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Introduction

When sharing your teaching ideas and resources in the teaching and learning (T&L) community, what information would you want to include? Obviously, an abstract that concisely describes your shared resource would be a must. A well-written abstract helps other instructors looking for innovative and effective T&L resources that can be adopted in their courses.

Besides the abstract, another critical component that describes the resource in terms of its intended purpose and consequences is the learning outcome. A *learning outcome* is a detailed description of how data regarding the effectiveness of the T&L resource are collected to provide evidence that students have achieved the learning objectives (Mansour, 2022). In short, it is where you describe what "ends" your T&L resource is supposed to produce. According to Mansour (2022), learning outcomes can consist of two elements: *learning goal/objective* and *assessment*. In this module, we will focus on the *assessment* component of learning outcomes. Specifically, we will discuss topics such as: 1) what we mean by *assessment*; 2) what we mean by *constructive alignment* among learning objectives, assessment, and pedagogical instruments such as the T&L activities that you intend to share in the T&L community; and 3) how to write well-aligned assessments and avoid common pitfalls.

A. What Is *Assessment?*

Formally defined, *assessment* is the measurement of how a student's knowledge, attitudes, and skills have increased or otherwise improved due to the academic experience provided by the instructor, a pedagogical instrument used in the class, or both (Mansour, 2022). Therefore, your T&L resource assessment should state how you will know whether students have achieved the specific learning objectives. Assessment can take various forms, ranging from something as simple as collecting student responses

in class discussions to something as elaborate as major capstone projects. Regardless of its form, your assessment should always address the critical question: *How will students demonstrate the acquired knowledge, ability, or attitude?*

Here are some examples of learning objectives and assessments from the resources published in TRAILS: Teaching Resources and Innovations Library for Sociology:

Example 1 (Kordsmeier, 2016):

- Learning objective: "Students will demonstrate understanding of concepts related to the social construction of health and illness."

- Assessment: "In a 4–6-page paper, students are assessed on the understanding of concepts related to the social construction of health and illness that they display through their use of terms and ideas from the course. (See attached rubric item 3)."

Example 2 (Takeuchi & Takeuchi, 2019):

- Learning objective: "To learn how to examine the difference between two unrelated groups and between two related groups by comparing the means obtained from the two groups, using examples of real-life social situations."

- Assessment: "How well students understand the nature of the problems and can formulate appropriate null hypotheses in Questions A3a, B3a, B3d, and C1 on the assignment sheet."

Example 3 (Linneman, 2020):

- Learning objective: "Students will be able to apply the ethical principles of professionalism, equity, academics, confidentiality, and honesty to examples of situations with ethical implications they might face as sociology teachers."

- Assessment: "At the conclusion of the activity, in a 1-minute paper assessment technique, or in a reflection paper, provide students with novel situations, and ask them how they would address them ethically in light of the PEACH principles."

These examples of learning objectives and assessments from TRAILS show how students' attainment of new knowledge or skills will be displayed in tangible forms, which are observable and thus measurable. As you can see, well-constructed assessments should also serve as "indicators" of the effectiveness of your T&L resource.
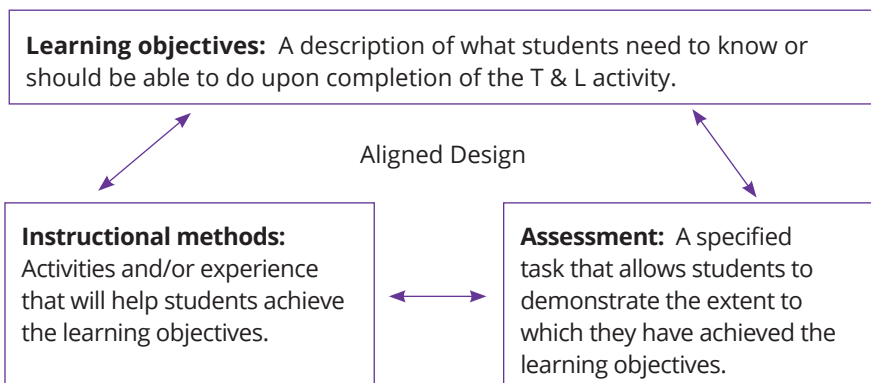
B. What Do We Mean by *Alignment*?

As discussed in the Introduction, assessment is an essential component of learning outcomes and does not exist independently of other critical components. Therefore, it must be congruent with the instructor's T&L design components.

1. The T&L Design

According to Chatterjee and Corral (2017), *instructional alignment* means how well the learning objectives, assessment, and instructional methods are working together to support the consistent educational outcome. To see a figure that shows how these three components are closely aligned, see Figure 1.

Figure 1. How to Write Well-Defined Learning Objectives

Learning objectives: A description of what students need to know or should be able to do upon completion of the T & L activity.

Aligned Design

Instructional methods: Activities and/or experience that will help students achieve the learning objectives.

Assessment: A specified task that allows students to demonstrate the extent to which they have achieved the learning objectives.

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When the three components are closely aligned to reinforce one another, it is called *constructive alignment* (Biggs, 2003). Ideally, your T&L resource is designed in such a way as to help students develop the knowledge and skills specified in the learning objectives; and a well-aligned assessment of the resource should measure the accomplishment of the learning objectives.

If assessments effectively reflect what the instructor can look for as evidence that the learning objectives have been achieved, they will also help other instructors understand the pedagogical contributions of the resource as well as its utility and adaptability to their classes. Then, the resource is more likely to be shared in the T&L community as part of the cumulative knowledge on effective pedagogy in sociology. In that sense, T&L resources with well-aligned learning objectives and assessments will enhance the quality of T&L experiences for both the instructors and their students and make greater contributions to sociology education.

2. Alignment for Measurement Quality

In research, a measurement must accurately reflect the concept it intends to measure to ensure its validity. Similarly, assessment in T&L must also accurately reflect the learning objective it intends to assess. Indeed, assessment validity is a critical dimension of quality measurement, of which alignment is foundational.

For instance, the learning objective may be for students "to be able to differentiate" the three major sociological perspectives (i.e., structural-functional, conflict, and symbolic interaction). Here, simply giving the students multiple-choice questions on the mere definition of each perspective would not adequately meet the

learning objective "to differentiate." Moreover, just giving multiple-choice questions on definitions can undermine assessment validity, even if such an assessment may still yield consistent results. Therefore, the appropriateness of the assessment instrument (e.g., type of question, such as multiple-choice versus short essay) and its contents (e.g., question on definition versus question on application or comparison) for specific learning objectives or their symmetry is very important.

Of course, it is also essential that a valid assessment yields consistent results across time periods (e.g., academic terms/semesters), groups (e.g., sections of the same course), and individual students to ensure its reliability. Assessment reliability is not as closely linked to the alignment of learning objectives and assessments as assessment validity. However, assessment reliability is still an important dimension of assessment quality closely related to alignment that instructors and authors of T&L resources need to keep in mind.

3. Logical Structure of Components

Figure 2. Assessment As Operationalization Of Learning Objectives.

T & L Activity (Treatment) ⟶ **Learning Objectives (Expected Effects)**

Operationalization

Assessment (Observed Effects)
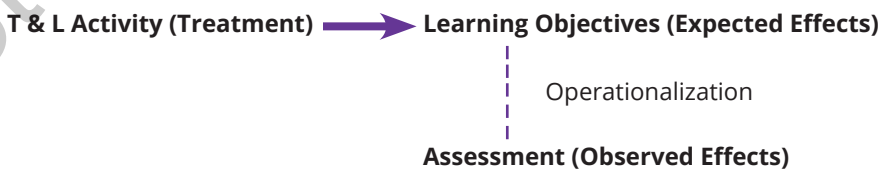
The issue of alignment can also be explained by using the analogy of the experimental method. In Figure 2, T&L Activity is much like

the Experimental Treatment intended to have effects on the dependent variable. In this analogy, the treatment results are the desired outcome in students' mastery of the course materials, as stated in the Learning Objectives. Assessment, on the other hand, is much like the operationalization of the dependent variable stated in the Learning Objectives. As such, assessment must specify how exactly you will observe and measure the extent to which the learning objectives have been achieved.

In aligning Learning Objectives, Assessment, and T&L Activity, it is imperative to pay attention to the logical temporal order of the three components and develop a proper assessment of the pedagogical goal (i.e., learning objectives) based on the anticipated consequence of the T&L activity. To assess any change in the dependent variable, the assessment factor needs to follow (i.e., occur after) the T&L activity but not lead (i.e., occur before) it in time order. As simple as it seems, the logical temporal order of the components is a common source of confusion when developing an assessment (see Section E later in this module).

C. What Should Be Aligned?

1. Aligning the Types of Learning Objectives and the Types of Assessment

Depending on when it is delivered, assessment can be categorized into two types: *summative assessment* and *formative assessment* (Sambell et al., 2012).

Summative assessment is given after the T&L activity. This type of assessment provides evidence that students have achieved/gained skills or knowledge specified in the learning objective after the T&L activity. Common examples of summative assessments include exams, assignments, projects, and presentations.

On the other hand, *formative assessment* is given in the middle of the T&L activity. It is typically implemented through self-tests, understanding checks, peer review, and critique. The purpose of formative assessment is to provide students with feedback while they are still working on the T&L activity.

Summative and formative assessments can be combined to aid students' learning experiences. For instance, in *scaffolded assessment* (Karla & Vogel, 2021), assessment is broken down into subassessments at different stages of the T&L activity. As such, it allows students to receive feedback multiple times and reflect on them throughout their progress toward completing the assigned task.

Another assessment typology can be made based on the type of tasks students are required to perform. In *traditional assessment*, students demonstrate their knowledge or skill on conventional tests, quizzes, or other assignments. In contrast, in *authentic assessment*, students would perform more applied tasks to demonstrate their acquired skills and knowledge (Sambell et al., 2012). Examples of such tasks include case studies, simulations, consulting, internships, and service learning that provides opportunities to practice, consult resources, get feedback, and refine their performance.

The assessment type must match the learning objectives specified in the T&L activity. For example, suppose the learning objective of your T&L resource is to promote students' smooth progression toward acquiring skills to perform a defined task. In that case, a *formative assessment* is required, so their progress during the process can be properly monitored and appropriate feedback can be provided. Also, the assessment type should be authentic assessment because the desired outcome is students' performance on a defined task. If the learning objective is

students' acquisition of knowledge, summative and traditional assessments are appropriate because the purpose of assessment is to evaluate rather than to provide feedback, and the desired outcome is the acquisition of knowledge rather than the application of knowledge.

2. Aligning the Types of Learning Objectives and the Types of Tasks that Students Perform in Assessments

Suppose students are required to perform an assessment task different from the one specified in the learning objective. In that case, the assessment cannot measure whether the students have achieved the learning objective. For example, if the learning objective states, "Students will be able to analyze and critique a journal article," students should be asked to "analyze and critique an article" in the authentic assessment rather than to "summarize an article."

One way to help ensure the alignment between T&L activities, learning objectives, and corresponding assessments is to look at the verb(s) used in each of the three components. Check whether the verb that describes the learning objective corresponds to the one used in its assessment regarding the *type of task* students must perform. Here is an example:

- T&L activity: Students **practice** interview skills by teaming up with a classmate, interviewing each other, and exchanging feedback with each other.

- A learning objective of the activity: Students learn the skills to **perform** an interview.

- The assessment of the learning objective: Students **answer** multiple-choice questions on interviewing at the end of the activity.

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In this example, the assessment task (i.e., answering multiple-choice questions) does not allow students to demonstrate what is stated in the learning objective (i.e., whether they have acquired interview skills and how well they can perform an interview). To have better alignment, the assessment of the learning objective needs to be modified:

•   The assessment of the learning objective: Students exchange a **checklist on their interview performance** with each other.

It is essential to remember that the type of learning objective and task that students perform in the T&L activity should guide you to an appropriate task in the assessment.

Table 1 summarizes different types of learning objectives with examples of verbs and assessment tasks that are appropriate for each type of learning objective as adopted from the revised Bloom's Taxonomy (Anderson & Krathwohl, 2001):

Table 1. Summary of learning objectives with assessment tasks and outcomes.

Types of Learning Objectives and Examples of Verbs	Examples of Appropriate Assessment Tasks	Possible Outcomes of Assessment Tasks
Remembering **Students will be able to** *define, describe, identify, list, outline, recall, recognize, report, select,* **or** *state.*	Objective test items, such as multiple-choice questions, fill-in-the-blank questions, or short-answer questions	Students recall or recognize facts, concepts, or terms
Understanding **Students will be able to** *classify, compare, differentiate, discuss, explain, interpret,* **or** *summarize.*	Activities such as papers, exams, assignments, problem sets, or class discussions	Students summarize readings, compare & contrast two or more theories/concepts, classify/categorize cases/elements using established criteria, paraphrase documents, identify examples of a concept

Types of Learning Objectives and Examples of Verbs	Examples of Appropriate Assessment Tasks	Possible Outcomes of Assessment Tasks
Applying **Students will be able to *apply, compute, demonstrate, execute, implement, infer, predict, prepare, produce, solve,* or use.**	Activities such as problem sets, performances, labs, prototyping, or simulations	Students use information or a skill to solve or complete tasks
Analyzing **Students will be able to *analyze, attribute, classify, compare & contrast, debate, differentiate, examine, explain, integrate, organize, question, relate, survey,* or test.**	Activities such as case studies, critiques, labs, papers, projects, debates, or concept maps	Students discriminate or select relevant from irrelevant parts, determine how elements function together, or determine bias, values, or underlying intent in presented materials
Evaluating **Students will be able to *appraise, argue, assess, check, critique, determine, evaluate, judge, justify, recommend, review, support, validate,* or weigh.**	Activities such as reviews, journals, critiques, case studies, problem sets, or studies	Students test, monitor, judge, or critique readings, performances, arguments, policies, methods, or studies against established criteria or standards
Creating **Students will be able to *build, construct, design, develop, formulate, generate, hypothesize, integrate, plan, produce, propose,* or synthesize.**	Activities such as essays, research projects, performances, or survey designs	Students make, build, design or generate new or original work

What follows are a few examples of alignment of verbs used in learning objectives and assessments, as shown in Table 1:

Example 1:

- Activity: An assignment designed to teach students the three major sociology perspectives.

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- Learning objective: Students will be able to **discuss** the unique feature of each major sociological perspective.

- Assessment: How well students can **compare** the three major sociological perspectives in their written responses.

Example 2:

- Activity: An exercise designed to teach students a step-by-step procedure for conducting a graphical analysis.

- Learning objective: Students acquire the skills to **analyze** quantitative data by drawing a graph.

- Assessment: Students sketch a graph using provided data and **examine** the bivariate association in the question at the exercise's end.

Example 3:

- Activity: An in-class group activity designed to enable students to create an appropriate household budget for a hypothetical family.

- Learning objective: Students will be able to **develop** an appropriate household budget considering social needs and constraints.

- Assessment: Students **generate** a budget spreadsheet that reflects appropriate expense items and allocation of resources as the output of the activity.

Note that all the assessment outputs in the three examples—students' written responses, graphs, and budget spreadsheets—are tangible and thus are directly measurable.

D. How to Develop Effective Assessments

Step 1: Determine how attainment can be demonstrated.

The construction of an effective assessment starts with specific learning objectives to be achieved. Once you determine your desired outcomes (i.e., learning objectives), determine how students would effectively demonstrate their knowledge and abilities (i.e., assessment). Identify the specific knowledge and skills that students are expected to gain through or by the end of the T&L activity and the desired level of attainment of such knowledge and skills.

Step 2: Define how the performance (or the demonstration of outcomes) should look.

The next step is considering the necessary performance or demonstration of the outcomes and how they can be observed and measured. Here, you need to determine acceptable evidence of learning and choose appropriate assessment tasks that will enable students to demonstrate it, receive feedback on their learning progress, or both.

Step 3: Write a specific, measurable, and well-aligned assessment.

To effectively demonstrate what effects/changes the T&L resource is intended to produce through or at the end of the learning activities, the assessment is expected to include (but is not limited to) the following information:

- Performance: What knowledge or skills will students be expected to demonstrate? Specify them using a measurable action verb as introduced in Table 1.

- Degree of attainment: How well or at what level are the knowledge or skills expected to be performed?

- Timing of measurement: When should the performance be measured—during T&L activity or after the activity?

- Method of observation: How will the performance be measured and evaluated?

The three examples of assessment from Section A also provide this information.

Example 1 (Kordsmeier, 2016):

"In a 4-6-page paper, students are assessed on the understanding of concepts related to the social construction of health and illness that they display through their use of terms and ideas from the course. (See attached rubric item 3)."

- **Performance**: Students display their understanding of the concepts related to the social construction of health and illness through their use of terms and ideas from the course.

- **Degree of attainment**: Rubric is provided.[1]

- **Timing of measurement**: At the conclusion of the activity.

- **Method of observation**: A 4–6-page paper.

Example 2 (Takeuchi & Takeuchi, 2019):

Assessment: "How well students understand the nature of the problems and can formulate appropriate null hypotheses in Questions A3a, B3a, B3d, and C1 on the assignment sheet."

- **Performance**: Students formulate appropriate null hypotheses.

- **Degree of attainment**: "How well . . . " (The example answers and common mistakes are provided in the resource to serve as references.)

- **Timing of measurement**: At the completion of the specified questions in the assignment.

- **Method of observation**: Questions A3a, B3a, B3d, and C1.

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[1]Rubrics are an excellent tool to describe precisely what is expected to be attained. Because rubrics clearly show what outcomes look like, they can be used for grading.

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Example 3 (Linneman, 2020):

"At the conclusion of the activity, in a 1-minute paper assessment technique, or in a reflection paper, provide students with novel situations, and ask them how they would address them ethically in light of the PEACH principles."

- **Performance**: Students address the provided novel situations ethically considering the PEACH principles.

- **Degree of attainment**: "How they would address . . . ethically." (The grading criteria are discussed in the Usage Notes of the resource.)

- **Timing of measurement**: At the conclusion of the activity.

- **Method of observation**: A 1-minute paper assessment technique or a reflection paper.

E. Common Sources of Confusion

1. Confusion of Assessment and Tasks (i.e., means to achieve the learning objective)

Example:

- **Learning objective**: Alleviation of students' anxiety for writing.

- **Assessment**: In-class writing exercise.

- **Problem**: The proposed activity, an in-class writing exercise, is the T&L activity or the means to produce the desired outcome (i.e., alleviation of writing anxiety). The assessment needs to reflect what instructors can look for as evidence that shows

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whether students' anxiety has decreased, and if so, to what extent. Therefore, the assessment should also address the degree to which the outcome has been produced.

- **Example revision to assessment**: After the activity, students are asked to write a short reflection on how the activity helped them feel more comfortable about writing.

2. Confusion of Assessment and Instructions (i.e., what instructors say, implement, or both)

Example:

- **Learning objective**: Students will be able to describe the three major sociological perspectives.

- **Assessment**: Students watch a video about the three major sociological perspectives.

- **Problem**: Watching a video is a procedure or means through which the instructor hopes to produce the desired outcome. Watching a video itself would not provide any information on students' levels of understanding of the materials as an outcome.

- **Example revision to assessment**: Students write a summary of the three major sociological perspectives as discussed in the video.

Again, learning objectives are what students will be able to do AFTER completing the assigned tasks (i.e., T&L activity), and assessments specify how the instructor observes the effects or outcomes. As such, they should not be a mere description of the task or instruction. Instead, learning objectives should really address the intended effects or desired outcomes of the assigned task or instruction.

3. Lack of Specificity

A well-constructed assessment should imply how the presence or absence of the desired outcome is observed and how the data are collected. What follows are several examples of assessments in which "operationalization" is ambiguous and thus is not measurable in tangible forms:

Example 1: "Students' contribution to the class discussion is observed."

- **Point for improvement**: Specify how exactly and in what manner the degree, quality, or both of students' contribution to the class discussion is observed and measured in the assessment.

Example 2: "Students' in-class participation."

- **Point for improvement**: Specify how the two states (i.e., "participation" and "lack of participation") are differentiated and in what manner "participation" is measured.

Example 3: "Students submit a one-minute paper about the activity."

- **Point for improvement**: Include a clear description of a one-minute paper assignment (providing specific instructions to students), so the alignment between the learning objective and its assessment is clearly shown.

Example 4: "Students respond to a series of questions after completing the activity."

- **Points for improvement**: a) Describe the questions used in the assessment so the alignment between the learning objective and its assessment is clearly shown, and b) specify the form of output (e.g., a simple hand-raising, a survey, or a quiz), so the exact procedure to evaluate students' responses are described in the assessment.

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F. Final Check List

1. Does the assessment correspond well to the learning objective in a measurable or directly observable form?

2. Is the assessment based on the direct observation of student performance?

3. Does the assessment allow the instructor to evaluate students' attainment of new knowledge and skills effectively?

4. Are the T&L activity, learning objectives, and assessments in the resource well-aligned?

5. Does the assessment follow, instead of lead, the T&L activity in time order?

6. Is the assessment clearly differentiated from the task(s) and instructions of the T&L activity?

7. Is the assessment clear, specific, and measurable?

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