

## Original Paper

# Effective Teaching and Learning—A Five-Step Process

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Received: June 18, 2020

Accepted: June 30, 2020

Online Published: July 7, 2020

doi:10.22158/jecs.v4n3p32

URL: <http://dx.doi.org/10.22158/jecs.v4n3p32>

### Abstract

*The Aristotelian triptych—tell them what you are going to tell them, tell them, and tell them what you told them—offers an excellent organizational framework for successful teaching. Two essentialities for learners interspersed with the Aristotelian triptych are—why listen (i.e., what’s in it for me?) and so what now (i.e., what’s its use to me?). In combination, an effective teaching and learning process requires five sequential steps. First, teachers preview how the course’s disciplinary content is organized. Second, teachers communicate information clearly and specifically to convince students how and why listening will personally benefit them. Third, teachers lead interactive classes utilizing a variety of instructional approaches interspersed with engaging learning activities. Fourth, through learning assessments, teachers reinforce learning. Fifth, students use new knowledge and skills learned.*

### Keywords

*teaching, learning, Aristotelian triptych, benefit statement, action plan*

### 1. Introduction

It is assumed that teaching *and* learning occur in all college classrooms. While sometimes both happen, this is not always the case. Faculty may not be competent in what they are teaching. Some faculty may be burned out after teaching the same courses and content unchanged for decades. Other faculty may not have the dedication, time, and motivation to plan, develop, and teach courses that will lead to student learning. On the other side of the podium may sit students who are required to enroll in courses, although they care little about the content. Students may choose not to engage through class attendance, completion of readings, or disciplined study. Some students “play college” instead of taking their learning seriously enough to actually benefit. The scholarship of teaching and learning (SoTL) has emerged as a viable disciplinary area of inquiry within the past three decades. Connections between teaching and learning are investigated through SoTL demonstrating that assumptions about teaching automatically resulting in learning are flawed.

Boyer (1990) was one of the first to argue there is a scholarship of teaching, but only if it means the

transmission of information that educates others and ensures they learn. This reciprocal relationship requires more than “showing up” by the teacher and course enrollment by students. Bok (2006) advocated for the need for college students to learn more because they were underachieving in college. To assist faculty in engaging today’s students more actively and connecting with them in their learning, many colleges have added teaching centers. These centers typically offer ongoing instructional sessions and bountiful teaching and learning resources. Among numerous authors, Brookfield (2015) emphasized how teachers must be more skillful in how they teach and how they interact with students. These changing times suggest a need to rethink the teaching and learning process and how to make it more effective.

Effective teaching is developmental and dynamic. Teachers should be growing continuously as they construct new knowledge and change their beliefs and levels of comprehension. Teachers expand their extensive disciplinary expertise and instructional abilities as they connect new information with what they already know. They reflect upon what they know, construct new paradigms, and organize schema for deepening their understanding. While teachers value learning new insights and knowledge, they may become disappointed when students fail to share their passion for learning. Therein lies a huge challenge in the teaching and learning process—how to overcome students’ resistance so they see personal benefits and take actions using what they have learned.

Learning is a developmental and dynamic process (Ambrose et al., 2010; Bain, 2004; Barkley, 2010; Doyle, 2008; Nilson, 2010). As such, the greatest challenge facing teachers is to convince students to take personal responsibility for their learning (Doyle, 2008). To use the metaphor of eating, the teacher can fill the buffet table with a range of flavorful and nourishing foods, but only students will decide whether to satisfy their hunger with the delectable choices. Learning, like eating, is something students must do themselves (Ambrose et al., 2010).

Bain (2004) reported what the best college teachers do. “Highly effective teachers design better learning experiences for their students in part because they conceive of teaching as fostering learning” (p. 67). Best practices in teaching include teachers setting high expectations for students, helping students learn outside of class, providing targeted and prompt feedback, facilitating interactive lectures in combination with active learning strategies, and ensuring diverse learning experiences such as experiential, real-life, and problem-solving learning opportunities (Ambrose et al., 2010; Bain, 2004; Diamond, 2008; Fink, 2013). As an extension of these best practices, students’ benefits and actions depend on how well teachers design courses, deliver instruction, and assess learning.

Telling students what to expect in a course occurs most poignantly when they receive a course syllabus on the first day of class or can access course materials on a learning management system. Course design begins with development of student learning outcomes described as achievable in a comprehensive syllabus. These outcomes should align with diagnostic, formative, and summative assignments affirming student learning. A course outline depicts topical content associated with the textbook and/or assigned readings.

Effective instructional delivery requires prior planning. Ideally, the teacher utilizes interactive lectures, which include daily learning objectives, a short review to refocus students on course content, a diagnostic assessment of what students already know or formative assessment to check for understanding about an assigned reading, content delivery using short lectures about only the most important information, and a variety of engaging learning activities. Linkages back to daily learning objectives, a synthesis statement or key take-home points, or a student review of the most important concepts learned reinforce learning in the class closure.

Unless content presented in a class becomes relevant to students, it is unlikely students will take responsibility for their own learning. Relevancy connects directly with Doyle's (2008) claim that real learning is the ability to use and apply information. Perception of a personal benefit from learning course material strengthens students' willingness to teach themselves, collaborate with classmates, reflect on their learning, and use feedback to improve performance. That is, in learner-centered classes, students embrace new roles and responsibilities, assume real control over their educational experiences, and engage in expanded learning opportunities. Taking ownership of one's learning contributes directly to an eagerness to use what has been learned in other contexts, including as a foundation upon which to build other learning.

The objectives of this work are to describe how use of five sequential steps lead to effective teaching and learning. In step one, teachers preview the design of the course's disciplinary content. In step two, teachers communicate information clearly and specifically to convince students listening and learning will benefit them. In step three, teachers lead interactive classes utilizing a variety of instructional approaches interspersed with engaging learning activities. In step four, teachers reinforce and strengthen learning through use of a variety of learning assessments. In step five, students take action by using knowledge and skills learned. In combination, these five sequential steps facilitate effective teaching and strengthen learning.

## **2. Course Design—Tell Them What You Are Going to Tell Them**

Student learning outcomes articulate content knowledge, skills, and abilities important for students to learn or develop, and based on these, convey what each student be able to do with this new knowledge. Like with goals, learning outcomes should be specific, measurable, attainable, relevant, and timely. Congruent with grabbing students' interest, course design entices students to enjoy and benefit from learning more about a subject. An effective "hook" hinges on convincing students a required or even elective course will help prepare them for a potential career or to be more successful in a subsequent course. Diagnostic, formative, and summative assessments aligned with student learning outcomes help determine whether students remember, understand, and apply content knowledge, at the lower levels of Bloom's revised taxonomy (Krathwohl, 2002).

When developing a course syllabus, detailed guidance about assignments and their associated grades demand clarity with explicit expectations. Transparent design (Winkelmes, Boye, & Tapp, 2019), which

offers a framework with a clearly explicated purpose, task, and criteria for each assignment, has proven effective in student success and retention. The *purpose* includes what skills students will practice and knowledge they will gain, with an emphasis on how these skills and this new knowledge relate to students' lived experiences and future careers. The *task* specifies exactly what teachers expect students to do and how they should do it to help them produce higher quality work, along with how this learning can apply to working in their careers. The *criteria* could be a checklist or rubric of expectations accompanied by exemplary examples of former students' work. Examples of prior students successfully meeting these criteria help guide students in understanding expectations and earning higher grades.

The syllabus should clearly explain how a course is structured including the various instructional approaches the teacher plans to use to help students learn. For example, the teacher should describe that some classes will involve all students in class discussions about assigned readings followed by short lectures interspersed with online quizzes. Alternatively, the teacher may structure classes to begin with daily quizzes over assigned readings, followed by lectures during which students complete guided notes before participating in discussions among pairs; then short lectures and discussions among pairs will be repeated prior to a class closure with a minute paper or a low-stakes, in-class activity.

A course outline depicts topical content associated with the textbook and/or assigned readings. Rather than viewed as onerous readings, course design links daily learning objectives with the most important topical content. These objectives emphasize to students what knowledge is most important for them to remember, understand, and apply. The course outline lists due dates for a variety of assignments, such as blog or discussion board posts, reflections, research papers, essays about current events, reflection papers, group projects, and class presentations, and how each reinforces what is important for students to know and be able to do. Previewing how a course is designed links directly to the next section about the anticipated benefit to students when they complete it successfully.

### **3. Benefit Statement**

Making disciplinary content relevant to students necessitates helping them connect what they are learning with their needs, interests, and goals. One way to do this is to focus student learning on the most important knowledge, not overwhelming them with "covering the textbook" or "going through all the slides". Helping students understand that centering benefits of learning on themselves harmonizes with how the human brain works. For example, how does what is being learned contribute to career preparation and help motivate each student to become a lifelong learner?

Getting students to want to learn is a huge challenge for teachers. A great place to start is by asking students what they already know, what questions they have about the content, and how best they learn. To overcome students' resistance to reading and studying, teachers can incentivize reading with points on the course grade, such as through daily class quizzes, blog responses prior to class, or in-class writing assignments linked with readings. That is, the benefit to students becomes earning higher grades through a variety of low-stakes assessments giving them greater control over their grades, rather

than “three tests and a final examination”. Because these assessments occur in the classroom, students also learn the benefit of accepting personal responsibility for preparing for and attending classes, behaviors that will serve them well in their careers. Rather than expecting the teacher to do all the work, learner-centered curricula successfully convince students that the one who does the work does the learning (Doyle, 2008).

Another benefit students need to embrace is learning how to learn, or metacognition. For example, McGuire and McGuire (2015) recommend that students benefit from metacognitive actions, such as engaging in active reading by asking questions in advance and seeking answers to these questions, paraphrasing information in textbooks with notes in the margins, and developing concept maps and outlines to frame information logically. They also advise students to go to class, take notes by hand, review notes after class, study by asking “why”, “how”, and “what” questions, and self-assess their learning.

Developing a growth mindset is another benefit for students (Dweck, 2006). That is, they need to believe in their ability to remember, understand, and apply new content (Krathwohl, 2002). Through reflections on past learning achievements and how rewarding these felt, students can gain confidence. Students will benefit from incremental opportunities to demonstrate their new-found knowledge and skills because these become reinforcing of expanding self-efficacy, shown through a willingness to take risks in learning challenging information. Another benefit for students occurs when teachers engage them more actively in their learning by using interactive lecturing, which will be discussed in the next section.

#### **4. Interactive Lecturing**

When most people think about instructional strategies in college classrooms, inevitably lecturing is assumed. Lecturing can and should present information otherwise unavailable to students, synthesize information from multiple sources, help organize information in a logical structure, and clarify confusing concepts, principles, and ideas (Barkley & Major, 2018). Teaching primarily or exclusively through lectures, however, remains problematic because lectures fail to provide a comprehensive learning experience, especially given the inherent passivity, limited attention span, and heterogeneity in knowledge and experience of students. Lecturing alone frequently leads to student boredom, detracts students from reading and preparing before class, and often results in poor retention of knowledge (Fink, 2013).

Barkley and Major (2018) describe interactive lecturing as “the process of combining engaging presentations with carefully selected active learning methods to achieve intended learning goals” (p. 16). Active learning reinforces content, concepts, and skills, helps students deepen subject matter knowledge and develop higher cognitive skills, provides students with opportunities to think about and apply learning through discussions and other activities, improves student engagement in learning, student motivation, and classroom climate and sense of community, and increases enthusiasm for a

topic (Barkley & Major, 2018). Interactive lecturing engages students in high-order learning through analyzing, evaluating, and creating (Krathwohl, 2002).

Interactive lectures require inclusion of active learning, which could vary widely from guided notetaking, asking students questions, discussions, small-group work, and quizzes emphasizing metacognitive reflection. To stimulate listening for information during lectures, the teacher could provide students advanced organizers to use as organizational templates or invite students to mark on Bingo cards when questions on the card are answered during lectures. To review information presented, the teacher could ask students to restate key points or write a one-sentence summary, develop questions and answers based on content presented, analyze a concept presented, and write a practical application (Barkley & Major, 2018).

When “telling” students, instructional strategies matter. Teachers must engage students with disciplinary content by making it relevant to their current interests and future careers. Learners learn actively, rather than passively, by receiving material repeatedly and in multiple modes, reflecting on and examining fully new information through metacognitive processes, and evoking emotional involvement. Optimizing learning occurs when college classes are characterized by lectures punctuated repeatedly with learning exercises engaging the minds of students.

Each lecture, which should be no longer than 15 minutes, needs a roadmap, such as use of guided notes. Lectures should be interspersed with activities to deepen and expand students’ abilities to make applications and enhance their critical thinking. Teachers should punctuate all lectures with infusion of a variety of active learning experiences. For example, in a Jigsaw, the teacher assigns in advance a topic for groups of students to research to become “experts”. In the next class, students meet with others who investigated the same topic and discuss their findings. The teacher then asks these “experts” to move to other groups and teach their classmates about this topic. This rotation continues until all students share information about their topics and learn from classmates. An optimal way to analyze, evaluate, and personally create new information is to teach it to others. Effective questioning strategies, exploratory writing assignments, write-pair-share, rotating stations, classroom polls, review games, checks for understanding, and minute papers engage students more actively. Table 1 provides examples of these and other successful active learning strategies for teachers to use in engaging students’ minds and enhancing their learning.

**Table 1. Examples of Active Learning Strategies**

| Facilitating Discussions (Brookfield, 2015) |   |
|---|---|
| Quotes to Affirm or Challenge               | Students are asked to bring two quotes they have chosen from an assigned reading, one the student wishes to affirm and another the student wishes to challenge. In small groups each student takes a turn to propose the quote he or she wishes to affirm; then, the group chooses one of the quotes to defend to the entire class. The same procedure is followed for the quotes to challenge, with a different student starting this time; each group reports to the class the rationale for why one quote should be challenged.  |
| Circle of Voices                            | The teacher explains a topic or an issue or phrases a question. Students get into groups of four or five for about two minutes and write notes about how they want to respond. Each student in turn (around in a circle) shares his or her analysis for about one minute each; no one else can speak when another student is speaking; then the discussion continues in a free-flowing format with comments required to be connected with or related to what has already been stated.   |
| Teaching Peers                              |   |
| Discussion Boards                           | Discussion boards help hold students accountable for completing assigned readings and engage with the content. Teachers post discussion board threads or questions on the learning management system. Each student must use information from each reading when making a post and then respond specifically and in some detail to comments posted by at least two classmates. Deadlines are needed for each student to complete his or her initial post followed by a day or two to respond to classmates' comments.   |
| Fishbowl                                    | The teacher asks students to form two concentric circles. Students in a smaller inside group analyze an assigned reading or examine a real-world issue with the larger outside group listening to classmates and developing questions to ask. After 5-10 minutes, students in the outer group ask questions and/or extend the discussion with the entire class participating.   |
| Writing Exercises (Bean, 2011)              |   |
| Exploratory Writing Activities              | Students are challenged to use exploratory writing to develop and clarify their ideas as they think and write concurrently. Teachers can pose questions, provocative ideas, ethical issues, and current events to engage students' interest in writing. Exploratory writing also may include reflective journals, study notebooks, marginal notes written in textbooks, electronic posts, and drafts of written assignments.  |
| Peer Feedback on Written Assignments        | The goal of giving and receiving peer feedback on written assignments is to help students become better writers. Teachers should provide instructions about how to do this, using the grading rubric and explaining how to give constructive feedback. As they review classmates' writing, students need to look for and mark the thesis or purpose statements, supporting evidence and/or analyses of key points, weak or inclusive statements and unsupported claims, concrete recommendations or conclusions, and questions for the writers to respond to in improving their written work. Students should be encouraged to mark grammatical errors. |

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## Formative Assessments

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**Minute Papers** With about three minutes left in class, ask students to anonymously respond to two questions: 1. What was the most important thing you learned today in class? 2. What important question remains unanswered or concept remains unclear or needs further explanation? Collect papers and at the next class provide feedback to students by summarizing responses and reviewing what concepts or information remain unclear. Alternatively, the teacher can post answers to the questions via the learning management system. Minute papers help students reflect on their learning.

**Jeopardy—An Example of a Review Game** Create each Jeopardy game with 31 answers and questions and allow about 30 minutes in class for the game. Students individually or in pairs think about or discuss responses (each group or person keeps a point tally). Students raise their hands to provide the answer, and the teacher calls on one student. All students receive points if they knew the correct answer. Post each Jeopardy game (after class) via the learning management system so students can use these games when studying for tests.

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## Effective Questioning Strategies (Lumpkin, 2019; Morse, 2016)

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- Phrase each question clearly, logically, and understandably.
  - Call on students by name when asking questions, including using “cold” calls.
  - Avoid “leading” questions and questions with “yes or no” or one- or two-word answers.
  - Do not interrupt students’ answers while providing positive, non-verbal feedback.
  - Refrain from answering own questions.
  - Pose a question and wait at least three seconds—ask for anyone to respond.
  - Wait at least three more seconds after posing a question and make a cold call.
  - Extend wait time at least five seconds after each response for students to complete or add more to the answer.
  - Ask lower-order questions (i.e., remembering and understanding); progress to higher-order questions requiring applying, analyzing, evaluating, and creating.
  - Accept an incorrect answer with an “interesting perspective” comment; correct any incorrect answers; never degrade a student’s incorrect answer.
  - Reinforce alternative answers with affirming comments.
  - Listen carefully to each student’s response; build on answers with questions to uncover a student’s thinking.
  - Pay attention to responses to view learning from the student’s perspective.
  - Always answer every question; if an answer is not known, find the answer and share it later.
  - Pause before responding to answers; affirm responses whenever possible and ignore the others; always be positive.
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Teachers’ instructional approaches through lecturing and incorporation of collaborative learning activities complements how students learn and reinforces benefits accruing to students. Utilization of a variety of instructional strategies positively influences the process of learning, which involves changes in knowledge, attitudes, beliefs, and behaviors. Infused throughout this “telling” stage are assessments



of student learning, which are described in the next section.

### **5. Assessment as, for, and of Learning—Telling What You Told Them**

Assessment is an ongoing process, states Suskie (2009), providing useful information about what students already know (through diagnostic assessments), what students have learned (using formative assessments), and whether students have met their learning goals (in summative assessments). Each type of assessment has a unique purpose. Assessment *as* learning involves the use of ongoing self-assessments by students as they monitor and reflect upon their learning with the goal of making adjustments to achieve deeper understanding. Assessment *for* learning means teachers provide feedback to students to improve their performances with the goal of helping them take greater ownership of their learning. Assessment *of* learning involves use of measurements to determine what students have learned and know.

Teachers often make assumptions about their students when a course begins so they do not ask or determine what students already know about a discipline or a topical area. Assessment *of* learning requires measuring what students know. In the absence of diagnostic assessments, teacher assumptions about students' prior knowledge may be unrealistic or simply incorrect. For example, students can complete Background Knowledge Probes to evaluate their foundational knowledge prior to the beginning a new topic. Pre-assessments measure what students know, with the information learned guiding teachers in where to start in presenting information and helping students fill in gaps in their existing knowledge while creating new knowledge.

Teachers often conclude students understand when new information is stated only once or twice in class, although this seldom is true. Exposure to or hearing information does not automatically mean learning has occurred. A better approach is to use numerous assessments *for* learning through which teachers can gain insights into what students actually have been learning, what is misunderstood or unclear to students and needs clarification, and, based on feedback received from students, can help improve their understanding and abilities to apply and analyze what they are learning. Information learned through formative assessments alerts teachers to the essentiality of reviewing, repeating, and reinforcing the most important disciplinary content.

Here are two examples of using formative assessments as assessments *for* learning, which often are low-stakes (i.e., counting for only a few points) assignments that help strengthen student learning. To assist students in optimizing understanding of assigned readings, the teacher can provide students with Guided Notes, containing numerous blanks, for summarizing content presented and discussed in class. Students generate a completed set of notes as they read, which can better prepare them to discuss the reading in class and use these notes as study guides for tests. Through Study Outlines students benefit from having structures for organizing content presented in meaningful and useful ways. After the teacher provides examples of study outlines early in the academic term, students can learn to develop study outlines to guide and strengthen their learning. In addition, teachers need to frequently assess

where students are in their learning. Asking students to answer questions is a great starting point, as long as questions move beyond students' remembering and reciting facts with only superficial understanding. Teachers need to ask students to make applications and analyze what they are learning. Also, establishing a caring and safe classroom culture invites students to ask questions and reveal any misunderstandings that need to be resolved.

Assessments are essential in determining the breadth and depth *of* student learning. Unit tests and final examinations are examples of summative assessments. Teachers are encouraged, however, to expand measurements of learning to include capstone projects, reflection papers, presentations, and maybe even student-designed portfolios allowing for greater creativity in demonstrating their learning.

Assessments provide a valid and reliable measure of students' understanding as they apply, analyze, and evaluate what they know and create new knowledge. When students realize what they have already learned and are learning, they are poised to "own" this new knowledge and want to use it. This leads to students developing action plans, which is the topic of the next section.

## **6. Action Plan**

Students have been told what to anticipate in well-designed courses in step one, convinced about personal benefits in step two, taught effectively through interactive lecturing in step three, and assessed about their learning in step four. The fifth and final step prepares students to take action using their new knowledge. This knowledge becomes most meaningful to students when they realize how beneficial what they now know can be as a foundation to learning in subsequent courses, in internships and other work experiences while students, and upon graduation in their careers.

Action plans are goal-driven providing a clear direction. They include tasks to accomplish, milestones to mark achievements, deadlines to meet, any additional resources or training needed, and, very importantly, measurements of progress. Action plans help prioritize allocation of personal time and effort. For students, action plans help them sequence their academic course schedule by choosing courses to build on existing knowledge, seek opportunities to expand course-related learning through real-world experiences—voluntary and compensated—, and network to gain access to future employment options. Developing action plans affirms the value of dedicated work associated with the first four steps. Effective teaching and learning contributes significantly to the accomplishment of action plans.

## **7. Conclusion**

An effective teaching and learning process requires five sequential steps. Teachers who care about the learning of students first preview how the course's disciplinary content is organized. Teachers then convince students how and why listening and learning will personally benefit them. Next teachers lead interactive classes utilizing a variety of instructional approaches interspersed with engaging learning activities. Through learning assessments, teachers reinforce and reward student learning. In enacting

their action plans, students actively use new knowledge and skills learned.

Educationally sound course design, instructional strategies characterized by interactive lecturing and active learning, and use of a variety of assessments facilitate student learning, but only when students perceive personally beneficial outcomes and realize how knowledge learned can be used. Effective teaching is premised not on content coverage but on student learning. Interactive lectures punctuated with continuing infusion of active learning exercises such as think-pair-shares, jigsaws, minute papers, and effective questioning strategies will energize and motivate students to want to learn more. Engaged students are more likely to think critically and build on prior knowledge and experiences to construct new knowledge. Evidence of learning documented through use of a variety of assessments prepares students to use what they have learned. Assessments evaluate students' understanding, growth in critical thinking, development of skills in problem solving, while strengthening their application and analytical abilities. McTighe and Wiggins (2013) summed up the essence of a well-designed, delivered, and assessed course, "...an educator's job is not to simply *cover* content. Our role is to cause learning, not merely mention things..." (p. 26). This is most successful when students feel they personally benefit from and can actually use content they learn. In combination, five steps converge resulting in more effective teaching and learning.

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