

Use xAPI to Measure & Evaluate Learning Effectiveness

Reporting Goal	KPI / Measure	Purpose	Feedback Loop(s)	Reports/ Analytics	Assessment Technique	Key xAPI Data
Pretest Pass Rate	Number of users that passed a knowledge assessment pretest	Measures the users' existing knowledge before completing a learning activity	<ul style="list-style-type: none"> - Informs stakeholders of users' existing knowledge of subject matter - Informs stakeholders of users' performance above or below the passing score threshold - Provides benchmark for later comparison against the posttest results 	Pretest Pass/Fail Rate Report, Scorecard, or Dashboard	Pretest Knowledge Assessment	<ul style="list-style-type: none"> - Initialized Assessment -actor -verb.id (initialized) -object.id -object.definition.type (assessment) -timestamp
Practice Test Pass Rate	Number of users that passed or failed a knowledge assessment quiz or practice test	Measures the users' new knowledge acquired during a learning activity	<ul style="list-style-type: none"> - Informs stakeholders of users' increased knowledge - Informs stakeholders of high and low performers, above or below the passing score threshold - Provides a metric for comparing against the pretest results 	<ul style="list-style-type: none"> - Posttest Pass/Fail Rate Report, Scorecard, or Dashboard - Pretest/Posttest Comparison Report, Scorecard, or Dashboard 	Practice/Quiz Knowledge Assessment	<ul style="list-style-type: none"> - Terminated Assessment -actor -verb.id (terminated) -object.id -object.definition.type (assessment) -context.registration -result.duration -result.success -result.completion -result.score.scaled -result.score.raw -timestamp
Posttest Pass Rate	Number of users that passed or failed a knowledge assessment posttest	Measures the users' increase in knowledge after completing the learning activity	<ul style="list-style-type: none"> - Informs stakeholders of users' increased knowledge - Informs stakeholders of high and low performers, above or below the passing score threshold - Provides a metric for comparing against the pretest results 	<ul style="list-style-type: none"> - Posttest Pass/Fail Rate Report, Scorecard, or Dashboard - Pretest/Posttest Comparison Report, Scorecard, or Dashboard 	Posttest Knowledge Assessment	<ul style="list-style-type: none"> - Responded to Question -actor -verb.id (responded or answered) -object.id -object.definition.type (cmi:interaction) -object.definition.interactionType (possible values) -context.registration -context.contextActivities.parent (array that includes the assessment Activity) -context.contextActivities.parent (object.definition.type (assessment)) -result.duration -result.success -result.completion -result.score.scaled -result.score.raw -timestamp
Refresher Pass Rate	Number of users that passed or failed a refresher knowledge assessment	Measures retention and knowledge decay after completing the refresher learning activity	<ul style="list-style-type: none"> - Informs stakeholders of users' knowledge retention or decrease in knowledge - Informs and monitors users' performance above or below the passing score threshold - Provides a metric for comparison against previous assessment results 	<ul style="list-style-type: none"> - Refresher Pass/Fail Rate Report, Scorecard, or Dashboard - Posttest/Refresher Comparison Report, Scorecard, or Dashboard 	Refresher Knowledge Assessment	<ul style="list-style-type: none"> -actor -verb.id (responded or answered) -object.id -object.definition.type (cmi:interaction) -object.definition.interactionType (possible values) -context.registration -context.contextActivities.parent (array that includes the assessment Activity) -context.contextActivities.parent (object.definition.type (assessment)) -result.duration -result.success -result.completion -result.score.scaled -result.score.raw -timestamp
Attempts Made Before Passing	Number of attempts users made before they passed the knowledge assessment	Measures when a user's first successful attempt on an assessment meets or exceeds the threshold score	<ul style="list-style-type: none"> - Informs stakeholders of a user's knowledge attainment speed -Informs stakeholders of potential improvements to the quality of the learning activity - Informs stakeholders to check for users that keep attempting the assessment until they pass (or exceed the limit) 	<ul style="list-style-type: none"> - First Attempt Pass Rate Report, Scorecard, or Dashboard - Time to Knowledge Attainment Report, Scorecard, or Dashboard 	Knowledge Assessment	<ul style="list-style-type: none"> -context.registration -context.contextActivities.parent (array that includes the assessment Activity) -context.contextActivities.parent (object.definition.type (assessment)) -result.duration -result.success -result.completion -result.score.scaled -result.score.raw -timestamp
≥ 80% Combined Average Passing Score	Average (mean) score of all users that passed or failed a knowledge assessment	Measures the average of all users' scores to be represented as the standard mean score	<ul style="list-style-type: none"> - Provides stakeholders with a benchmark to compare user's individual scores to the standard mean score - Provides stakeholders with a benchmark to compare the standard mean score to the threshold score 	Average Score Report, Scorecard, or Dashboard	Knowledge Assessment	<ul style="list-style-type: none"> -result.score.scaled -result.score.raw -timestamp
≥ 80% First Attempt Average Passing Score	Average (mean) score of all users that passed a knowledge assessment on the first attempt	Measures the average of all users' scores that passed on the first attempt to be represented as the standard first attempt passing mean score	<ul style="list-style-type: none"> - Provides stakeholders with a benchmark metric to compare the standard mean score to the standard first attempt passing mean score - Provides stakeholders with a benchmark metric to compare the standard first attempt passing mean score to the threshold score 	<ul style="list-style-type: none"> -First-Time Average Score Report, Scorecard, or Dashboard 	Knowledge Assessment	
Two Standard Deviations Above or Below the Average	Standard deviation (SD) from the average score of all users that passed a knowledge assessment	Measures how much variance there is from the standard mean score	<ul style="list-style-type: none"> - Provides stakeholders with a metric to indicate a low SD (where the data points are close to the mean) - Provides stakeholders with an outlier metric to indicate a high SD (where the data are spread out over a large range of scores) 	<ul style="list-style-type: none"> -Low Standard Deviation Report, Scorecard, or Dashboard - High Standard Deviation Report, Scorecard, or Dashboard 	Knowledge Assessment	
Test Item Analysis	Number of correct and incorrect responses on a knowledge assessment	Measures validity of individual test questions in an assessment	<ul style="list-style-type: none"> - Informs stakeholders of potential training effectiveness problems and revisions needed to the learning objectives, training activity, and assessment questions 	-Test Item Analysis Report, Scorecard, or Dashboard	Knowledge Assessment	
Self-Reported Assessment Score (4.1 - 5.0)	Opinions or beliefs (attitudes) of users about the how much they learned	Measures the user's self-assertion of their increase in knowledge or skills after completing the training activity	<ul style="list-style-type: none"> - Informs stakeholders of feedback about whether the users feel the training was effective for future on-the-job performance 	<ul style="list-style-type: none"> -Learning Attitudes Report -Learning Attitudes Dashboard - Survey Responses Export (LRS) as CSV, JSON 	Survey	
Observational Assessment Score (4.1 - 5.0)	Instructor observation and verification on a performance assessment	Measures the instructor's assertion of the user's successful or unsuccessful performance on a classroom lab exercise, drill, or hands-on skill activity	<ul style="list-style-type: none"> - Provides stakeholders with additional evidence of the user's skills or performance of a task 	-Observational Performance Assessment Scores Report, Scorecard, or Dashboard	Survey	
≥ 85% Scenario-Based Assessment Score	Number of problems recognized, correct actions taken, or correct sequence of actions by a user in a scenario-based simulation or assessment	Measures the users' decision-making or problem-solving skills after completing the training activity	<ul style="list-style-type: none"> - Informs stakeholders of users' increased decision-making skills or abilities - Informs stakeholders of high and low performers - Provides a metric for comparing against other results 	-Decision-Making Performance Report, Scorecard, or Dashboard	Scenario-Based Assessment	