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## DISTANCE LEARNING ECOSYSTEM: INSTRUCTIONAL SYSTEMS DESIGN FRAMEWORK FOR EFFECTIVE E-FACILITATION

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### Abstract

Open and distance learning (ODL) has gained popularity and acceptance in recent years as a means of providing access to higher institutions for the educational aspirations of millions of learners. This has been made possible due to the technological advancements which have also caused changes in the pedagogical practices. However, the use of technologies for online facilitation requires sound instructional design system framework in organizing content, materials; as well as appropriate pedagogy in course delivery in distance learning. This paper highlights key strategies and innovations in distance learning delivery, emphasizing the importance of engaging the instructional system design (ISD) practices in providing quality e-facilitation in distance learning. It underscores the need for appropriate integration of digital tools, continuous professional development for educators and the importance of prioritizing learner-centred engagement in course interactions. The paper concludes by providing guidelines and instructional design system framework for the facilitation of interactive online learning programmes.

**Key words:** Distance Learning, e-Facilitation, Instructional System Design, Online Learning

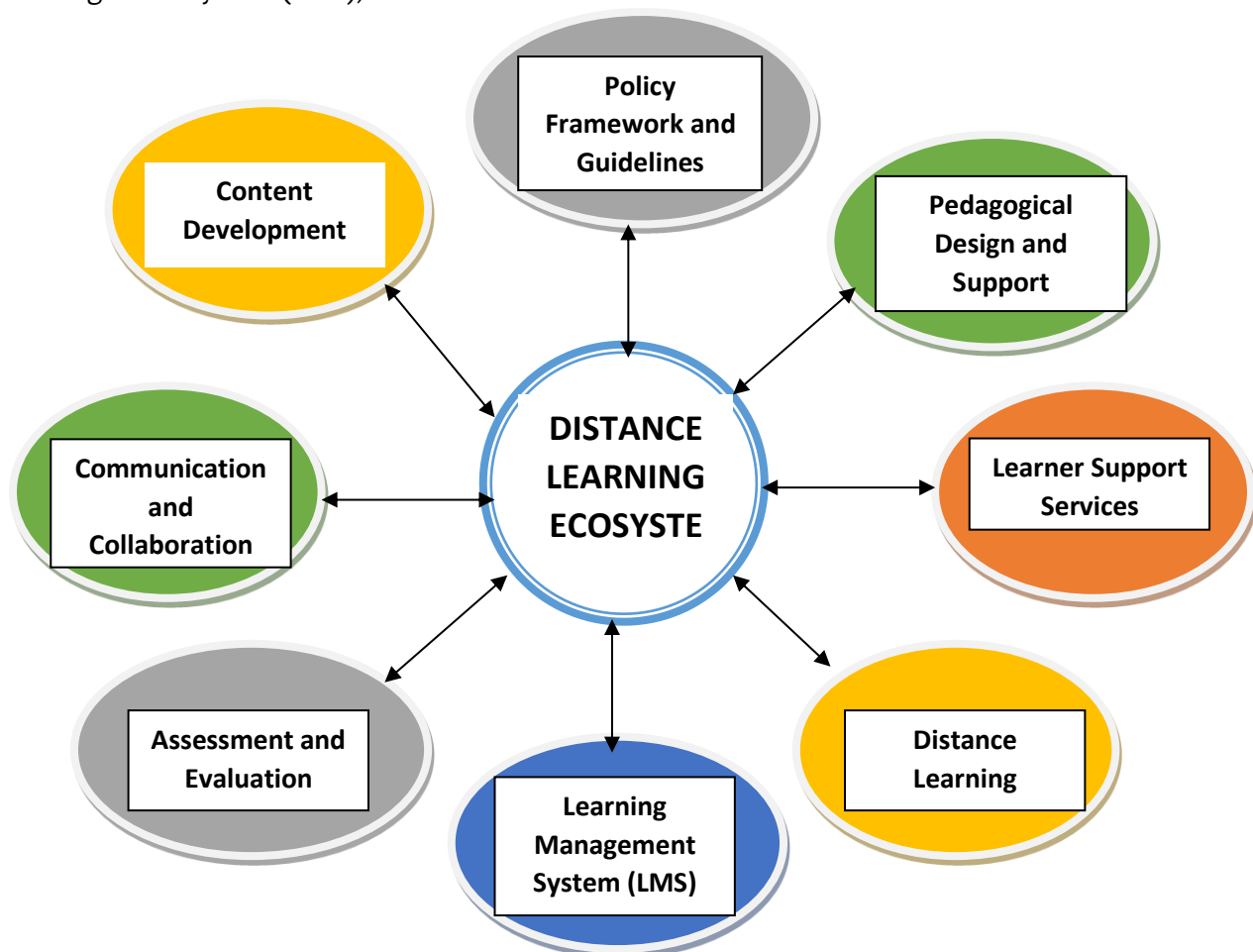
### 1. Introduction

In recent years, open and distance learning (ODL) has undergone a significant paradigm shift, addressing the educational aspirations of millions of learners. This growing trend provides educational opportunities that meet the needs of aspiring individuals. Digital innovations and the global emphasis on skill enhancement have drawn many to the ODL system, which offers lifelong learning opportunities. With the advent of digital technologies, the learning environment is becoming increasingly interconnected, utilizing both online and offline resources to facilitate learning wherever and whenever, through personalized pathways. Studies (Shackelford & Maxwell 2012; Clarke & Bartholomew, 2014) indicate that technology-enhanced learning influences the design, implementation, evaluation, and management of educational processes. Designing effective online course facilitation in open and distance learning is a big task that requires systemic planning for quality interactions delivery to take place between learner-learner, learner-facilitator and learner-materials resources. To address this, the distance learning ecosystem must be enhanced with potential opportunities, scalable reach, and effective use of techno-pedagogy. This is where instructional system design considerations are essential in carefully planning the online facilitation and interaction in the distance learning ecosystem.

An instructional design model outlines the activities that will steer the creation of your online training initiatives. It establishes the framework that will influence and guide your strategies in the e-learning project. As noted by Bozkurt and Sharma (2020), online distance education entails comprehensive planning of the learning experience, which allows for choices, accountability, and adaptability, along with a meticulous course design that promotes learning. The purpose of instructional design is to develop effective, productive, and engaging learning experiences that meet the expected standards based on thorough planning.

### What Constitute Distance Learning Ecosystem?

A distance learning ecosystem consists of various interconnected components that work together to facilitate effective teaching and learning in remote or virtual environments. These components create an infrastructure that supports the delivery of education and ensures a seamless experience for both learners and instructors. Here are the key elements that constitute a distance learning ecosystem: policies and guidelines, content development tools, pedagogical design and support, communication and collaboration tools, assessment and evaluation tools, technical infrastructure, support services, and; learning management system (LMS),



**Fig 1:** Distance Learning Ecosystem

**Source:** Adapted from Oguntunde (2022): Facilitating Online Learning in Distance Education. Paper presented at WMOU 3-Day Training/Workshop on Open Distance Learning.

**Table 1: The components of distance education ecosystem**

S/no	Components	Indices
1	Policies and Guidelines	<ul style="list-style-type: none"> <li>○ Institutional policies, guidelines, and best practices governing distance learning initiatives.</li> <li>○ Includes policies related to course development, intellectual property rights, data privacy, accessibility standards, and academic integrity.</li> <li>○ Ensures compliance with regulatory requirements, promotes quality assurance, and safeguards the rights and interests of stakeholders.</li> </ul>
2	Content Development Tools	<ul style="list-style-type: none"> <li>○ Software and tools used to create, edit, and organize instructional materials for online delivery.</li> <li>○ Includes multimedia authoring software, video editing tools, document creation tools, and interactive content authoring platforms.</li> <li>○ Enables the creation of engaging and interactive learning resources tailored to the needs of remote learners.</li> </ul>
3	Pedagogical Design and Support	<ul style="list-style-type: none"> <li>○ Instructional design principles, pedagogical strategies, and professional development opportunities for instructors.</li> <li>○ Focuses on designing effective online courses, integrating technology into teaching practices, and fostering learner engagement.</li> <li>○ Supports instructors in creating interactive, learner-centered, and accessible learning experiences in virtual environments.</li> </ul>
4	Communication and Collaboration Tools:	<ul style="list-style-type: none"> <li>○ Facilitates interaction and collaboration between instructors and learners, as well as among learners themselves.</li> <li>○ Includes video conferencing software, messaging platforms, discussion boards, and virtual classrooms.</li> <li>○ Promotes real-time communication, group discussions, peer learning, and project collaboration in virtual environments</li> </ul>
5	Assessment and Evaluation Tools:	<ul style="list-style-type: none"> <li>○ Tools used to create and administer assessments, quizzes, exams, and assignments in an online format.</li> <li>○ Includes assessment management systems, plagiarism detection software, and grading tools.</li> <li>○ Enables instructors to assess learner performance, provide feedback, and monitor progress effectively.</li> </ul>
6	Technical Infrastructure	<ul style="list-style-type: none"> <li>○ Hardware, software, and networking infrastructure required to support distance learning operations.</li> <li>○ Includes servers, computers, laptops, tablets, mobile devices, high-speed internet connectivity, and security measures.</li> <li>○ Ensures reliable access to online resources and seamless functioning of learning platforms and tools.</li> </ul>
7	Support Services	<ul style="list-style-type: none"> <li>○ Technical support, instructional support, and student support services provided to facilitate the distance learning experience.</li> <li>○ Includes helpdesk support, online tutorials, training resources, academic advising, counseling services, and accessibility accommodations.</li> <li>○ Addresses technical issues, instructional inquiries, and learner needs to ensure a positive learning experience.</li> </ul>

8	Learning Management System (LMS):	<ul style="list-style-type: none"> <li>○ A centralized platform for course administration, content delivery, and student management.</li> <li>○ Provides features such as course materials hosting, discussion forums, assignment submission, grading, and progress tracking.</li> <li>○ Examples include Moodle, Canvas, Blackboard, and Google Classroom.</li> </ul>
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By integrating these components into a cohesive ecosystem, educational institutions can create robust and effective distance learning environments that cater to the diverse needs of students and enable high-quality education delivery in remote or virtual settings

### Efficient Instructional System Planning for Improving Online Education

There is a considerable necessity to create a robust instructional design model that supports the development, enhancement, and implementation of online learning settings. Meticulous planning and comprehensive instructional design are essential for successful online education (Branch & Dousay, 2015). These design procedures are closely linked to the quality of online distance learning (Hodges, Moore, Lockee, Trust & Bond, 2020).

Online education necessitates more extensive pre-planning due to the varied characteristics of online learning settings and the opportunities enabled by technology. When crafting instruction for online distance learning environments, it is essential to apply learning theories along with theories specific to distance education, take individual differences into account, carefully analyze the target audience, and identify their instructional needs accordingly (Hodges et al., 2020). Given the complex nature of designing online courses, failing to address any step can lead to a subpar learning experience and likely failure for learners, who may become confused and frustrated, lose focus and motivation. A poorly structured course can leave online learners uncertain about where to begin, what actions to take, when to engage, and how to go about learning. Therefore, a pedagogically sound instructional design model is crucial (Branch & Dousay, 2015). This paper proposes a cyclical, iterative, and contemporary ADDIE approach for the development of online learning environments. This model encompasses the phases of analysis, design, development, evaluation, and revision in that order. The ADDIE model is widely recognized as one of the most effective instructional design frameworks because it lays a robust foundation for creating quality e-learning materials and fostering interaction.

ADDIE represents the stages of Analysis, Design, Development, Implementation, and Evaluation. In this instructional design framework, the outcome of each stage feeds into the subsequent stage. They provide a structure to assist in the e-facilitation and the creation of learning content. Instructional design strategies are the techniques that instructional designers employ to construct the course in a way that optimizes the learning of the subject matter. Within the realm of online education, effective instructional design strategies are essential to address the primary challenges presented by the digital learning context: - They compensate for the absence of a physical instructor. In online education, the educator is not present with the learners to assess their engagement and reactions to the learning materials. Selecting the appropriate instructional design strategy can help replicate this same engagement experience in a digital learning setting. - Instructional design strategies aid in making online learning relevant. Numerous organizations utilize online courses to train employees on skills that need to be implemented in their roles. A well-structured instructional design strategy will ensure that the learning content is applicable and ready for

employees to use in their jobs. - Learning strategies assist learners in effectively utilizing the online instructional environment and resources. In a digital setting, instructors transition to facilitators of learning, placing the onus of learning on the participants themselves. This necessitates the implementation of a sound strategy to ensure that learners can maximize the benefits of the online resources available to them.

### The Five Phases of ADDIE Model

**Phase 1: Analysis:** Analysis involves examining training needs and goals, identifying gaps, and determining the best approach to address them. Basically, analysis helps the content developer and instructional designer to clearly identify who the target audience for the course is. Therefore, before starting to initiate and develop any content creation or strategy development, the first step involves analyzing the audience, the current situation regarding knowledge gaps, course objectives, and targets to ensure optimal learning effectiveness. When this analysis is conducted thoroughly, the resulting course output will be more impactful. Recognizing and comprehensively understanding the target audience to determine their needs is the most effective way to craft engaging and motivating e-learning experiences.

**Phase 2: Design** is the second stage of the ADDIE Model. Design involves planning the course structure, content, and instructional strategies based on the analysis. This is where the blueprint for the learning experience is created. This stage focuses on outlining the course structure in two ways: either through the organized use of storyboards alongside mind maps or bullet-point sketches, or by crafting a detailed plan with vivid descriptions and schematics. The more thoroughly you outline your design, the smoother the development phase will be. An additional key objective of this phase is to formulate an educational strategy that includes interactive elements, assessments, resources, and gamification to enhance learners' comprehension and retention of the course content. As such, it's important to create opportunities for learners to practice the skills or behaviors you want them to acquire. This phase is crucial for the overall creation of the course, as it streamlines knowledge delivery, inspires learners with numerous examples, sharpens their skills, and boosts the effectiveness of the e-learning experience. Basic considerations during this phase include: a) What is the amount of time learners can commit to the course? b) What resources are at your disposal for course development? c) Does your course design engage learners with its aesthetic appeal? The steps in this phase involve: a) Establishing learning objectives b) Identifying the course sequence (structure) c) Implementing instructional design strategies d) Designing the navigation and user interface e) Incorporating visual or graphic design f) Finally, creating quizzes or assessments

**Development Stage:** Development involves creating the actual learning materials, including content, multimedia, and assessments, based on the design phase. The earlier phases focused on analyzing and planning the course creation process. This third stage of the ADDIE model, known as development, is where the actual construction occurs, allowing you to implement your designs using preferred and suitable e-learning authoring tools, which can vary in complexity. During the course creation process, each feature should be developed in alignment with the design phase. The careful application of these features will enable the presentation of the course in a way that captures learners' attention and improves the e-learning experience. Additionally, this is the point at which the course quality should be tested through user testing to confirm that there are no basic mistakes, such as errors in grammar, spelling, or syntax. Testing the course is a crucial aspect of the development phase to ensure that all scenarios outlined are thorough and complete, thereby adding value to the course.

**Implementation Stage:** The implementation stage involves launching and delivering the course/modules, and putting the developed materials into use for the intended audience. Once the course development is completed and there is satisfaction that the content is of high quality and free of errors, the courses are then uploaded to a Learning Management System (LMS). During this stage, the LMS manages delivery options, as well as tracking and reporting. A key advantage of the LMS is its ability to accommodate both instructors and learners, enabling both self-directed learning and instructor-led e-facilitation.

**Evaluation Stage:** The concluding phase of the ADDIE model is evaluation. This stage emphasizes measuring the training program's effectiveness, collecting feedback, and identifying enhancements for future versions. Once the e-learning course has been created, implemented, and delivered, you can analyze both qualitative and quantitative results to enhance the performance of your target audiences as well as that of the e-learning team.

### Advantages of instructional design in online facilitation

Instructional system design provides a structured process for creating learner-centered, engaging, and effective distance learning experiences. There are numerous advantages to using instructional design in the creation of online courses: a) Instructional design aids in understanding the learners. Quality instructional design starts with recognizing that learners come from diverse backgrounds, each with unique needs and characteristics. Hence, the initial phase of the instructional design process involves analyzing the learners regarding their prior knowledge, demographics, available time for the course, preferred study environment, and more. Furthermore, instructional designers consider the learning objectives. After this analysis, the instructional designer proceeds to develop the curriculum and determine the most effective methodologies and strategies for imparting the necessary information. b) Instructional design enhances the engagement of e-facilitation. Since instructional designers invest time to understand their learners initially, they can more readily identify the learning activities that resonate with and interest their learners when developing e-learning content. Drawing from their evaluations and insights, instructional designers are able to select the tools and strategies that align best with the learners' needs, thereby fostering a more interactive learning experience. c) Instructional design supports knowledge retention among learners. E-learning materials created according to sound instructional design principles enable learners to acquire and retain knowledge more effectively. This is achieved by implementing effective instructional design techniques that accommodate various learning styles and capabilities. d) This advantage is one of the key benefits of using instructional design in online course creation. Effective instructional design enhances the overall e-facilitation and learning experience, making it more inspiring for learners and encouraging them to apply their knowledge in practice and surpass their initial expectations

### Facilitators Roles and Appropriate Strategies for e-Facilitation: Dos and don'ts

Facilitating online discussion boards can be quite difficult. A facilitator must inspire students to actively participate in the discussions and enhance their learning experiences within the forum (Bolliger & Inan, 2012). As an online facilitator, your responsibility is to foster critical thinking, encourage learners to approach problems or situations from different perspectives, and facilitate the creation of new knowledge through reflection and construction. Interaction in discussion forums is an essential and fundamental process for acquiring knowledge and promoting cognitive growth (Clarke & Bartholomew, 2014). Some researchers (Bukingham Shum & Ferguson, 2012; Clarke & Bartholomew, 2014) characterize discussion forums as the environment where a class-wide learning community emerges, as it's the setting in which



students engage with the content, the instructor, and one another to reshape and enhance their understanding. As a facilitator, a primary focus is to steer the discussion appropriately and assist learners who may deviate from the topic at hand. According to Dzubinski (2014), the facilitator should facilitate progress in conversation if it becomes “stuck” or stagnant. However, a facilitator should not become so overly involved that they disrupt the natural flow of dialogue. The literature indicates that minimal interference from the facilitator allows students to express their thoughts and opinions more freely.

- a) Prior to the discussion, outline the guidelines for netiquette and the behavioral expectations at the beginning of the class. Clearly communicate your expectations. Ensure that your students understand what you anticipate from them on the discussion board. Would you prefer more formal, referenced responses, or should the tone be more casual? To what degree do you expect students to engage with each other’s posts? Consider responding to the prompt yourself (and/or engaging with student replies) to demonstrate the kind of behavior you wish to encourage among your students. You might want to explicitly ask students to reply to a specific number of their peers’ contributions. In this case, it’s important to set clear deadlines for when the initial post and responses should be made to prevent all discussions from clustering at the last minute before the due date. This will also enhance the quality of the discussions, allowing both students and facilitators more time to reflect on the contributions.
- b) While discussing, motivate students to introduce themselves and get to know each other in order to create a supportive learning environment where they can comfortably share and engage in discussions. Urge students to participate frequently and from the beginning.
- c) After the discussion  
Summarize the conversations. Either you or your students should regularly connect comments to synthesize the discussion and advance it. In these summaries, refer to specific remarks made, highlight various perspectives, and clarify the key contributions of the discussion. A summary can also serve as an effective conclusion to a discussion. Keep in mind that several shorter discussions tend to be more beneficial than one lengthy discussion,

Maintain a clear organization of messages. You might need to relocate a comment from one discussion forum to another if there are multiple discussions or threads happening simultaneously. One approach is to copy the message and email it to the original author with an explanation of why you're recommending the move, then delete it from the current discussion forum. This allows the student to easily transfer the copy to the appropriate discussion forum.

### Some Challenges in Delivery of Open Distance Learning

Although there are many promising opportunities for digital presence in the emerging landscape of distance education, there are also significant challenges associated with its development. These challenges include: 1. inadequate digital infrastructure; 2. disparities in digital access and equity; 3. insufficient or low levels of digital literacy; 4. absence of accessible educational resources pertaining to digital educational technologies; and 5. lack of relevant public policies or legal frameworks in certain instances. The challenge of inadequate digital infrastructure encompasses the partial or total lack of high-speed internet access, necessary computing devices and peripherals, suitable software, and qualified personnel required for the operation of these technologies (Olanrewaju, Adebayo, Omotosho, & Olajide, 2021).

## Conclusion

Distance learning offers opportunities for flexible, accessible, and scalable education delivery. The development of a robust Distance Learning Ecosystem (DLE) requires a comprehensive Instructional Systems Design (ISD) framework to ensure effective e-facilitation. This framework is vital for creating an engaging and effective online learning environment. The ADDIE ISD framework integrates various instructional design principles with technological tools to enhance the quality of distance education. By focusing on key components such as learner analysis, content development, technology integration, and continuous evaluation, the framework addresses the unique challenges of distance learning and promotes active engagement, interaction, and learning outcomes. The effective implementation of this framework leads to a more cohesive and efficient distance learning ecosystem, which supports diverse learning styles and needs. The framework ensures that instructional materials are accessible, interactive, and aligned with learning objectives. Moreover, it emphasizes the importance of e-facilitation skills, which include guiding discussions, providing timely feedback, and fostering a collaborative learning environment. This ADDIE ISD framework not only enhances the effectiveness of distance learning programs but also contributes to the overall satisfaction and success of both learners and educators. By leveraging ISD principles and e-facilitation techniques, educators can create engaging, interactive, and impactful distance learning e-facilitation that cater for diverse learners need and enable high-quality education delivery in remote or virtual settings

## Suggestions for Enhancing the e-facilitation in Distance Learning

By implementing the following suggestions, educational institutions can enhance the quality and effectiveness of their distance learning programs, making sure they address diverse needs of every learner and facilitate successful learning outcomes.

1. Educational institutions should adopt a well-structured ISD framework tailored to distance learning. This framework should encompass all aspects of course design, from initial analysis to evaluation and continuous improvement.
2. Continuous learning and skills enhancement programme opportunities should be offered for educators to enhance their e-facilitation skills. This includes training on effective online communication, use of digital tools, and strategies for fostering student engagement.
3. Utilize advanced technological tools and platforms to design dynamic and engaging educational experiences, including the use of virtual classrooms, and multimedia content.
4. Courses should be designed with a focus on the learners' needs, preferences, and learning styles. Incorporate interactive elements such as discussion forums, quizzes, and group projects to promote active learning.
5. There is the need to provide adequate learning resources and make them available for use to learners with disabilities.
6. Establish mechanisms for continuous assessment and feedback. Regularly assess the impact of instructional pedagogies and tools, and implement necessary changes in improving students' learning experience.



7. Foster a sense of community among learners by encouraging collaboration and interaction. Use group activities, peer reviews, and social media integration to build a supportive learning community.
8. Provide a wide range of support services for students, such as technical assistance, academic guidance, and access to mental health resources. Ensure that students have access to the help they need to succeed in the distance learning environment.

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