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Designing Online Learning: Comparative Study between Indonesian Open University and Korea National Open University

Benny Agus Pribadi
Faculty of Education, Universitas Terbuka, Indonesia, *agus.benny@gmail.com*

Kwan Sik Chung
Korean National Open University, South Korea, *kchung0825@mail.knou.ac.kr*

Many people especially educators are developing instructional materials for online learning during the pandemic era referring to the guiding principles of online instructional units or course materials in order to produce instruction for online learning. In fact, it is difficult for educators to start designing the appropriate instructional by the context of online learning for considerations used as guidelines of larger instructional system. The aim of this study is to analyse the best practice of implementing the instructional system design models to create effective and efficient online learning programs. Instructional system design models consist of systematic steps that are commonly used in designing and developing high-quality learning materials. This study used the descriptive qualitative research approach that consists of detailed analysis of one or more cases or phenomena. The use of the instructional system design model and procedures both in UT and KNOU were explored to find a comprehensive insight that can be applied in designing and developing the optimum quality of the online learning program. The implementation of the instructional system design model provides common important components that can be shared to create a high quality of online learning programs by involving several common components namely: analysis, design, development, implementation, and assessment as the generic components of instructional system design. The instructional system design models' methodical and holistic phases aid instructional designers in designing and developing successful and efficient online learning programs.

Keywords: best practice, comparative study, instructional design model, online learning, open and distant learning

INTRODUCTION

Education institutions in the world have used online learning massively. It is believed that this mode of learning provides some benefits for the faculty and students. Student computer literacy, student computer access, infrastructure, interactivity, navigation, evaluation, correctness and decency, and loading speed and bandwidth are some of the

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significant issues that require further attention in the context of online learning to have an impact on achieving the goals within instructional process. In other circumstances, the item is not new (for example, the impact on student learning), but it requires extra attention in online learning. Some studies have been conducted regarding the impacts of using online learning programs on students' achievement. The United States Department of Education (2009, p. 45) reported "Students who took all or part of online class performed better than those taking the same course through traditional face-to-face instruction."

In higher education institutions that apply the distance education system, the use of online learning is necessary as this mode of learning opens wide access for students to have flexible study. The use of online learning as a mode of study shows significant development across the globe in field of education including Universitas Terbuka (UT) and Korea National Open University (KNOU). They apply online learning to facilitate the students' learning process to attain the required learning goals. All courses offered in both open and distant universities are held online. They are aimed to provide chances for the students to use the online course materials. In addition, both the distant and open higher institutions provide synchronous communication between the students and the lecturer as a kind of learning support (Appana, 2008).

The instructional design that consists of the systematic and holistic procedures resulting in an effective instructional program. Since it requires intensive learning process, it is crucial for the distant and open education institutions to implement the instructional system design that makes their online programs engage students in learning activities. One of the indicators of online learning succeeding is student involvement in learning activities. Students have to be involved in intensive interaction of the learning process. In online learning, the students have to interact with lecturers, peer students, and learning materials (Aljaraideh, 2019; Burdina et al., 2019).

The use of instructional system design is done by applying the instructional system models. It is a general guide to implement the systematic and holistic procedures that will produce an effective instructional program that includes online learning. This present study will elaborate on the use of the instructional system design model that is used by UT and KNOU to create an effective and efficient online learning program. The systematic and holistic steps and procedures of the instructional system design model implemented by UT and KNOU will be elaborated and analyzed to find the common components that can contribute to the successful implementation of the online learning program (Elen, 2016).

This study analyzed the best practices of the open and distant learning institutions in implementing the instructional system design models to produce effective online learning programs. In this study, the online focus group discussion (FGD) method was used. Besides, the analysis of relevant documents of the open and distant learning was used to find the essence of using the instructional system design model in producing the online learning program. Fellow researchers of UT and KNOUare involved in this study. The analysis of using the instructional system design model is based on the best

practices of UT and the KNOU in designing and developing the online learning program.

To summarize, we were unable to locate complete instructions for building and developing an instructional unit or course materials based on an online learning strategy found on principles. Guidelines for printed materials are established and generally understood... there is no standard for electronic papers (Plankis, 1998). As a result, we went back to a framework that represented general principles for creating text-based instructional modules or course materials (McAlpine & Weston, 1994; Saroyan & Geis, 1988). These principles are a compilation of expert guidelines for instructional material creation and evaluation. These concepts had previously guided our instructional material design and appeared to be equally applicable in the context of online learning. However, it became clear that some aspects of online learning are not explicitly addressed in the existing guidelines, necessitating explicit evaluation of their link to these principles.

The framework of generic guidelines presented in this paper consists of five categories of instructional principles to be considered when designing online learning as the system design model: analysis (pedagogical issue's needs), design (content issues), development, implementation (physical issues), and assessment.

We present additional considerations for designing instruction for the context of online learning, based on the literature and our own experience: impact on learning, lecturers' computer literacy, lecturers' computer access, infrastructure, interactivity, navigation, and evaluation. We illustrate how each of them is an extension of existing instructional ideas in some way. This paper makes a significant contribution by providing a thorough set of guidelines or principles for building online learning for use on a website or in a live conference.

Based on the background of the study above, the research problems presented in this study cover in the following questions: 1) How does the instructional design system model provide significant roles in designing and developing the high quality of online learning programs? 2) What are the common components of the instructional system design model that can provide a positive contribution in designing and developing the online learning program?

Literature Review

Instructional Design Model

The open and distant learning institutions must implement the field of instructional system design in designing and developing the course materials. Instructional design in this sense is defined as the systematic process of translating a plan of instruction into a set of activities, materials, information, and assessment procedures (Smith & Ragan, 1999). In addition, Branch and Kopcha (2014) noted that "instructional design is intended to be an iterative process of planning outcomes, selecting effective strategies for teaching and learning, selecting relevant technologies, identifying educational media and measuring the performance" (p. 77).

Reigeluth and An (2021) define instructional design as a deliberate and orderly, but flexible, process for planning, analyzing, designing, developing, implementing, and evaluating instruction in education or training settings, formal and informal. The field of instructional system design is used to develop education, training programs consistently, and reliably (Gustafson & Branch 2007, p.11).

The use of instructional system design provides comprehensive frameworks for the instructional designers and developers to produce competency-based online learning materials for the students. Branch and Dousay (2015) noted the instructional design as a complex process that, when appropriately applied, promotes creativity during development and results in instruction effectively and appealing to learners. The implementation of instructional system design, in general, is done by applying one of the instructional design models. In this sense, the model is defined as a simple representation of more complex forms, processes, and functions of physical phenomena or ideas (Branch & Dousay, 2015). The model is mostly used for systematic and systemic procedures to complete a specific job.

Kurt (2018) stated that an instructional design model provides guidelines to organize appropriate pedagogical scenarios to achieve the pre-specified instructional goals. Instructional system design can be defined as the practice of creating instructional experiences to facilitate learning most effectively. Instructional design models convey the guiding principles for analyzing, producing, and revising learning environments (Branch & Dousay, 2015).

According to Branch and Dousay (2015) the models of the instructional system design process usually pose the following characteristics:

1. Learner-centered learner and his/her performance are the focal points.
2. Goal-oriented well-defined goals are essential.
3. Focus on real-world performance help learners perform their abilities in the real world.
4. Focus on outcomes that can be measured reliably and validly- creating a valid and reliable measurement instrument is essential.
5. Empirical data are the heart of the design process.
6. Team effort the process of using instructional design usually involves teamwork.

Many instructional system design models can be applied in designing and developing the instructional program, including online learning. Branch and Dousay (2015) classify the instructional design models into three following categories: 1) classroom-oriented models; 2) product-oriented models, and 3) system-oriented models.

Primarily, professional teachers use the classroom instructional design models. These models are believed to support their role as teachers who have to facilitate the students' learning process. The user of the classroom instructional design model includes elementary and secondary school teachers, community college and vocational school instructors, and university faculty. Product development models are typically used to develop several hour or perhaps a few days, in length instructional programs. The various front-end-analysis are used in implementing the product-oriented models. In

using these kinds of models, the user may have no contact with the program developers except during the try-out of the prototype. In some rapid prototyping models, early and continuous interaction with prospected users or clients is a central feature of the process (Burdina et al., 2019).

The models of the system-oriented typically concern that a large amount of instruction, such as the entire course or the entire curriculum, will be developed with available substantial resources or a team of highly trained developers. The use of the system-oriented model requires continuous try-out and revision to ensure the effectiveness of the instructional programs (Goksu et al., 2017).

Online Learning

E-learning is a term created by combining electronic technology (e) and learning, and e-learning is defined as a learning environment through electronic means, information communication, and radio broadcasting technology. Early e-learning is a computer-based learning environment, and the use of computers for education dates back to the 1970s. But it was in the early 1990s that the current e-learning environment, which combines computers with Internet technology, appeared. In particular, with the commercialization of various multimedia communication services called the web service and the advent of a lifelong learning society, education and training recognized as a part of a lifelong life. E-learning provides a learning environment without time and place restrictions. It is a form of learning that learners can use it for lifelong learning. The definition of e-learning is as follows in more detail for each scholar.

1. E-learning is the use of internet technology to deliver various solutions to improve knowledge and learning performance (Rosenberg, 2001).
2. E-learning is to conduct teaching and learning using the internet, that is, multimedia and network (Oke, 2000; Reigeluth & An, 2021).
3. E-learning is the use of IT technology partially or entirely to convey information or to promote the acquisition of skills or knowledge of learners (Mantyla, 2001).
4. E-learning refers to designing, delivering, selecting, supporting, extending, and coaching learning using technology for all kinds of learning. (Hammond, 2001).
5. E-learning is defined as instructions delivered through digital devices with the intent of supporting learning (Clark & Meyer, 2011).
6. E-learning supports teaching and learning, organizational performance, and knowledge creation exchange. A system that provides educational experiences using the internet and IT technology for sharing (Parsad et al., 2008).

E-learning can be considered as a new model of learning which uses electronic devices to convey instructional content to students. The well-designed and developed online learning program will support students' learning to achieve the required knowledge and skills. The terms commonly included in the above definitions are 'IT service' and 'learning'. In other words, e-learning refers to teaching and learning using IT services. E-Learning continuously provides educational content or learning information by using IT services. In addition, information and communication network technology are used to distribute and share educational content or learning information to learners, and learners use computers and smartphones as learning terminals (Rosenberg, 2001).

E-learning is developed and operated in various types and forms in the educational field. Many scholars have different opinions about the classification criteria and classification of e-learning, but in the field of distance education, according to teaching-learning methods and development methods, classification criteria are defined. First, classification according to teaching-learning method includes individual teaching type, discussion learning type, simulation type, educational game type, repetitive practice type, case-based reasoning type, storytelling type, resource-based learning type, problem-based learning type, and inquiry learning type, goal-based learning type. Second, classification according to the development method is divided into stand-alone courses type, virtual-class courses type, learning the games and simulations type, embedded learning type, and blended learning type. Considering factors such as learning purpose, situation, and environment, an appropriate one of the above methods, or using a mixture of several types could be defined (Parsad et al., 2008).

There are many forms of e-learning online learning, blended learning, Open Education Resources (OER), and Massive Open Online Course (MOOC). Online learning is considered the newest and most popular form of distance education today. They are internet-based courses offered synchronously and/or asynchronously to facilitate learning and instruction (Thurmond & Wambach, 2004). Within the past decade, online learning has had a major impact on postsecondary education, and the trend is only increasing. Some reasons that influence the conducting of online learning in distant education.

Online learning provides some of the advantages which include course material accessibility, flexible scheduling, more academic options, and the opportunity to build valuable skills. Online learning is highly likely to stay and grow. The review of its history clearly shows that online learning has developed rapidly, facilitated via Internet connectivity, advanced technology, and a massive market. Online learning has evolved from the 19th-century correspondence programs to the 21st century's vibrant and well-designed institutional online offerings (Clark & Meyer, 2011).

Parsad et al., (2008) conducted a study regarding some factors that influence the higher-education institutions to offer online learning. Their study showed that meeting the students' demands for flexible schedules (68%), providing access to college for students who would otherwise not have access (67%), making more courses available (46%), and seeking to increase student enrolments (45%).

Yuan and Kim (2014) noted that online students benefit greatly from the online learning program in the following ways: (1) because of their connectivity with one another, the learners can share knowledge and fulfill common goals, which can reduce the students' dropout rates; (2) the relationship and interaction between the instructor and learners and among peer learners can increase student performances and their satisfaction of the course, and (3) learners can receive supports and help from their peers, and at the same time, the students can add their knowledge base through their interactive actions.

Effective online instruction relies on well-designed course content, motivating interaction between the instructor and learners, well-prepared and fully supported

instructors. With our thorough analysis on this matter, this study further confirms that teachers definitely and indisputably play a crucial role in online education (Sun & Chen, 2016). Teachers have to be able to design an online program that engages the students in learning activities.

Online learning provides a wide opportunity for the learners to share rich content media files such as pictures, complex diagrams, audio, video; and interactivity of electronic communication in user-friendly modalities such as email, bulletin boards, and simultaneous chat rooms, as well as more bandwidth-intensive forms of Web-enabled audio and video teleconferencing. Learning interaction will be more intensive in participating in an online learning program. Online learning programs provide chances for students to participate and learn actively (Goksu et al., 2017).

Online learning has become the main form of delivering instruction at colleges and universities (Appana, 2008; Makruf et al., 2022). The interaction is often considered necessary and desirable for student satisfaction and learning to occur. Instructor-student interaction in this context is a critical component to the success of the instructional program.

One of the criteria that can be used to assess the quality of online learning is the interaction between the students and the learning substances (Frydenberg, 2007). The online learning programs have to ensure intensive student engagement in studying the online course content. In addition, the students must get immediate feedback that informs their learning achievement. The use of feedback in this context is essential in conducting the online learning program.

METHOD

Sample/ population

The participants in this research covered 12 lecturers from Universitas Terbuka (UT) and 8 lecturers from Korean National Open University (KNOU). Both institutions are chosen as the research population by considering the similar characters of education service available in terms of open system and its online instructional design model developed for students in learning.

Data collection strategy/ procedures

It used online focus group discussion, in-depth interview, and document analysis concerning the use of instructional design model to gain a comprehensive understanding of using the instructional system design model in designing and developing the online learning program as the instruments in collecting the data.

Data analysis

This present study implemented the descriptive qualitative approach which involves a detailed analysis of one or more cases or phenomena. (Gall et al., 2013). The use of the instructional system design model and procedures were explored both in UT and the KNOU to find a comprehensive insight that can be applied in designing and developing

the optimum quality of online learning program. Meanwhile, in analyzing the data, this research instrument use a Likert scale with 5 answer categories (Strongly Agree, Agree, Doubt, Disagree, Strongly Disagree). This study engaged the instructional designers, media producers, and practitioners to gather the required data.

FINDINGS

The common components of the instructional system design model to provide a positive contribution in designing and developing the online learning program: UT and KNOU

The online course materials of UT are designed and developed by qualified tutors from well-known state and private universities in Indonesia. The tutors were trained to design and develop the online course materials that can facilitate the students to attain the curriculum learning outcomes. UT determines to use the systematic design of instruction model proposed by Dick and Carey (2017) for designing and developing the online course materials. The model consists of some systematic and holistic steps of designing and developing the instructional programs which include: 1) identifying instructional goals; 2) conducting instructional analysis; 3) analyzing learner and context; 4) writing performance objectives; 5) developing assessment instruments; 6) developing instructional strategy; 7) developing and selecting instructional materials; 8) designing and conducting a formative evaluation of instruction; 9) revising instruction; and 10) designing and conducting a summative evaluation of instruction. The systematic and holistic procedures of the model can be seen in the following figure.

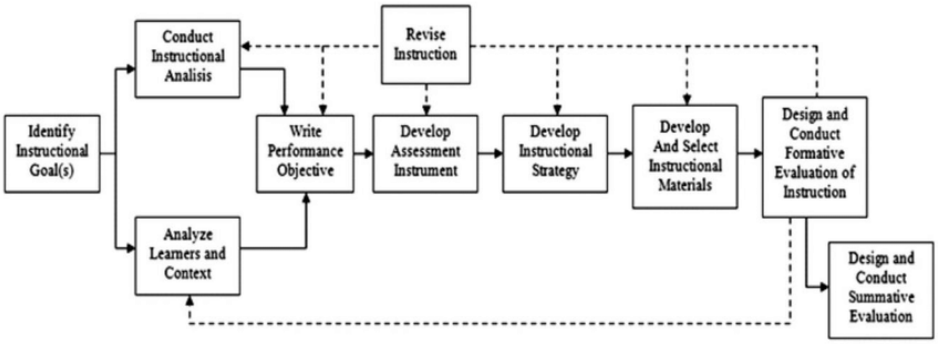

Figure 1
The model of the systematic design of instruction (Source: Dick & Carey, 2017)

The systematic design of instruction is considered as a comprehensive model to design and develop online course materials. Simonson (2015) suggestted the open and distant university institutions to implement the system approach instructional system design model for developing the instructional materials and programs. The system approach-based model consists of the systematic and the systemic procedures in which the output of one design step can be used as an output for the next step. For example, the evaluation steps provide feedback used to revise the instruction until it meets the original needs or specification.

The implementation of instructional system model design was started by determining the course goals as learning outcomes. The national curriculum of the field study is used as a standard for stating the instructional goal. Description of the course goal has to be a clear statement of the competencies that have to be mastered by students. A clear statement of the course goals is used to determine the other components of the instruction or course such as course content, instructional method, media, and evaluation or assessment. In addition, the clear statements of the course goal can be used as an input for the other steps of the systematic instructional design model called instructional analysis.

The instructional analysis is a process of subordinate skills or sub-competencies identifications learnt by the students to achieve the course goals. The use of instructional analysis steps will ensure that learning objectives or sub-skills are relevant to be learned by the students to achieve the predetermined course goals. The result of the instructional analysis process is a map of competencies that describes the structure of sub-competencies that should be learned by the students to master the course goals.

Korea National Open University (KNOU) e-learning content configurations vary depending on the content of the course and design strategy. But, basic learning steps and development methods of e-learning content configurations are similar to each other. Various menu configurations of e-learning content are adjustable according to the characteristics of the subject or instructional goals, and the main components of KNOU e-learning contents.

KNOU e-learning content development process consists of an analysis and planning stage, a teaching plan and manuscript preparation stage, a storyboard preparation stage, a development stage, and a review-revision and supplement stage. The e-learning content developed by the Digital Media Center (DMC) of Korea National Open University is planning e-learning content through analysis and content analysis, technology, and environment analysis of instructors and learners in the analysis and planning stage. In the teaching plan and manuscript preparation stage, the author (professor) prepares the teaching plan, and according to the written teaching plan, the instructional designer establishes teaching and learning strategy suitable for the purpose of the lecture based on the teaching plan. In addition, e-learning content development direction, e-learning content distribution strategy, e-learning content interaction, learner interface, and e-learning content evaluation method are designed. Figure 2. Shows the development process of e-learning contents of the KNOU.

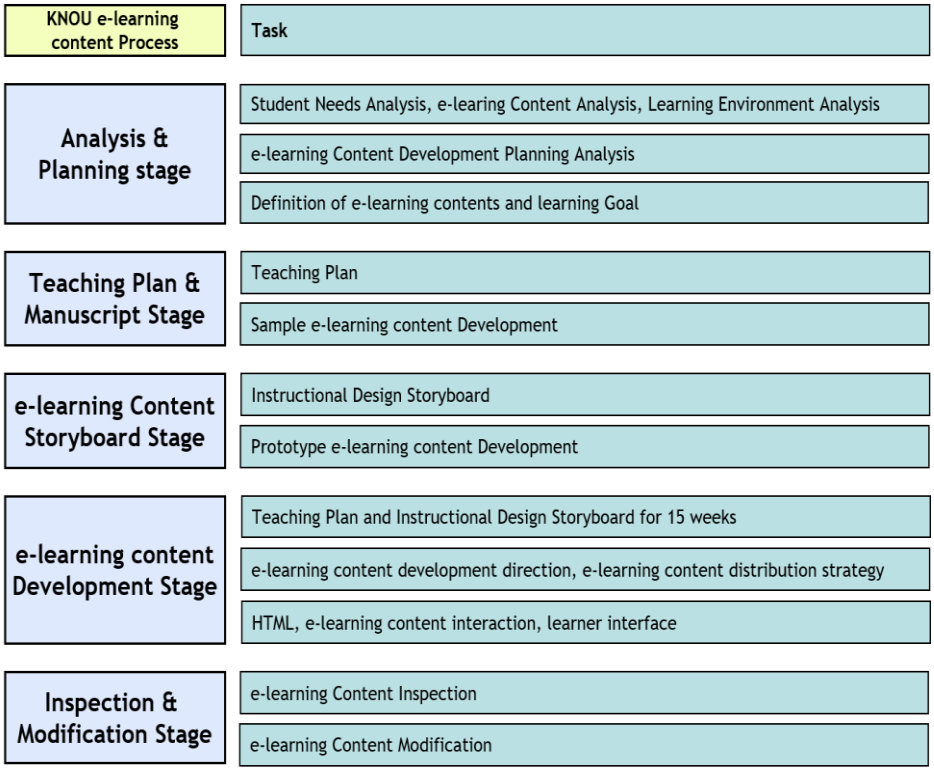

Figure 2
Development process of e-learning contents of the KNOU

In the storyboard creation stage, the e-learning content direction, e-learning content distribution strategy, e-learning content interaction, learner interface, and e-learning content evaluation method are revised and supplemented through a meeting between the instructor and the content designer. In the e-learning content development stage, the person in charge of multimedia development is responsible to develop the e-learning content. For e-learning content video production, the production team confirms and produces the recording schedule and distributes e-learning content through the media server of the e-learning content server operation team. In the review-modification and supplementation stage, the developed e-learning content is inspected and supplemented.

The roles of instructional design system model to provide significant high quality of online learning programs: UT and KNOU

In UT, the instructional design roles refer to the result of data analysis based on three variables namely; focus group discussion, in-depth interview, and document analysis were the factors. A closed questionnaire instrument with a 1-4 Likert scale was used to measure all variables. The method of analysis was descriptive with a qualitative approach. The instruments for focus group discussions were presented below;

Table 1
Focus group discussion analysis

No	Questions	The Korea National Open University (KNOU)	Universitas Terbuka (UT)
1	How important is the use of the Instructional System Design (ISD) model in producing the good quality of online learning?	The use of the ISD model is necessary to guide the lecturers in creating the valid and systematic online learning courses	The ISD model is used as a standard procedure in designing and developing the online learning program
2	What is the role of the ISD model in producing the online learning course/	The use of the ISD model focus on the lecturer or instructional designer in designing the reliable online learning program	The use of the ISD model supports the lecturers in producing the online learning courses that can be used to facilitate students' achievement
3	What are the procedures used by the lecturers in designing and developing the online learning program?	The steps of using the ISD model include: - Describing students' characteristics - State the objectives of the online course - Writing the course plan - Producing online learning materials. - Trying out and revising the program - Implementing the online learning course	The ISD model used consists of the following steps: - identify the instructional goal - conduct instructional analysis - Analyse learners and context - Write performance objectives - Develop assessment instruments - Develop an instructional strategy - develop and select instructional materials - implanting formative evaluation - revise the program - Using the program
4	Who are the experts involved in designing and developing online learning?	Designing and developing the program involves: - Course manager as an instructional designer - Subject matter expert - Instructional media specialist - IT programmer	The use of ISD models involves: - Senior lecturer - Project leader as an instructional designer - Content expert - Media expert - Media specialist - Programmer
5	What is the contribution of using the ISD model in designing and developing online learning?	The use of the ISD model helps us to create an online course that is relevant to students' learning achievement	Implementing the ISD model provides guidelines to produce a program that can support the students' learning to attain the required competencies
6	Who is responsible for designing and developing the offered online learning	An appointed course manager is responsible to conduct a project of designing and developing the online learning program	The project leader leads the ISD team to produce the online learning course

The step of learners and content analysis is required to gather information concerning the characteristics of the students who will participate in designing online course. The focus in analyzing the characteristics of the students' is on students' computer literacy and entry behavior exposed to participate effectively to complete the course. These factors are considered essential in conducting the online learning program.

The sub-skills list resulted from implementing the instructional analysis process are also used as the performance objectives of the online learning program. The students have to learn systematically and holistically to attain the pre-determined course goals. The list of performance objectives of the online learning program is used as a base for doing the next step in developing the assessment instrument.

The assessments' instruments used in the online program should be valid and reliable. The test items and learning assignment written in this step must be able to measure the students' learning achievement. The result of the test should indicate that the students have achieved the course learning objectives.

The usage of standard instructional strategy is necessary for conducting the online learning program. The instructional strategy is aimed to create learning activities that can engage the students in an online learning program. The course designer must select the proper instructional strategy since the success of the online learning program depends on the level of the students' engagement. The use of proper instructional strategies will make the online learning program able to enhance the students' learning achievement.

The next step of using the systematic instructional design model is to develop online learning materials and its media. There are many types of media and learning materials that can be used in an online learning program. Smaldino et al. (2018) noted the six basic categories of media and learning materials that can be used in facilitating the students' online learning process such as text, people, objects, visuals, audio, and video. These types of media can be presented in digital form. Every type of media has specific attributes that can be used to support the online learning process. UT uses many kinds of media and learning processes to facilitate the students to study the course substances. Those kinds of media and learning materials are located in a learning management system (LMS). The students can study the course substances by using the LMS. Besides, the use of LMS enables the students to communicate with tutors and peers both synchronously and asynchronously.

The formative evaluation step is used to produce the prototype of the online learning program. The program has to be tried out before it is used in the real online setting. The revision process of the program is applied to assure its effectiveness when it is used in real student online learning activities.

The online program, which was evaluated in a formative way, was used as course materials located in pre-designed LMS. The online course program consists of the program initiation that introduces the students to an online course, learning schedule, the course content or learning materials, tutor profile and information of course participants, learning assignments, quizzes, test, chat, and discussion forum, feedback, additional hyperlink learning resources, and contact (Indrawati, 2021).

Meanwhile in KNOU, the roles of instructional design system model to provide significant high quality of online learning programs rely on the e-learning content developed by the Digital Media Center (DMC) consisting of five stages. The students can study the online course both through synchronous and asynchronous communications. In this program, learning interaction occurs between the tutor and students, students and peers, and students and course materials. Details of its stages and roles in the online learning are presented below;

1) The analysis and planning stage

In the analysis and planning stage, learners, learning environments, and e-learning contents are analyzed and determined according to the results of the analysis. It is shared through the establishment of an e-learning content development plan, the e-learning content related to development and future development schedule. It also covers the preparation for e-learning content plan, class plan, and content development plan.

Based on the e-learning content plan, lesson plan, and content development plan, e-learning content and goal definitions are also made. The learning needs of learners are converged through questionnaires or small group interviews on learners using e-learning contents. Due to the nature of e-learning content, an online inspection method may be utilized.

2) Teaching plan and manuscript stage

The professor and the instructional designer hold a teaching plan meeting and decide the e-learning development direction and vision, and teaching and learning strategy. The professor develops a teaching plan for a sample lecture that matches the planning content of e-learning content. Then, a sample lecture is sent to the professor in charge.

3) e-learning Content Storyboard stage

After the professor's teaching plan and sample manuscript are completed, the stage of creating an e-learning content storyboard begins. Based on the sample manuscript, the instructional designer establishes an optimal teaching-learning strategy and creates an e-learning content storyboard. Within the scope of e-learning content development and the type of instructional design, a sample content that is the prototype of e-learning content is developed.

The e-learning content development team conducts a meeting with the professor with a prototype e-learning storyboard. The e-learning content and development schedule are determined through a meeting between the e-learning content development team and the professor. Professors (content experts), instructional designers, programmers, web designers, and multimedia experts decide the direction of e-learning content development and agree on the e-learning content development process.

Content experts or professors write e-learning content teaching plans using PowerPoint or Word. Using the e-learning content teaching plan, the instructional designer creates an e-learning content storyboard. Voice recording and video recording for e-learning content teaching plans are added, and courses are developed in the form of web contents.

4) E-learning content Development stage

The professor submits the e-learning content teaching plan for 15 weeks to the development team. The instructional designer creates an e-learning content storyboard for each week, and the instructor examines the e-learning content storyboard. The instructional designer completes the reviewed e-learning content storyboard. Based on the reviewed e-learning content storyboard, multimedia development team develops web design, HTML development, UI programming, lecture video and recording.

5) Inspection and Modification stage

The developed e-learning content is inspected, and modifications are sent to the multimedia development team. After uploading the developed e-learning content to the e-learning media test server, the final inspection is conducted. When the final e-learning content is uploaded to the e-learning media server, development of the e-learning content is finished.

We believe that creating online learning instruction should follow the same ideas that have guided instructional designers for decades. As a result, we explore the design of teaching for the online learning context using both systematic and holistic content or material development techniques as the framework. The concepts that experts recommend be examined systematically when creating any sort of education are listed in Fig. 1 inside each of the nine processes. In Fig. 2, the additional five considerations are highlighted, with linkages indicating how they relate to the existing instructional concepts. Both categories of instructional principles are briefly described, along with the types of questions one might ask to see if the attributes of each category have been taken into account to aid educators in organizing their thoughts within a structured framework when designing an online learning model.

DISCUSSION

Elen (2016) noted that educational quality is of paramount importance to society. An important way to enhance the quality of education is through the deliberate and systematic design of learning environments. In this sense, instructional designers play a significant role in designing and developing an online program. Many instructional design models can serve as guidelines for instructional designers to design and develop effective and efficient online courses. (Sharif & Gisbert, 2015).

This study uses the generic components of instructional system design to analyze each step in designing and developing the online learning that can be used to facilitate students' learning process. The generic components of the instructional system design are analysis, design, development, implementation, and evaluation. These components are considered as the core elements of instructional system design. In addition, these components are also called generic instructional design paradigm (Branch & Dousay, 2015).

Instructional design models mostly are built upon the ADDIE approach consisting of; Analysis, Design, Development, Implementation, Evaluation created by the Center for Educational Technology at Florida State University for the U.S. Army. (Göksu, Özcan, Çakir, & Göktas, 2017). The systematic and holistic steps of the instructional system design models guide the instructional designers in planning and producing effective and efficient online learning programs. (Reigeluth & An, 2021).

Both UT and KNOU implement systematic procedures for designing and developing the online learning program. UT uses the systematic design of the instruction model which consists of a step-by-step and holistic process in designing and developing the online learning program. The KNOU uses more flexible instructional system design procedures which are developed by their faculty.

Both open and distant learning institutions focus on the students' competency or learning outcomes as a base for implementing the other steps of the instructional system design model. In determining the course learning objectives, UT uses the process of instructional analysis which consists of systematic phases in identifying the sub-skills or competencies that should be mastered by the students to achieve the course goal. (Dick & Carey, 2017).

UT and KNOU conduct the design step of the model by creating the content and lesson plan that involves the experts. To be more specific, UT is conducting the process of writing course-learning objectives, analyzing the students' entry behavior, determine assessment type, learning strategy, media, and instructional materials, determining the assessment type, learning strategy, media and instructional materials that will be used in the online learning program.

The development step is done by specifying the learning method and strategy, producing media and learning materials, and writing learning achievement tests and learning assignments. Besides, the multimedia development team develops web design, HTML development, UI programming, lecture video, and recordings. The main result of this development stage is supporting media and instructional materials used to support students' learning process.

The implementation stage of the program equals the try-out phase of the draft or prototype program to the prospective students. This stage of the instructional system design model is the same as the use of formative evaluation to gather constructive feedback from the prospective users. The KNOU uses this model stage with the specific term of "inspection and modification stage."

The evaluation of the stage of the instructional system design model is done by planning to conduct an achievement test to measure the learning achievement of the students. The program evaluation will be conducted after the online learning program is used in a certain period. The use of core components of the instructional system design used by both UT and the KNOU can be summarized in the following table.

Table 2
The use of the instructional system design component by UT and KNOU

Generic components of the Instructional system design	Description of the model	Components of the instructional system design model used by Universitas Terbuka	Components of the instructional system design model used by Korea National Open University
Analysis	Aanalysis of the contexts and learners' needs.	Identify instructional or course learning outcomes as the first step	Analysis and planning stage
Design	Design of a set of specifications for an effective, efficient, and relevant learning environment.	Conduct instructional analysis Analyse student entry behavior Write course objectives Determine assesment type, learning strategy, media and instructional materials.	Teaching plan and manuscript stage e-learning content storyboard stage
Development	Development of all student and course management materials.	Specify learning method and strategy, produce media and learning materials, write learning achievement test and assignment.	E-learning content development stage
Implementation	Implementation of the planned instruction.	Try-out the draft of the program to prospective students and gather feedback to revise the draft	Inspection and modification stage
Evaluation	Evaluation of the results of the design processes, both formative and summative.	Plan and conduct the achievement test and evaluation program	Inspection and modification stage

CONCLUSION

The field of instructional system design has been used continuously in many open and distant learning institutions. This study limited to the universities applied distant online learning model to design its instructional process through online learning. The use of instructional design is usually realized through using the instructional system design models. The models consist of several systematic and holistic steps or procedures used to create an effective instructional program. The institutions, which rely on using various learning materials to convey the instructional content to their students, have to implement an appropriate model of the instructional system design to produce good quality of the instructional programs.

UT and the KNOU to produce good quality online learning programs to facilitate the students' learning process use the systematic and holistic steps of the instructional design model. Comparing and analyzing the instructional system design model used by UT and the KNOU revealed that there are some generic components of the model that can be used by both open and higher education institutions to design and produce effective online learning programs.

The generic steps of the instructional system design model include analysis, design, development, implementation, and evaluation. Implementing the five basic steps of the instructional system design model will facilitate the open and higher education institutions to create high-quality online learning programs to support the students' learning process.

The issue of online learning for further research particularly with a focus on loading speed and bandwidth due to the impact that speed has on the reception of online multimedia such as animation and video should become the next for focus of similar research. When creating online education, it is critical to think about the importance of multimedia features for achieving learning objectives from the accessibility perspective.

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