Ed Tech Rapid Cycle Evaluation Coach

Glossary

Attrition One or more participants or groups of participants drops out of the study sample. Attrition is particularly important for randomized pilot because a high dropout rate can mean that the two groups that were equivalent or balanced when they were randomly assigned are no longer balanced. It is important to consider both overall attrition (the dropout rate of the full sample) and differential attrition (the difference in the dropout rate between the two groups).

Background Characteristics Information on study participants—such as gender, English learner status, or years of teaching experience—that might be related to accessing the technology or with the outcome you are measuring. These characteristics are recorded as variables in your data set and are used to create comparison groups that are similar to each other.

Baseline The beginning of the evaluation, before the introduction of the intervention (that is, just before the technology is used).

Baseline Equivalence A demonstration of the similarity between the educational technology users and nonusers before you implement the technology. You achieve equivalence by comparing the average of each group on one or more observed characteristics.

Binary Variable See Dummy Variable

Categorical Variable A variable that has a limited number of specific values. For example, high, medium, and low test scores can be represented as 3, 2, and 1, respectively.

Causality The relationship between a cause and an effect. The Coach is designed to help you use research designs that enable you to assess whether the technology you are studying causes the outcomes you wish to achieve.

Cluster A group of individuals. For example, students are clustered within classrooms and within schools, and classrooms are clustered within schools. It is important to account for clusters in analyses when you are assigning technology based on groups because individuals within a group share experiences. For instance, all students within a class have the same teacher, and the quality of that teacher's instruction will affect students' outcomes in a way that differs from a group of students in a different class.

Comparison Group A set of participants who are similar to the technology users but who do not have access to the educational technology. In a randomized controlled trial, the comparison group is the set of participants who were not selected to pilot the technology. In a matched comparison group design, the comparison group is usually the set of participants who do not use the technology.

Confounding Factors A hidden factor that influences an outcome, when you think the cause is actually something else (such as the technology).

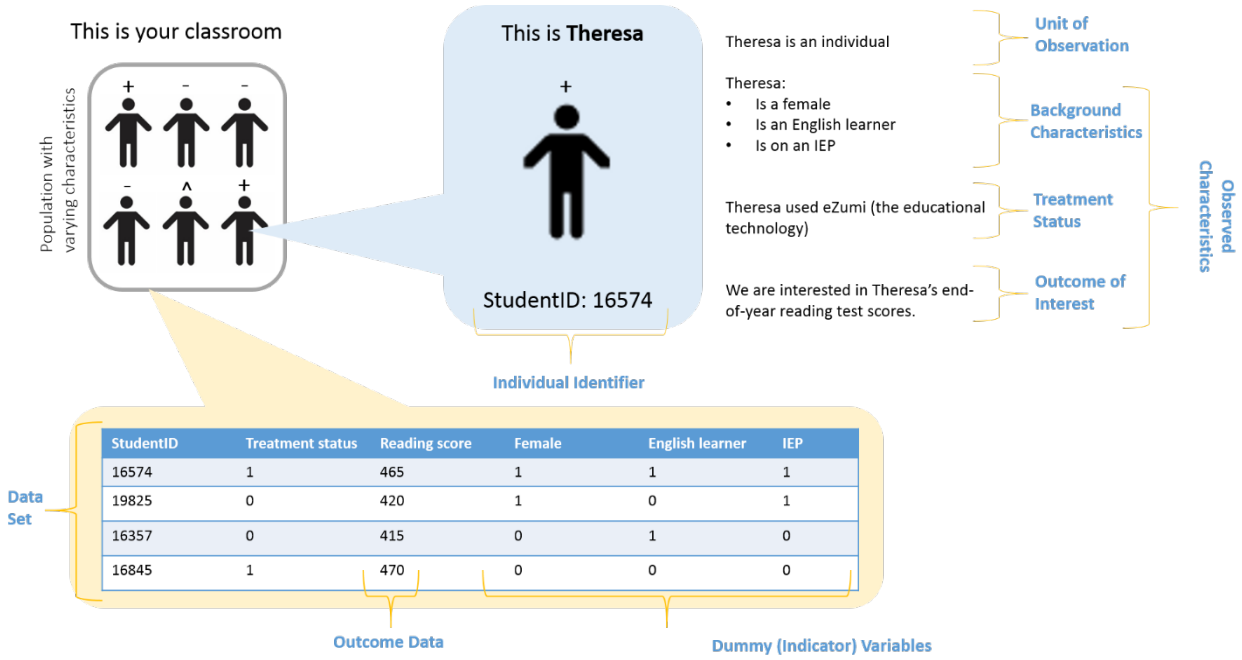
Control Variables See Covariates

Covariates Factors or characteristics that differ across participants and can be related to the outcome of interest. It is important to account (or control) for these characteristics in your analysis of a technology's effectiveness because one of these factors or characteristics—rather than the technology—could explain your findings.

CSV File A CSV (comma-separated values) file stores data in tables as plain text and is widely used to exchange or transfer information. The Coach uses the CSV format to read in your data files for analysis. You can save Microsoft Excel files as CSV files using the "Save As" function.

Data Set A collection of related information that is organized in a table of rows and columns. Each column represents a variable (for example, whether a participant used a technology, student test scores, and gender). Each row represents a different observation (for example, a student, a teacher, or a school). The Coach uses your data set to run analyses and to determine whether an educational technology is moving the needle on desired outcomes.

Exhibit 1. Pieces of data



StudentID	Treatment status	Reading score	Female	English learner	IEP
16574	1	465	1	1	1
19825	0	420	1	0	1
16357	0	415	0	1	0
16845	1	470	0	0	0

Dummy Variable Variable that takes the value of 0 or 1 to indicate the absence (0) or presence (1) of a specific trait or background characteristic. For example, to include gender in your data, your dummy variable would be female, with males assigned a 0 and females assigned a 1.

Effect The amount by which the average outcome of the treatment group differed from the average outcome of the comparison group. This difference is how much the technology moved the needle.

Effectiveness The extent to which something succeeds in causing the desired result or outcome. The effectiveness of an educational technology will depend on a school or district's goal for that technology. For example, one district might determine that a technology is effective if it increases student test scores by more than 10 points, whereas another district might decide that the technology is effective if it increases student test scores by any amount.

Experiment A controlled test of the effect that an intervention (for example, a reading software) has on participants' outcomes. A random assignment pilot is an experiment.

Impact See Effect

Indicator Variable See Dummy Variable

Individual Identifier A unique code, number, or ID assigned to individuals. These could be student IDs, users IDs, or school IDs. Unique values for each participant enable you to easily merge data and make information anonymous. An individual identifier is also necessary to randomly assign users and nonusers if you are conducting a random assignment pilots.

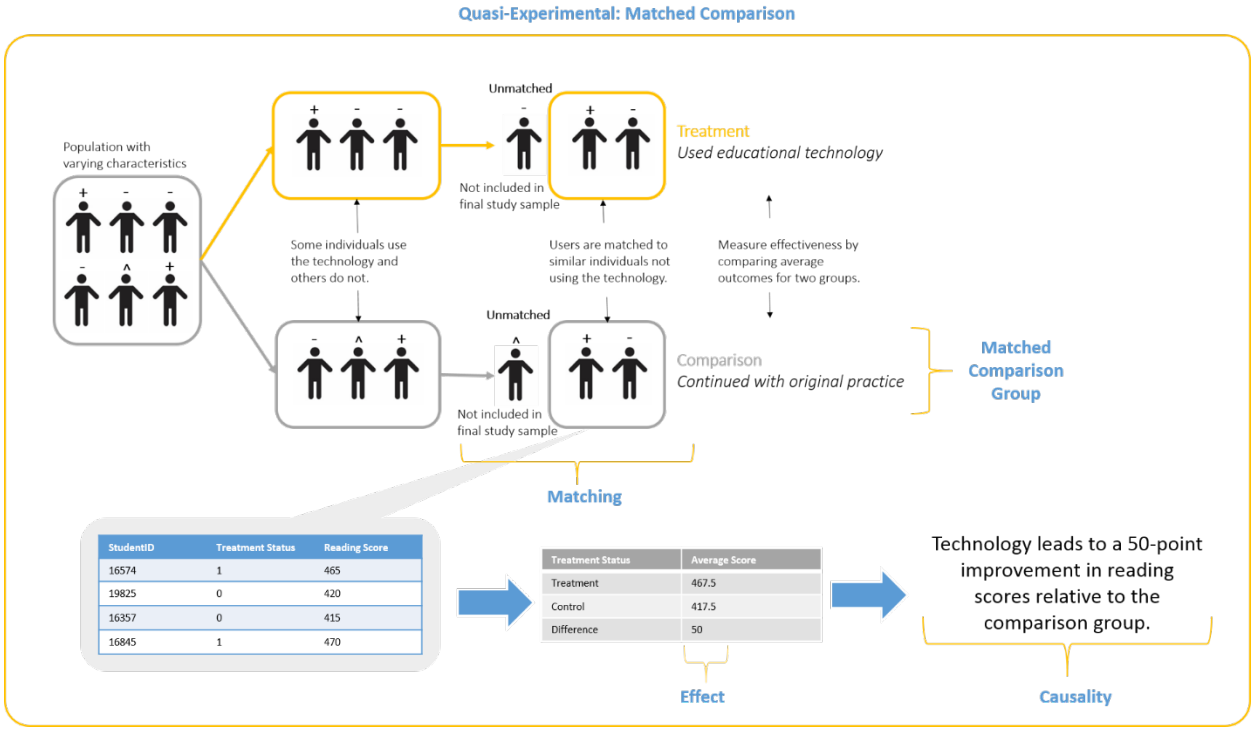
Intervention The program or educational technology being tested. In an evaluation, you investigate whether the intervention had an effect or an impact on participants' outcomes.

Intervention Group See Treatment Group

Matched Comparison Group A set of participants, in a matched comparison experiment, who are similar to the technology users but are not given access to the educational technology.

Matched Comparison Group Design An evaluation design that uses participants' pre-test and background characteristics to create two sets of similar participants. One group uses the educational technology (the treatment group) and the other group does not use the technology (the comparison group), and the outcomes of the two groups are compared. See Exhibit 2.

Exhibit 2. Pieces of a matched comparison group design



Matching The process of finding similar nonusers to compare with technology users. Only users and nonusers who are successfully matched will be compared with each other in the analysis. See Matching Overview for more information.

Missing Values A data point with no recorded information. For example, if you do not have a test score for a particular student, that would be a missing value. In a spreadsheet, these can show up as blank cells or be tagged with labels such as NA, 999, or 0. You should make sure that all missing values are labeled using NA before uploading your data to the Coach.

Numeric Type Data recorded as numbers.

Observation A single row in a data set. Each row usually represents a student, teacher, class, or school.

Observed Characteristic A variable that you can measure and that can also affect the outcome of interest. Examples of observed characteristics are individualized education program status or prior achievement.

Outcome Knowledge, skills, attitudes, or other desired benefits attained as a result of an activity. For example, student attendance or math test scores can be outcomes.

Outcome of Interest What you hope to change as a result of implementing the educational technology, such as student test scores or teacher performance.

Pilot A small-scale, short-term roll out of an educational technology. In a pilot, only a portion of potential users are introduced to the technology. The purpose is to help you learn how the technology would work on a larger scale before investing the time and resources in a full roll out.

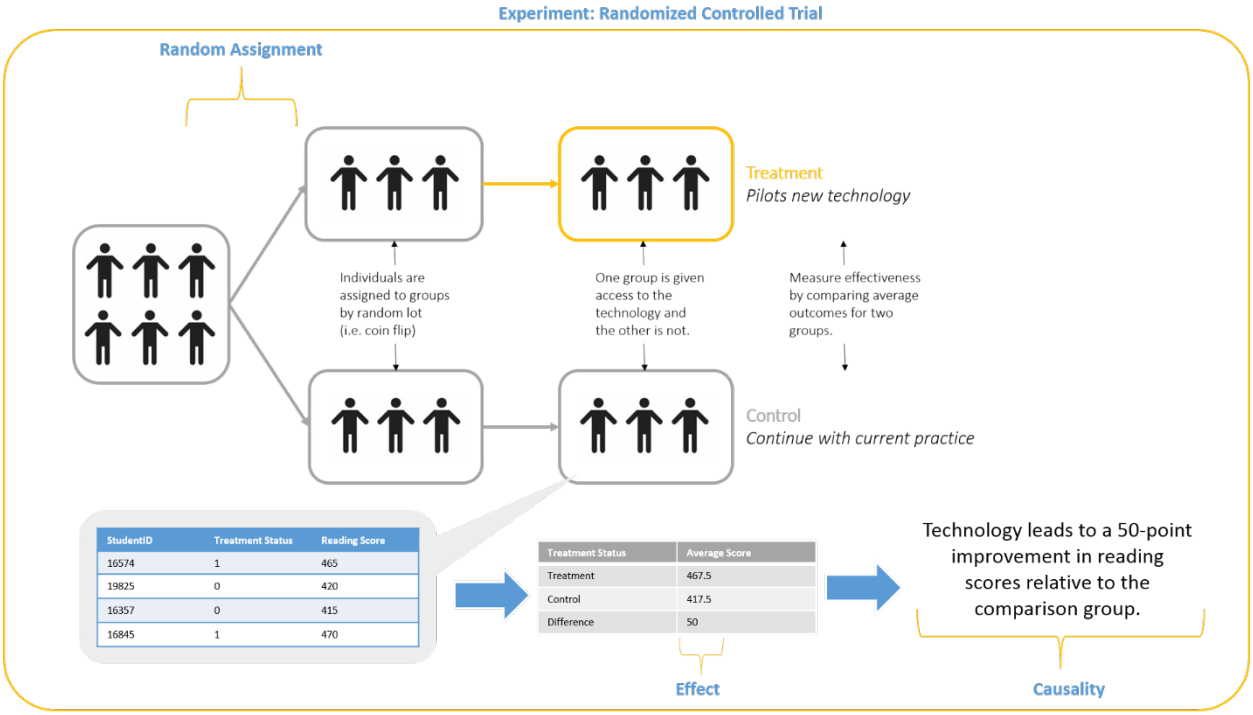
Probability The likelihood of something happening.

Quasi-Experimental A design in which groups are created through a process that is not random. For a quasi-experimental design to be rigorous, the intervention and comparison groups must be similar, demonstrating equivalence on observed characteristics before the intervention begins. A matched comparison group design is a quasi-experimental design.

Random Assignment A process by which groups of users and nonusers are formed by chance (coin flip, random number generator, and so on). When carried out correctly, random assignment results in groups that are similar on average in both observed characteristics (such as pre-test scores and gender) and unobserved characteristics (such as motivation), and any differences in outcomes between the groups are due to the intervention alone.

Randomized Controlled Trial An experiment in which subjects are assigned to the group with access to the technology and the group without access at random, for example, by tossing a coin. See Exhibit 3.

Exhibit 3. Pieces of a randomized controlled trial design



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Research Question An answerable question about the effect that an educational technology could have. Defining a research question is the first step in an evaluation.

Statistically Significant The likelihood that a relationship between two or more variables is caused by something other than random chance.

Treatment Group Participants who are in the group with access to the educational technology. In a randomized pilot, the treatment group is the set of participants who were randomly selected to pilot the technology. In a matched comparison design, the comparison group is usually the set of participants who actually use the technology.

Treatment Status Whether a participant belongs to the treatment (technology user) group or the comparison (nonuser) group. In a randomized controlled trial, the treatment status is the group to which the participant is randomly assigned. If a participant was assigned to the treatment group, the treatment status will always be treated, regardless of whether the participant actually uses the technology. In a matched comparison group design, the treatment status usually refers to participants who used the technology versus participants who did not use the technology. Treatment status is recorded in the data set as its own variable, with 0 indicating the participant belongs to the comparison group and 1 indicating that the participant belongs to the treatment group.

Unit of Observation Individual (could be students or teachers), school, or district for which outcomes are examined.

Unobserved Characteristic Variable that you can't see or measure that can affect the outcome of interest. For example, self-motivation is an unobserved characteristic.

Usage Data Information concerning the actions and events that users engage in while using the technology. Usage data describe all types of user interactions with a system or technology.

Variable A characteristic, assignment, or outcome that can vary or change over time or across individuals. Variables are the columns in your data set. Examples of variables include treatment status, test scores, and English learner status.

Vertically Scaled Assessment Standardized tests that are comparable across grade levels.