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Teaching and Learning Frameworks

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Teaching and Learning Frameworks

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Teaching and learning frameworks are research-informed models for course design that help instructors align learning goals with classroom activities, create motivating and inclusive environments, and integrate assessment into learning. Frameworks like Backward Design serve as conceptual maps for planning or revising any course, syllabus, or lesson, and can be easily adapted and mixed.

Effective teaching and learning frameworks emerge from psychological, cognitive, sociological, and educational research findings that students learn best when a) the prior knowledge and “preconceptions” they bring into the classroom are recognized and engaged, b) they have practice and time to build “conceptual frameworks” upon foundational knowledge through active, experiential, and contextually varied learning, and c) they have practice and time to “take control of their own learning” through metacognitive reflection (NRC, 14-18). Teaching and learning frameworks often call for classroom activities that integrate lecture with discussion, active learning, and self-reflection. L. Dee Fink (2013) writes that “A long history of research indicates lecturing has limited effectiveness in helping students

- Retain information after a course is over
- Develop an ability to transfer knowledge to novel situations
- Develop skill in thinking or problem solving
- Achieve affective outcomes, such as motivation for additional learning or a change in attitude”

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Teaching and learning frameworks provide scaffolded, diverse approaches that help students “form knowledge structures that are accurately and meaningfully organized” while informing “when and how to apply the skills and knowledge they learn” (Ambrose et. al., 4-5). Eschewing “Instruction,” which focuses on content delivery, “Learning” focuses on structures for continual student development, inviting students to be “co-producers” in the classroom (Barr and Tagg, 15). This page provides an overview of major teaching and learning frameworks, from theoretical and methodological approaches for overall course design to specific techniques for individual class sessions.

Examples of Course Design Frameworks

Course design frameworks provide models for achieving learning outcomes in overall courses, crafting the syllabus, and course redesign. Many elements in course design can also be applied to individual class design.

Backward Design

Backward Design originated with Wiggins and McTighe in their book *Understanding by Design* (2005), and drives the educational philosophy behind most recent teaching and learning frameworks. Backward Design differs from classic beginning-to-end approaches to instructional design where the instructor first decides what content to teach before developing activities and assessments for the resulting learning. Backward Design instead begins with desired end goals by focusing on what the learner will learn, rather than what the teacher will teach. In this sense, Backward Design is a student-centered approach.

The Backward Design process for designing instruction has three main stages:

1. Identify desired results
2. Determine acceptable evidence
3. Plan learning experiences and instruction

The corresponding actions are:

1. Write student [learning goals and learning outcomes](#)
2. Create [assessments](#) that measure progress toward outcomes
3. Design [activities](#) that will prepare learners to perform well on the

assessments

In summary, a course developed using **Backward Design** practices *alignment* between learning goals, class activities and class assessments.

Instructors may choose the Backward Design process for several reasons:

1. It is well supported by learning theory.
2. It improves attainment of desired learning outcomes.
3. It is a well-known and widely accepted approach to course design.
4. It is easy to remember and explain.
5. It is transferable to almost any instructional situation.

Examples of Backward Design Alignment

Discipline	Course	Sample Learning Goal	Sample Learning Outcome	Sample Assessments	Sample Activities
Humanities	American History	Students will develop a broader knowledge of American history	Students will be able to describe the colonization of the Americas by the British, French and Spanish	Clicker questions based on textbook reading; Essay question on examination	Textbook reading; Group work - create a timeline of American colonization
Social Sciences	Cognitive Psychology	Students will understand human language acquisition	Students will be able to articulate gaps within theories of human language acquisition	Poster presentation; Essay question on exam	Group work - compare and contrast theories; Class Debate
Science, Technology, Engineering or Mathematics (STEM)	Independent Study in Chemistry	Students will develop discipline-specific research skills	Students will be able to design a controlled experiment	Develop a research proposal; Questions on exams on research design	Discuss a relevant element; a controlled experiment; Outline a controlled experiment with laboratory

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Integrated Course Design

Integrated Course Design was developed by L. Dee Fink (Fink 2013), and expands Backward Design into a detailed methodology specific to higher education. As its key feature, Integrated Course Design arranges the stages of Backward Design into a simultaneous planning strategy, informed by environmental and contextual factors specific to higher education:

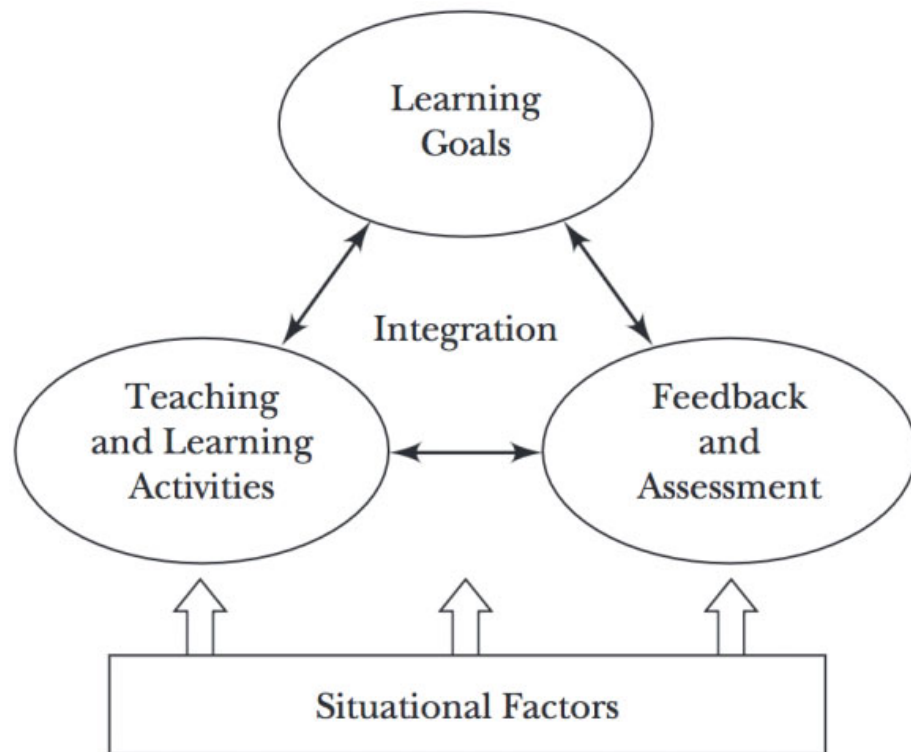


Figure 1: Key Components of Integrated Course Design, Fink 2013 (70)

As part of its simultaneous methodology, Integrated Course Design guides instructors through a 12-step process for creating and aligning learning

outcomes, classroom activities, rubrics, assessment protocols, and the syllabus in light of context and potential challenges:

Initial Phase: BUILD STRONG PRIMARY COMPONENTS.

1. Identify important situational factors.
2. Identify important learning goals.
3. Formulate appropriate feedback and assessment procedures.
4. Select effective teaching and learning activities.
5. Make sure the primary components are integrated.

Intermediate Phase: ASSEMBLE THE COMPONENTS INTO A COHERENT WHOLE.

6. Create a thematic structure for the course.
7. Select or create a teaching strategy.
8. Integrate the course structure and the instructional strategy to create an overall scheme of learning activities.

Final Phase: FINISH IMPORTANT REMAINING TASKS.

9. Develop the grading system.
10. Debug the possible problems.
11. Write the course syllabus.
12. Plan an evaluation of the course and of your teaching.

Figure 2: The Twelve Steps of Integrated Course Design, Fink 2013 (74-75)

In summary, Integrated Course Design provides a detailed model for executing a Backward Designed-course that includes consideration of environmental and contextual factors impacting student learning. Instructors may choose this framework to facilitate Backward Design in their courses while including considerations of inclusivity and faculty-student assessment throughout term.

Examples of Class Design Frameworks

Class design frameworks provide models for achieving learning outcomes in individual class sessions, developing activities, and motivating students. Some frameworks, like Universal Design for Learning, can also apply to course design.

5Es

The 5E model was developed by the Biological Sciences Curriculum Study. The approach has been typically used in the sciences, but its principles can be applied to other disciplines (BSCS, 2001). 5E provides a 5-step approach for designing individual lesson plans or class sessions: engagement, exploration, explanation, elaboration, and evaluation, which occurs throughout the cycle. Like many modern instructional frameworks, this approach is based in constructivist theory, wherein students learn by

experiencing phenomena and reflecting upon their learning. During the first five minutes of class, the instructor uses an activity that engages students in learning and builds upon their prior knowledge. The following steps scaffold new learning in ways that ascend [Bloom's taxonomy](#), moving from understanding to articulating and developing. At the end of class, the students might be tasked with assessing their own understanding, and the instructor may evaluate the learners on key skills and/or concepts. Instructors may choose this model for its scaffolding approach, prioritization of student learning, and flexibility to occur once or multiple times within a single class session.

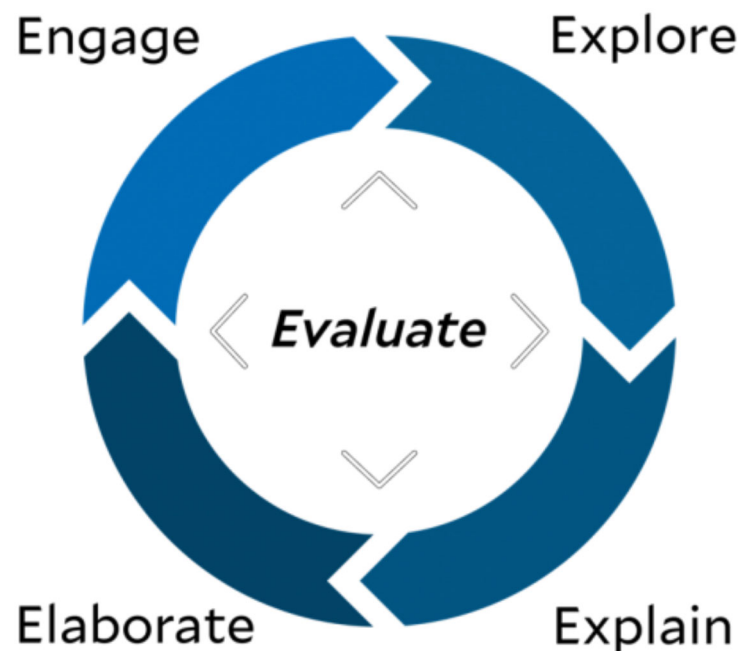


Figure 3: The 5E Learning Cycle

Accelerated Learning Cycle

The Accelerated Learning Cycle was developed by Alistair Smith (Smith, 1996). Like 5E, it can be used to structure single class sessions. Accelerated Learning draws from Howard Gardner's theory of multiple intelligences by building a classroom that acknowledges varied prior knowledge and learning habits. The model has several stages: the instructor creates a safe and welcoming learning environment, builds on the background knowledge of the learners to create a larger contextual framework, describes intended learning outcomes, provides new information or content, facilitates a student activity, enables discussion or interactive demonstration based on the findings of the activity, and reviews and reinforces presented information. Through these steps, ALC prioritizes

“the needs of the learner” while “help(ing) students understand their own learning preferences better” (Smith 1996).

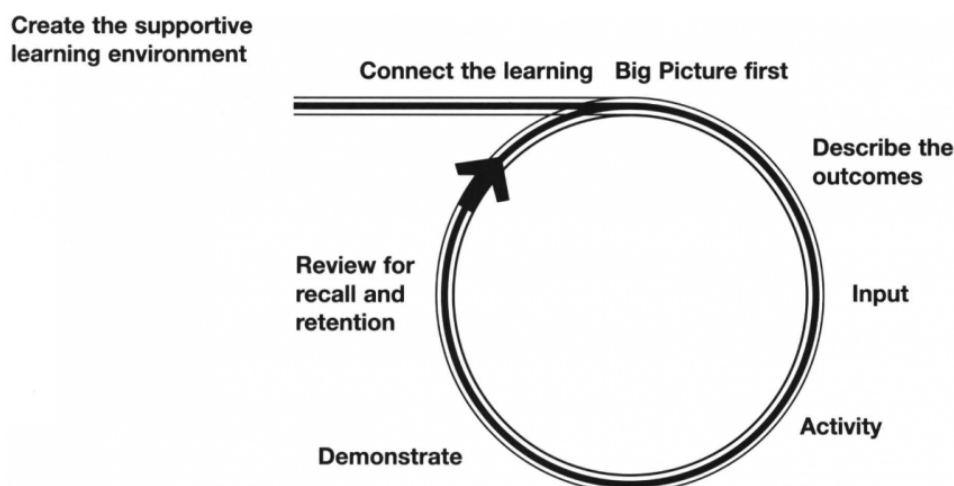


Figure 4: The Accelerated Learning Cycle, Smith 1996 (11)

Universal Design for Learning

Universal Design for Learning was developed in the early 1990s as a model for addressing the diverse learning needs of students in the classroom. It can be applied to course or single class session designs, and its focus on accessibility makes it an effective approach to ensuring the success of class sessions for every student. UDL operates under three essential principles:

- Provide Multiple Means of Engagement (the “why” of learning)
- Provide Multiple Means of Representation (the “what” of learning)
- Provide Multiple Means of Action and Expression (the “how” of learning)

These principles are also understood within UDL as approaches that, respectively, account for learning inquiries like “affective” (why?), “recognition” (what?), and “strategic” (how?). These spheres are flexible enough to modulate the level of challenge and positive experience in the classroom, providing for a dynamic curriculum to address comprehensive student needs. The National Center on Universal Design for Learning provides an extensive set of guidelines for implementation:

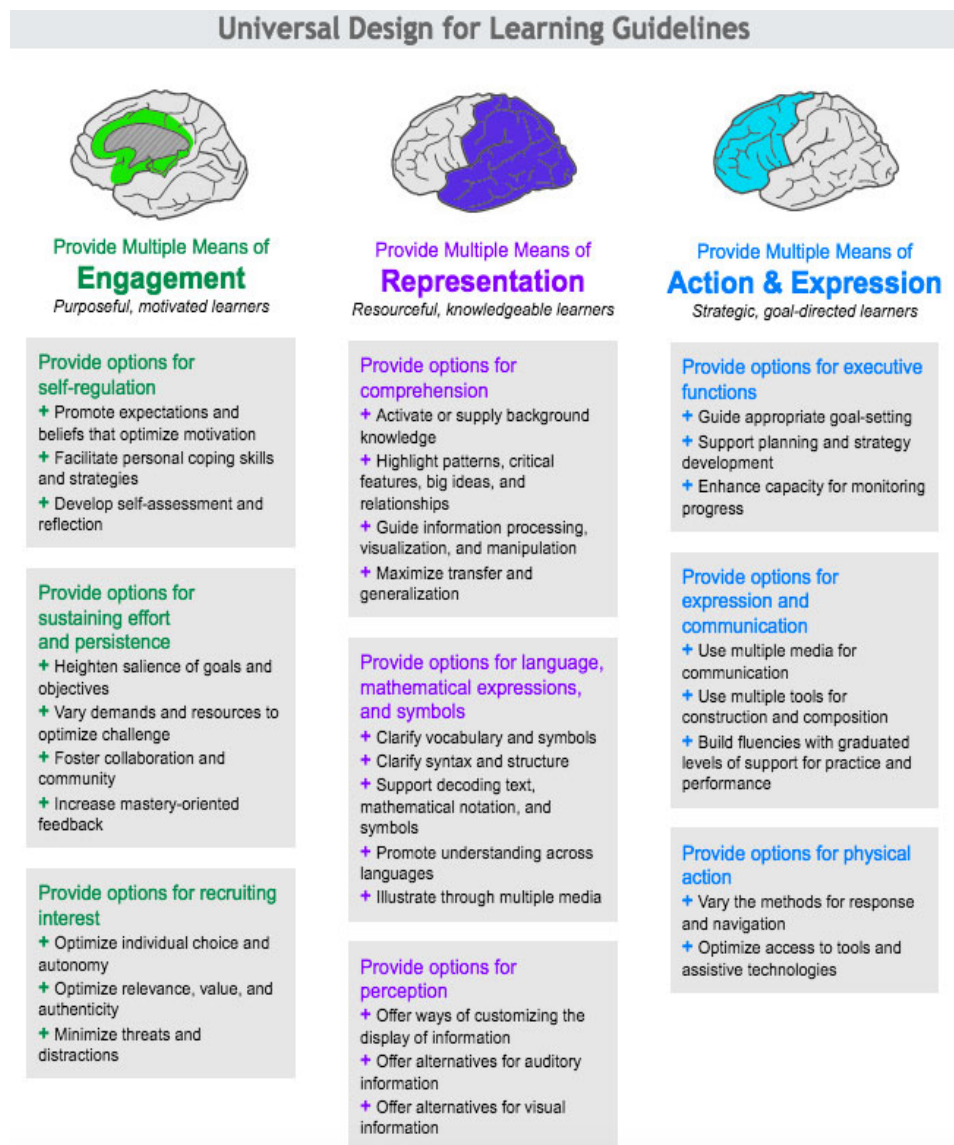


Figure 5: Universal Design for Learning Guidelines, Meyer et. al 2014 (111)

Instructors may choose to incorporate UDL for its strategies on inclusivity and access, and for its wide-ranging recommendations for revising and varying teaching approaches. UDL provides “a sufficiently flexible curriculum so that each learner can find the right balance of challenge and support” (Meyer et al., 2014). The approach has classically been understood to improve environments for learners with disabilities, but its principles apply more broadly for creating inclusive classroom settings.

Recommendations

- **Identify Most Relevant Framework** – Applicability of teaching and learning frameworks will depend on a host of variables, including teaching philosophy, classroom environment, course objectives, student demographics, and challenges to teaching. Instructors can consider

which elements from which frameworks are most relevant and helpful for use in their classrooms.

- **Create a Course Alignment Map** - Instructors can create a map as illustrated in the figures above when designing a course. Doing so encourages instructors to align all items with the learning outcomes of the course, avoiding more instructor-centered approaches to course development.
- **Assess Student Knowledge** – Ascertaining prior knowledge and skills helps instructors craft a learning arc that fits and challenges specific student representations. Review syllabi from prerequisite courses in order to gauge likely student knowledge and recent reading; ask students to share their strengths and weaknesses anonymously on index cards the first day of class, or in an online survey before class; perform group brainstorming or focused keyword activities to uncover student knowledge.
- **Include Formative and Summative Assessments** - [Formative assessments](#) help instructors monitor the progression of students towards achieving learning outcomes and modify instruction as needed. [Summative assessments](#) are performed for the sake of accountability. As each of these types of assessments serve specific purposes, both should be included within alignment maps.
- **Complete a Teaching Practices Inventory** – Completing an inventory can help instructors identify their teaching habits, and explore the best frameworks for facilitating development of new habits, approaches, and course designs. A variety of [inventories](#) exist to describe instructors' typical teaching approaches, many of which are short and self-driven. The “Downloads” section at the bottom of this page also contains an assessment for considering degrees of inclusivity in syllabus and course design.
- **Modify Activities and Assessments as Needed** - If students do not appear to be reaching the learning outcomes as desired, instructors can use feedback from the assessments and observations to reflect upon why this is the case. Activities and assessments may need to be modified to better prepare students to meet the outcomes.

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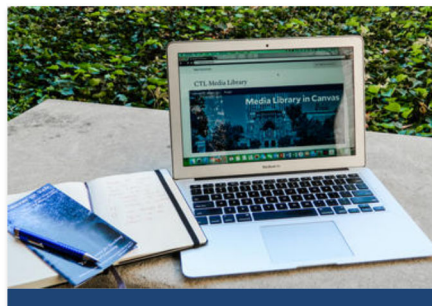
Downloads

[Inclusion by Design: Survey Your Syllabus](#)

Assessment, modified from a JMU tool, exploring the degree of inclusive practices,
approaches, and language in the syllabus and course design.

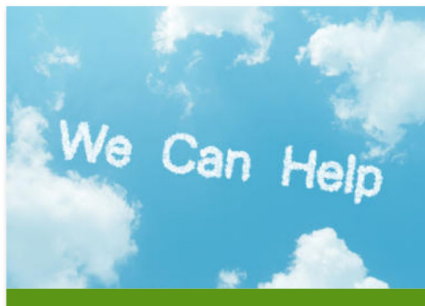


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