BLOOMSBURG UNIVERSITY®

Teaching and Learning Enhancement (TALE) Center

TALE Teaching Tip:

Backward Design: A Powerful Course Design Method with Guidelines

What is Backward Design?

Backward design is a process-oriented approach to designing and redesigning courses, topical units, and daily classes. Honestly, it's a sound approach to any project, not just teaching. As the name suggests, instructors begin at the end: what do you want your students to know, do, and/or value upon completing units or the course, and equally important why. Backward design has inspired higher education through two publications: Grant Wiggins and Jay McTighe's *Understanding by Design*, intended for K-12 teachers, and L. Dee Fink's *Creating Significant Learning Experiences*, intended for college-level instructors. Backward design is not simply commendable because of its logical process; it compels many of us to rethink our teaching and learning. In their collective wisdom, Wiggins, McTighe, and Fink challenge all faculty to go beyond content and ask ourselves, "what distinctive educational impact you would like your teaching and your course to have on your students?" (Fink) What will be memorable a year or more after the course is completed even in general education classes? Our love of content and content mastery and our caring relationships with students are not enough. We must design our courses to create significant learning experiences. The Backward Design model that I advance here synthesizes the approaches taken by Wiggins, McTighe, and Fink:

Stage 1: Develop Desired Results & Identify Situational Factors → **Stage 2:** Determine Formative & Summative Assessment → **Stage 3:** Develop Student Learning & Teaching Activities

Click on arrow to hyperlink

Why Backward Design?

It is a powerful and logical approach to designing courses and making content choices. It is learner-centered, that is we make our choices about assignments and teaching to optimize student learning, not to cover content. After all, to cover something is to conceal (Wiggins and McTighe). We want students to be empowered to uncover content. We cannot achieve this goal simply by giving students information or concepts in a traditional lecture format; students must do the learning, using their brains. We must decide how our teaching can support student learning. To retain our focus on students, we must begin with our desired results: what impact do we want? How will we know our students got there? How do we get them there? By thinking about our students first, not the content, we avoid the temptation of taking the number of chapters in a textbook, dividing them by the number of weeks in a semester, plug in a few assignments, quizzes, or exams, and call that the syllabus. Backward Design, a learner-centered strategy, "forces [us] into a conversation with [our] content." (Christina Francis, English) What do we teach? Why? How do we make it relevant to students?

Underlying Assumptions of Backward Design

- Based on more than two decades of biological and psychological research on how learning occurs, Backward Design argues that learning is optimized under the following conditions:[1]
  - Leveraging positive emotions, through validation, increases the potential for student engagement.
  - Intrinsic motivation is more impactful than extrinsic; if our courses or assignments fulfill student expectancies and their subjective values, their motivation will increase.
  - Working memory has its limits, so we need to interleave practice and review content throughout the semester and throughout a program of study. If you don't use it, you lose it.
  - Writing-to-learn, i.e. informal writing assignments, creates opportunities to explore and practice the expression of ideas.

[1] If you want an abridged explanation of this research coupled with a discussion of small changes we can make in our teaching, I strongly recommend James Lang, *Small Teaching: Everyday Lesson from the Science of Learning* (2016).

  - Frequent, low-stakes quizzes requires learners to retrieve information and discover what they do or do not know. You may quiz with this intent, but do your students know this is your motive or do they see it as a nuisance, or worse, punitive?
  - Practice is essential to learning; it creates and deepens pathways between synapses. Once you learn to ride a bike you do not forget though you might get rusty.
  - Hands-on or minds-on activities create opportunities for students to practice, to think, to uncover.
  - Students cannot remember discrete facts without being able to know its larger significance or big idea; they need a road map, and we need to remind them of that in the process of teaching.
  - Covering content, through lecture or video, does not ensure students have learned it unless they are required to use, apply, synthesize.
  - Mass practice, that is cramming for an exam, may lead to positive results in the short run, but deceives students and faculty that learning has occurred. How many times has this dialogue run through your head: "I know we went over this. … I remember you did well on this test."
- Textbooks should be used as a reference source. Allowing a textbook to dictate course design, as Wiggins and McTighe note, "leaves students with inert phrases and an erroneous view of how arguable and hard-won knowledge has been. Rather, students need to experience what scholars know if they are to understand their work: how key facts and principles are the revealing and powerful fruit of pondering, texting, shaping, and rethinking of experience."[2] Textbooks should be used as a reference source, not drive the course content.
- Lectures, whether live or recorded, and videos have a place in backward-design courses, but they do not dominate or dictate. Lectures create foundations for higher-ordering thinking, provide context, help students when they struggle, create relevance for students, frame a topic or unit. The simple process of making notes does not lead to learning, it is how those notes are used by students to learn that can have an impact. Even a lecture-based course can be made interactive with minds-on or hands-on challenges; in large lecture halls, we have to tolerate the inevitable chaos and potential that not all students will be on task.
- Active learning techniques and strategies are more common and must be well-designed to promote learning and to achieve desired results. To learn, students must practice, to engage with the content by thinking about a problem, exploring an open-ended question, testing their comprehension, comparing views, debating, dialoguing, performing, practicing, and the best place for these hands-on, minds-on activities is the classroom with the support of faculty and classmates. We will encounter resistance, so we need to help students understand why we have chosen this approach, to help them understand how the choice is informed by the science of learning.
- Learning is socially collaborative and knowledge is constructed through interaction with others. Subsequently, we should incorporate *ad hoc* small group work, and when appropriate team-based learning. "If I teach it or talk it through with others, I am more likely to remember it."
- Making content relevant to students is essential to backward design. If we cannot persuasively answer the why, then students are more likely to disengage or be motivated by grades, not the desire to learn.
- Reflection, meta-cognition, and self-regulated learning should be employed to help students take responsibility for their learning.
- Never assume students know how to learn, so to create equity in our classes, we need to make our teaching transparent and unpack our disciplinary standards of reading, writing, and research.

For additional reading, the TALE Library has many of these books, email TALE@bloomu.edu to gain access or search TALE's organization in BOLT by searching content with a key word. All faculty should be enrolled. See the resources listed at the end.

---

[2] Grant Wiggins and Jay McTighe, *Understanding by Design* (Alexandria, VA: ASCD, 1998), 100.

Stage 1: Desired Results & Situational Factors

- Develop learning goals, objectives, outcomes: consult master syllabi, disciplinary standards.
- Become aware of situational factors that impact course: class size, room resources, technology, student preparedness, nature of the subject, characteristics of learners and teacher.

Wiggins and McTighe recommend that we conceive of course outcomes as the "big ideas" or understandings, then formulate them as essential questions. In doing so, we inherently create a focus that makes course or unit topic choices worth investigating and becomes a touchpoint as we teach. However, be aware that this stage of developing "big ideas" and essential questions might be surprisingly difficult to articulate. The process compels us to look at our disciplinary fields from the outside, and we are "cursed" with insider's knowledge. To many of us, the relevance should be obvious. (It has taken me years to develop the language to speak about my discipline of history; I read manuals on conducting historical research, explored professional standards, and studied how students learn history.)

Understandings

- Think of the "big ideas" that uncover disciplinary ways of knowing and have a lasting impact.
- Anticipate areas of misunderstandings (break free from the "curse of knowledge").
- Think about "creating significant learning experiences" that incorporates foundational knowledge, application, integration, human dimensions, caring, and learning how to learn (see L. Dee Fink).
- Grant Wiggins and Jay McTighe provide defining features of "big ideas":
  - "Provides a 'conceptual lens' for prioritizing content. …Big Ideas reflect expert understanding and anchor the discourse, inquiries, discoveries, and arguments in a field of study.
  - Serves as an organizer for connecting important facts, skills, and actions…. They connect discrete knowledge and skills to a larger intellectual frame and provide a bridge for linking specific facts and skills. … helps students to see the purpose and relevance of content.
  - Transfers to other contexts. Discrete facts do not transfer…a focus on the Big Ideas helps to manage information overload.
  - Manifests itself in various ways within disciplines … [as] a core concept…, a focusing theme…, an ongoing issue or debate…, a puzzling paradox…, an important process…, an authentic problem or persistent challenge…, an illuminating theory…, an underlying assumption… or differing perspectives [that might be revisited throughout the semester or program].
  - Requires un-coverage because it is an abstraction…. Its meaning is not always obvious to students, and simply covering it will not ensure student understanding…. The idea must be uncovered – its meaning discovered, constructed

Essential Questions

- Turn these big ideas into "provocative questions [that] will foster inquiry, understanding, and transferring of knowledge."
- These essential questions provide a framework to introduce daily topics, units, the course.
- These are routinely shared with students and help explain why.
- Grant Wiggins and Jay McTighe offer the following criteria for essential questions:
  - "Have no simple 'right' answer; they are meant to be argued.
  - Are designed to provoke and sustain student inquiry, while focusing learning and final performances.
  - Often address the conceptual or philosophical foundations of a discipline.
  - Raise other important questions.
  - Naturally and appropriately recur.
  - Stimulate vital, ongoing rethinking of big ideas, assumptions, and prior lessons."
- Grant Wiggins and Jay McTighe offer the following question prompts as a way of developing an Essential Question:
  - "Why study ___? So what?
  - What makes the study of ___ universal?
  - If the unit on ___ is a story, what's the moral of the story?
  - What's the 'big idea' implied in the skill or process of ___?
  - What larger concept, issue, or problem underlies ___?
  - What couldn't we do if we didn't understand ___?
  - How is ___ used and applied in the larger world?
  - What is a real-world insight about ___?
  - What is the value of studying ___?"[4]

[4] Wiggins and McTighe, *Professional Development Workbook*, 91, 83.

> or inferred by the learners, with the aid of the [professor] and well-designed learning experiences."[3]

Consult Student Learning Objectives or Outcomes

After we determine the big ideas and essential questions, we will need to translate them into statements with action or performance verbs. These verbs point us to ways to assess students and develop learning activities. For example, let's consider this student learning objective (SLO) example for a personal health class:

> **Differentiate** between infectious agents to **judge** the reliability of news reports in a pandemic.

There are two performance verbs found in this SLO: to **differentiate** is to analyze and to **judge** is to evaluate when we consult Bloom's Taxonomy or Anderson and Krathwohl's revision. If we consult L. Dee Fink's Taxonomy of Significant Learning, this SLO would be relevant to Caring, Foundational Knowledge, and Application.[5] To learn more about these taxonomies and writing SLOs consult TALE Teaching Tip: Making Student Learning Outcomes Relevant and Transparent.

With big ideas, essential questions, and SLOs composed, it becomes easier to clarify content priorities.

Clarify Content Priorities

If you found it difficult to articulate understandings and essential questions because of the "curse of expert knowledge," it's even more challenging to make decisions about content. Wiggins and McTighe offer the following graphic to guide us in that decision-making process. Remember, the appeal of Backward Design "forces us into a conversation with our content." Stay focused on "big ideas," essential questions, and SLOs.

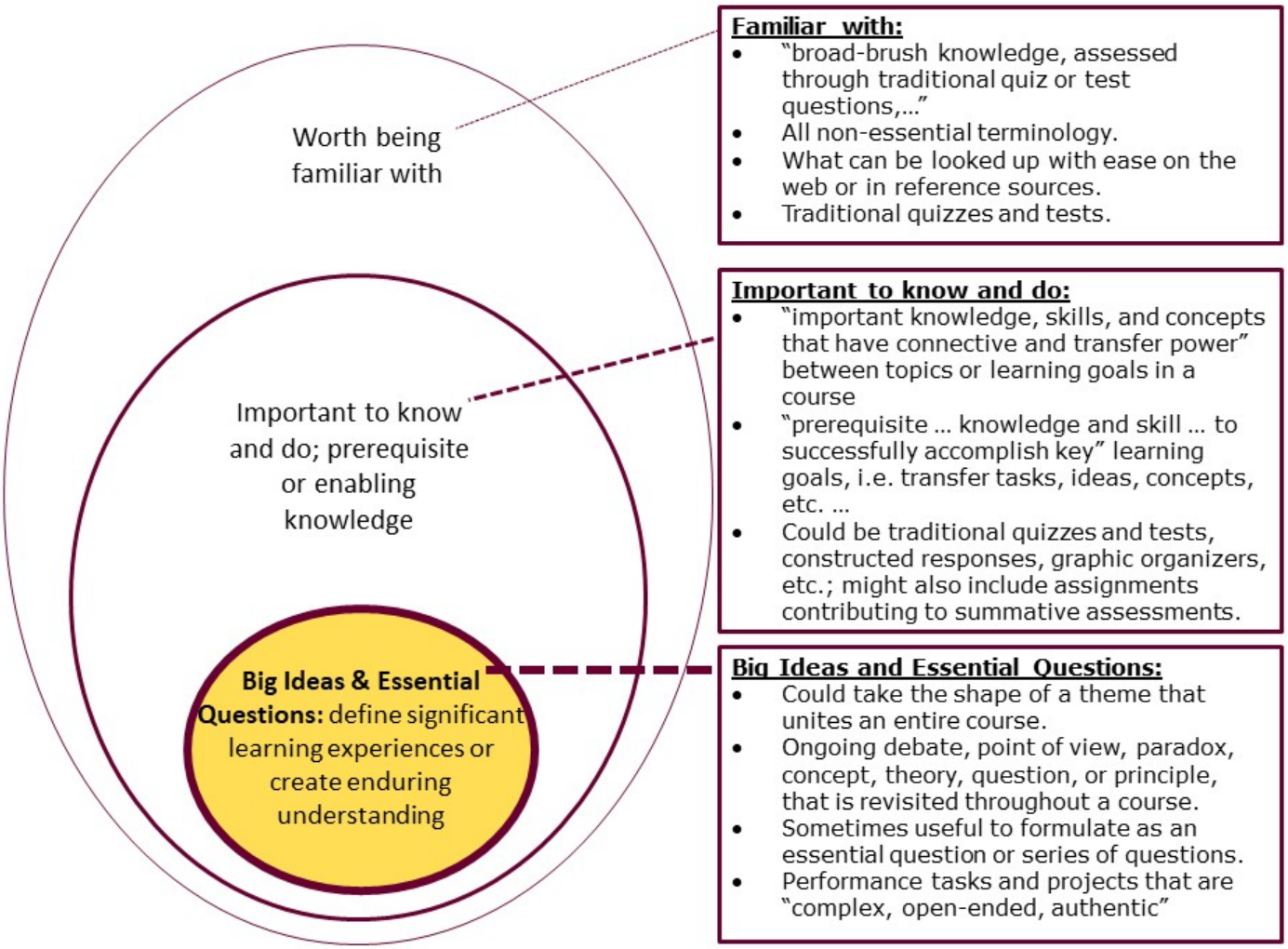
Several working assumption shape these content priority recommendations:

- not everything that we teach is learned;
- there is more content to learn than can ever be taught;
- to make learning stick, we must make it meaningful, so we must prioritize;
- we cannot teach everything that students will need to know upon graduation; and
- we need to create life-long learners.

In the graphic, note the distinctions made between "important to know and do" and "worth being familiar with." To design backwards, does not reject the importance of memorizing facts to create a foundation for higher-order thinking. Yet, those facts will easily be forgotten if learners do not see how they contribute to big ideas and essential questions. Wiggins and McTighe maintain that the ultimate challenge for faculty is to make "the big ideas in the field become big in the mind of the learner." [6]

---

[3] Grant Wiggins and Jay McTighe, *Understanding by Design: Professional Development Workbook* (ASCD: Alexandria, VA, 2004), 69.
[5] L. Dee Fink, *Creating Significant Learning Experiences* (2013), 89.
[6] Wiggins and McTighe, *Understanding by Design* (2005), 75.



Identify Situational Factors

Situational factors shape the contexts in which we teach, and L. Dee Fink suggests this should be the first step in course design. They are important to consider, and so I suggest that we do so in Stage 1 of Backward Design.

- "Specific Context of the Teaching and Learning Situation:" enrollment, course level, length and frequency of class meetings, modality.
- "Expectations of External Groups:" accrediting bodies, program goals, societal expectations.
- "Nature of the Subject:" convergent, divergent, relatively stable, physical or performative skills
- "Characteristics of the Learners:" prior knowledge, skills, attitudes, motives for taking the course, responsibilities outside of class.
- "Characteristics of the Teacher:" expert or marginal familiarity with subject, experience taking a comparable course, first time teaching, confidence and competence in the subject matter.[7]

Taking time to make a list of these factors can help you make choices in stages 2 and 3 and make wise choices about content.

[7] L. Dee Fink, *Creating Significant Learning Experiences*, p. 69-70 probably first edition.

Stage 2: Assessment - Evidence Students Have Achieved Desired Results

Now it's time to determine how you will know that students have achieved desired results of either the course, unit, or daily lesson. There are two types of assessment, formative and summative. The summative (or performance) tasks may be a single project, a capstone, or it might be a series of significant assignments that prove levels of mastery. Formative assessments can be completed on the road to mastery.

Performance Tasks – Summative:

- What students do to prove they have achieved the desired results for the topic, unit, or course.
- Summative – graded final products to prove mastery, e.g. exams, projects, essays, portfolios.
- Clear criteria shared with students.

Other Evidence – Formative:

- Evidence that students will provide through the learning process.
- Formative – Feedback to students and professor while learning is in progress; low stakes grades or none at all; credit for "good faith" effort.
- Clear criteria shared with students.

Questions to answer in formulating your assessments:

- ☐ What will you have students do to demonstrate that they "got it"?
- ☐ Will your assessments provide **valid, reliable** feedback to be confident that students have achieved the desired results (see the alignment example below)? If you are asking student to defend an argument, then the final product should involve a defense, not a multiple-choice exam.
- ☐ Is your assessment "forward looking": realistic, requires judgment, innovation, simulates doing the subject, real life contexts, requires synthesis? This tends to be a summative assessment.
- ☐ Have you included formative assessments to allow students to practice, rehearse, refine, get better at low risk?
- ☐ What will be your criteria to measure?
- ☐ Have you shared that criteria with students? Might take the form of rubrics, sample work, clearly defined assignment guidelines, discussion of the assignment guidelines.
- ☐ What will be graded? How will it be graded?
- ☐ Have you planned for timely, frequent feedback that is supportive and informed by criteria?
- ☐ Have you been transparent about the assessments, feedback procedures, and grading?
- ☐ Have you included opportunities for students to reflect upon their learning behaviors (e.g. metacognition and self-regulated learning)?

If you can offer an affirmative answer to these questions, then you are ready for Step 3.

Stage 3: Determine your Student Learning and Teaching Activities

Review situational factors that impact Student Learning and Teaching Activities: class size, room resources, technology, student preparedness, nature of the subject, characteristics of learners and teachers. More importantly, develop student learning activities to achieve Stage 2, the assessments, and then determine your role to facilitate student learning.

Student Learning Activities

- **What will students do outside of class?** Many possibilities: read, write, work in groups, complete homework, screen videos, study lectures, practice skills, practice quizzes, make notes, journaling, reflection, create, prepare for active learning to occur in class, etc.
- **What will students do inside of class?** They could listen to lectures, observe demonstrations, or watch a video. We often associate these activities as passive, the filling of a bucket, but they can be made interactive by pausing lectures, demonstrations, or video with application questions, think-pair-share, etc. Additional learning activities: debate, discussion, jigsaw activity, small group work, games, simulations, reenactments, role play, etc…

BLOOMSBURG UNIVERSITY

Teaching and Learning Enhancement (TALE) Center

Teaching Activities: Questions to Consider

- ☐ What roles will you fulfill and when? When will you coach, be the guide-on-the-side, or the sage-on-the-stage?
- ☐ How does the lesson contribute to the unit and desired results? Provide the students with a road map.
- ☐ How will you hook your students' interest? Mystery, open-ended questions, devil advocacy can frame in-class activities or lectures and create relevancy or spur interest.
- ☐ Have you developed thought-provoking big ideas and essential questions?
- ☐ Have you written SLOs that reflect desired results located in the big ideas and essential questions?
- ☐ Have you determined what is important to know and do?
- ☐ Have you determined what is worth being familiar with?
- ☐ Have you determined formative assessments to evaluate student progress?
- ☐ How will you help students understand the expectations for summative assessment(s)?
- ☐ What teaching techniques will you develop and employ to promote learning? Match the technique to the goal.
- ☐ What techniques will you employ to encourage students to be prepared for class?
- ☐ What is the best use of in-class time?
- ☐ What kinds of active learning can you employ to provide students with minds-on or hands-on opportunities?
- ☐ What resources do you need to curate?
- ☐ What will students read, study, practice?
- ☐ How will you create opportunities to practice?
- ☐ Have you anticipated potential areas where students will struggle and how to help students through this difficult learning?
- ☐ Have you scaffolded the workload so that the difficulty increases over time?
- ☐ Have you developed ways to help students learn how to learn, to decode the discipline, make learning transparent, or unveil the hidden curriculum?
- ☐ How will you help students reflect upon their learning?
- ☐ How might you check in with students periodically to evaluate your teaching effectiveness?
- ☐ Have you reviewed the three stages of Backward Design to ensure alignment between the three stages?

Alignment

In higher education, alignment at the program level refers to whether or not the courses, course content, teaching practice, and sequence of courses will ensure that the intended outcomes have been achieved by students upon commencement. At the course level, alignment is achieved if the assessments (Stage 2) will measure the desired results (Stage 1), and that the teaching and learning activities (Stage 3) will allow the student to achieve the outcomes.

Stage 1: If the Desired Result is for learners to...	**Stage 2:** Then, you need evidence of the students' ability to...	**Stage 3:** Then, the teaching and learning activities need to ...
differentiate between infectious agents to judge the reliability of news reports in a pandemic.	to classify infectious agents into categories of more or less dangerous, and to conduct a comparative analysis in writing of how three news sources reported on the science of infectious agents as a cause for disease.	**Student Learning Activities:** • Students will complete a prior-knowledge survey. (formative, ungraded) • Students will read or study a lecture to define infectious agents as a cause for disease. • Students will differentiate infectious agents by creating a graphic organizer. (formative, plus-check-minus) • Students will identify three news sources, make notes on the scientific information in the stories, and analyze. • Students will compose a comparative analysis of the news stories. (summative)

As you can see, while details are not fully elaborated in this example, to achieve alignment between the three stages, many teaching and learning activities must be developed to bring about a desired result.

- Students will reflect upon what they have learned about the reliability of news and infectious agents in short paragraph form. (formative, plus-minus)

Teaching Activities:

- Create survey of prior knowledge of infectious agents and perceptions on the reliability of news.
- Hook students by linking the subject to current events.
- Lecture or assign reading that defines the infectious agents and which ones tend to be more dangerous.
- Demonstrate how to read and make comparative notes for graphic organizer of infectious agents.
- Demonstrate how to compose an effective comparative analysis.
- Develop assignment guidelines to share expectations and criteria.

My discussion of Stage 1 is more in-depth than stages 2 and 3 because entire books are dedicated to assessment, learning and teaching activities. Every disciplinary organization contributes to the conversation as well. If you are looking for specific help on assessments or teaching and learning activities, in **small chunks**, read individual chapters by Linda Nilson, James Lang, José Antonio Bowen and C. Edward Watson, and Elizabeth Barkley's and Claire Howell Major's college teaching handbooks listed below.

These books are available in the TALE Center, and you can contact me for access to individual chapters. Also check out the A to Z Teaching Resources in TALE's BOLT organization. All faculty are enrolled as "students."

Sources:

Barkley, Elizabeth F., and Claire H. Major. *Interactive Lecturing: A Handbook for College Faculty*. San Francisco: Jossey-Bass/Wiley, 2018.

_____. Learning Assessment Techniques: A Handbook for College Faculty. San Francisco: Jossey-Bass/Wiley, 2016.

_____. *Student Engagement Techniques: A Handbook for College Faculty*. San Francisco: Jossey-Bass/Wiley, 2009. (The second edition just came out in April 2020.)

Bowen, José Antonio, and C. Edward Watson. *Teaching Naked Techniques: A Practical Guide to Designing Better Classes*. San Francisco: Jossey-Bass/Wiley, 2017.

Brown, Peter, Henry Roediger, and Mark McDaniel, *Make it Stick: The Science of Successful Learning*. Cambridge: Harvard University Press/Belknap Press, 2014.

Fink, L. Dee. *Creating Significant Learning Experiences: An Integrated Approach to Designing College Courses*. San Francisco: Jossey-Bass, 2013.

Herman, Jennifer, and Linda B. Nilson. *Creating Engaging Discussions: Strategies for 'Avoiding Crickets' in any size Classroom and Online*. Sterling, VA: Stylus, 2018.

Lang, James. *Small Teaching: Everyday Lesson from the Science of Learning*. San Francisco: Jossey-Bass/Wiley, 2016.

Nilson, Linda B. *Teaching at Its Best: A Research-Based Resource for College Instructors*. San Francisco: Jossey-Bass/Wiley, 2016.

Wiggins, Grant, and Jay McTighe. *Understanding by Design*. 2nd Edition. Alexandria, VA: ASCD, 1998, 2005.

_____. *Understanding by Design: Professional Development Workbook*. Alexandria, VA: ASCD, 2004.

Zull, James. *The Art of Changing the Brain: Enriching the Practice of Teaching by Exploring the Biology of Learning.* Sterling, VA: 2002.

