Glossary

Attrition One or more participants or groups of participants drops out of the study sample. Attrition is particularly important for randomized controlled trials because a high dropout rate may mean that the two groups that were equivalent or balanced when they were randomly assigned may no longer be 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 may be related to getting access to the technology or with the outcome you are measuring. These characteristics are recorded as variables in your dataset and are used to create comparison groups that are similar to each other.

Baseline The beginning of the evaluation, prior to the introduction of the intervention (i.e. just before the technology is used).

Baseline Equivalence A demonstration of the similarity between the education technology users and non-users before technology implementation. This is done 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 may 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 allow 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. It is important to account for clusters in analyses 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 different way than a group of students from a different class.

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

Confound A hidden factor that influences an outcome, when you think the cause is actually something else (like the technology).

Control Variables See Covariates

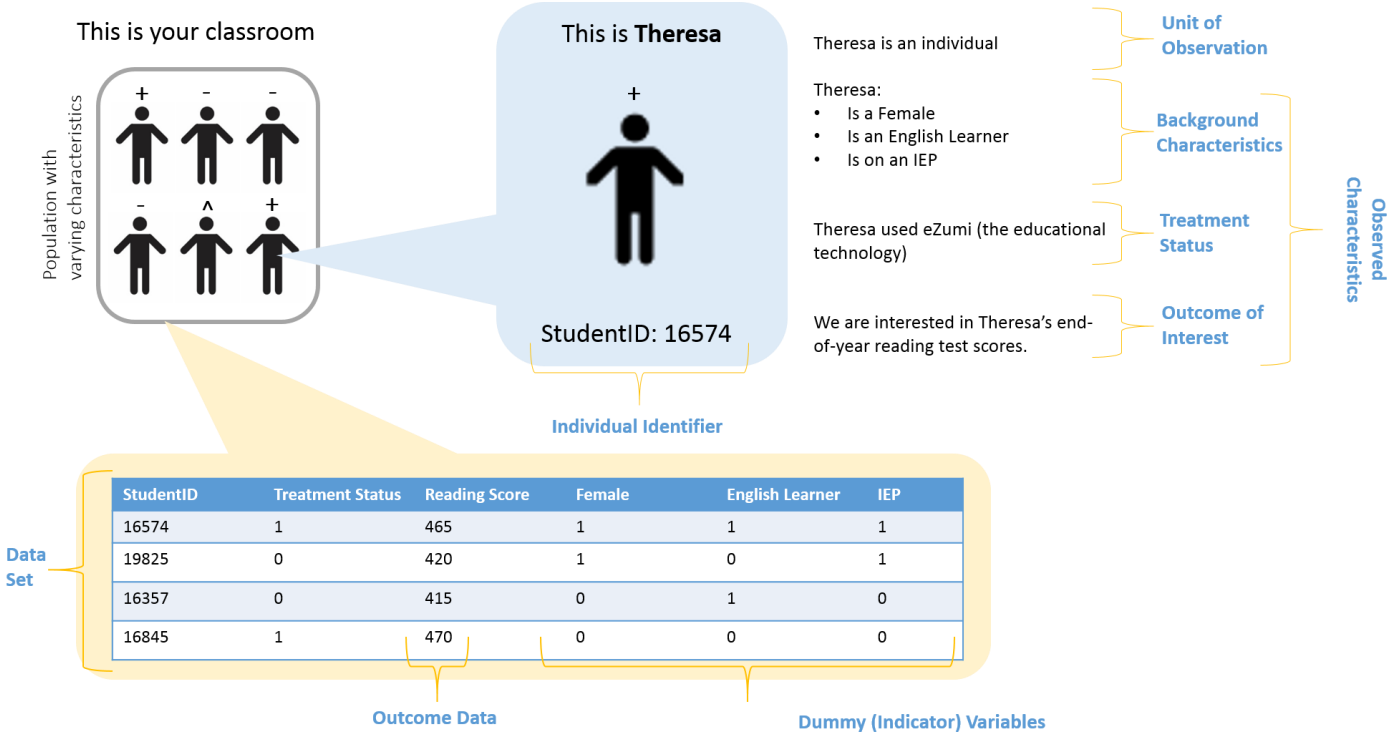
Covariates Factors or characteristics that differ across participants and may be related to the outcome of interest. It is important to account (or control) for these characteristics in your analysis of a technology's

effectiveness because one of these factors or characteristics could explain your findings rather than the technology.

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 Excel files as CSV files using the "Save As" function.

Dataset A collection of related information that is organized in a table of rows and columns. Each column represents a variable (for example, whether or not 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 dataset to run analyses and to determine whether an educational technology is moving the needle on desired outcomes.

Figure 1. Pieces of Data



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 is successful in causing the desired result or outcome. The "effectiveness" of an educational technology will depend on a school or districts' goal for that technology. For example, one district might determine that a technology is "effective" if it increases student test

scores by more than ten points, while 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 (e.g. a reading software) has on participants' outcomes. A randomized 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 allows you to easily merge data and anonymize information. An individual identifier is also necessary to randomly assign users and non-users if you are conducting a randomized pilots.

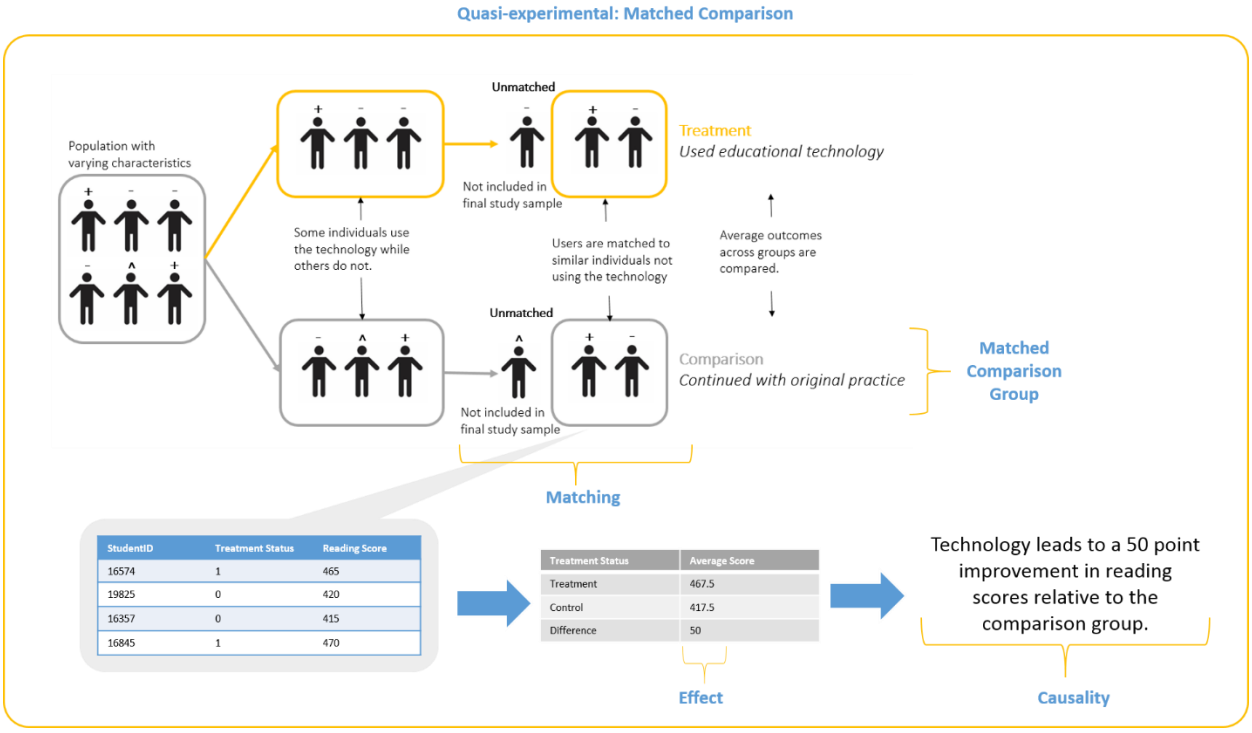
Intervention The program or education technology being tested. In an evaluation, you investigate whether the "intervention" had an effect or an impact on participants' outcomes.

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' pretest and background characteristics to create two sets of similar participants. One group uses the educational technology (treatment group) and the other group does not use the technology (comparison group), and the outcomes of the two groups are compared.

Figure 2. Pieces of a Matched Comparison Group Design



Matching The process of finding similar non-users to compare to technology users. Only users and non-users who are successfully matched will be compared to 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 dataset. Each row usually represents a student, teacher, class, or school.

Observed Characteristic Variable that you can measure, that may also affect the outcome you are interested in. For example, IEP status or prior achievement.

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

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.

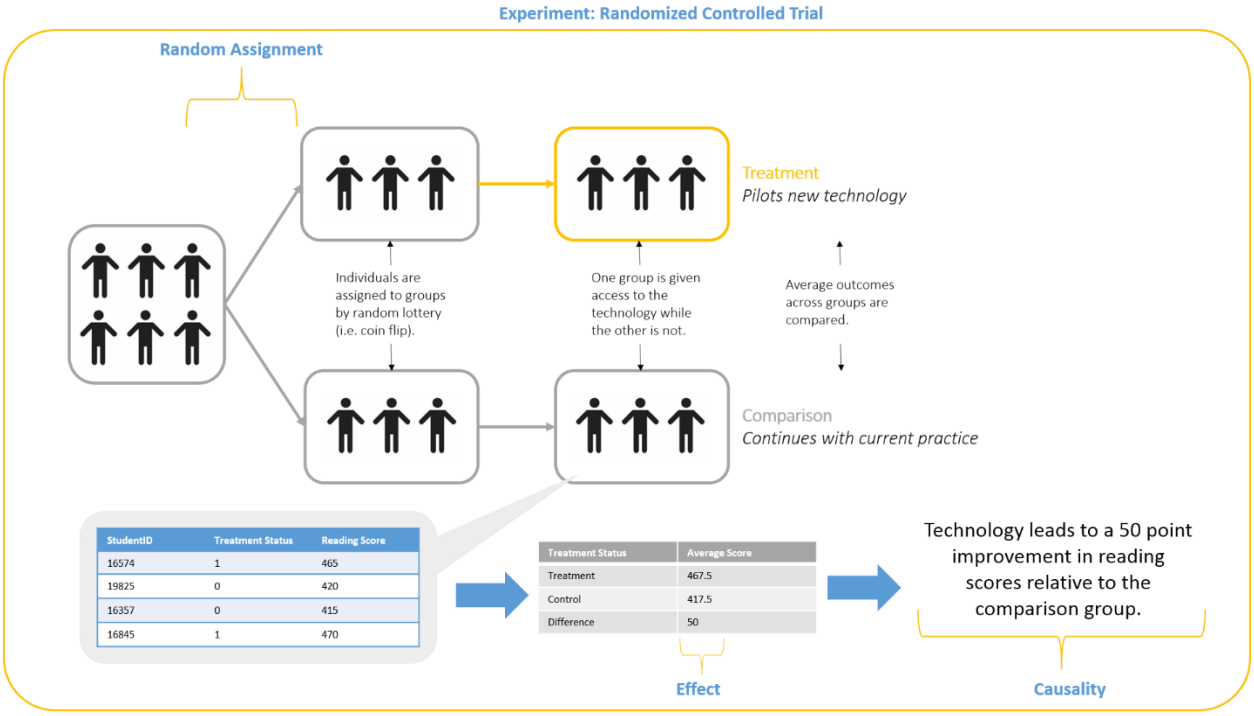
Probability The likelihood of something happening.

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 is started. A matched comparison group design is a quasi-experimental design.

Random Assignment A process by which groups of users and non-users are formed by chance (coin flip, random number generator, etc.). When carried out correctly, random assignment results in groups that are similar on average in both observable characteristics (such as pretest scores and gender) and unobservable 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.

Figure 3. Pieces of a Randomized Controlled Trial Design



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

Statistically Significant It is unlikely that the outcome observed occurred solely by chance.

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

Treatment Status Whether a participant belongs to the treatment (technology user) group or the comparison (non-user) 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 for 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 dataset as its own variable, with 0 indicating they belong to the comparison group and 1 indicating that they belong to the treatment group.

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

Unobserved Characteristic Variable that you can't see or measure that may affect the outcome you are interested in. For example, self-motivation.

Usage Data Information concerning the actions and events that users engage in during system use. Describes all types of user interactions with a system.

Variable A characteristic, assignment, or outcome that can vary or change. Variables are the columns in your dataset. Examples of variables include: treatment status, test scores, and EL status.

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