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### Leadership, Voice of the Educator

### Student assessments: Junk in, junk out

By Adisack Nkougansona



Student assessment is one of the most important things that happen in a teacher's classroom. I'm not referring to the state accountability assessments that take place at the end of the school year, though those accountability assessments are important in their own way. I am referring to the classroom assessments created by teachers and given to their students to check for understanding and mastery of desired learning targets or standards.

As with any activity, what you put in is what you get out. Junk in. Junk out. Unlike the state accountability assessments, teachers ultimately have control over what they put into their classroom assessments. That's why it is so important for teachers to be well versed in assessment best practices and not put "junk" into their assessment practice.

So, what are the best ways to avoid "junk in and junk out" when it comes to assessing students? Here are four best practices to help teachers create and deliver better assessments.

#### Use a variety of item types

Whether you're creating and delivering tests on paper-and-pencil or on an online assessment platform, it is best practice to incorporate a variety of item types in your assessments. Different item types are best suited to assess different knowledge types and skills. So as a teacher, you should know which item type is best suited for assessing which type of knowledge or skill.

**Short -Answer.** Short-answer items require a short phrase, number or symbol response. These items are relatively easy to construct and can be scored objectively. Short-answer items are best and commonly used to assess lower-order thinking skills such as recall and comprehension of information.

**True-False.** True-false items consist of a statement that students must judge and mark as either true or false. This item type is also relatively easy to construct and can be scored objectively and can cover a wide range of content. Although true-false items are often criticized for assessing only trivial facts and for being prone to measurement error because students have a 50-50 random chance of answering them correctly, well-written true-false items can assess a wide variety of knowledge and skills with precision. For example, you can ask students to identify appropriate generalizations, comparisons, causal propositions, predictions and evaluations. And when you include many items on an assessment, it is difficult or very improbable for a student to obtain a good score by random guessing.

**Multiple-choice.** Multiple-choice items consist of a few introductory sentences and a statement or question followed by usually four or more choices from which students must choose the one correct answer. This item type is very commonly used, maybe a little more difficult to construct, but also have the advantage of being objectively scored. Multiple-choice items can be used to assess a variety of knowledge or skills, such as the ability to comprehend concepts and principles, make judgments about various courses of action, infer, reason,

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compute, interpret new data and apply information.

**Matching.** Matching items consist of a list of premises, a response list, and require students to match each premise to one of the responses. This item type is best used to assess a lot of content in a relatively concise manner. It is often used to test a student's ability to identify associations or relationships between two sets of things. Matching items can also be used to test younger student's ability to match words or phrases with pictures of objects or with locations on maps and diagrams.

**Constructed-response and essays.** Constructed-response and essay items ask students to compose their response to a question or prompt. The responses are typically scored with rubrics or rating scales. These items are best used to assess higher-order thinking skills such as a student's ability to organize ideas, develop logical arguments, evaluate and interpret data and demonstrate original thinking.

### Use a variety of cognitive processes

As you can see above, many item types can be used to assess the same type of knowledge and thinking skills. Regardless of the type of item used, it is important to construct that item well. One way to ensure that an item has been constructed well is to identify the type of knowledge and the cognitive process that is required to answer the item.

The revised Bloom's Taxonomy is a great tool for categorizing assessment items into these two dimensions of knowledge type and cognitive process. In Bloom's Taxonomy, there are four types of knowledge that students are asked to learn and can be assessed:

1. Factual Knowledge — Learning facts
2. Conceptual Knowledge — Learning ideas, generalizations or theories
3. Procedural Knowledge — Demonstrating procedures or ways of doing things
4. Metacognitive Knowledge — Being aware of and understand what they know

There are six cognitive processes that can be assessed:

1. Remember — Recalling or bringing to mind the appropriate material.
2. Understand — Knowing what is communicated and making use of the material.
3. Apply — Using abstractions to solve novel problems.
4. Analyze — Breaking down information to its constituent parts to make clear the relationship among the parts.
5. Evaluate — Making judgments about the value of the material and methods.
6. Create — Putting together pieces to create something new.

Each assessment item should be coded to each knowledge dimension and each cognitive process. For example, an item that is aimed to assess whether a student can apply conceptual knowledge can be coded as "3B." An item aimed to assess whether a student can create procedural knowledge can be coded as "6C."

### Align items to learning targets or standards

Perhaps more important than categorizing assessment items to the knowledge dimension and cognitive process, each assessment items should be aligned to a learning target or standard. The learning targets of instruction are ultimately what you want to assess whether the students have learned or mastered. Therefore, it is imperative to know precisely what learning target is assessed by each assessment item.

Aligning assessment items to Bloom's knowledge dimensions and cognitive processes and to learning targets should go hand-in-hand. Often the learning target should easily map onto one of the knowledge dimensions and cognitive process. For example, if your learning target is to "explain the main ideas and themes in the stories we read", this will map onto "Understanding Conceptual Knowledge (2B)."

### Engage students in better assessment techniques

After constructing well-written items that are aligned to learning targets and assess a variety of knowledge dimensions and cognitive processes, there is one last thing that teachers can do to get more out of their assessments: Ask students to do more than just answer the question!

When students take the assessment, don't restrict them to just selecting or constructing the



answer. Ask them for more. Ask them to predict how well they will do. Ask them to rate their confidence in their answer. Ask them to show their work. Ask them to justify their answer.

When students finish the assessment, you can still ask them to do more. Don't just ask them to look at their overall score or see what items that got right or wrong. Ask them to reflect on their performance. Ask them to write about what they would do better or differently next time. Ask them to reflect on their performance on each item. Ask them to state why they got it right or wrong. Ask them to reconcile their prediction with their actual performance.

When you ask students to do more than just select or construct an answer, you are asking them to engage in better assessment practices. You are asking them to engage in self-assessment and self-reflection. These assessment techniques have been shown through research to help students learn the material better and more deeply.

So remember, what you put in is what you get out. If you put in the time to construct well-written items, ensure that they cover a variety of knowledge types and cognitive levels, align them to specific learning targets, you're bound to get reliable and valid information what your students. On top of that, if you engage in better assessment techniques and ask students to do more, you will get even more meaningful data about your students to help you make the best instructional decisions.

*Adisack Nhouyvanisvong is an educator and entrepreneur. He teaches graduate courses on assessment practice and theory at the University of Minnesota. He also is the co-founder of Naiku, Inc., a firm that specializes in supporting districts with their transition to next generation online student assessment. Nhouyvanisvong earned his Ph.D. from Carnegie Mellon University.*

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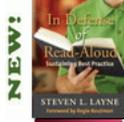
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