Designing Online Instruction: How to Become Unflummoxed

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Abstract

Successful online instruction/eLearning requires new methods of course design, interaction among course participants, and instructor preparation and support. A well-designed course is one that fosters student learning and interaction. The article provides best practices for designing, developing, and implementing online instruction. Areas covered include assessment, content, design, equipment, feedback, games, instructional design, methods, students, teacher, teacher support, and teaching.

Keywords: Online assessment, content, design, equipment, feedback, games, instructional design, methods, students, teacher, teacher support, and teaching.

Introduction

West and Bleiberg in 2013 quoted Thomas Edison as once predicting, "Books will soon be obsolete in the public schools…our school system will be completely changed inside of ten years." They continue to express that Edison, one of our nation's most important inventors, was proven quite wrong, and this sentiment still rings true over ten years later. The American education system has a remarkable resistance to innovation and the classroom experience has changed very little in the 100 years since Edison's prediction. Although today's children have been surrounded by technology since birth, they are not prepared for a technology rich future they will encounter. Even after the Covid-19 pandemic of 2020 forced many educators and students into a world of unknown, the digital divide is still prevalent four years later in 2024 and the benefits of online learning have yet to be harnessed. Until today! This article is developed to help you to design instruction that has usability and facilitates your changing role as teacher from content presenter to the facilitator of online learning.

The concept of e-Learning is not new in terms of the principles of instruction; however, it is new in relation to the delivery of such. E-learning, also known as online learning, virtual learning, or distance learning, is defined as "learning that is enabled electronically" (Tamm, 2023). In this article, the authors will use online learning (OL) throughout. This type of instruction can be traced back to as early as 1840when Isaac Pittman developed a shorthand correspondence course delivered by mail (Britannica, 2024; Cherry, 2024). In 1924, the first testing "machine" was developed, and in 1954, B.F. Skinner

introduced a "teaching machine" which allowed teachers to test their students' knowledge through programmed instruction (Skinner, 1956). The sixties introduced the first computer-based training program (CBT) which was designed to only deliver information to students without an instructor present, however, during the seventies CBT instruction became more interactive via snail mail correspondence. This type of learning was expanded with the inception of the personal computer and the Internet in the late 20th century making learning easily and efficiently accessible to all. Presently, we even see businesses utilizing online learning to train employees to expand on their knowledge base and skill sets. The biggest concern for today's educators is that you cannot make the mistake in letting the "technology" drive the education process, as seen in the late eighties and early nineties, but harness the power of online learning through sound pedagogical practices (Schrum, 2005).Toyama (2012) warns educators that "no technology today or in the foreseeable future can provide the tailored attention, encouragement, inspiration, or even the occasional scolding for students that dedicated adults can, and thus, attempts to use technology as a stand-in for capable instruction are bound to fail". While the Covid pandemic forced a sudden and extreme shift to online learning, it came with much anxiety and apprehensions (Nuryana, et al., 2023), however, the authors believe that two important lessons were learned: when OL is done well, it works having many benefits, but there is no substitution for a teacher.

Technology can be an integral part in improving productivity, increasing student engagement and motivation, building 21st century skills, and accelerates learning supporting learners 24 hours a day, seven days a week (U.S. Department of Education, 2023b). There are a multitude of advantages for OL especially when it comes to providing for a personalized learning experience. OL increases students' effectiveness and productivity, encourages interactions and engagement, increases learning possibilities and student accountability, produces a higher rate of engagement, greater teacher, and parent engagement, and introduces skills needed for 21st century employment (Lensen, 2023).

At the higher educational level, OL offers greater flexibility, a variety of course options, and the ability to study from anywhere and at any time. However, OL does come with several disadvantages including the lack of hands-on learning experiences and the inability to interact with peers and instructors. Research concerning OL during the Covid Pandemic show that the stress levels and mental health were negatively impacted due to the lack of social interactions and isolation (Carrion, et al., 2023).Not only were students impacted, but teachers as well who at the time found themselves unprepared to teach remotely, and quickly discovered that what worked in the physical classroom, would not suffice in the online world (Archambault et al., 2022).

Additionally, in the OL platform, students have difficulty with self-discipline, learning process organization, psychological factors, and receiving timely substantive feedback from instructors (Grigorkevich, et al., 2022).A final disadvantage, and considered a major obstacle, is the financial considerations for technology infrastructures and lack of training in implementation. Chih and Metros (2024) reports that there is a wide technological gap between socio-economic classes and that extreme technologies remain "way out of reach financially and technologically." This was especially evident during the Covid pandemic where teachers found that many of their students were unable to attend synchronous lessons. Darby (2023) suggests that you must know what your students must work with as you can build the best course ever, but disaster will set in if your students cannot use it.

Although the advantages of OL outweigh the disadvantages, meeting the needs of students must be the top priority, and despite the platform (OL verses F2F), it all boils down to the delivery of instruction. It is imperative that teachers unequivocally understand the nature of online pedagogy that best leverages the affordances of technology that are increasingly relevant in today's schools. This understanding should always include the following key elements: 1) the use of appropriate tools, 2) active learning opportunities, 3) an account for diversity in cultural backgrounds, views or learning strategies, 4) opportunities for student directed learning, 5) relationship and communication building, and situational factors amongst students/teachers, context, infrastructure. (Archambault, et al., 2022; Means, et al., 2009; Fink, 2003). With these elements in mind, educators will be able to create a well-designed course and one

that fosters student learning and interaction. The remaining focus of the article will help with this task and provides best practices for designing, developing, implementing, and assessing online instruction.

Instructional Design

Much like all things in life, such as learning to write, swim, changing oil in a car, or cooking a recipe, learning is a process that requires building upon fundamental skills to reach mastery (Young, 2020). In developing OL, instructors should have an underlining understanding of Instructional design (ID) which is "a marriage of education, psychology, and communications to create the most effective teaching plans for specific groups of students" (Purdue, 2023). Instructional design is certainly not new and in simple terms is the creation of instructional materials from design to delivery. The formal definition of ID is the careful and comprehensive planning of courses to assist learners in achieving the stated instructional goals and objectives (About e-learning, 2023; Darby, 2023).

Instructional design incorporates a backward design model where the end results (what the students/learners are expected to learn and be able to do)are first identified and then activities for the skills and knowledge needed to acquire the end product are built around it.The mode of evaluation/assessment first determines if students are successful in learning the intended learning outcomes (Neelakandan,&Paulrai, 2020). A basic question to ask at this initial stage is "What will students do to demonstrate the have mastered the intended learning goals?" Using this model systematically helps ensure successful student performance and makes it much easier to create effective teaching/learning activities later in the process. Because of this, the authors contend that the evaluative phase of the design process is the key to building OL courses. Other elements in ID include, first and foremost knowing for whom the instruction will be designed for (student/learner), developing the outcomes (not objectives) of the instruction, and how to best deliver the instruction (methods, activities, and resources).The general premise of backwards design involves three key steps: (1) identifying desired results (outcomes); (2) determining acceptable evidence; and (3) planning for learning activities. Keep in mind that backwards design model is an iterative process where you may find the need to revise the outcomes if they cannot be assessed. Some common instructional design models include:

- ADDIE Model
- Merrill's Principles of Instruction
- Gagne's Nine Events of Instruction
- Bloom's Taxonomy

In designing a course, two factors are involved: the gathering of information (student, content, outcomes etc.) and preliminary ideas of engagement (interactions of student and teacher). For this article, the authors follow the basic five steps of ID (Fink, 2023) that utilize a backwards design model and ensure significant learning experiences:

Step 1: Consideration of situational factors
Step 2: Developing learning outcomes
Step 3: Developing feedback and assessment procedures
Step 4: Creating teaching and learning activities
Step 5: Ensuring integration and alignment of all components.

The bottom line is that developing and designing a quality course with significant learning experiences takes uninterrupted and constructive time. To ensure success, be certain to set realistic expectations and deadlines with a timeframe that is a function of "where you are starting and other obligations" (Maricopa, 2020).The authors of this article also suggest starting small trying out one unit of a course. Addressing the fundamental questions presented in Figure 1 will kickstart Step 1 and aid in charting your subsequent moves in the design process.

Baseline Questions for Situational Factors	
Student/Learner	Content/Outcomes
- What are the academic backgrounds of the learners? - Do the students have prior knowledge to the topic, - What are the students' preferred learning styles? - Are there any culture diverse factors or primary language barriers to consider? - Are there any students with disabilities? - What are the personal or social characteristics of the learner? (age, attitude, work experience etc.) - What are the motivational factors of the students (grade, credit, self-improvement, salary or status advancement)? - What are the student's readiness levels with technology?	- Who will the instruction be designed for? - What should the learner be able to do after instruction? - How will the learning objectives be best acquired and what tools should be used? - What will be the methods, activities and resources used? - How will you know if the objectives have been mastered? - How will you assess mastery?

Figure 1: Baseline Questions for Initial Course Design (adapted from About e-Learning, 2023)

Student as Learner

As previously mentioned, knowing for whom the instruction is intended for is most important, therefore, the authors started this paper with a section on students before anything else because everything we are about to discuss is directed at and for the student. Doing anything without them in mind is a waste of time and energy. In fact, that is the reason for the article. Situational factors feed into the course development process as shown in Figure 2 (Fink, 2023), therefore, a best practice in ID, and creating the most efficient OL experience, begins with an analysis of the learner in terms of their academic background, their personal and social characteristics, their preferred learning styles, and what motivates them to learn. This can be identified through pre-assessments, quizzes, surveys, or direct observations (Neelakandan, 2020). You will also need to consider the readiness levels of technology and to whether the learners have direct access to such and what navigational skills they possess. If learners are not tech-savvy, then special trainings will need to be incorporated into the course (Guyman, 2014; Neelakandan, 2020). Another aspect to consider is the characteristics of the non-conventional learner such as those with disabilities or those that are culturally diverse. These students may learn and think differently and will need more explicit instruction (About e-Learning, 2023; Kaufman, 2023). Instructors who take the time to get to know the intended learner(s) are more apt to develop relevant and engaging learning experiences (Pinto, 2023; Neelakandan, 2020).

After the Covid-19 pandemic, other situational factors emerged that also need special attention in the course design process. This specifically relates to the learners' social and emotional needs. Research discovered that the stress levels and mental health were impacted negatively (Carrion, et al., 2023), and it is therefore necessary to provide activities and resources that address these needs. Online learning is different in respect that the learner is not physically near other classmates and complete their course work mainly in isolation. This of course leads to a strong sense of seclusion and need for support. To plan for these needs, Kaufman (2023) suggests scheduling regular check-ins with the learner (and families for the younger learner) to explain the online learning experience, offer support, and share tips. Kaufman also suggests utilizing "strategy instruction" that teaches the learner how be organized, how to manage time, and self-regulate. This can be accomplished by simply adding checklists within the course design

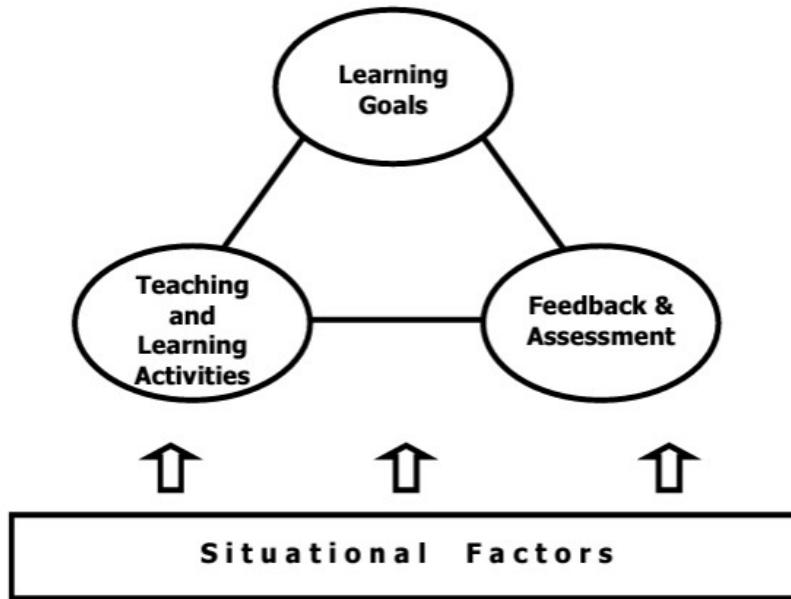**The Key Components Of INTEGRATED COURSE DESIGN**

Figure 2: Key Components of Integrated Course Design (Fink, 2023)

Teacher and Teaching Methods

It is obvious OL begins with the teacher. Before delving into the next stage of the course design, it is important to discuss the integral role that teacher plays in the overall design process. Developing an effective online course, that meets the needs of all learners, takes an instructor who is innovative, creative, and embraces informational technology that exponentially changes on a regular basis. This teacher must focus on the "art of teaching" finding the right balance of technology and other strategies remembering that it's the tools and not the tech that will best meet the preferences and needs of the learner (Michelle, 2023).Providing high quality instruction in the online environment requires instructors to hold certain beliefs about educational technology. Today's student does not separate technology from their daily life, nor should the instructor separate online learning and technology from what goes on in their classrooms. Most importantly, instructors need to understand the latest in technology and what digital tools are best suited for their learners. Although many teacher competencies apply to the traditional face-to-face classroom and online teaching, instructors should also acquire specific skill sets and competencies different or modified from that of the traditional classroom instructor to facilitate effective online instruction. Online teaching competencies are encompassed between three general areas of presence, facilitation, and supporting students as noted in Figure 3.

Effective online teaching	Competencies
Presence	Communication
	Modelling online behaviours
	Cordial learning environment
	Expectations
	Listen to students
Facilitation	Facilitate interaction
	Promote interactivity
	Encourage cooperation
	Resolve conflict
	Encourage active learning
	Implement instructional strategies
Supporting students	Feedback
	Monitor student progress
	Time management
	Manage learning environment
	Content knowledge
	Responsiveness

Figure 3: *Effective online teaching and competencies* Farrell, et al., 2021).

The type of teaching methods you employ will depend on your personal educational philosophy, classroom demographics, content and institutional mission statements (Teach.com, 2020). How you teach must reflect how your students learn, and the rapidly changing world they will move into. Emphasis should be placed on teaching styles and approaches that build on the 21st century technological, information, and media fluencies.

According to Archambault, et al. (2021) "Online pedagogy consists of the methods, techniques, and strategies used to teach content via the internet" dealing with complex components. These components include instructional design, implementation, and evaluating student learning outcomes and being able to leverage technologies that support pedagogy that is learner-centered, engaging, and motivating. The authors contend that there are five pillars of online pedagogy including (a) building relationships and community, (b) incorporating active learning, (c) leveraging learning agency, (d) embracing mastery learning, and (e) personalizing the learning process. In OL, pedagogy can be classified into four categories incorporating two major parameters as indicated in Figure 4.
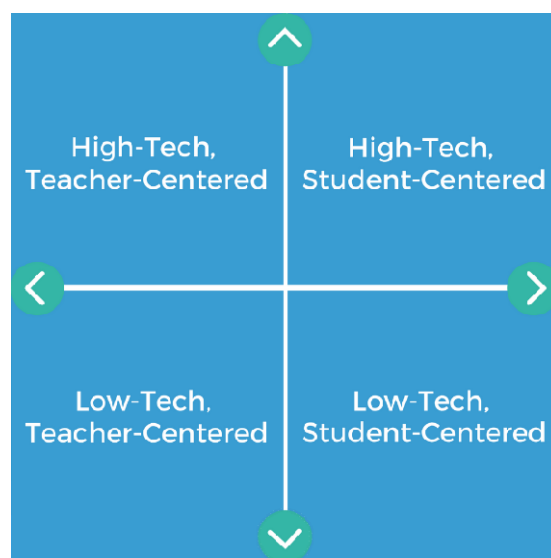
High-Tech, Teacher-Centered	High-Tech, Student-Centered
Low-Tech, Teacher-Centered	Low-Tech, Student-Centered

Figure 4; Approaches to Learning (Teach.com, 2020)

A teacher-centered approach utilizes lectures and direct instruction where students are construed at "empty vessels" passively receiving information. This approach views teaching and assessments apart from each other and student learning is measured through different forms of formal assessments. In contrast, in a student-centered approach, both the teacher and student play an active role in the learning process, and the teacher's role is primarily that of a facilitator. Learning is measured through both formal and informal methods of assessments such as in group projects, or portfolios. The student-centered approach views learning, and assessment as connected since student learning is being continuously measured during the instruction and includes inquiry based and cooperative learning opportunities. A comparison of these teaching methods in relation to a teacher or student-centered approach is displayed in Figure 5 (Teach.com, 2020), and will be readdressed in a later section.

Figure 5: Teaching Methods: Tech vs Teacher/Student Centeredness (Teach.com, 2020)

As many educators are now incorporating technology in the classroom, educational technology strategies must be considered especially in the OL environment. It is important to note that the strategies, not the tech tools themselves are to be considered low and high-tech approaches. Low-tech integrations add value and enhance learning through substitution and augmentation methods with no, or little, functional change to instruction. Substitution strategies help with saving time, such as having students type their notes rather than handwriting them, whereas augmentation strategies go beyond convenience. Augmentation strategies

include using the internet to research a topic, or supplementing instruction with a video to clarify a concept. On the upper tier of the integration model are those strategies that transform learning through modification and redefining strategies. Technology used to modify learning goes beyond that of the traditional classroom such as through collaborating on shared documents or creating video presentations. Redefinition, on the other hand utilizes technology to make "entirely new learning opportunities possible", and connects learning with the real world (Best, 2020).

Since the primary role of the teacher becomes that of a facilitator of learning (guiding, supporting, and encouraging their learners) they must also develop heightened communication skills as they will be communicating primarily through electronic measures such as email, text messages, discussion board posts etc. Time management skills and ability to be more flexible become more critical especially in asynchronous platforms since they can be online at any time. Finally, teachers need to ready to adapt course content and instruction to meet the needs of diverse students.

Developing Outcomes in Instructional Design

Once thepreliminary content and learners' situational factors are identified and needs established, learning outcomes should be developed. Groves (2016) warns against using a technology first approach and recommends prioritizing learning outcomes before technology and then choosing tools that provide the best opportunities to master the outcomes. According to about e-Learning (2023), defining outcomes are essential to:

- "Facilitate effective learning by designing appropriate instruction
- Provide a framework for evaluating learning
- Prepare and guide the learner
- Address the Cognitive domain, Psychomotor domain, Affective domain; and
- Evaluate instruction"

Drafting instructional outcomes for OL is not much different than in the traditional classroom. They are related to intended outcomes (not the process), are specific and measurable, and concern the learner and not the instructor. Outcomes take into consideration the diverse ways individuals learn and engage online. In traditional pre-service programs, educators are taught how to develop teaching objectives, however, there is a key difference between the two which is focus. Objectives are instructor focused specifying what skills, knowledge or competencies are expected to be learned whereas outcomes are learner focused and are measurable and observable. A learning outcome describes the overall purpose or goal from participation in an educational activity. Courses should be planned with a measurable learning outcome in mind. Objectives, on the other hand, are used to organize specific topics or individual learning activities to achieve the overall learning outcome, and therefore the authors will use outcomes rather than objectives throughout this article.

Outcomes that focus on specific topics are considered content-centered, and although important at time, they generally result in lower-level learning. On the other hand, a learner- centered approach identifies with significant lifelong learning opportunities and includes critical thinking, "learning how to creatively use knowledge from the course, learning to solve real-world problems, changing the way students think about themselves and others" (Fink, 2023).

Utilizing verbs from the revised Bloom's Taxonomy are essential in developing learning outcomes in OL that engage learners with content and provide for active learning. The graphic in Figure 6 shows the transformation from the original 1956 version by Benjamin Bloom to the modified version (Anderson & Krathwohl, 2000) known as the "Revised Taxonomy" and incorporates verbs rather than nouns (Gutierrez, 2018). The purpose of the taxonomy is to push the learners into the higher levels of learning to produce a deeper understanding of knowledge. One goal of OL is to develop learners into critical thinkers and problem solvers and thus utilizing these higher order thinking skills in the top three domains will be of great value.
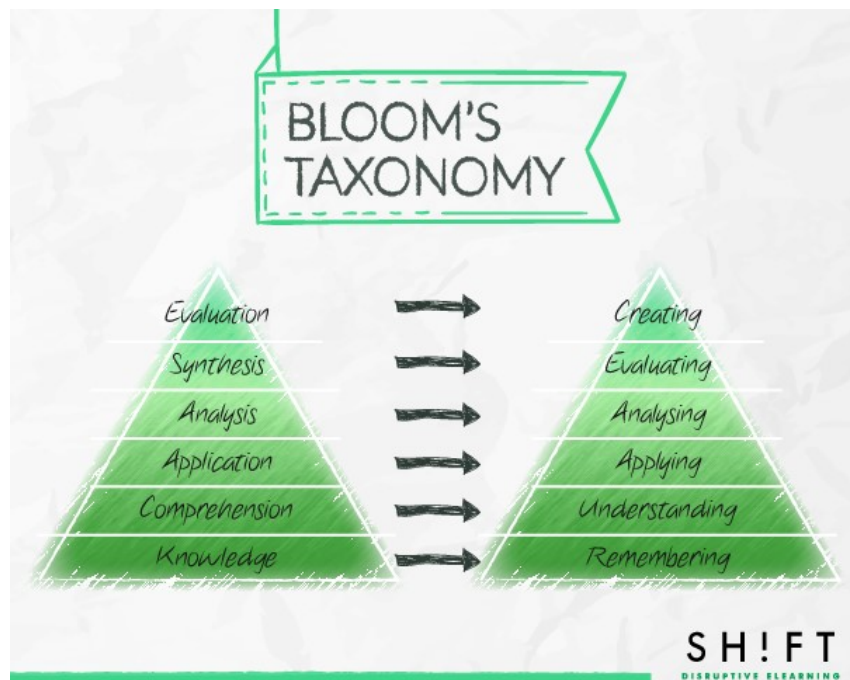
Figure 6. (Gutierrez, 2018)

Although Bloom's taxonomy has proven to be helpful in creating objectives and outcomes going beyond the basic levels of learning for over half a century, it does not encompass all types of learning that OL can provide, or today's society demands. A different taxonomy can be used that makes learning more significant and is appropriately titled: A Taxonomy of Significant Learning (see Figure 7, Fink, 2023). The taxonomy is comprised of six types of significant learning, along with sub-categories that will assist in developing outcomes you will want to include in your OL course design. The six types of significant learning include:

1. **Foundational Knowledge**: this is what the students should understand and remember about the basic content of the course (e.g., terms, concepts, principles).
2. **Application**: students should use the content and engage in effective and appropriate kinds of thinking.
3. **Integration**: students should integrate different disciplines, major ideas, and realms of life.
4. **Human Dimension**: students should identify the personal and social implications of this knowledge.
5. **Caring**: students should develop new feelings, interests, and values in relation to the subject.
6. **Learning How to Learn**: students should keep on learning about the subject after the course is over. (Fink, 2023).

Each type of learning is interactive, or stimulates other kinds of learning, and the more interaction between the learning types, the more valuable it will be to students.

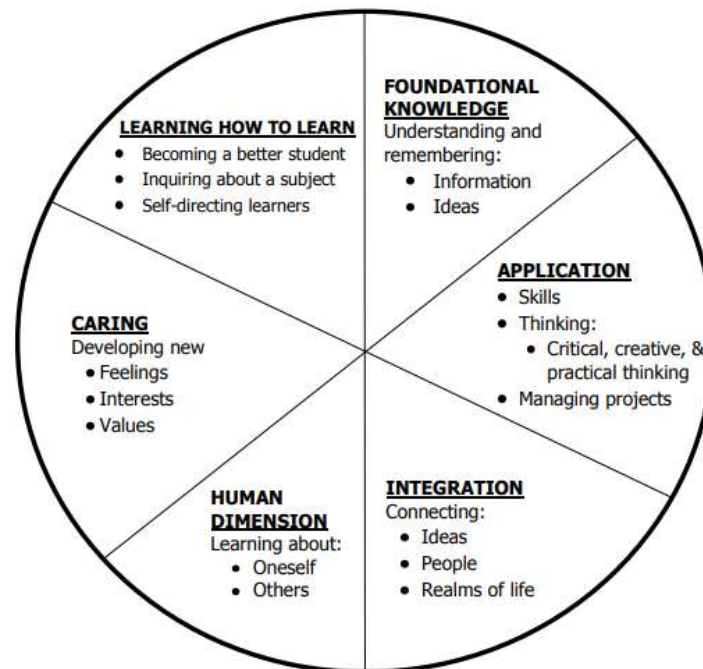**A TAXONOMY OF SIGNIFICANT LEARNING**

Figure 7: A Taxonomy of Significant Learning (Fink, 2023)

Developing Assessments

The next step in the design process is to determine what assessment will be used to determine if the students have met the intended outcomes established in the previous steps. Traditionally, assessments used to establish if the learning outcomes have been mastered have been auditive in nature, however, to establish an OL environment that is more learning centered, assessments need to be "educatively" driven. Audit-ive type assessments are those that are primarily used for teachers to assign grades whereas educative assessment enhance student learning. Instructors need to "assess in a way that goes beyond "auditing" student learning to actually enhancing the learning as well" (Wiggins, 1998, as cited by National Center for Learner Disabilities, 2023). Educative assessments must include authentic problems, provide clear criteria and standards, and include opportunities for self-assessments. Providing such equates to better learning and grading all around (Fink, 2023; National Center for Learner Disabilities, 2023).

Educative assessment includes four key components, as summarized in Figure 8, that will help in creating assessment evaluative measures to ensure high quality OL course design. The first is Forward-Looking assessments that incorporates practical scenarios, inquiries, and/or challenges to establish a real-world context for addressing a specific issue, problem, or decision. To formulate such a question or problem, the teacher must "look-forward", anticipating the time beyond the course's conclusion, and specifically ask: "In what scenarios do I anticipate students requiring or being able to apply this knowledge?" Subsequently, craft a question or problem that mirrors this real-life context as authentically as possible. Open-ended questions rather than those that are pre-structured work best in these situations. Next, students should be given the criteria and standards from which they will be evaluated. Rubrics are generally used to assess how well students have met the learning outcomes. Rubics provide for transparency noting what criteria is needed to show the level of proficiency required for work to be deemed acceptable or exceptional. Assessments should also include opportunities for students to "self-assess" where students apply success criteria related to learning goals, reflect on efforts given to met the goals, and identify areas of improvement. It is important to utilize self-assessment as it models real-life

scenarios such as in work performance appraisals that link to increased employee performance, higher levels of job satisfaction, and improved employee engagement. The final component of educative assessment is providing high quality feedback. Fink (2023) suggests the following model for providing such:

"FIDeLity" feedback:

> **F**requent: Give feedback daily, weekly, or as frequently as possible.
> **I**mmediate: Get the feedback to students as soon as possible.
> **D**iscriminating: Make clear what the difference is between poor, acceptable, and exceptional work.
> **L**oving: Be empathetic in the way you deliver your feedback

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Procedures for Educative Assessment

1. **Forward-Looking Assessment** Formulate one or two ideas for forward-looking assessment. Identify a situation in which students are likely to use what they have learned, and try to replicate that situation with a question, problem, or issue.

2. **Criteria & Standards** Select one of your main learning goals and identify at least two criteria that would distinguish exceptional achievement from poor performance. Then write two or three levels of standards for each of these criteria.

3. **Self-Assessment** What opportunities can you create for students to engage in self-assessment of their performance?

4. "**FIDeLity" Feedback** What procedures can you develop that will allow you to give students feedback that is:
Frequent
Immediate
Discriminating, i.e., based on clear criteria and standards
Lovingly delivered

Figure 8: Procedures for Educative Assessment (Fink, 2023).

Creating Teaching and Learning Activities

The next step in the design process is to create teaching and learning activities that are aligned and integrated with the situational factors, outcomes, and assessments. Some key components to include when developing sound OL is to provide clear expectations, concise instructions, and content that is engaging and robust. You will also want to consider what learning management systems will be utilized, the amount of guidance and supports that will be built into the instruction, WHO will be delivering the instruction (Ribeiro, 2017), and account for diversity in cultural backgrounds, views or learning strategies as discovered in your initial analysis of your students' situational factors. Finally, you will need to determine if the course will be solely asynchronous, synchronous or a combination of the two.

In order to create significant learning opportunities as previously discussed, the teaching and learning activities need to move away from the traditional "passive" low tech and teacher-centered activities to those that create "active" learning and are high-tech student centered. Active learning is defined as "an instructional strategy where students take an active role their own learning, participating in activities and, reflecting on their learning" (Sandercock, 2013). This is a major step away from strategies where students passively receive information such as those from traditional lectures and presentations. Research has shown that students who "actively" engage in their own learning experiences,learn more and retain information longer when information is received actively rather than passively as shown if Figure 9, and in doing so creates ownership of their own learning (Fink, 2024; Sandercock, 2013; Archambault, et al., 2022). Incorporating activities that provide for experiential learning, collaboration, and reflective dialogue

goes a long way in making learning more engaging and "active". Archambault, et al. (2022) also reported that active learning has a deep connection with relationship building and met cognition.

Figure 9: Active and Passive Learning (Sandercock, 2013)

Fink (2023) contends that the teacher's view of "active" learning must be enlarged to a more "holistic" view to achieve significant learning. This view incorporates learning activities that integrates "getting information and ideas, experiences, and reflection" as indicted it Figure 10, in a variety of ways and directly.

In addition to developing teaching and learning activities that promote active and higher-order thinking, relationship and communication building activities need to be pursued. This educational implication was made clear from the results of the Covid 19 pandemic where it was discovered how crucial the role relationships play in the learning process especially in the OL environment. Cultivating caring relationship have several positive outcomes including an increased sense of belonging, connectedness, participation, and motivation (Miller, et. al., 2021). Unfortunately, this is not as easy of a task in OL, and teachers must make a consorted effort to get to know students while effectively utilizing technology to do so.

When determining the appropriate activities, it is important to use sequencing methods to help the learners achieve the outcomes and to use a variety of delivery methods such as whole group presentations, small
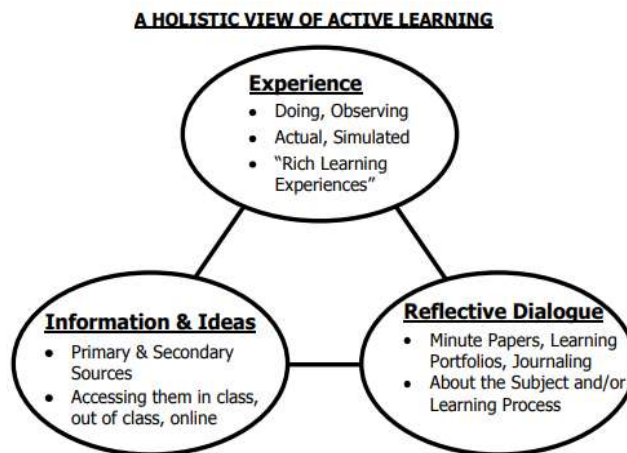

Figure 10: A Holistic View of Active Learning (Fink, 2023)

group interactions, and individualized/personalized learning (About eLearning, 2023). For sequencing methods, Shift learning (2018) suggests "Micro learning" that involves "chunking" material into small learning segments to meet a specific learning outcome that helps to keep learners engaged in a world full of distractions. They also suggest utilizing retrieval practices, such as through flashcards or multiple-choice questions, as a fundamental OL interaction method. A final recommendation is in customizing the course to meet the specific needs of each learner by setting up learning paths because of pre assessments or surveys. The remaining part of this section provides you with the technological tools needed to help create a more robust "active" learning environment and build strong personal and community relationships. The section will conclude with a discussion on asynchronous and synchronous delivery methods.

Online Learning Approaches and Activities

In any teaching platform, the activities and learning opportunities must be carefully structured for significant learning to take place. Depending on your work environment, you may have a variety of media to use, but do first find out what is available and allowed in your individual district. The authors of this article endorse utilizing activities that incorporate a variety of high- and low-techstudent-centered activities while integrating the three active learning views.

Low-Tech Approaches

Direct Instruction. Although direct instruction is considered as more of a low-tech teacher centered approach, some learners may benefit from this approach. For example, research has shown that students that write out notes had more long-term recall than those that used word processing software to type notes (Doubek, 2016). Technology integration would be used to substitute and augment instruction with little or no functional change.

Differentiated Instruction. As a result of the 1975 Individuals with Disabilities Education Act (IDEA) (U.S. Department of Education, 2023a)the differentiated learning approach became very popular to meet the needs of those learners with special needs. Today, this approach is used to meet the needs of all types of learners. Even though this approach focuses on students' needs, it is still considered low-tech and teacher-centered since it is planned and implemented by the teacher. Of course, technology tools can aid in implementation, however, would only augment instruction.

Kinesthetic Learning. This type of learning requires students to "do, make, or create" through physical activities rather than listening to lectures, or watching a demonstration. Hands-on experiences, drawing, role-playing, acting and physical activities (i.e., sports) are a few examples of kinesthetic learning. Although there are many current uses of technology that provide opportunities for kinesthetic learning, such as online manipulative and videos that having students up and moving out of their seats, the educational technology is only a substitute for physical tools, and it is still considered a teacher-centered approach unless students are afforded a choice.

High-Tech Approaches

Flipped Classroom. This approach was developed by two teachers in 2007 who utilized pre-recorded videos of lesson instruction. Students watch the videos at home, and then completed in-class activities the next day. The flipped classroom model allows for differentiation as teachers can assign videos to whole groups, small groups, or individual students, however, because the videos are being assigned, the approach is considered teacher centered. Because of the video aspect and potential online activities students can participate in during "class" time, this approach is considered "high-tech", but only allows for substituting and augmenting instruction rather than modifying and or redefining instruction.

Inquiry-based Learning. Inquiry-based learning provides learners with the opportunity to investigate real-world problems through high-level questioning and explorations while the teacher serves as a facilitator offering support and guidance throughout the process. Inquiry based learning puts students in

the center of learning as they explore and discover information on their own. Benefits of this approach include students becoming more curious, allowing students to develop critical thinking and problem-solving skills, learning becomes more engaging and meaningful, and provides a way for students to take ownership of their own education (Main, 2021). Educational technology integration allows for transformation through task modifications and redefinitions. An example of a group inquiry lesson could be comparing the Covid 19 with that of the 1918 Spanish Influenza and develop questions to motivate deeper learning. Students would collaborate and conduct research. The results can then be presented using technology such as video recording or publishing applications.

Expeditionary Learning. This approach is a form of project-based learning in which students go on physical expeditions to engage in real-world problems impacting their communities. Once students understand the problems, they then work on solutions to implement. According to Emke (2023), "expeditionary learning enables students to "see how the puzzle pieces of learning fit together" because they read texts, conduct research and scientific experiments, and crunch numbers." Technology allows students to access hands-on experiences once thought of as out of reach through virtual field trips and collaboration tools.

Personalized Learning. This approach is like that of differentiated instruction; however, a main difference is that of student choice and self-direction. Teachers specify personalized learning paths that are individual to students' interests, skills, what they know and how they learn best. Assessments are competency based where students progress to the next topic or standard once mastery is achieved on the previous level. This approach is highly student-centered as they can work beyond their grade level or receive additional help as needed, however, the teacher is still responsible for teaching lessons and frequently assessing data adjusting each students' plan. Many virtual programs and platforms have learning paths or adaptive technology built in making personalize instruction more feasible (Teach.com, 2020).

Game-based Learning. Game-based learning is where students engage in active learning in a gaming format. This format requires a high level of problem solving, much like what students would use in their favorite video game, and encourages a mastery mindset (Teach.com, 2020). While in the gaming environment, students work through quests and earn badges or points as they progress through the levels. There are currently many programs in the market that utilize game-based learning such as Classcraft and 3D Game Lab to name a few, making the teachers job that much easier. Although the planning and creating content falls mostly under the teacher's role thus making this more teacher-centered, students work on their own pace and make independent choices directing this approach back to a student-centered one.

Discussion Boards

An important aspect of active learning, and 21st Century skills set, is the use of discussion boards in the OL environment. In the tradition face-to face classroom, communicating with peers can be very intimidating and online discussion boards are an avenue for students to actively participate in the class without the intimidation, anxiety, or stress. This is especially true for new students, those that are shy or quiet, or for the ESL student. Conversations in the discussion board are more fluid and assist in building a sense of community with classmates and the instructor. Research has shown that students are more likely interact with peers through discussions and tend to integrate and cite research more in depth as they have more time to reflect on their thinking and understanding of course material (Boettcher, 2023). Online discussions are an excellent way to incorporate active learning as previously discussed. Discussions could be potentially designed for the following purposes:

- Provide an open question and answer forum
- Encourage critical or creative thinking
- Reinforcing domain or procedural processes

- Achieve social interaction and community building – have the students get to know each other personally and intellectually
- Validating experiences
- Supporting students in their own reflections and inquiries(Boettcher, 2023).

In creating discussion boards, you will want to follow several best practices which includes creating open-ended questions that learners can apply information they are learning about in the course, or questions that provide for alternative perspectives on topics. The questions asked should elicit more than a yes or no answer and encourage students to think more deeply about what they know or do not know. You will also want to set specific guidelines and expectations to follow such as the length of initial posts, how many replies are required and the tone of reflection/discussion posts for example, casual discussion vs. formal Discussion replies to classmates should be substantive providing more than "I agree" responses. This could be modeled by teachers also participating in the discussions early and often.

Educational Technology and Revised Bloom's Taxonomy

In addition to the different approaches, you can use in your OL design, there are a plethora of educational technology tools that can be used that align with the Revised Bloom's Taxonomy and your course outcomes. Note that the lists following are not exhaustive, and with the advancement of newer technologies daily, some tools listed may or may not be available, so the authors recommend due diligence when selecting the right educational technology.

- **Remembering**: Online tools that support, recalling, listing, curating, describing, mind mapping, and searching.
  - Symbaloo; Wordle, Vocaroo, Popplet, OneNote, Google.
- **Understanding**: Supports organization, annotating, explaining, blogging, subscribing and labeling.
  - Feedly, Voicethread, PicMonkey collage; Befunky; Express Edu.
- **Applying**: Online tools used for interviewing, simulating, demonstrating, showcasing, editing, and illustrating.
  - Soundation; Zoom; Pixlr; Sway; Express Edu.
- **Analyzing**: Online tools used for outlining, structuring, organizing surveying, reworking, and mashing.
  - Wufoo; ThingLink; AirTable; Google Sheets; Wevideo.
- **Evaluating**: These tools could be used for moderating, conferencing, networking, posting, collaborating, and critiquing.
  - Padlet; Notion; Miro; Weebly; X (formerly Twitter).
- **Creating**; Online tools that provide structures for storytelling, video editing, mixing, designing, podcating, and animating..
  - Express Edu; Screencastify; Canva; Anchor; Zoom; Micro Teams; Google Maps.

Asynchronous and Synchronous Learning

Once you have determined the teaching and learning approaches and activities you want to include in your OL course and determined which technology tools are best suited to master the learning outcomes, you must consider if the instruction will be delivered asynchronously or synchronously. Synchronous online instruction most resembles that of the traditional classroom, but in a real-time "live" environment where students are all present in web conferencing tools such as Zoom, or Microsoft Teams. Synchronous learning is not just only for the delivery of content but can be used for streaming video that has the capability on incorporating formative assessments, conducting live chats or discussions, and for setting up virtual office hours. This type of delivery is best suited for smaller student populations and provides for a more personal and collaborative environment. Asynchronous learning, on the other hand, allows learners more flexibility to learn on their own time, in their own place. It relies heavily on the technology used and can include the following: Pre-recorded lectures/videos/presentations; forums and discussion boards,

email communications, and Google Drive or other collaboration tools. The aforementioned delivery tools allow students to view and re-review the content and are especially helpful for those students who may not be able to attend synchronous sessions. Asynchronous learning also allows students to work on their own pace and is a method to incorporate personalized learning or adaptive learning technologies (Groves, 2020; Online Learning, 2023). Both formats have specific advantages, however, knowing how each works best, and under what circumstances is beneficial to all stakeholders in OL courses. It is therefore the reason why the authors recommend the use of both synchronous and asynchronous activities.

Teacher Supports and Next Steps

A final step in the development of online courses, but not specifically addressed in the design plan, is to reach out for support. First, it is a wonderful idea to make friends with your school's instructional designer who are experts in online teaching and learning. These individuals are often underutilized and can offer collaboration sessions to help you refine your approach. Second is to seek out other educators who have more online teaching experience or have a common interest to be successful online teachers. These veteran teachers can be utilized to vet your online course as if they were the students and look for any issues or concerns you may not have noticed. Other ideas for support include joining a book-study, attending conferences or workshops, (Darby, 2023), becoming a member of professional organizations such as the Online Learning Consortium or Educause, and subscribing to professional journals to keep abreast of the latest research and trends. Additionally, support from all stakeholders needs to be present where desperately needed leadership provides best practices for incorporating technology to enhance the teaching and learning experiences (Schrum, 2005).

It has long been emphasized a need for programs that prepare teachers for OL, and it became evidently clear that teachers were not equipped to teach online during the Covid 19 pandemic. This is because many of the OL competencies and pedagogy do not align with those found in the traditional classroom and teacher preparation programs. There is currently a call for teacher education to address this need, and simply allowing preservice teachers to observe those embracing OL and pedagogy will better prepare a future generation of educators (Miller, et al., 2021). Future educators must be prepared to incorporate technology that builds relationships and makes personalized connections with students. Emphasis should be placed on curriculum delivery, assessments and collecting data to progress monitor, and especially learning strategies that incorporate active learning in the online setting.

Gaining knowledge about and online pedagogical strategies is a win-win situation for not only teacher education programs, but would benefit current teachers as well, thus professional development opportunities should be in place in current educational institutions. For OL to be of value, professional development opportunities should focus on content with a "personalized learning" approach rather than a "one-size fits all" model, promoting active learning through reflection, sustained duration over a period of time rather that a one-day workshop, collective participation through sharing of ideas with other colleagues, and coherence of goals and expectations (Schuler, 2018).Pak, 2022).

Conclusion

The concept of OL has a rich history dating back to the 19th century, evolving from correspondence courses to sophisticated online platforms. While the delivery method has transformed significantly, the core challenge remains ensuring that technology enhances, rather than hinders, the educational process. The rapid shift to online learning during the Covid pandemic highlighted both the potential benefits and challenges associated with this mode of instruction. It is evident that when done well, online learning can be a powerful tool, offering flexibility, increased engagement, and personalized learning experiences. However, it is crucial to recognize that technology alone cannot replace the vital role of dedicated educators in providing tailored attention, encouragement, and inspiration to students.

The advantages of online learning, such as improved productivity, 24/7 accessibility, and fostering 21st-century skills, are substantial. Nevertheless, there are notable disadvantages, including the lack of hands-

on experiences, reduced social interactions leading to mental health concerns, and challenges in maintaining student discipline and organization. Financial considerations and technological gaps further complicate the implementation of effective online learning. Despite these challenges, the priority must always be meeting the diverse needs of students. Whether in an online or face-to-face environment, the key lies in the delivery of instruction. Educators must embrace sound pedagogical practices, leveraging technology to enhance rather than replace effective teaching methods.

Moving forward, educators must prioritize understanding the nature of online pedagogy, considering factors such as appropriate tools, active learning opportunities, cultural diversity, student-directed learning, and effective communication. By incorporating these elements into the design and implementation of online courses, educators can create a well-rounded learning experience that fosters student engagement and interaction. The task at hand may initially seem daunting, given the multitude of strategies and considerations. However, the key is to start small, taking incremental steps toward improvement. By focusing on one aspect at a time, educators can build a foundation of effective online teaching practices. The advice to continuously strive for improvement, fueled by effort, creative thinking, curiosity, and courage, emphasizes the dynamic nature of online education. With dedication to refining teaching methods, educators can navigate the challenges of OL, ensuring enhanced learning experiences and success for their students.

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