When it comes to the assessment of learning outcomes, there are two primary approaches that instructors can take: summative assessment and formative assessment.

**What’s the Difference?**

To begin, we need to be clear on the difference between summative assessment (SA) and formative assessment (FA). Arends and Kilcher (2010) define the difference as, “formative assessment involves collecting information prior to or during instruction, that can be used by teachers to make instructional decisions and in-flight adjustments. Students can use this information to adjust [their] learning strategies….Summative assessment ... involves collecting information after an instructional segment has occurred” (p. 132). Looney (2011) provides a similar distinction when she explains, “Summative assessments of individual students may be used for promotion, certification or admission to higher levels of education. Formative assessment, by contrast, draws on information gathered in the assessment process to identify learning needs and adjust teaching. Summative assessment is sometimes referred to as assessment of learning, and formative assessment, as assessment for learning” (p. 5). Brookhart (2007) explains that there are three key elements to formative assessment: “1) it informs teaching practice, 2) instructional decisions are made based on this information, 3) students receive scaffolded assistance based on how to improve their work” (p. 43). Black and William (1998) see FA as “activities undertaken by instructors, as well as by students in assessing themselves” prior to the SA.

**Advantages of Summative Assessments**

While a great deal of research has focused on the advantages of formative assessments in directing and re-directing learning, this is not to suggest that there are no advantages to summative assessments. Summative assessment helps to inform the evaluation of the student (Black and William 2011, 1998, Biggs 1998, Looney 2011). Arends and Kilcher (2010) make a distinction between summative assessment and evaluation, arguing, “assessment [is] a continuous process of gathering formal and informal information about student learning and about teachers’ instructional processes. Evaluation…consists of making judgments about the level of students’ achievements for the purposes of grading and accountability” (p. 132). They suggest that whether an assessment tool is providing learning and instruction information or
whether it is providing evaluative information (or both) needs to be clearly and distinctly described. Summative assessments are particularly useful if they are also authentic (more on this later) and if students can use them to demonstrate their skills and abilities. Among the SA tools are capstone courses or presentations, portfolios, projects, standardized tests (for licensure or certification), and cumulative exams.

**Advantages of Formative Assessments**

The biggest advantage of formative assessment is that it allows both the teacher and the student to see where the student is at and find ways to make improvements before the summative assessment occurs. Consistent use of formative assessment has been shown to improve student motivation, both intrinsically and extrinsically (Brookhart 1997, 2007; Black and William 1998, Cauley and McMillan 2010). Gareis (2007) reminds us that the Socratic method was a type of formative assessment. Socrates “[used] questions to assess understanding, to guide learning, and, ultimately, to foster critical thinking.” It was a method used throughout the teaching process and not just at the end of the teaching process. Gareis (2007) explains, “Basically, formative assessment is any means by which a teacher figures out what students are getting and what they are not getting—in the classroom, for the purpose of teaching and learning, but not for purposes of grading.” Cauley and McMillan (2010) assert, “In summative assessment, evidence only records current student achievement. Although formative assessment can be performed after a test, effective teachers use formative assessment during instruction to identify specific student misunderstandings, provide feedback to students to help them correct their errors, and identify and implement instructional correctives.” They argue that there are four primary reasons why formative assessment should be used.

1. Frequent, ongoing assessment allows both for fine tuning of instruction and student focus on progress.
2. Immediate assessment helps ensure meaningful feedback.
3. Specific, rather than global, assessments allow students to see concretely how they can improve.
4. Formative assessment is consistent with recent constructivist theories of learning and motivation. (Cauley and McMillan, 2010).
According to Stiggins (2005), FA helps increase motivation in the classroom since it helps indicate to students whether or not the learning is worth the effort. Consistent formative assessment that is built into lesson plans and contributes in obvious ways to the summative assessment allows students to set learning goals and monitor their own progress. Black and William (1998) assert that “student-involved formative assessment raises student achievement as reflected in summative assessment.”

**Types of Formative Assessment**

1. **1-minute paper:** This technique can be used in many ways. The basic concept is to ask students a brief question and have them spend 1-minute writing a response. The instructor can surf the classroom and see who has the “correct” response, or the instructor can have students swap responses and compare and identify which students have the “correct” response. This technique is especially useful for teaching students how to recall information. It can be especially helpful when the only other assessment will be a summative assessment because it enables instructors to identify gaps in knowledge before the summative assessment takes place. Additionally, it can be helpful with making sure that students can explain information or concepts before they apply that information.

2. **“Clearest” and “muddiest” point:** This technique is similar to the 1-minute paper, except that it is usually done at the end of a class. Students quickly write down what the “clearest” and “muddiest” points were for what they learned that day. This technique helps instructors identify problem areas that need to be addressed in subsequent class sessions. Being able to identify what students are struggling with (the “muddiest” point) can help to correct that problem before it comes up in an assessment (SLO or otherwise). Being able to identify what students understand (the “clearest” point), can give instructors valuable information, too. It can give instructors something to think about in terms of how they taught that particular point and how those strategies can be used to make other points more clear. Keeping track of the “clearest” vs. “muddiest” points can
be valuable data to bring to faculty dialogue meetings for discussing student progress on SLOs.

3. **Think-pair-share:** This technique works well when students will have to solve a problem or complete a task as part of an assessment. It is a practice wherein the students are given a problem to solve or task to complete. They are given a few minutes to attempt it on their own before connecting with a partner (or in a small group) to compare responses. The students then work together to make sure they’re all understand how to solve the problem or complete the task. This technique really connects with the idea that we learn better if we practice what we’re taught as immediately as possible. Think-pair-share works well with SLOs where students must do things like *analyze, evaluate, create, design, apply, or prepare.* The instructor has the chance to see how many students can perform the task or solve the problem on their own and how many need assistance. It can also help the instructor identify where a concept did not get transmitted well.

4. **Student surveys:** This technique is a tough sell because this isn’t about a formal survey; it’s not about having students fill anything out or answer formal questions with pre-designated responses – it’s about surveying the students as they sit in the classroom. It’s about asking the students, “What could I be doing better?” It’s a hard thing to do. Because it’s admitting to students that we’re fallible. I have less trouble asking fellow instructors to come and give me feedback than asking students this question. For one, to do this well, you have to have established enough rapport with students for them to take this question seriously and for them to understand that you won’t be offended by their responses. However, when done correctly, this question can elicit a significant amount of information not only about what students don’t understand but also about what is being done well. This technique can really help to pin down best practices and to tie those best practices back to SLOs.

5. **The Pause:** Dr. Susan Johnston stated that to help students understand information, they needed to be able to connect it with prior knowledge. In “the pause,” the instructor presents information and then gives students a few minutes to think through and make
that connection. The students then share the connections they have made. This technique can help the instructor understand how new the information might be for students, which in itself can lead to further adaptation of the teaching process. Additionally, the students can then become teachers of their peers by showing connections. *The Pause* gets back to that idea of finding ways for students to connect with the material; we can’t find all of those connections ourselves, so we ask the students to engage with the material and help each other find those connections.

6. **Misconception Check:** This technique can be very useful, but it requires planning and preparation on the part of the instructor. In a “misconception check,” the instructor must think through the ways that students could misinterpret information or get a process wrong. The instructor then presents the information or process incorrectly to see how many students identify it as an error. This technique is especially challenging because it requires the instructor to create a rapport with the students such that students feel comfortable challenging the instructor about the information or process. In other words, if the students don’t feel comfortable disagreeing with the student, than this technique is really useless.

7. **Mini-quiz:** Like the “1-minute paper” or the “clearest or muddiest point,” a mini-quiz gives a quick snapshot of what students know. A “mini-quiz” is not helpful in determining what students are able to do because multiple-choice does not provide for testing abilities. However, this technique can be useful for the instructor to determine how well students are assimilating knowledge. It can be especially useful for classes where comprehensive midterms and finals are given because they allow the instructor to see where to revisit information in preparation for such comprehensive tests.

8. **Student Self-Assessment:** In this technique, students assess their own progress towards the SLO. To effectively use a “student self-assessment,” students really need to understand the SLO, why the SLO is important and what steps they will take to achieve the SLO. Self-assessments where the instructor simply asks, “how do you think you’re performing so far?” are often not entirely helpful. Students have an unfortunate tendency
to misjudge their own abilities, and an entire class responding that they’re doing well isn’t going to tell the instructor much. This is why self-assessments need to be controlled.

Why Use Both Formative Assessment and Summative Assessment

Zacharis (2010) points out that “assessing students’ work provides teachers with an opportunity to gauge [sic] not only how well their students have learned, but also how effectively they have been teaching them.” Ewell sees formative assessment as being able to identify a “wide range of performance” whereas summative assessment simply identifies how many students have achieved the target. It is in the “performance” of the assessment that the most information about student abilities can be garnered. FA contributes to the necessary dialogue on how well students perform on the SA and can help in identifying gaps and trends in learning. FA can also help to identify best practices in achieving the outcome. Biggs (1998) suggests that if summative assessment is going to be blended with or used as evaluation (in other words – in giving a grade), then formative assessment must precede it. He argues, “When that happens, you get aligned instruction, where teaching to the test is exactly what you want because it is teaching to the intended curriculum.”

Additionally, using and reporting both formative and summative assessment results allows for the triangulation of data, which means to use three different types of data in order to make decisions. Looking at more than one assessment method helps to validate results. Researchers suggest that assessment methods include both direct and indirect methods of assessment. Mary J. Allen (2007) defines direct and indirect assessment:

1. **Direct** – The assessment is based on an analysis of student behaviors or products in which they demonstrate how well they have mastered learning outcomes.

2. **Indirect** – The assessment is based on an analysis of reported perceptions about student mastery of learning outcomes. The perceptions may be self-reports by students, or they may be made by others, such as alumni, fieldwork supervisors, employers, or faculty.

The summative assessment should always be a direct method of assessment, whereas the formative assessment could be either a direct or indirect method of assessment.
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For more on direct and indirect assessment methods, please see the Assessment Methods Cheatsheet.