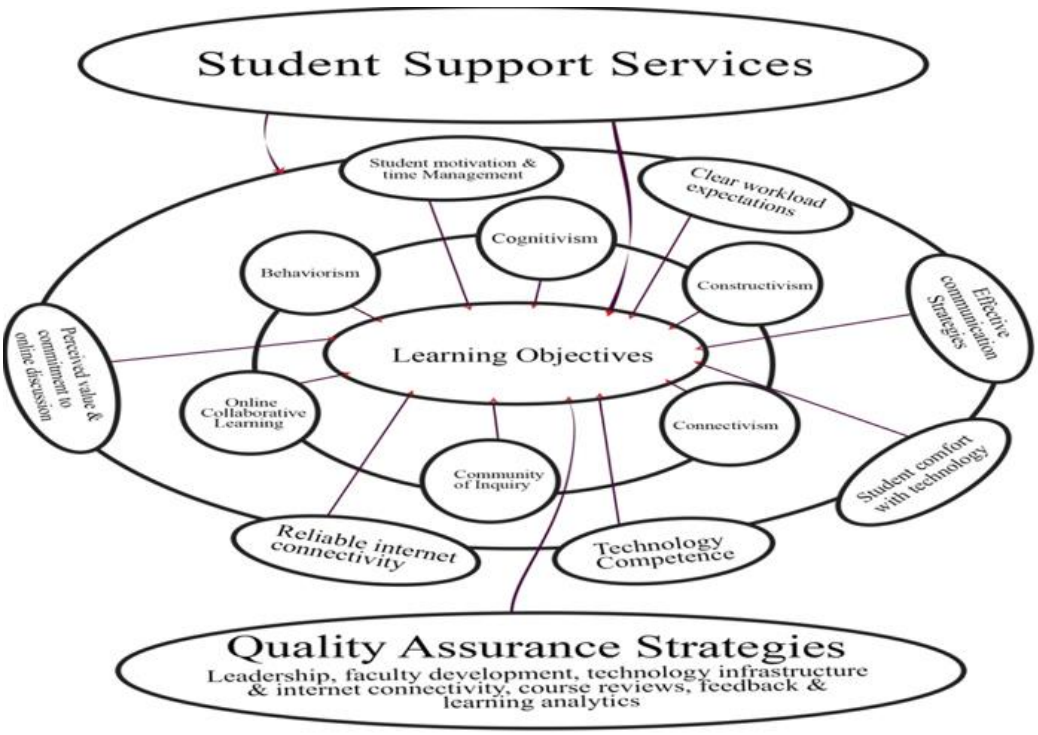

Figure 3: Multimodal- integrative Approach to Online Learning Design

Surrounding the learning objectives are various instructional theories. Frameworks like cognitivism, constructivism, and connectivism offer different approaches for diverse learners. The beauty of an integrative approach lies in drawing from these various theories to create a rich learning experience, ensuring learning objectives are achievable through a variety of learning activities and resources. This multimodal-integrative approach strategically incorporates elements such as lectures, videos, simulations, discussions, case studies, and hands-on activities, catering to diverse learning styles and preferences and ensuring all learners have opportunities to engage with the material. This model explicitly illustrates the linkages between diverse learning theories and the strategic choices for multimodal content delivery and support mechanisms, highlighting how theoretical foundations directly inform specific design decisions beyond general modalities. For example, principles from constructivism might guide the design of collaborative multimedia projects, while cognitive load theory could inform the presentation of complex information across different visual and auditory modalities.

Beyond instructional theories, the framework acknowledges the critical importance of student support services and quality assurance. These elements form a strong foundation for successful OL. Strong student support services encompass motivation strategies, clear workload expectations, effective communication and time management guidance, and readily available support systems including technology/technical support, internet access guidance, and online

discussions for academic assistance and guidance services (Rolle, 2023; Yilmaz, 2019). Because online students encounter distinct learning challenges as compared to traditional counterparts, institutions should provide support services that address their unique technical, academic, and personal needs. All students require access to clear information regarding online education's requirements, including preparation strategies (Babacan & Thurgood, 2022; Brown et al., 2020; Gillett-Swan, 2017). This model provides more detailed and actionable guidance on the design and integration of these comprehensive student support services, treating them as integral components from the outset rather than auxiliary considerations.

Crucially, while an instructional designer does not directly control external factors such as reliable internet connectivity, institutional technological infrastructure, or a student's prior technology competence and comfort, the proposed model emphasizes that the design process must strategically account for these realities. The designer's role is to build resilience into the learning experience, scaffold technology use, and establish clear pathways to support. Moreover, the designer is expected to assure the instructional strategies are relevant to real-world application (Chen, 2016; Moller, 2010; Stavredes & Herder, 2014). This means:

i. Designing for diverse technological access: Incorporating asynchronous activities and providing downloadable or low-bandwidth content options to accommodate varying internet stability.
ii. Integrating institutional support: Ensuring prominent and intuitive access to existing institutional technical support, academic advising, and personal counseling services within the learning environment.
iii. Promoting digital literacy: Designing explicit introductory modules or activities to help students develop necessary technology competence and comfort, ensuring they are prepared for the online learning environment.

Quality assurance measures ensure if the online course meets specific standards. This involves accessibility checks, regular review of course content and assessments, and gathering learner feedback to continuously improve the OL experience. Effective OL environments rely on strong quality assurance mechanisms. Learning analytics provide valuable data on student learning patterns, allowing educators to identify areas for improvement and enhance learning outcomes (Holt et al., 2014; McFurtane, 2011). Strong leadership and a culture of quality within an institution are crucial, with administrators establishing strategic plans, performance indicators, and fostering continuous improvement (Awais, 2023). Technological infrastructure plays a critical role; adequate resources must be allocated to ensure accessible, reliable technology for all students regardless of location (Bates & Poole, 2003). This includes not only institutional learning management systems but also faculty development on using technology effectively (Khalil & Elkhider, 2016). Additionally, students' "bring-your-own-device" approach opens doors for innovative technology use in OL (Garrison & Anderson, 2000; Yeung et al., 2019).

Regular reviews informed by performance data and stakeholder feedback (including students) are essential for program improvement and building a strong reputation (Oliver, 2001).

Quality assurance models for OL should be integrated into existing frameworks but tailored to the specific online delivery mode. A whole-of-institution approach is necessary, gathering information across all aspects of service delivery, teaching and learning, and staff management (Maphsa et al., 2020). This comprehensive approach ensures ongoing evaluation and improvement of OL environments.

Student experience and assessment strategies play a significant role in delivering quality OL. While often overlooked, student experience is crucial for OL success, with positive experiences influencing student retention. A sense of belonging fosters student engagement and identification with the institution. As online education offerings expand, prioritizing positive student experiences can significantly impact course selection (Dumford & Miller, 2018; Sharpe & Benfield, 2005). Furthermore, clear communication of assessment tasks and effective moderation strategies are hallmarks of a quality OL program. Assessments should demonstrably align with program learning outcomes and provide opportunities for students to showcase their knowledge and skills (Al-Khatib, 2023; Gil-Jaurena et al., 2022). Established assessment guidelines are essential to manage and support the unique dynamics of online group work and collaboration (Brindley et al., 2004; Brindley et al., 2009). To enhance assessment legitimacy and reliability, providers increasingly utilize plagiarism detection tools and incorporate features like facial recognition software (proctored exams) and keystroke identification to minimize cheating (Labayen et al., 2021; Vegendla & Sindre, 2019). While these technological advancements hold promise, it is vital to maintain a balance by also incorporating real-world application through authentic projects or intensive work experience placements (Banta & Palomba, 2014; Sheridan et al., 2019). The development of discipline-specific and generic skills, such as oral communication and interpersonal skills, remains achievable within online environments (Luca, 2002).

Ultimately, this comprehensive approach to quality assurance and instructional design fosters a successful and engaging learning experience for all students. It ensures the online program delivers effective and stimulating educational experiences that promote deep learning and critical thinking skills. By integrating quality assurance mechanisms with a multimodal-integrative design, OL environments can truly empower students to achieve their full potential.

Conclusion and Way Forward

As OL becomes increasingly mainstream in higher education, the need for continuous evaluation and adaptation of instructional design theories becomes paramount. This ensures their ongoing relevance and effectiveness within the unique context of OL environments. Instructional designers must stay abreast of the latest technological advancements and

innovations in the field. They should be open to experimenting with new OL approaches to deliver the most effective and engaging learning experiences for their students.

The learning theories explored in this study provide a valuable framework for designing effective and efficient OL environments, with their strengths and weaknesses. These theories are powerful tools, but only tools, that can enhance learning when used judiciously. With sound learning theories as the foundation, effective instructional design can create flexible, engaging, participatory, inclusive, and personalized learning experiences. This fosters deep learning and the development of critical thinking skills in online learners. Furthermore, research exploring the application of these theoretical frameworks in diverse instructional design contexts for OL holds immense value.

Instructional designers must carefully consider the application of each theory to specific learning goals and contexts. Making decisions about which theories to apply in a particular OL course requires careful consideration of their advantages and limitations. It's important to remember that there's no single "best" theory for all situations. Most of these theories can be leveraged to promote and integrate technology into OL experiences. This suggests that multiple theories can be applied simultaneously within the same OL course to address different learning activities. Rather than adhering to a single theoretical approach, instructional design should strategically select the most appropriate and contextually relevant theories to address specific learning objectives.

Through applicable instructional design grounded in sound learning theories, coupled with comprehensive and continuous student support services, robust assessment practices, and informative feedback mechanisms, OL can offer learners a multitude of benefits. These include flexibility, engagement, collaboration, and personalization, ultimately leading to deeper learning and the development of critical thinking skills. Therefore, the author recommends *a multimodal-integrative or mixed approach* that strategically combines the strengths of behaviorism, cognitivism, constructivism, connectivism, CoI, and OCL. This approach can cater to the specific needs of each learning objective and context, maximizing the likelihood of mastery and offering students the optimal OL experience. However, the effectiveness of integrating and combining these theories through an eclectic method is highly dependent on various factors. Some of these key factors include student motivation, time management skills, workload, communication approaches, understanding student comfort levels with technology, the level of student support available, technology competence of both students and instructors, internet connectivity, commitment to online discussions, and the perceived value and role of online discussions.

Future Research Directions

Future research efforts should explore the effectiveness of OL theories within an *integrated multimodal model* for online education. This model should incorporate strong student support services alongside robust assessment and feedback strategies. This research should also investigate the potential influences of such an integrated model on student engagement and learning outcomes.

References

Akpan, V. I., Igwe, U. A., Mpamah, I. B. I., & Okoro, C. O. (2020). Social constructivism: Implications on teaching and learning. *British Journal of Education, 8*(8), 49–56. https://www.eajournals.org/wp-content/uploads/Social-Constructivism.pdf

Akyol, Z., & Garrison, D. R. (2008). The development of a community of inquiry over time in an online course: Understanding the progression and integration of social, cognitive, and teaching presence. *Journal of Asynchronous Learning Networks, 12*(3), 3–22. https://files.eric.ed.gov/fulltext/EJ837483.pdf

Alanazi, A. (2016). A critical review of constructivist theory and the emergence of constructionism. *American Research Journal of Humanities and Social Sciences, 2*(1), 1–8. https://doi.org/10.21694/2378-7031.16018

Al-Khatib, T. (2023). Netiquette rules in online learning through the lens of digital citizenship scale in the post-corona era. *Journal of Information, Communication and Ethics in Society, 21*(2), 181–201. https://doi.org/10.1108/JICES-08-2021-0089

Amineh, R. J., & Asl, H. D. (2015). Review of constructivism and social constructivism. *Journal of Social Sciences, Literature and Languages, 1*(1), 9–16. https://blue-ap.com/j/List/4/iss/volume%2001%20%282015%29/issue%2001/2.pdf

Annand, D. (2011). Social presence within the community of inquiry framework. *International Review of Research in Open and Distributed Learning, 12*(5), 40–56. https://doi.org/10.19173/irrodl.v12i5.924

Annand, D. (2019). Limitations of the community of inquiry framework. *International Journal of E-Learning & Distance Education, 34*(2), Article n2. https://files.eric.ed.gov/fulltext/EJ1242715.pdf

Arshavskiy, M. (2018). The learning theory of cognitive development in eLearning. *eLearning Industry*. https://elearningindustry.com/learning-theory-of-cognitive-development-elearning

Awais, A. (2023). Leadership in online education: A scoping review. *Electronic Journal of e-Learning, 21*(4), 335–352. https://doi.org/10.34190/ejel.21.4.3072

Babacan, A., & Thurgood, M. (2022). Learner support services in an online learning environment. In H. Huijser, M. Y. C. A. Kek, & F. F. Padró (Eds.), *Student support services: University development and administration* (pp. 257-271). Springer. https://doi.org/10.1007/978-981-16-5852-5_2

Bandara, D., & Wijekularathna, D. K. (2017). Comparison of student performance under two teaching methods: Face-to-face and online. *International Journal of Education Research, 12*(1), 69–79.

https://www.iabpad.com/comparison-of-student-performance-under-two-teaching-methods-face-to-face-and-online/

Banta, T. W., & Palomba, C. A. (2014). *Assessment essentials: Planning, implementing, and improving assessment in higher education*. John Wiley & Sons. https://books.google.com/books/about/Assessment_Essentials.html?id=rO_sBQAAQBAJ

Bates, A. and Poole, G. (2003). *Effective Teaching with Technology in Higher Education: Foundations for Success* San Francisco: Jossey-Bass. https://welib.org/search?page=1&q=Effective+teaching+with+technology+in+higher+education%3A+Foundations+for+success

Bates, A. T. (2022). Online collaborative learning. In *Teaching in a digital age: Third edition – General*. BCcampus. https://pressbooks.bccampus.ca/teachinginadigitalagev3m/

Bates, A. W. (2015). *Teaching in a digital age: Guidelines for designing teaching and learning*. BCcampus. https://pressbooks.bccampus.ca/teachinginadigitalagev2/

Booth, A., Martyn-St James, M., Clowes, M., & Sutton, A. (2021). *Systematic approaches to a successful literature review* (2nd ed.). Sage. https://www.scirp.org/reference/referencespapers?Referenceid=3184401

Boyraz, S., & Ocak, G. (2021). Connectivism: A literature review for the new pathway of pandemic-driven education. *Online Submission, 6*(3), 1122–1129. https://files.eric.ed.gov/fulltext/ED625559.pdf

Breen, H. (2013). *Examining Harasim's online collaborative learning theory for nursing education* (Doctoral dissertation, University of Hawai'i at Manoa). https://eric.ed.gov/?id=ED555189

Brindley, J. E., Blaschke, L. M., & Walti, C. (2009). Creating effective collaborative learning groups in an online environment. *International Review of Research in Open and Distributed Learning, 10*(3), 1–18. https://doi.org/10.19173/irrodl.v10i3.675

Brindley, J. E., Walti, C., & Zawacki-Richter, O. (2004). The current context of learner support in open, distance and online learning: An introduction. In J. E. Brindley, C. Walti, & O. Zawacki-Richter (Eds.), *Learner support in open, distance and online learning environments* (pp. 9–28). Oldenburg: BIS-Verlag der Carl von Ossietzky Universität. https://www.academia.edu/23431178/Learner_support_in_open_online_and_distance_learning_environments

Brown, V. S., Strigle, J., & Toussaint, M. (2020). A statewide study of perceptions of directors on the availability of online student support services at postsecondary institutions. *Online Learning, 24*(4), 167–181. https://olj.onlinelearningconsortium.org/index.php/olj/article/view/2147

Bryant, L. C., Vincent, R., Shaqlaih, A., & Moss, G. (2013). Behaviorism and behavioral learning theory. *In M. Orey (Ed.), Emerging perspectives on learning, teaching, and technology.* University of Georgia. https://psycnet.apa.org/record/2013-11995-008

Cakir, M. (2008). Constructivist approaches to learning in science and their implications for science pedagogy: A literature review. *International Journal of Environmental and Science Education, 3*(4), 193–206. https://files.eric.ed.gov/fulltext/EJ894860.pdf

Carr, J. E. (2022). *Teaching in a digital age – second edition* [Review of the book *Teaching in a digital age* (2nd ed.), by A. W. Bates]. *Open Learning: The Journal of Open, Distance and e-Learning, 37*(3), 305–307. https://doi.org/10.1080/02680513.2022.2056008

Cennamo, K., & Kalk, D. (2019). *Real world instructional design: An iterative approach to designing learning experiences*. Routledge. https://www.routledge.com/Real-World-Instructional-Design-An-Iterative-Approach-to-Designing-Learning-Experiences/Cennamo-Kalk/p/book/9781138559905

Chen, L. L. (2016). A model for effective online instructional design. *Literacy Information and Computer Education Journal, 6*(2), 2303–2308. https://doi.org/10.20533/LICEJ.2040.2589.2016.0304

Chiong, R., & Jovanovic, J. (2012). Collaborative learning in online study groups: An evolutionary game theory perspective. *Journal of Information Technology Education: Research, 11*(1), 81–101. Informing Science Institute. https://doi.org/10.28945/1574

Cleveland-Innes, M., Gauvreau, S., Richardson, G., Mishra, S., & Ostashewski, N. (2019). Technology-enabled learning and the benefits and challenges of using the community of inquiry theoretical framework. *International Journal of E-Learning & Distance Education, 34*(1), Article n1. https://files.eric.ed.gov/fulltext/EJ1227840.pdf

Cooper, H. M. (1988). Organizing knowledge syntheses: A taxonomy of literature reviews. *Knowledge in Society, 1*(1), 104–126. https://doi.org/10.1007/BF03177550

Cooper, T., & Scriven, R. (2017). Communities of inquiry in curriculum approach to online learning: Strengths and limitations in context. *Australasian Journal of Educational Technology, 33*(4). https://doi.org/10.14742/ajet.3026

Dumford, A. D., & Miller, A. L. (2018). Online learning in higher education: Exploring advantages and disadvantages for engagement. *Journal of Computing in Higher Education, 30*, 452–465. https://doi.org/10.1007/s12528-018-9179-z

Dunaway, M. K. (2011). Connectivism: Learning theory and pedagogical practice for networked information landscapes. *Reference Services Review, 39*(4), 675–685. https://doi.org/10.1108/00907321111186686

Entwistle, N. (2000). Promoting deep learning through teaching and assessment. In *Assessment to promote deep learning: Insights from AAHF's 2000 and 1999 assessment conferences* (pp. 9–20). AAHF. https://www.researchgate.net/publication/241049278

Eun, B. (2019). The zone of proximal development as an overarching concept: A framework for synthesizing Vygotsky's theories. *Educational Philosophy and Theory, 51*(1), 18–30. https://eric.ed.gov/?id=EJ1205807

Evanick, J. (2023, June 20). *From behaviorism to connectivism: A comprehensive guide to instructional design theories for online learning*. *eLearning Industry*. https://elearningindustry.com/from-behaviorism-to-connectivism-comprehensive-guide-instructional-design-theories-online-learning

Fish, L. A., & Snodgrass, C. R. (2019). Instructor perspectives of online versus face-to-face education at a Jesuit institution. *The BRC Academy Journal of Education, 7*(1), 15–24. https://doi.org/10.15239/j.brcacadje.2018.07.01.ja03

Gaad, A. L. V. (2022). The effects of online collaborative learning (OCL) on student achievement and engagement. *IAFOR Journal of Education, 10*(3), 31–49. https://doi.org/10.22492/ije.10.3.02

Garrison, D. R., & Anderson, T. (2000). Transforming and enhancing university teaching: Stronger and weaker technological influences. In T. Evans & D. Nation (Eds.), *Changing university teaching: Reflections on creating educational technologies* (pp. 24–33). Kogan Page.

Garrison, D. R., & Archer, W. (2000). *A transactional perspective on teaching and learning: A framework for adult and higher education*. Advances in Learning and Instruction Series. Elsevier Science. https://eric.ed.gov/?id=ED451371

Garrison, D. R., Anderson, T., & Archer, W. (2000). Critical inquiry in a text-based environment: Computer conferencing in higher education. *The Internet and Higher Education, 2*(2–3), 87–105. https://doi.org/10.1016/S1096-7516(00)00016-6

Garrison, D. R., Anderson, T., & Archer, W. (2001). Critical thinking and computer conferencing: A model and tool to assess cognitive presence. *American Journal of Distance Education, 15*(1), 7–23. https://doi.org/10.1080/08923640109527071

Gil-Jaurena, I., Domínguez-Figaredo, D., & Ballesteros-Velázquez, B. (2022). Learning outcomes-based assessment in distance higher education: A case study. *Open Learning: The Journal of Open, Distance and e-Learning, 37*(2), 193–208. https://doi.org/10.1080/02680513.2020.1757419

Gillett-Swan, J. (2017). The challenges of online learning: Supporting and engaging the isolated learner. *Journal of Learning Design, 10*(1), 20–30. https://doi.org/10.5204/jld.v9i3.293

Govindasamy, T. (2001). Successful implementation of e-learning: Pedagogical considerations. *The Internet and Higher Education, 4*(3–4), 287–299. https://doi.org/10.1016/S1096-7516(01)00071-9

Harasim, L. (2012). *Learning theory and online technologies*. Routledge. https://doi.org/10.4324/9780203846933

Harasim, L. (2017). *Learning theory and online technologies*. Taylor & Francis. https://doi.org/10.4324/9781315716831

Harman, K., & Koohang, A. (2005). Discussion board: A learning object. *Interdisciplinary Journal of E-Learning and Learning Objects, 1*(1), 67–77. https://www.learntechlib.org/p/44867

He, H., Zheng, Q., Di, D., & Dong, B. (2019). How learner support services affect student engagement in online learning environments. *IEEE Access, 7*, 49961–49973. https://doi.org/10.1109/ACCESS.2019.2908993

Hodges, C. B., Moore, S., Lockee, B. B., Trust, T., & Bond, M. A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*. https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning

Holt, D., Palmer, S., Gosper, M., Sankey, M., & Allan, G. (2014). Framing and enhancing distributed leadership in the quality management of online learning environments in higher education. *Distance Education, 35*(3), 382–399. https://doi.org/10.1080/01587919.2015.955261

Hung, D., & Nichani, M. (2001). Constructivism and e-learning: Balancing between the individual and social levels of cognition. *Educational Technology, 41*(2), 40–44. https://www.jstor.org/stable/pdf/44428658.pdf?casa_token=BN6qJRZqH3UAAAAA:HkeNgPxt5xWFiZi-VpYGL-LtkQO8Oc8bR3RKLmNzNGpUOAkh6v9hou0Cui9sk-TYWWFSJwkb9Z805gXs4NglSkREdMLX0zJgWhiNROpwbESO_ezHxT6i

Jeong, H., & Hmelo-Silver, C. E. (2016). Seven affordances of computer-supported collaborative learning: How to support collaborative learning? How can technologies help? *Educational Psychologist, 51*(2), 247–265. https://doi.org/10.1080/00461520.2016.1158654

Jesson, J., Matheson, L., & Lacey, F. M. (2011). *Doing your literature review: Traditional and systematic techniques*. SAGE Publications Ltd. file:///C:/Users/hp/Downloads/Doing%20your%20literature%20Review%20-%20traditional%20and%20systematic%20--%20Jesson,%20Jill,%20Matheson,%20Lydia,%20Lacey,%20Fiona%20M%20--%20(%20WeLib.org%20).pdf

Kali, Y., Levin-Peled, R., & Dori, Y. J. (2009). The role of design-principles in designing courses that promote collaborative learning in higher education. *Computers in Human Behavior, 25*(5), 1067–1078. https://doi.org/10.1016/j.chb.2009.01.006

Kelly, J. (2012). *Learning theories*. The Peak Performance Center. Retrieved from http://thepeakperformancecenter.com/educational-learning/learning/theories

Khalil, M. K., & Elkhider, I. A. (2016). Applying learning theories and instructional design models for effective instruction. *Advances in Physiology Education, 40*(2), 147–156. https://doi.org/10.1152/advan.00138.2015

Kirschner, P. A., Sweller, J., & Clark, R. E. (2006). Why minimal guidance during instruction does not work: An analysis of the failure of constructivist, discovery, problem-based, experiential, and inquiry-based teaching. *Educational Psychologist, 41*(2), 75–86. https://doi.org/10.1207/s15326985ep4102_1

Kitchenham, B., & Charters, S. (2007). *Guidelines for performing systematic literature reviews in software engineering (version 2.3).* EBSE Technical Report, Keele University and Durham University. file:///C:/Users/hp/Downloads/Kitchenham-2007Systematicreviews5-8.pdf

Koohang, A., & Harman, K. (2005). Open source: A metaphor for e-learning. *Informing Science, 8*, 75–86. https://doi.org/10.28945/2867

Kop, R., & Hill, A. (2008). Connectivism: Learning theory of the future or vestige of the past? *The International Review of Research in Open and Distributed Learning, 9*(3), 1–13. https://doi.org/10.19173/irrodl.v9i3.523

Labayen, M., Vea, R., Flórez, J., Aginako, N., & Sierra, B. (2021). Online student authentication and proctoring system based on multimodal biometrics technology. *IEEE Access, 9*, 72398–72411. https://www.researchgate.net/publication/351501686

Laurillard, D. (2001). E-university—What have we learned? *International Journal of Management Education, 1*(1), 3–7. https://doi.org/10.3794/ijme.12.a

Levy, Y., & Ellis, T. J. (2006). A systems approach to conduct an effective literature review in support of information systems research. *Informing Science, 9*, 181–212. https://www.researchgate.net/publication/228666286

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke, M., Devereaux, P. J., Kleijnen, J., & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: Explanation and elaboration. *Annals of Internal Medicine, 151*(4), W65–W94. https://doi.org/10.7326/0003-4819-151-4-200908180-00136

Lu, B., & Hanim, R. N. (2024). Enhancing learning experiences through interactive visual communication design in online education. *Eurasian Journal of Educational Research, 109,* 134–157. https://ejer.com.tr/manuscript/index.php/journal/article/view/1593

Luca, J. (2002). *Developing generic skills for tertiary students in an online learning environment* (Doctoral dissertation, Edith Cowan University). Edith Cowan University Research Online. https://ro.ecu.edu.au/theses/713

Maphosa, C., Mthethwa-Kunene, K. E., & Rugube, T. (2020). Quality assuring online-learning using the Commonwealth of Learning Regional Community of Practice for quality assurance guidelines. *US-China Education Review*, *10*(5), 201–211. https://www.researchgate.net/publication/346850545

Margolis, A. A. (2020). Zone of proximal development, scaffolding and teaching practice. *Cultural-Historical Psychology*, *16*(3), 67–76. https://www.researchgate.net/publication/346281849

Marton, F., & Säljö, R. (1976). On qualitative differences in learning: I—Outcome and process. *British Journal of Educational Psychology*, *46*(1), 4–11. https://doi.org/10.1111/j.2044-8279.1976.tb02980.x

May-Varas, S., Margolis, J., & Mead, T. (2023). Theory of human motivation. In S. May-Varas, J. Margolis, & T. Mead (Eds.), *Educational learning theories* (3rd ed.). Simple Book Publishing. https://openoregon.pressbooks.pub/educationallearningtheories3rd/chapter/theory-of-human-motivation/

McFarlane, D. A. (2011). The leadership roles of distance learning administrators (DLAs) in increasing educational value and quality perceptions. *Online Journal of Distance Learning Administration*, *14*(1), 1–13. https://ojdla.com/archive/spring141/McFarlane141.pdf

McLeod, G. (2019). Rephotography for photographers: Discussing methodological compromises by post-graduate online learners of photography. *Journal of Visual Literacy*, *38*(1–2), 22–45. https://doi.org/10.1080/1051144X.2018.1564606

McLeod, S. (2018). Jean Piaget's theory of cognitive development. *Simply Psychology*. https://www.simplypsychology.org/piaget.html

Meda, L., & Waghid, Z. (2022). Exploring special need students' perceptions of remote learning using the multimodal model of online education. *Education and Information Technologies*, *27*(6), 8111–8128. https://doi.org/10.1007/s10639-022-10962-4

Moll, L. C. (2013). *L. S. Vygotsky and education*. Routledge. https://doi.org/10.4324/9780203156773

Moller, L. (2010). Trends in the external environment as a context for critiquing the field of instructional design and technology. In G. J. Anglin (Ed.), *Instructional technology: Past, present, and future* (3rd ed., pp. 89–98). Libraries Unlimited.

Mukherjee, D., Kumar, S., Donthu, N., & Pandey, N. (2021). Research published in *Management International Review* from 2006 to 2020: A bibliometric analysis and future directions. *Management International Review*, 61(1), 1–44. https://doi.org/10.1007/s11575-021-00454-x

Ng, P. M., Chan, J. K., & Lit, K. K. (2022). Student learning performance in online collaborative learning. *Education and Information Technologies*, 27(6), 8129–8145. https://doi.org/10.1007/s10639-022-10923-x

Nor, N. F. M., Hamat, A., & Embi, M. A. (2012). Patterns of discourse in online interaction: Seeking evidence of the collaborative learning process. *Computer Assisted Language Learning*, 25(3), 237–256. https://doi.org/10.1080/09588221.2012.655748

Okoli, C., & Schabram, K. (2010). A guide to conducting a systematic literature review of information systems research. *SSRN Electronic Journal*. Advance online publication. https://doi.org/10.2139/ssrn.1954824

Oliver, R., (2001). Assuring the Quality of Online Leaning in Australian Higher Education. In A. E. A. D. N. M. Wallace (Ed.), Moving Online II Conference (pp. 222-231). Lismore: Southern Cross University. https://www.scirp.org/reference/referencespapers?referenceid=3006567

Olorode, J. J., & Jimoh, A. G. (2016). Effectiveness of guided discovery learning strategy and gender sensitivity on students' academic achievement in financial accounting in Colleges of Education. *International Journal of Academic Research in Education and Review*, 4(6), 182–189. https://doi.org/10.14662/IJARER2016.027

Öztürk, O., Kocaman, R. & Kanbach, D.K. (2024). How to design bibliometric research: an overview and a framework proposal. *Review of Managerial Science, 18,* 3333–3361. https://doi.org/10.1007/s11846-024-00738-0

Palloff, R. M., & Pratt, K. (2007). *Building online learning communities: Effective strategies for the virtual classroom*. John Wiley & Sons. https://books.google.com.et/books/about/Building_Online_Learning_Communities.html?id=VSnL3mla_x8C&redir_esc=y

Paré, G., Trudel, M. C., Jaana, M., & Kitsiou, S. (2015). Synthesizing information systems knowledge: A typology of literature reviews. *Information & Management*, 52(2), 183–199. https://doi.org/10.1016/j.im.2014.08.008

Pask, G. (1975). *Conversation, cognition and learning: A cybernetic theory and methodology*. Elsevier. file:///C:/Users/hp/Downloads/Conversation,%20cognition%20and%20learning%20-%20a%20cybernetic%20theory%20--%20Gordon%20Pask%20--%20(%20WeLib.org%20).pdf

Paul, J., Khatri, P., & Kaur Duggal, H. (2024). Frameworks for developing impactful systematic literature reviews and theory building: What, why and how? *Journal of Decision Systems*, 33(4), 537–550. https://doi.org/10.1080/12460125.2023.2197700

Petticrew, M., & Roberts, H. (2008). *Systematic reviews in the social sciences: A practical guide*. John Wiley & Sons. https://onlinelibrary.wiley.com/doi/book/10.1002/9780470754887

Piaget, J. (1970). *Science of education and the psychology of the child*. Orion Press. https://books.google.com.et/books/about/Science_of_Education_and_the_Psychology.html?id=ZwedAAAAMAAJ&redir_esc=y

Picciano, A. G. (2021). Theories and frameworks for online education: Seeking an integrated model. In M. G. Moore & W. C. Diehl (Eds.), *A guide to administering distance learning* (pp. 79–103). Brill. https://doi.org/10.1163/9789004471382_005

Polanin, J. R., Pigott, T. D., Espelage, D. L., & Grotpeter, J. K. (2019). Best practice guidelines for abstract screening large-evidence systematic reviews and meta-analyses. *Research Synthesis Methods, 10*(3), 330–342. https://doi.org/10.1002/jrsm.1354

Pozzi, F., Manganello, F., Passarelli, M., Persico, D., Brasher, A., Holmes, W., Whitelock, D., & Sangrà, A. (2019). Ranking meets distance education: Defining relevant criteria and indicators for online universities. *International Review of Research in Open and Distributed Learning*, *20*(5), 42–63. https://doi.org/10.19173/irrodl.v20i5.4391

Priest, T. (2020, November 11). Using the Community of Inquiry (CoI) framework to reflect on online course design. *Center for Excellence in Learning and Teaching Blog*. Stony Brook University. https://you.stonybrook.edu/celt/2020/11/11/using-the-community-of-inquiry-coi-framework-to-reflect-on-online-course-design/

Qureshi, J. A. (2019). Advancement in massive open online courses (MOOCs) to revolutionize disruptive technology in education: A case of Pakistan. *Journal of Education and Educational Development, 6*(2), 219–234. https://files.eric.ed.gov/fulltext/EJ1235074.pdf

Reddy, K., Ankiewicz, P. J., & De Swardt, A. E. (2005). Learning theories: A conceptual framework for learning and instruction in technology education. *South African Journal of Higher Education, 19*(3), 423–443. https://doi.org/10.4314/sajhe.v19i3.25502

Reeves, T. C., Herrington, J., & Oliver, R. (2004). A development research agenda for online collaborative learning. *Educational Technology Research and Development, 52*(4), 53–65. https://doi.org/10.1007/BF02504718

Rhim, H. C., & Han, H. (2020). Teaching online: Foundational concepts of online learning and practical guidelines. *Korean Journal of Medical Education, 32*(3), 175–183. https://doi.org/10.3946/kjme.2020.171

Rolle, D. S. (2023). *A descriptive analysis of the relationship between student career support services efficacy and on-time graduation in online education* (Doctoral dissertation, Northeastern University). Northeastern University Library. https://repository.library.northeastern.edu/files/neu:4f190x505/fulltext.pdf

Rotar, O. (2022). Online student support: A framework for embedding support interventions into the online learning cycle. *Research and Practice in Technology Enhanced Learning, 17*(1), 1–23. https://doi.org/10.1186/s41039-021-00178-4

Rothwell, W. J., & Kazanas, H. C. (2011). *Mastering the instructional design process: A systematic approach* (4th ed.). John Wiley & Sons.

Şahin, M. (2012). Pros and cons of connectivism as a learning theory. *International Journal of Physical and Social Sciences, 2*(4), 437–454. https://www.indianjournals.com/article/ijpss-2-4-026

Salmon, G. (2000). *E-moderating: The key to teaching and learning online*. London: Taylor & Francis. https://doi.org/10.4324/9780203465424

Sangrà, A., & Wheeler, S. (2013). New informal ways of learning: Or are we formalising the informal? *International Journal of Educational Technology in Higher Education, 10*(1), 286–293. https://doi.org/10.7238/rusc.v10i1.1689

Sankey, M., Birch, D., & Gardiner, M. W. (2010). Engaging students through multimodal learning environments: The journey continues. In *Proceedings of the 27th Australasian Society for Computers in Learning in Tertiary Education (ASCILITE)* (pp. 852–863). ASCILITE.

Santiago, C., Ulanday, M. L., Centeno, Z. J., Bayla, M. C., & Callanta, J. (2021). Flexible learning adaptabilities in the new normal: E-learning resources, digital meeting platforms, online learning systems and learning engagement. Asian Journal of Distance Education, 16(2), 38–56. https://files.eric.ed.gov/fulltext/EJ1332615.pdf

Saunders, L., & Wong, M. A. (2020). Learning theories: Understanding how people learn. In *Instruction in libraries and information centers: An introduction* (pp. 37–58). Illinois Open Publishing Network. https://doi.org/10.21900/wd.12

Scardamalia, M., & Bereiter, C. (2006). Knowledge building: Theory, pedagogy, and technology. In K. Sawyer (Ed.), *Cambridge handbook of the learning sciences* (pp. 97–118). Cambridge University Press. https://doi.org/10.1017/CBO9781139519526.025

Secore, S. (2017). Social constructivism in online learning: Andragogical influence and the effectual educator. *e-mentor, 70*(3), 4–9. https://doi.org/10.15219/em70.1300

Selvaraj, V., Harshini, P., & Tamilamsan, P. (2020). Integrative model for online learning: An intervention research. *Journal of Indian University, 14*(5), 1003–1010. https://doi.org/10.37896/jxu14.5/109

Sharpe, R., & Benfield, G. (2005). The student experience of e-learning in higher education. *Brookes eJournal of Learning and Teaching, 1*(3), 1–9. https://www.researchgate.net/profile/Rhona-Sharpe/publication/237811152_The_Student_Experience_of_E-learning_in_Higher_Education_A_Review_of_the_Literature/links/5686983808ae1e63f1f5969a/The-Student-Experience-of-E-learning-in-Higher-Education-A-Review-of-the-Literature.pdf

Shea, P., & Bidjerano, T. (2012). Learning presence as a moderator in the community of inquiry model. *Computers & Education, 59*(2), 316–326. https://doi.org/10.1016/j.compedu.2012.01.011

Sheehan, M. D., & Johnson, R. B. (2012). Philosophical and methodological beliefs of instructional design faculty and professionals. *Educational Technology Research and Development, 60*, 131–153. https://doi.org/10.1007/s11423-011-9220-7

Sheridan, L., Gibbons, B., & Price, O. (2019). Achieving WIL placement and theoretical learning concurrently: An online strategy for higher education institutions. *Journal of University Teaching & Learning Practice, 16*(3), 113–132. https://doi.org/10.53761/1.16.3.8

Siemens, G. (2008, January 27). *Learning and knowing in networks: Changing roles for educators and designers*. Paper presented at ITFORUM. https://www.sciepub.com/reference/115669

Simpson, O. (2013). *Supporting students for success in online and distance education*. Routledge.

Singh, V., & Thurman, A. (2019). How many ways can we define online learning? A systematic literature review of definitions of online learning (1988–2018). *American Journal of Distance Education, 33*(4), 289–306. https://doi.org/10.1080/08923647.2019.1663082

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research, 104*, 333–339. https://doi.org/10.1016/j.jbusres.2019.07.039

Stavredes, T., & Herder, T. (2014). *A guide to online course design: Strategies for student success*. Jossey-Bass.

Stewart, B. L., Goodson, C. E., Miertschin, S. L., Norwood, M. L., & Ezell, S. (2013). Online student support services: A case based on quality frameworks. *Journal of Online Learning and Teaching, 9*(2), 290–303. https://jolt.merlot.org/vol9no2/stewart_barbara_0613.pdf

Valdiviezo, J. (2021). *Open tools and methods to support the development of MOOCs: A collection of how-tos, monster assignment and kits*. https://www.researchgate.net/publication/353118994_Open_Tools_and_Methods_to_Support_the_Development_of_MOOCs_A_Collection_of_How-tos_Monster_Assignment_and_Kits

Valsiner, J., & Van der Veer, R. (2013). The encoding of distance: The concept of the zone of proximal development and its interpretations. In *The development and meaning of psychological distance* (pp. 35–62). Psychology Press.

Vegendla, A., & Sindre, G. (2019). Mitigation of cheating in online exams: Strengths and limitations of biometric authentication. In A. V. Senthil Kumar (Ed.), *Biometric authentication in online learning environments* (pp. 47–63). USA: IGI Global. https://doi.org/10.4018/978-1-5225-7724-9.ch003

Verhagen, P. (2006). *Connectivism: A new learning theory?* https://jorivas.files.wordpress.com/2009/11/connectivismnewtheory.pdf

Vom Brocke, J., Simons, A., Niehaves, B., Reimer, K., Plattfaut, R., & Cleven, A. (2009). Reconstructing the giant: On the importance of rigour in documenting the literature search process. *Proceedings of the 17th European Conference on Information Systems (ECIS 2009)*. Verona, Italy. https://www.researchgate.net/publication/259440652

Vygotsky, L. (1978). *Social development theory*. Instructional Design. https://www.instructionaldesign.org/theories/social-development/

Yılmaz, A. B. (2019). Distance and face-to-face students' perceptions towards distance education: A comparative metaphorical study. *Turkish Online Journal of Distance Education, 20*(1), 191–207. https://doi.org/10.17718/tojde.522705

Yilmaz, K. (2011). The cognitive perspective on learning: Its theoretical underpinnings and implications for classroom practices. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas, 84*(5), 204–212. https://doi.org/10.1080/00098655.2011.568989

Zembylas, M. (2005). *Teaching with emotion: A postmodern enactment*. Greenwich, CT: Information Age Publishing. https://books.google.com/books/about/Teaching_with_Emotion.html?id=b8AGFyb_JDgC