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39th Academic Chairpersons Conference,
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Using Canvas LMS learning outcomes assessment and program improvement

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Recommended Citation

Burrack, Frederick (2022). "Using Canvas LMS learning outcomes assessment and program improvement," *Academic Chairpersons Conference Proceedings*. <https://newprairiepress.org/accp/2022/enrollment-budget/1>

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Learning Expectations

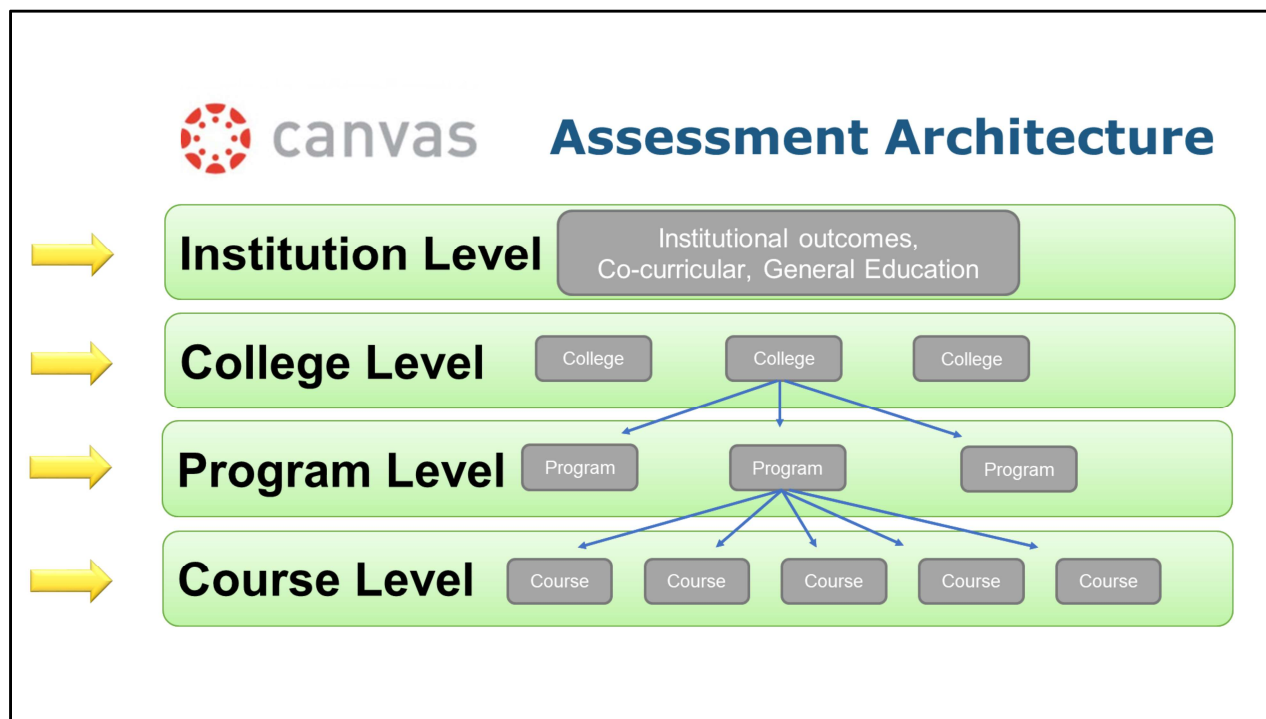
- ❑ Architecture of the Canvas Assessment Portal
- ❑ Creating institutional, college, and program outcomes.
- ❑ Aligned scoring devices with assessment tasks.
- ❑ Automating data collection.
- ❑ Working with programs and faculty.
- ❑ Preparing data for analysis.

This session will provide a step-by-step process of creating institutional, college, and program outcomes in Canvas. These outcomes are aligned with assessment tasks through the scoring devices used in courses, internships, or other course-based means through which students demonstrate outcomes proficiencies. The session will provide a foundational understanding of the architecture of the Canvas Assessment Portal and how it connects with assessment tasks to automate data collection. Processes of working with programs and faculty will be shared that have been found to enable ownership of assessment processes. The session will end with the process of preparing data for analysis by faculty and program directors. Examples of analysis tables and graphs using PowerBI will be shown to encourage questions and discussion.

I will have a good amount of time at the end of the session for specific questions, but I also ask that you type questions in the chat box that can be answered along the way while the issue is pertinent.



But let's move directly to the foundation of using CANVAS' assessment technology, which is understanding its structure.



The structure of CANVAS LMS is in a hierarchy.

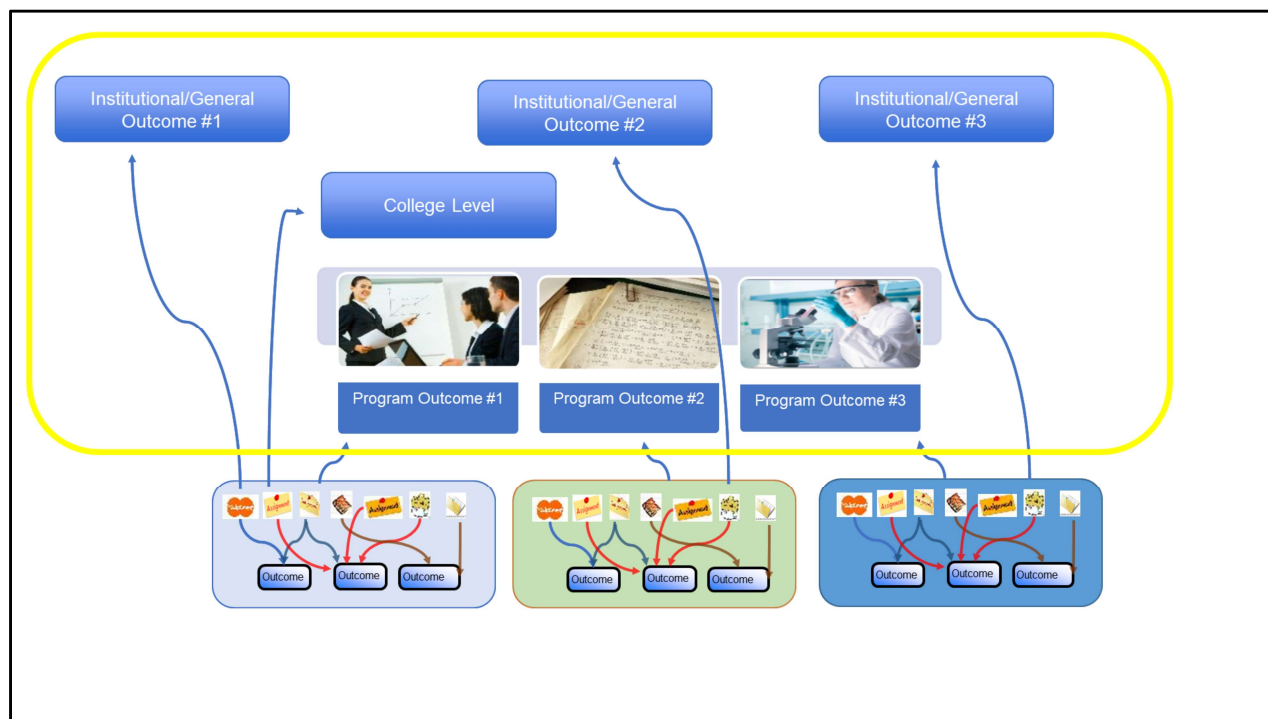
- The facing layer into which the faculty interact is the course level. In this course level, faculty interact with students by sharing documents, scheduling instructional sequences, creating assignments, placing scores in a grade book, and many other aspects associated with teaching their course. This level is where student achievement for outcomes can be collected, but this is **not** the layer where the outcomes exist.

The layers above the hierarchy are accessible through administrative access:

- (a) the program level connects all of the courses that are under the program's oversight;
- (b) the college level connects all of the program within the college; and
- (c) the institution level that connects all of the colleges as well as any unit that is broadly administered across the institution.

Understanding this hierarchy is essential to effectively implementing the assessment module for automating data collection.

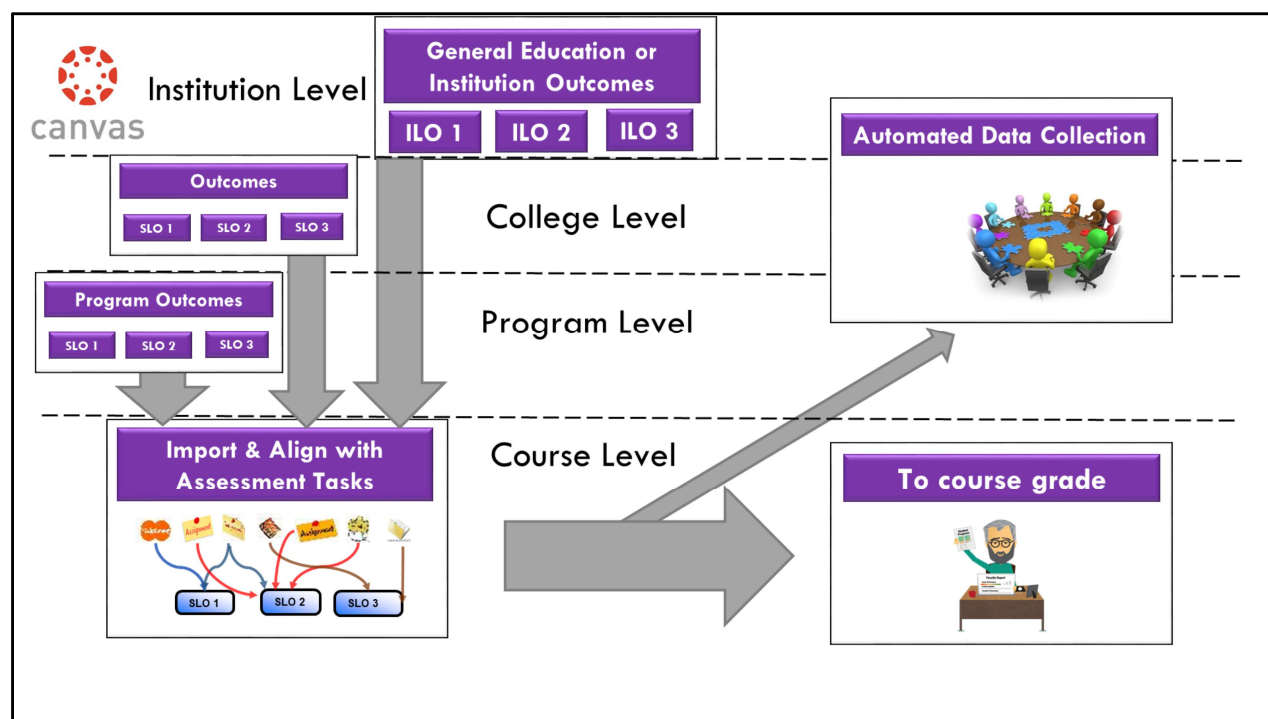
Using Canvas LMS learning outcomes assessment and program improvement



Since achievement data in an outcomes assessment process are intended to be aggregated and analyzed beyond individual courses, the highest level at which aggregation occurs is where the outcome should be created in the technology.

*It is important to know that when we pull the data from Canvas, we receive all of the data together in one CSV/excel file and then the data is sorted by whomever needs to see their data. The data can also be pulled out of Canvas at each collected area separately and I will speak about that in the last segment of the session.

Remember that Canvas is not your assessment structure, it is only your data collection mechanism. Having a well-designed assessment process is important in order to use CANVAS to its fullest potential. I will mention this multiple times during the session. The assessment structure must be well designed before Canvas can be effectively used.

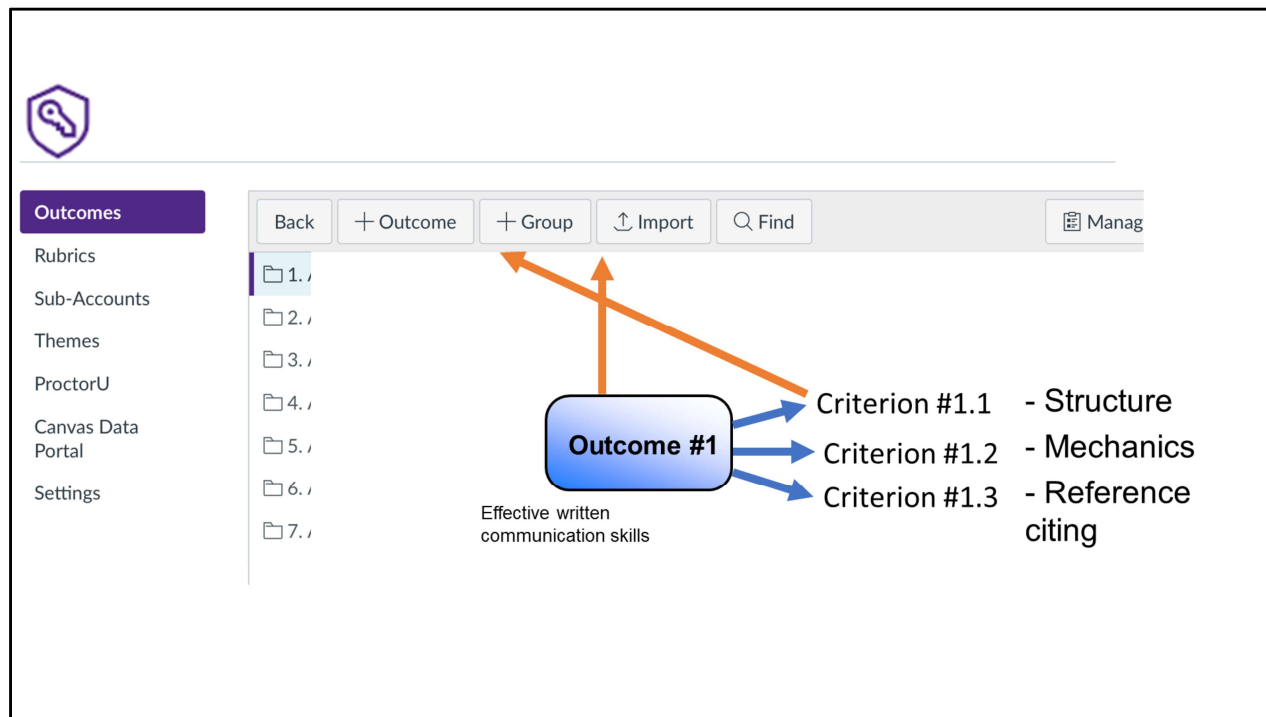


An understanding of the hierarchy is fundamental in outcome assessment in CANVAS. **The level in which an outcome is created is where the achievement score is retrieved.**

* If an outcome is to be assessed in any course in a program but not in courses outside of the program, then it is best to create the outcome at the program level and brought into courses to score student achievement.

- Beyond the program level, if a college uses common outcomes across multiple programs in their college and you want the data collected at the college level, then these outcomes should be created at the college level to make them available for use in courses that are within their purview.
- Extending this construct more broadly, if outcomes are to be assessed in courses across the entire institution and the data is collected across the institution, then these outcomes should be created at the institutional level so to be available to all courses. This also applies to co-curricular outcomes as the student population is the entire institution.
- When the demonstration of student achievement is assessed using the Canvas scoring device, the score goes directly to the gradebook.
- But for the broader structure of assessment, the score simultaneously goes to the source of the outcome for automated data collection, alleviating having to go back to faculty to collect a set of scores.

Before I show you what this looks like in CANVAS, are there any questions up to this point that need a response?



In the administrative section, the outcome button on the left side of the page will open the outcome creating page. This page will be empty unless outcomes have already been created.

One of the most important constructs to understand is a difference in terminology used by CANVAS as compared to the meaning understood by most assessment processes.




- When we use the term 'Learning Outcome' in an assessment process, it usually means a specific category of learning.
- And in assessment lingo, each time an outcome is assessed, that outcome is usually comprised of multiple criteria that provide indicators of achievement. These criteria are often seen as part of a scoring rubric or individual questions on an exam.
- For example, an outcome that states "Students will be able to communicate effectively in writing", this usually is comprised of multiple criteria that are assessable such as:
 - 'Structure is clear, logical, and easy to follow', 'Uses correct mechanics such as grammar, spelling, and punctuation', 'Effectively incorporates appropriate supporting materials', etc. In CANVAS, the criteria are what CANVAS calls Outcomes. These are the components that are scored in an assignment.
- What a typical assessment process calls an outcome, in Canvas is called a Group. In CANVAS, we create a Group (outcome folder) for each of the outcome categories

Using Canvas LMS learning outcomes assessment and program improvement

The screenshot shows the Canvas LMS administrative portal for learning outcomes. On the left is a navigation menu with options like 'Outcomes', 'Rubrics', 'Sub-Accounts', 'Themes', 'Canvas Data Portal', 'ePortfolio Moderation', and 'Settings'. The main area displays a tree view of outcomes. A yellow box highlights the '1. General Planning' group and its sub-outcomes. A red arrow points from the '1.1. Purpose and M...' sub-outcome to the right, where a detailed view of this outcome is shown. The detailed view includes a description: 'Why planning is undertaken by communities, cities, regions, an impact planning is expected to have.' Below the description is a table with columns for 'Exceeds Expectations', 'Meets Expectations', 'Meets Minimum Expectations', and 'Does Not Meet Expectations'. The table shows '3 Points' for Exceeds, '2 Points' for Meets, and '1 Points' for Meets Minimum. Below the table, it says 'Mastery: 2 Points' and 'Calculation Method: Highest Score'.

As an example, this is a screen shot from CANVAS. It comes from the administrative portal of a Regional Planning academic program but would look similar to any outcomes page at the program, college or institution level.

- After opening the outcome window, the best strategy would be to create a folder for each of the program outcomes using the group button. As I mentioned previously, what most of us call Outcomes are considered groups in CANVAS. Think of these as folders of assessable criteria that are used as the indicators of student achievement.
- Inside of each folder are the assessable criteria that CANVAS calls outcomes. These are created with the Outcome button.
- In CANVAS, by using the GROUP folders to organize criteria outcomes, we can design an assessment structures as granular as we want because we can create organizing folders inside of folders.
- For sorting and filtering purposes, we find it best to use a numbering system. When a program is accredited, the number system often comes from the accreditation expectations. This structure becomes a valuable aspect for aligning the data to accreditation reporting expectations. Even when a program is not accredited, the numbering system makes organization during analysis easier.
- A full description can be placed in outcome statement textbox provided and is available in the data export for use in reporting. Note that at this point is where categories of achievement are created that can become a line on a rubric.

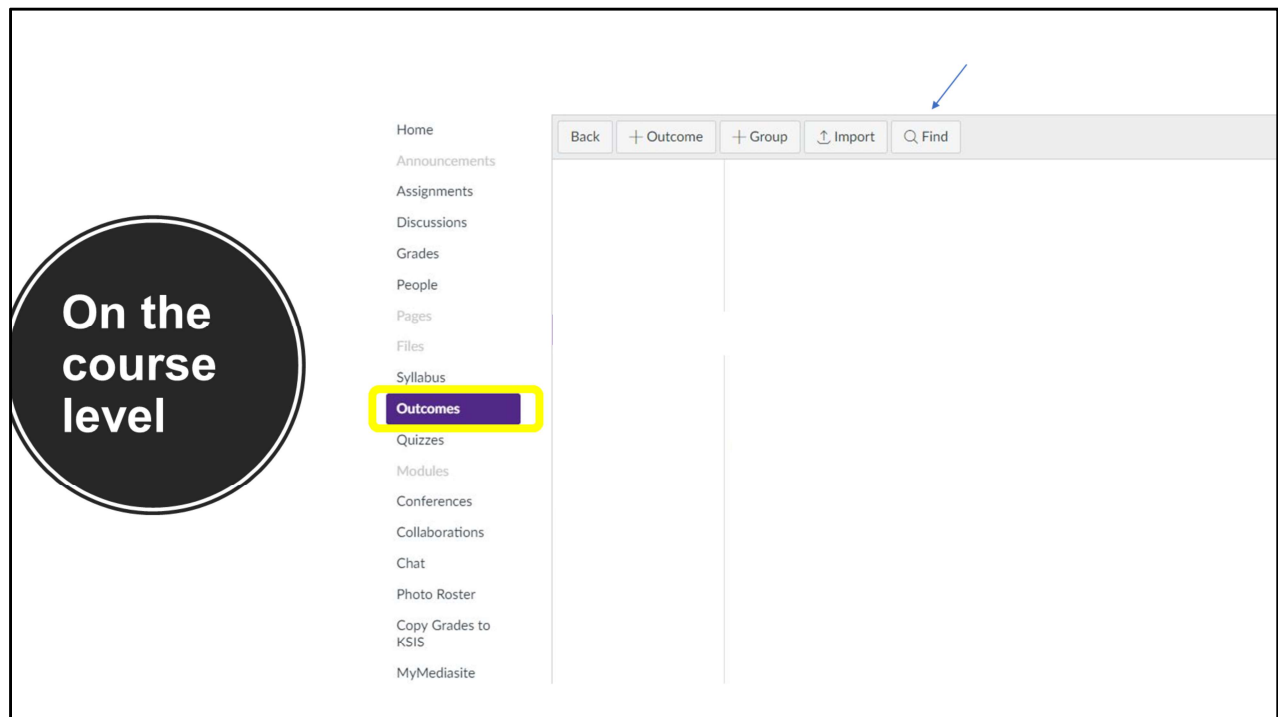
Aural Skills						
Criteria	Ratings				Pts	
 4.4 Sight Singing threshold: 3.0 pts	3.0 pts Pass (meets expectations)	2.0 pts Almost (needs more work)	1.0 pts Does not meet expectations	0.0 pts Not assessed yet	3.0 pts	
 4.5 Triads threshold: 3.0 pts	3.0 pts Pass (meets expectations)	2.0 pts Almost (needs more work)	1.0 pts Does not meet expectations	0.0 pts Not assessed yet	3.0 pts	
 4.1 7th Chords threshold: 3.0 pts	3.0 pts Pass (meets expectations)	2.0 pts Almost (needs more work)	1.0 pts Does not meet expectations	0.0 pts Not assessed yet	3.0 pts	

Rubrics can also be created in the program, college, or institutional level can be attached to a course assignment to be used in its entirety. But faculty also has the opportunity to selectively remove criteria that does not fit the particular assignment. They may also add additional rubric lines to be used in the assignment scoring but not collected in the outcomes assessment plan. When the common rubric is used for scoring, each outcome criterion score will be automatically collected at the level where the outcomes were created.

- And you know it will be collected because of the target icon at the beginning of a criteria line, which indicates that this is an outcome that will collect scoring data.

This is another good time for questions.

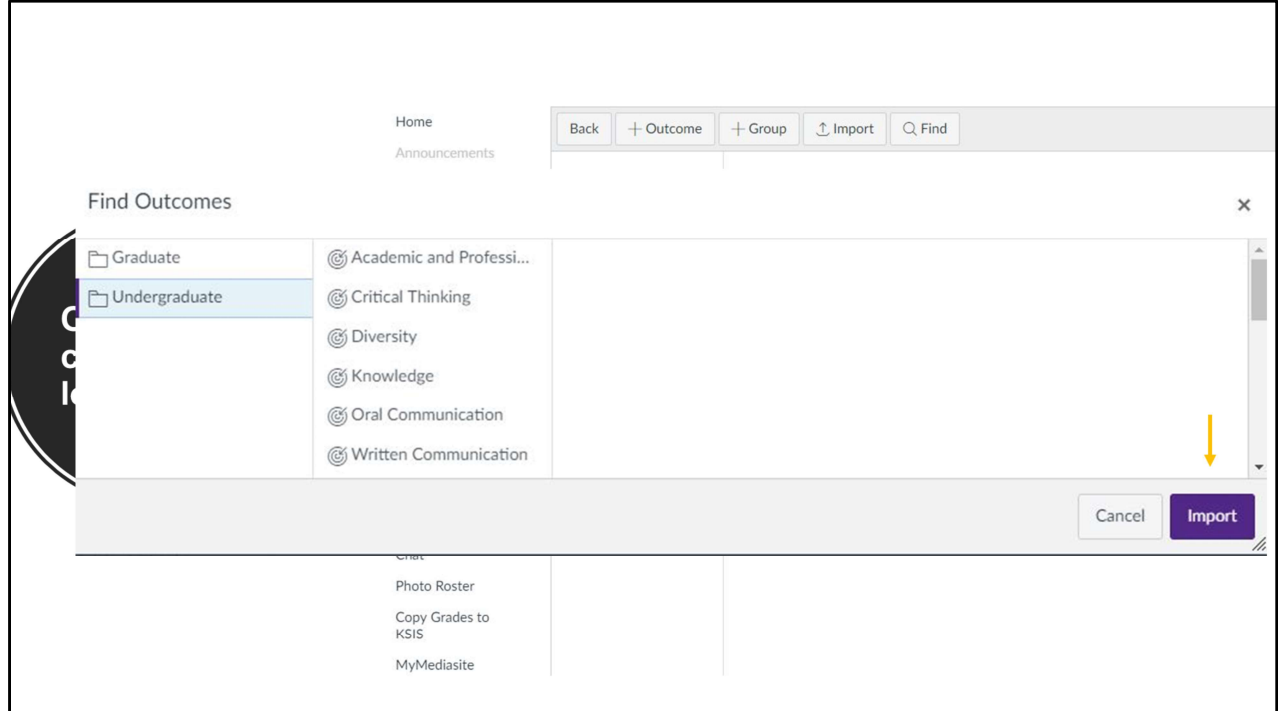
Using Canvas LMS learning outcomes assessment and program improvement



There are two ways of bringing outcomes into courses. The way with the most flexibility is to import each outcome individually to be aligned to an assignment.

- Your faculty can accomplish this by selecting the 'Outcomes' button that is in the left ribbon on the CANVAS page. When the outcomes panel opens,
- the command to use is 'Find'.

Using Canvas LMS learning outcomes assessment and program improvement



When ' Find' is selected, this will bring up the outcomes that are available from the associated Program/College/and Institution level.

- Each selected outcome can be imported individually into the course. The next step is aligning the imported outcome to an assignment.

The screenshot displays the Canvas LMS interface. On the left, a navigation menu includes 'Home', 'Announcements', 'Assignments', 'Discussions', 'Grades', 'People', 'Pages', 'Files', 'Syllabus', 'Outcomes', 'Quizzes', 'Modules', 'Conferences', 'Collaborations', 'Chat', 'Photo Roster', 'Copy Grades to K SIS', and 'MyMediasite'. The 'Assignments' menu item is highlighted with a yellow box. A large black circle with white text 'On the course level' is overlaid on the left side. The main content area shows the 'Critical Thinking' outcome page. At the top, there are buttons for 'Back', '+ Outcome', '+ Group', 'Import', and 'Find'. Below the title 'Critical Thinking', a description states: 'Students will demonstrate the ability to access and interpret information, respond and adapt to changing situations, make complex decisions, solve problems, and evaluate actions.' A table shows the scoring breakdown:

Exceeds Program Expectations (Advanced)	Meets Program Expectations (Proficient)	Meets Minimum Acceptable Level (Developing)	Does Not Meet Expectations	Total Points
3 Points	2 Points	1 Points	0 Points	3 Points

Below the table, it indicates 'Mastery: 2 Points' and 'Calculation Method: Highest Score'. A box titled 'Calculation Meth...' provides an example: 'Mastery score reflects the highest score of a graded assignment or quiz.' It lists '1- Item scores: 1, 4, 2, 3' and '2- Final score: 4'.

A faculty member may bring in as many outcomes as are intended to be assessed in the course.

- Each outcome can be aligned with a scoring device in an assignment.

Using Canvas LMS learning outcomes assessment and program improvement

		Beginning Band Teaching Episode - MUSIC 513					
		Criteria	Ratings				Pts
Institution	<ul style="list-style-type: none"> Value Rubrics General Education Co-curricular 	6.1.1.1 The teacher understands repertoire and pedagogy appropriate for various developmental stages. <small>view longer description</small> <small>threshold: 3.0 pts</small>	4.0 pts Exceeds Standard	3.0 pts Meets Standard	2.0 pts Approaching Standard	1.0 pts Unsatisfactory	4.0 pts
		6.1.1.3 Variety of Pedagogies <small>view longer description</small> <small>threshold: 3.0 pts</small>	4.0 pts Exceeds Standard	3.0 pts Meets Standard	2.0 pts Approaching Standard	1.0 pts Unsatisfactory	4.0 pts
College	<ul style="list-style-type: none"> Licensure Portfolio College outcome 	6.1.2.1 Representative Works <small>view longer description</small> <small>threshold: 3.0 pts</small>	4.0 pts Exceeds Standard	3.0 pts Meets Standard	2.0 pts Approaching Standard	1.0 pts Unsatisfactory	4.0 pts
		6.1.2.2 Ensemble Performance <small>view longer description</small> <small>threshold: 3.0 pts</small>	4.0 pts Exceeds Standard	3.0 pts Meets Standard	2.0 pts Approaching Standard	1.0 pts Unsatisfactory	4.0 pts
Program	<ul style="list-style-type: none"> Common rubric across course sections Assignment rubrics 	6.1.2.3 Musical Resources <small>view longer description</small> <small>threshold: 3.0 pts</small>	4.0 pts Exceeds Standard	3.0 pts Meets Standard	2.0 pts Approaching Standard	1.0 pts Unsatisfactory	4.0 pts
		6.1.2.4 Appropriate Pedagogy <small>view longer description</small> <small>threshold: 3.0 pts</small>	4.0 pts Exceeds Standard	3.0 pts Meets Standard	2.0 pts Approaching Standard	1.0 pts Unsatisfactory	4.0 pts

Using pre-created rubrics is an ideal way to utilize a common scoring device such as

- Value Rubrics, General Education Rubrics, or assessments co-curricular units. Each criterion is created separately as an outcome and brought together in a common rubric, which will be connected to an assignment or activity for scoring.
- Here you see an example used at Kansas State University Our university uses the Institution level to create a common rubric to assess learning in our first-year experiences because these courses occur across every college. We also have each criterion and full rubric for the AAC&U value rubrics that can be used by any program or co-curricular unit across the institution. You may wonder, if everyone uses the same rubric how you know which program to which the score aligns. Each score is collect along with all of the meta-data for sorting later. We will discuss this later in this session.
- At the College level, this example comes from our College of Education that uses common rubrics to address licensure and accreditation expectations. The rubrics are used for portfolio scoring and internship scoring with all programs in the college using the common scoring devices. The scores are automatically collected by the college and used (and analyzed) within each program.
- At the Program level, usually consist of scoring devices used in a course or across multiple courses in the program for consistency and automatic data collection.

Are there any questions about creating common rubrics on the administrative level?

Using Canvas LMS learning outcomes assessment and program improvement

Previous Webinars

Date and Time	Title	Presenter(s)
Thursday, April 22, 2021, 3:00 PM EST	Using Canvas Assessment Module to automate data collection from coursework for institution, college, or program level assessment	Presenter: Fred Burrack

Assessment of Student Learning

<http://www.ksu.edu/assessment>

Training Home

Canvas Training

Qualtrics Training

PowerBI Training

Office of Assessment
Kansas State University
226 Anderson Hall
919 Mid-Campus Drive N.
Manhattan, KS 66506-0110
785-532-3429
assessment@ksu.edu

Canvas Training

[Guide to Student Learning Assessment](#)

Canvas offers several assessment tools you can use to track and improve student learning in your courses. Use the links below to find guides, walkthroughs, and videos on how to enable the full functionality of student learning assessment in Canvas, allowing you to monitor student progress across learning outcomes and target pedagogical interventions to improve student learning.

[Using Canvas for Program Level Assessment](#)

These videos explore the structure built into CANVAS (LMS), how to set-up CANVAS so it collects student achievement data for outcomes and associated criteria directly from coursework, how to export the data out of CANVAS, and ways to display the outcome data for effective use in decisions making.

In this session I'm not going to go through how to align an outcome to an assignment because I presented a webinar a couple of month ago, but I want to remind you that specific techniques for doing this can be retrieved on the webinar page on the AALHE website, as well as on the Kansas State University assessment webpages under 'Training'

- Well-defined learning outcome structure

- Thoughtfully defined learning outcomes
- Assessable criteria
- Differentiated levels of achievement

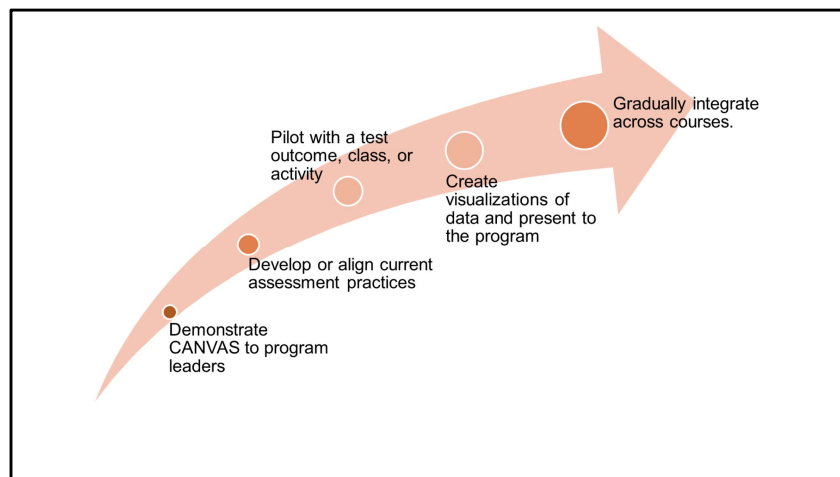


- Respect Autonomy (not gain buy-in)
 - Assist their discussion and consensus
 - Allow programs to be unique if it is useful to them

Before we move on, let's get to the most important part of this topic:

- Canvas is not the assessment structure, it is only a data-collection mechanism. A well-defined learning outcomes structure is essential before anything can be developed in Canvas. Without *(a) thoughtfully defined learning outcomes, *(b) assessable criteria that provide indicators of achievement, and *(c) clarified differentiation for levels of outcomes attainment, the CANVAS hierarchy will not be able to be developed.
- In the process of learning to use CANVAS assessment portal, we have found that the discussion that programs and co-curricular units went through to define what students were to learn has been the most valuable result of using CANVAS. Through setting up Canvas through this process, programs and units came to a much deeper understanding of their purpose and curriculum. And the programs that had been most resistant assessment have since developed into some of our university's champions of assessment. Many came to realize that outcomes are not defined by what is being taught but by what student learn do with what was taught. Many assessment tasks were redesigned to reflect student application of content rather than retention of content. Co-curricular units shifted from counting attendance at the activities they host to assessing what students learn from the activities. In nearly every instance, the most valuable result of implementing the CANVAS assessment technology were the discussions with and among the program and unit leaders.
- I often am asked how to get faculty/programs to buy-in to the process. To be honest, I don't want to coerce buy-in with using this technology. What I want is for programs to implement an assessment processes that provides useful data for them to make decisions for improvement. I will show you the process that we use to enable integration of the Canvas technology into assessment processes.

Using Canvas LMS learning outcomes assessment and program improvement



We usually begin with a focus on their purpose or mission for student learning. When discussing learning and outcomes,

- We use Canvas to provide the visualization of criteria and outcomes. This is done by showing authentic examples from other programs or units are using the technology. We emphasizing the flexibility that enables autonomy for their own structure, and explore how the technolgy might be adapted to fit within their assessment processes. (when we started, we had to fabricate a completed version so we had something to show).
- If outcomes and an assessment structure was already designed and in place, the we give the assessment coordinator administrative access to create the Groups (outcome folders) and the Outcomes (assessed criteria) in the appropriate CANVAS level. When they have access to input these into the technology, the thoughtfulness and generative development is clearly evident. They become very thoughtful of the wording used and the instructional connection to the outcomes. Then we always pilot the process in a class before sharing the process with the entire program. The pilot is designed to work out the problems that may occur. It is important that all challenges are solved in advance of full program involvement. There is nothing worse than initiated something new with faculty that does not work. The pilot also develops authentic examples before initiating further implementation.

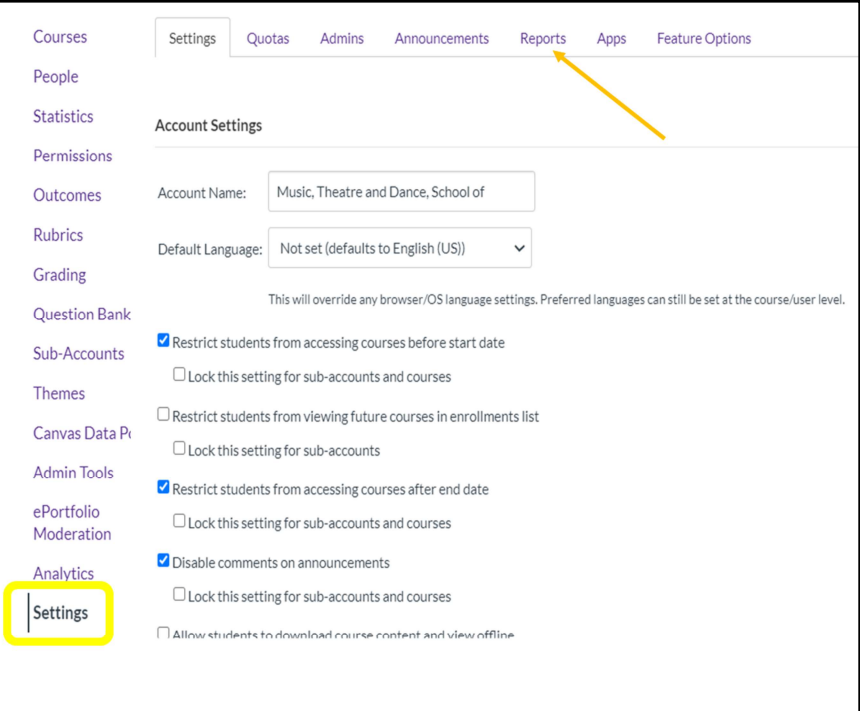
A typical timeline to develop the Groups and Outcomes is at least one semester. Then a second semester pilot is used to collect data, which will be analyzed to demonstrate the entire process to the faculty.

- The data collected is then visualized for assessment analysis to be used as an example for a demonstration to the entire program/unit at the beginning of the third semester.
- Then a gradual integration is developed across the program/unit's assessment process. We have found success with this structure and continue to see faculty and programs/units enhance their assessment processes. We never try to integrate an entire program's assessment process all at once.

Before we move on the analysis, are there any questions about integration of Canvas assessment technologies?

CANVAS is used for data collection

Analysis occurs outside of CANVAS

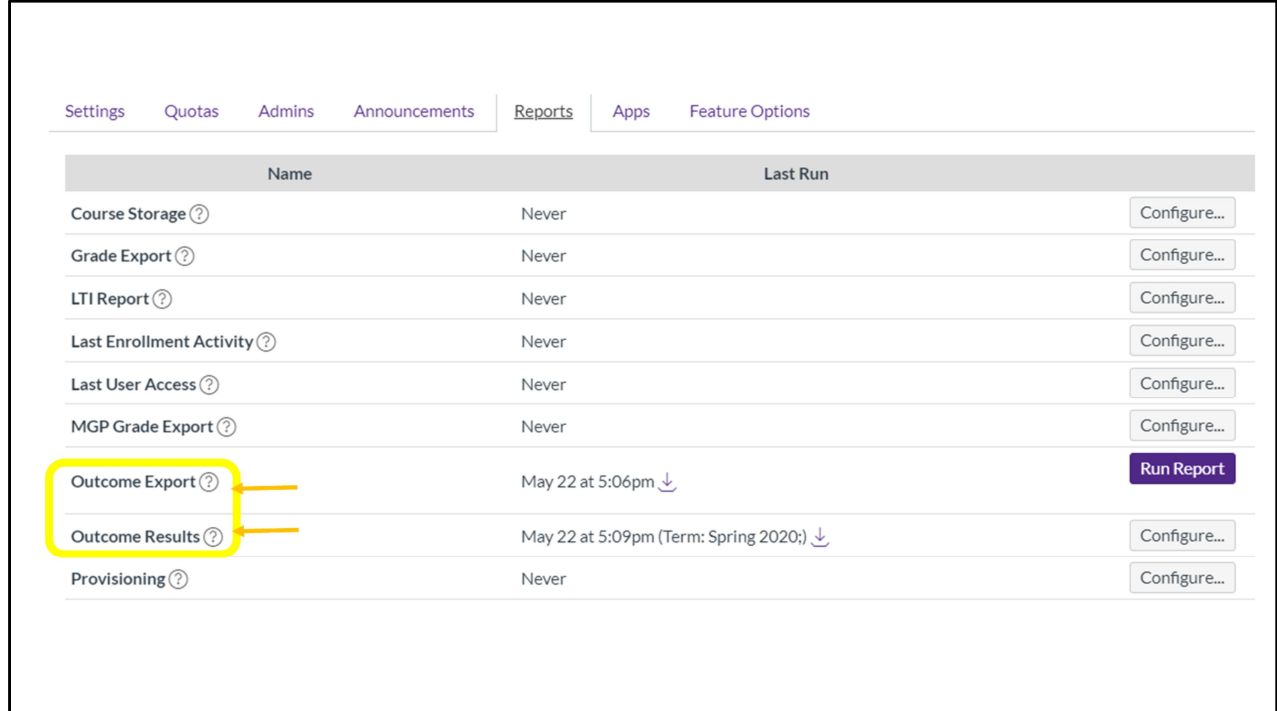


The screenshot displays the Canvas LMS administrative interface. On the left, a sidebar menu lists various navigation options, with 'Settings' highlighted by a yellow box. At the top, a ribbon of links includes 'Settings', 'Quotas', 'Admins', 'Announcements', 'Reports', 'Apps', and 'Feature Options', with 'Reports' highlighted by a yellow arrow. The main content area is titled 'Account Settings' and contains several configuration options: 'Account Name' (text input), 'Default Language' (dropdown menu), and several checkboxes for restricting student access, such as 'Restrict students from accessing courses before start date' and 'Restrict students from accessing courses after end date'.

We consider CANVAS as a data-collection technology. The analysis of data occurs outside of CANVAS. Assessment data used for analysis can be downloaded in multiple ways. CANVAS has cloud access to data for an extra fee, but for our institution as well as many others this may not be financially feasible.

- Data from the program/college/institution levels is retrieved on the administrative level in the settings.
- By opening 'Reports', which is in the top ribbon of links, you will get to a page with many different options.

Using Canvas LMS learning outcomes assessment and program improvement



Name	Last Run	
Course Storage ?	Never	Configure...
Grade Export ?	Never	Configure...
LTI Report ?	Never	Configure...
Last Enrollment Activity ?	Never	Configure...
Last User Access ?	Never	Configure...
MGP Grade Export ?	Never	Configure...
Outcome Export ?	May 22 at 5:06pm ↓	Run Report
Outcome Results ?	May 22 at 5:09pm (Term: Spring 2020;) ↓	Configure...
Provisioning ?	Never	Configure...

On this page, the areas that provide the data needed are the Outcome Export and Outcome Results.

- the hierarchy of Groups and Outcomes are downloaded by selecting 'Outcome Export'. This .csv file includes all learning outcomes that exist within this account and will show the details of all associated attributes with each outcome category.
- The achievement data collected from the outcomes are downloaded when selecting 'Outcome Results'. The technology provides the entire dataset of scores or you have the option of selecting individual terms.

Using Canvas LMS learning outcomes assessment and program improvement

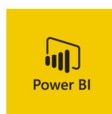
student name	student id	student sis id	assessment title	assessment id	assessment type	submission date	learning score	learning outcome name	attempt	outcome score	assessment question	assessment question id	course name	course id	course sis id	section name	section id	section sis id	assignment url	learning outcome friendly name	learning outcome points possible	learning outcome mastery score	learning outcome
Huey	6469	#####	Final	#####	assigr	2020-29 2.1.1	9710		1	4			Music #####	#####	MUSI #####	22021	https://k-st	Score	4	3	1	Excee	
Huey	6469	#####	Final	#####	assigr	2020-29 2.2.1	9711		1	4			Music #####	#####	MUSI #####	22021	https://k-st	Melo	4	3	1	Excee	
Huey	6469	#####	Final	#####	assigr	2020-29 2.3.1	9712		1	4			Music #####	#####	MUSI #####	22021	https://k-st	Chorc	4	3	1	Excee	
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Boul	7416	#####	Oral E	#####	assignment	S.2.a.	#####		1	0			Mastt #####	#####	THTR #####	22021	https://k-st		4	3	0		
Boul	7416	#####	Oral E	#####	assignment	S.2.b.	#####		1	0			Mastt #####	#####	THTR #####	22021	https://k-st		4	3	0		
Boul	7416	#####	Oral E	#####	assignment	S.2.c.	#####		1	0			Mastt #####	#####	THTR #####	22021	https://k-st		4	3	0		
Boul	7416	#####	Oral E	#####	assignment	S.2.d.	#####		1	0			Mastt #####	#####	THTR #####	22021	https://k-st		4	3	0		
Boul	7416	#####	Oral E	#####	assignment	S.2.e.	#####		1	0			Mastt #####	#####	THTR #####	22021	https://k-st		4	3	0		
Boul	7416	#####	Mastt	#####	assignment	S.3.a.	#####		1	4			Mastt #####	#####	THTR #####	22021	https://k-st		4	3	1	Uses	
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Boul	#####	#####	Dr. D	#####	assigr	2020-28 1.1 Tc	9162		1	7			Spring #####	#####	Spring #####	#####	https://k-st		10	8	0	Advai	

The .csv report shows the learning outcome results of all scored outcomes for all students. In addition to scoring data, it includes the meta-data associated with the course, assignment, outcome, and time-stamps needed for many types of analysis.

From these .csv files, data can be organized in many ways to make the data useful.

The purpose of visualizing student learning data:

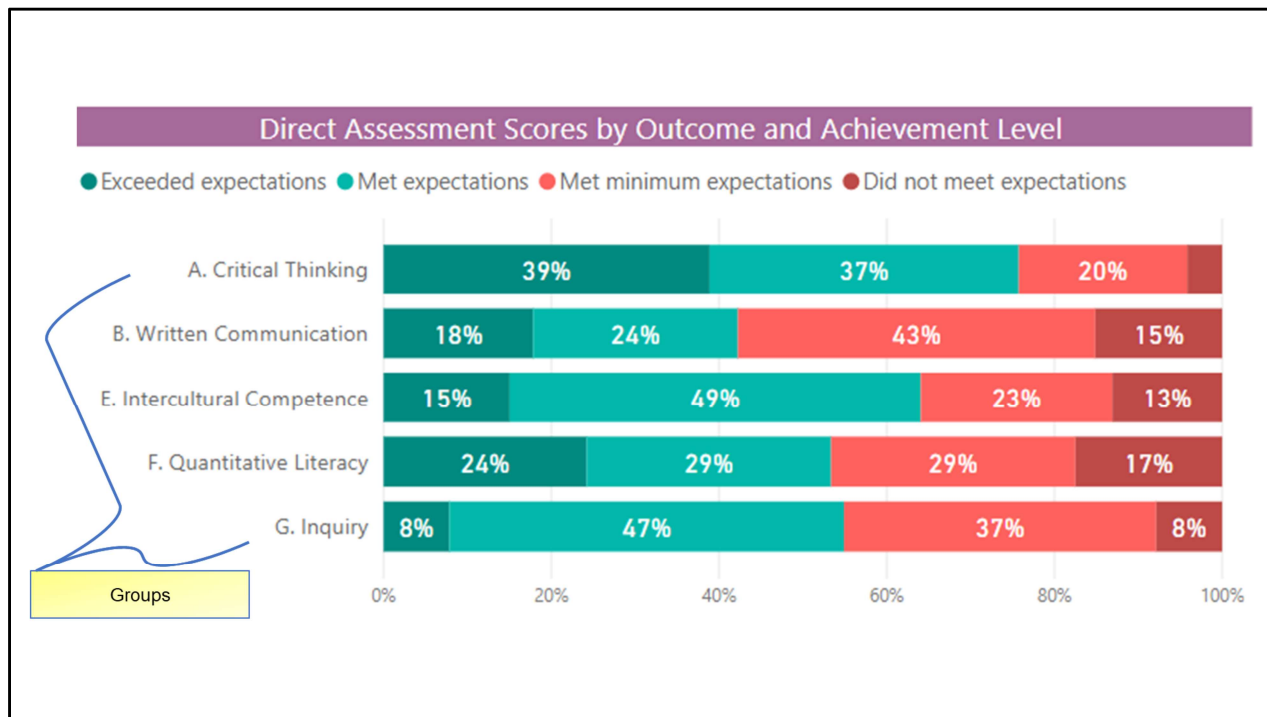
- Explore learning impact
 - Identify successful learning achievement
 - Uncover learning deficiencies
 - Implications for curricular/instructional improvements



Whether visualizations include tables or graphs, it is essential that the data is presented so the stakeholders (usually the program/unit and its faculty/staff) can assess the meaning and implications for student learning..

The student achievement data organized by outcome categories and the assessable criteria has a purpose of identifying successful learning and ways in which learning could be improved. There are multiple ways to visualize assessment data. Depending upon technology skills, the .csv files can create visualizations in the form of tables and charts using Excel, RStudio, PowerBI, Tableau, Python, or other visualization products.

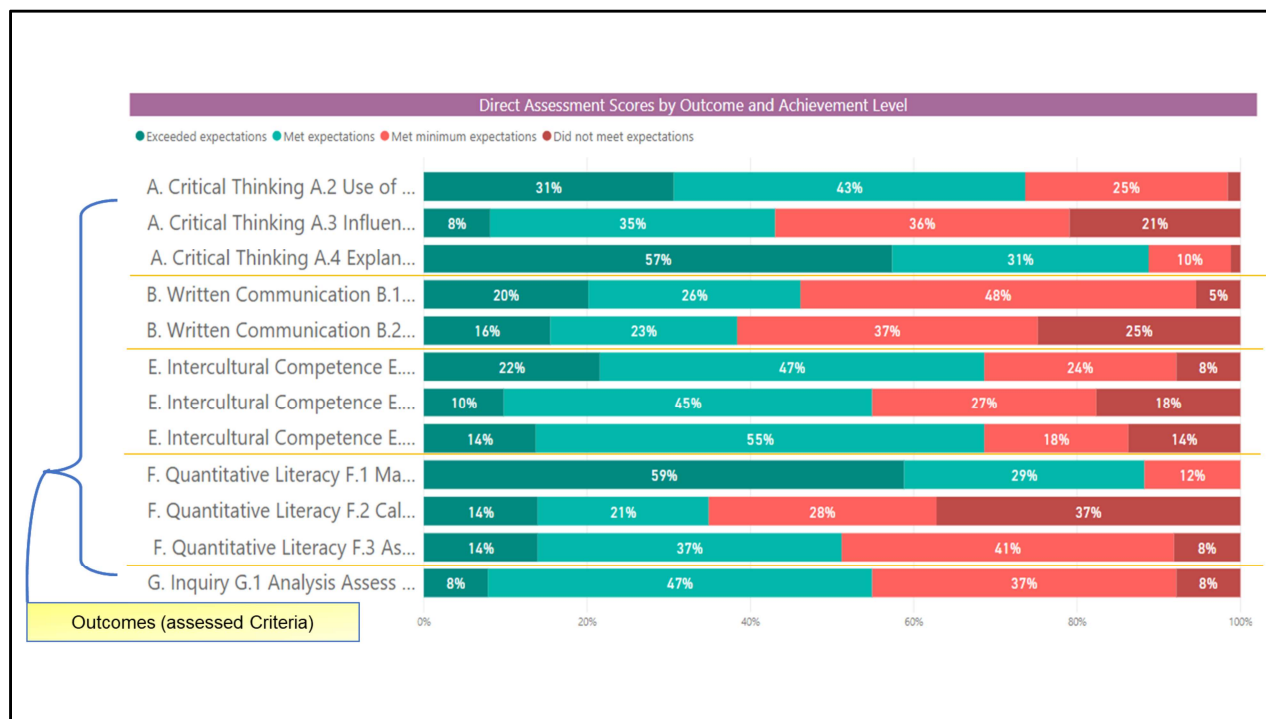
Although this session is not focused on how to visualize the data, presenting achievement data in ways that analysis can be useful is a valuable construct of understanding and using Canvas. As I share examples of visualized data, feel free to ask any questions about implementation or educational usefulness.



Earlier we talked about the Groups and Outcomes in the administrative levels.

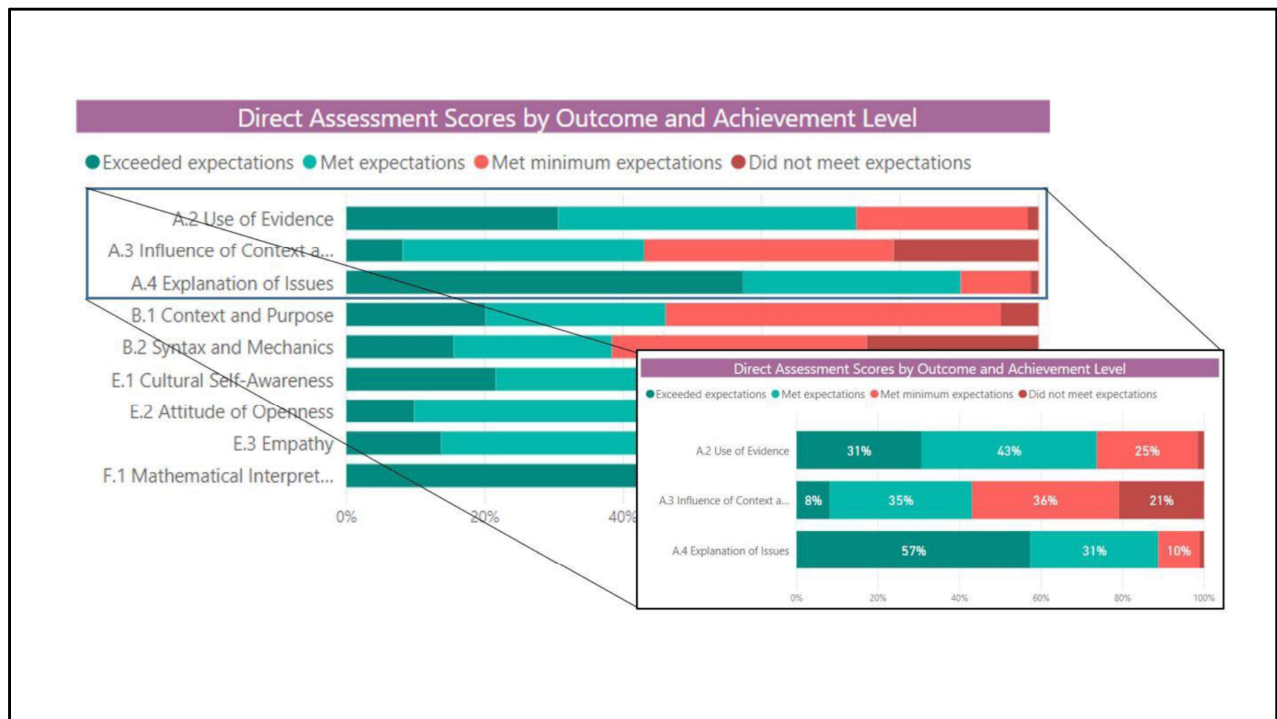
- The usefulness of creating outcome categories (Groups in CANVAS) and the component criteria (Outcomes in CANVAS) comes in the producing visualizations to be used in analyzing the data to better understand learning. When combining achievement scores over time and across assignments, student achievement can be easily understood through a chart. The outcomes that you see on this chart are the folders that were created in the Canvas structure that hold the assessable criteria. The sections of the bars are created by the combined achievement levels of each of the scoring rubrics.

Using Canvas LMS learning outcomes assessment and program improvement

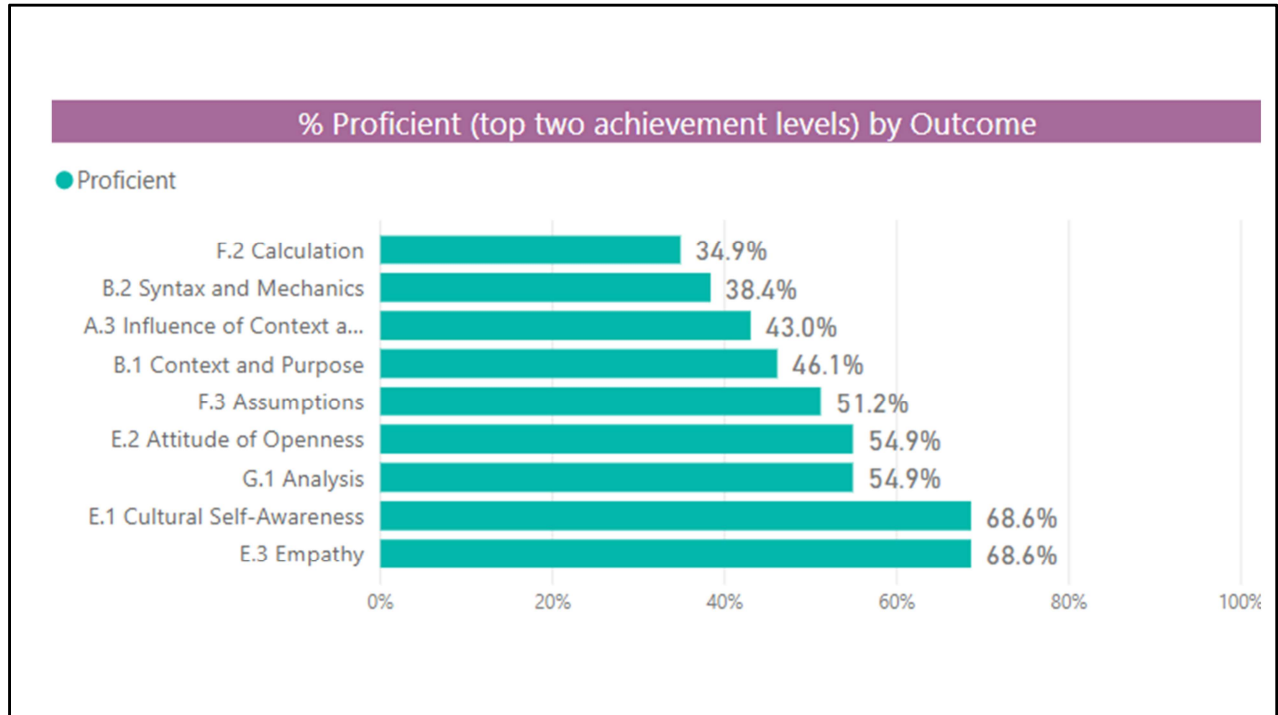


The same data can be expanded to view achievement in each component criteria. Because all scores were collected as Outcomes (assessed criteria) level, achievement can be disaggregated to better understand successful demonstration and challenges to the qualities of learning the make up each outcome category group. If you look carefully at each grouping, there is one criterion with which students experienced greater challenges. Without disaggregation into component criteria, this would have remained hidden in the data.

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By analyzing the data by the component criteria, programs can expose specific areas of achievement and challenges to guide instructional or curricular adjustments that can lead toward learning improvement. Reassessed over time, data can demonstrate effectiveness of instructional interventions as continual improvements are implemented.



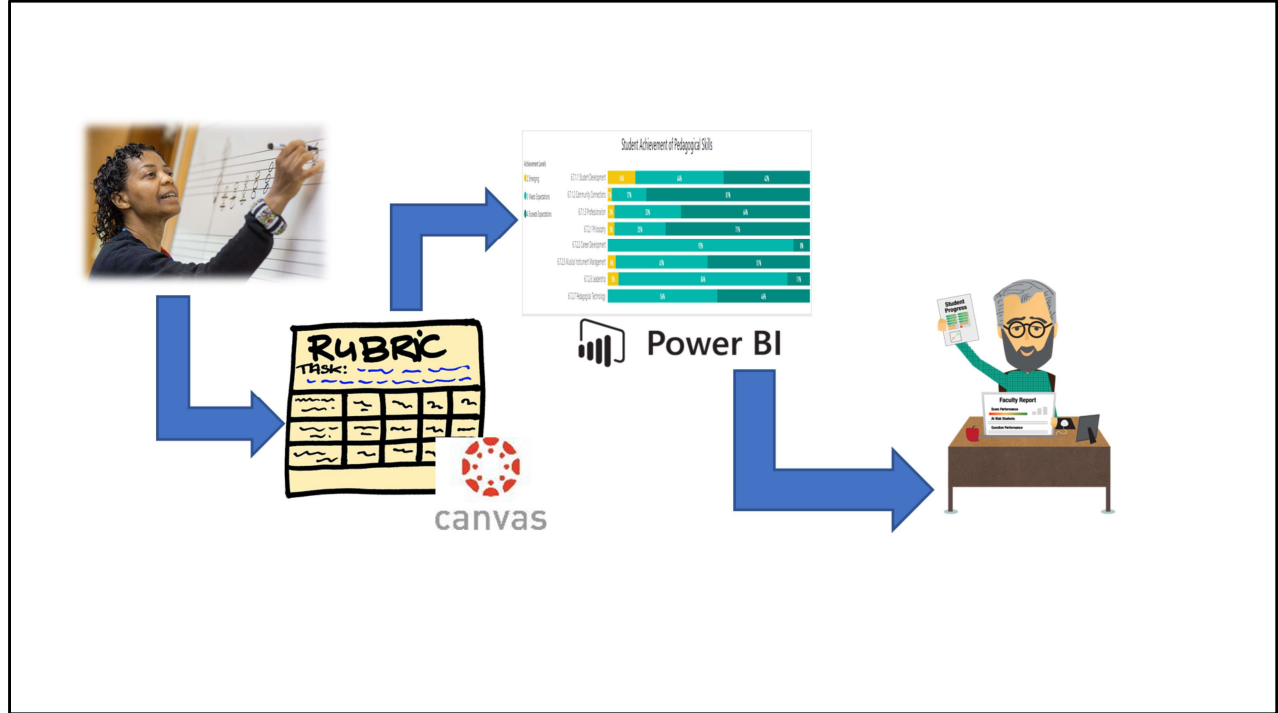
Visualized another way, we sort all assessed criteria from lowest to highest levels of achievement to expose the most challenging criteria for students. A visualization like this has been useful to many programs to expose learning challenges and to guide curricular discussion.

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Direct Assessment Scores by Outcome and Achievement Level										
-	Exceeded expectations		Met expectations		Met minimum expectations		Did not meet expectations		Total	
Outcome	Count	%	Count	%	Count	%	Count	%	Count	%
A. Critical Thinking	234	38.9%	222	36.9%	121	20.1%	25	4.2%	602	100.0%
A.2 Use of Evidence	79	30.6%	111	43.0%	64	24.8%	4	1.6%	258	100.0%
A.3 Influence of Context and Assu...	7	8.1%	30	34.9%	31	36.0%	18	20.9%	86	100.0%
A.4 Explanation of Issues	148	57.4%	81	31.4%	26	10.1%	3	1.2%	258	100.0%
B. Written Communication	92	17.8%	126	24.4%	220	42.6%	78	15.1%	516	100.0%
B.1 Context and Purpose	52	20.2%	67	26.0%	125	48.4%	14	5.4%	258	100.0%
B.2 Syntax and Mechanics	40	15.5%	59	22.9%	95	36.8%	64	24.8%	258	100.0%
E. Intercultural Competence	23	15.0%	75	49.0%	35	22.9%	20	13.1%	153	100.0%
E.1 Cultural Self-Awareness	11	21.6%	24	47.1%	12	23.5%	4	7.8%	51	100.0%
E.2 Attitude of Openness	5	9.8%	23	45.1%	14	27.5%	9	17.6%	51	100.0%
E.3 Empathy	7	13.7%	28	54.9%	9	17.6%	7	13.7%	51	100.0%
F. Quantitative Literacy	54	24.2%	65	29.1%	65	29.1%	39	17.5%	223	100.0%
F.1 Mathematical Interpretation	30	58.8%	15	29.4%	6	11.8%			51	100.0%
F.2 Calculation	12	14.0%	18	20.9%	24	27.9%	32	37.2%	86	100.0%
F.3 Assumptions	12	14.0%	32	37.2%	35	40.7%	7	8.1%	86	100.0%
G. Inquiry	4	7.8%	24	47.1%	19	37.3%	4	7.8%	51	100.0%
G.1 Analysis	4	7.8%	24	47.1%	19	37.3%	4	7.8%	51	100.0%

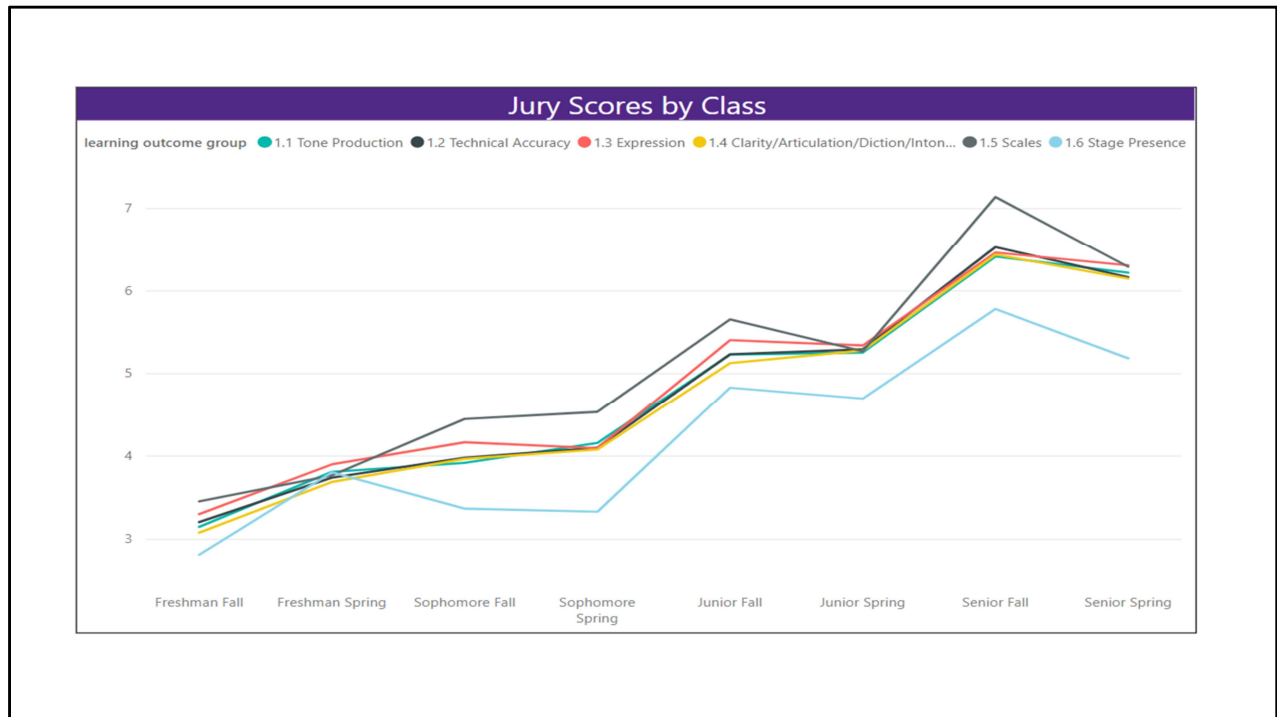
Sometimes a table is a preferable way for program or co-curricular units to view achievement data. The most important factor in visualization is presenting student learning data from CANVAS in the way it is most useful for the stakeholders. The purpose is to expose what is often not visible in the typical grading scheme. Course grades and GPA present averages of multiple learning outcomes. Since courses or assignments seldom teach only one learning outcome, these aggregations of multiple criteria from multiple outcome groups typically hide learning challenges. To fully understand what students are learning, and more importantly the challenges to learning achievement, disaggregating scores by criteria is essential.

Using Canvas LMS learning outcomes assessment and program improvement

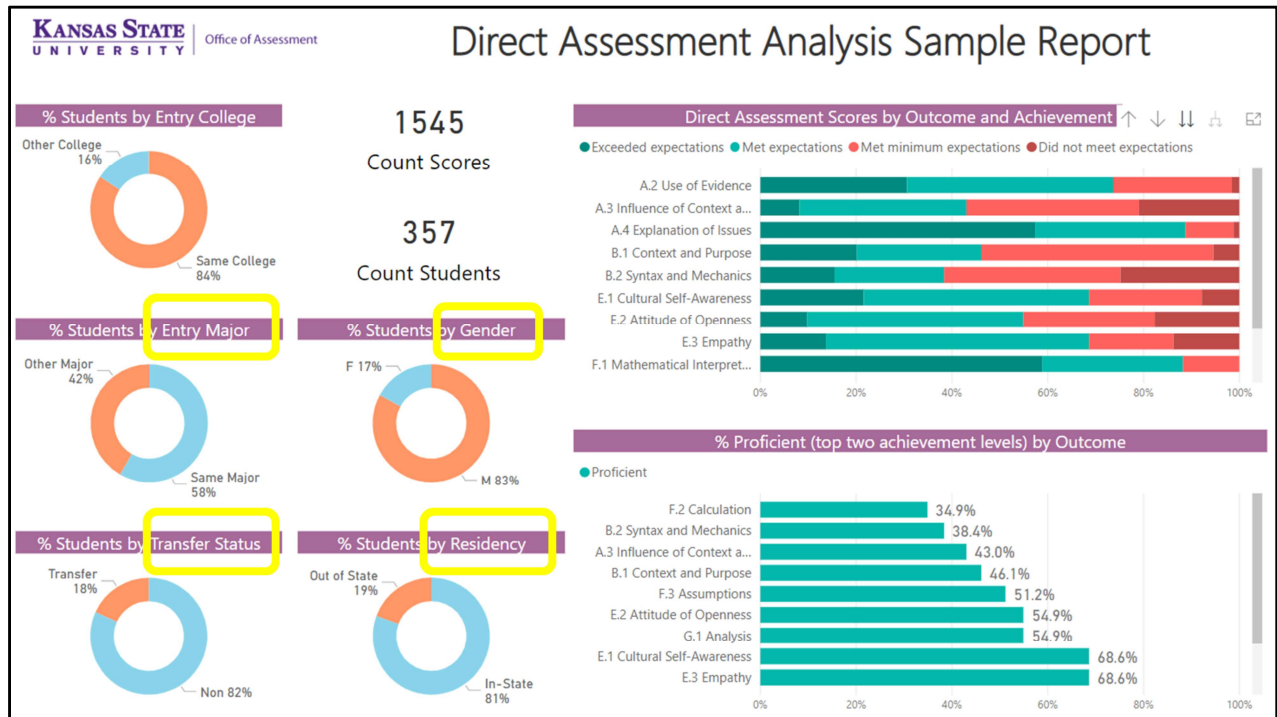


The advantage of collecting these scores using CANVAS assessment technology is in its automation. Faculty score student demonstration of learning through assessment tasks embedded in the learning process while simultaneously automating the collection of assessable criteria scores across multiple assignments and courses.

Using Canvas LMS learning outcomes assessment and program improvement



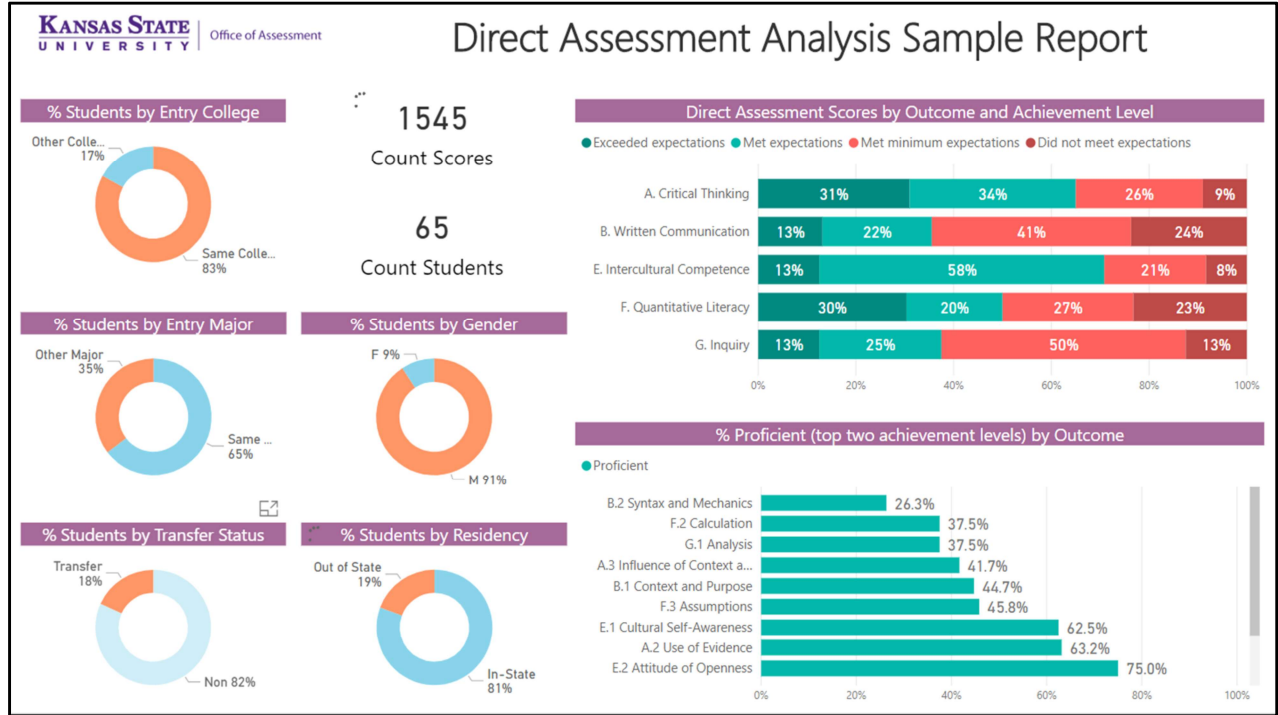
The CANVAS assessment technology can be administered with flexibility to provide data in ways that programs find valuable. When skills are developed and assessed over time, visualizations can differentiate gradual progress toward the outcome development. This is implemented in programs like the visual and performing arts, teacher training, public speaking, and other developmental skill areas. Developmental tendencies can be visualized over students' educational experience to provide evidence when the greatest development occurs or when learning plateaus.



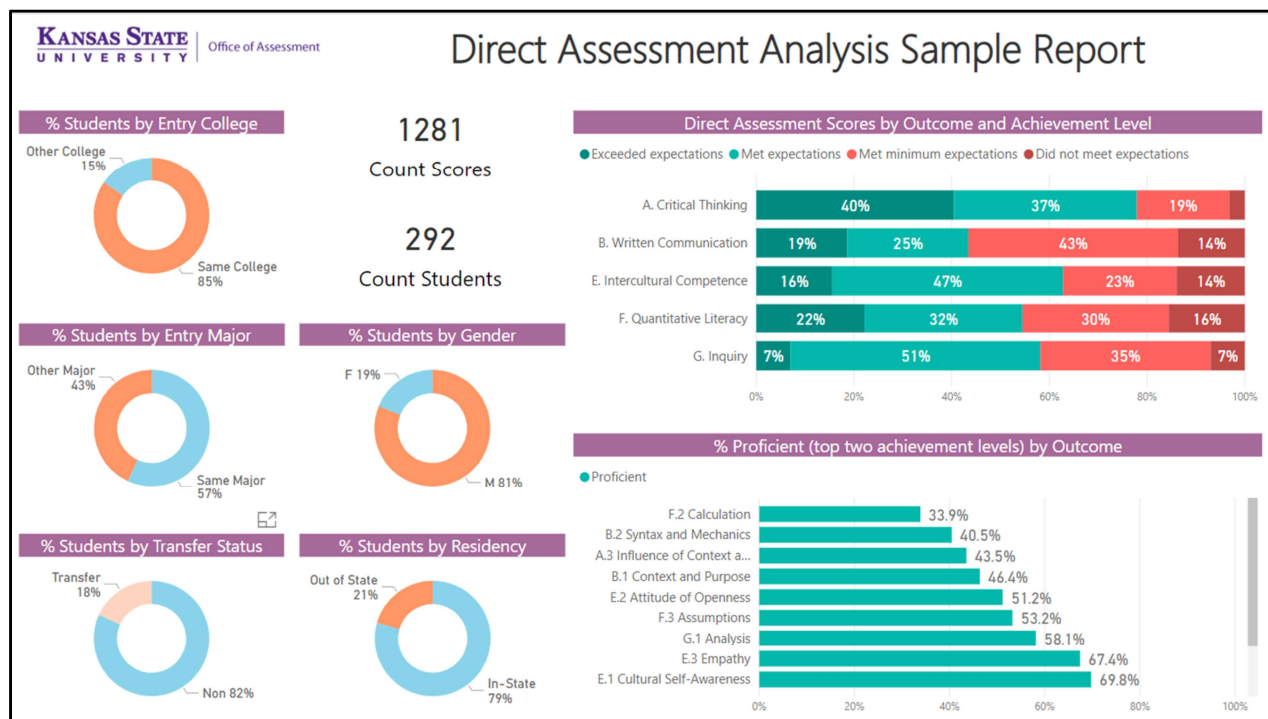
One important advantage to collecting student achievement data through CANVAS outcomes technology is its connection to the student identifier. With student identifier column in the csv file, student achievement data collected can be aligned with the Student Information System enabling filtering by demographic identifiers

- such as gender,
- Transfer status,
- Residency status
- registered major,
- First-generation applicants, GPA, And other such as ethnicity, academic status, and any other identifier that could differentiate learning needs.

In this example, the identifiers serve two purposes: (1) visualizing the calculations of what percentage make up the population of each demographic category and (2) as a filter to selected to change the adjoining tables showing the results from the selected cohort. For example, when I select non-transfer

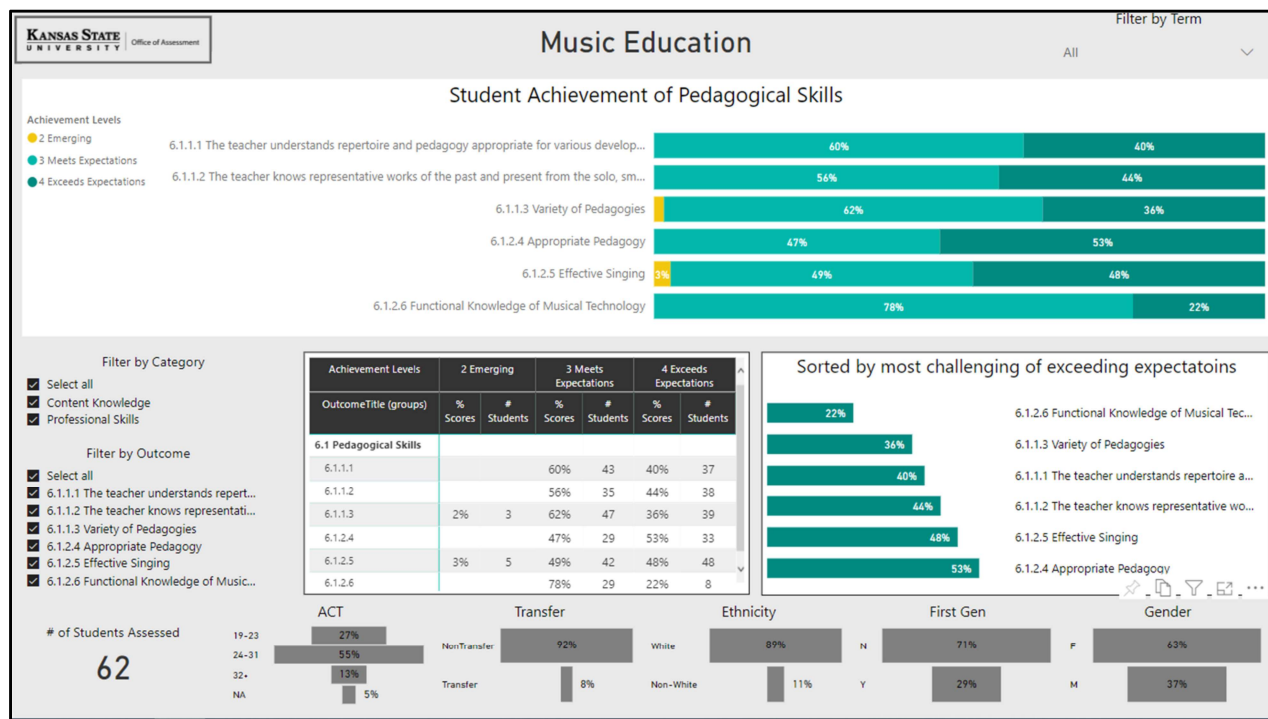


We see the scores of the students that started their studies on our campus



As compared to the scores of those that transferred into the program. The connection to student information enables the ability to disaggregate data by any cohort category for which the institution has access.

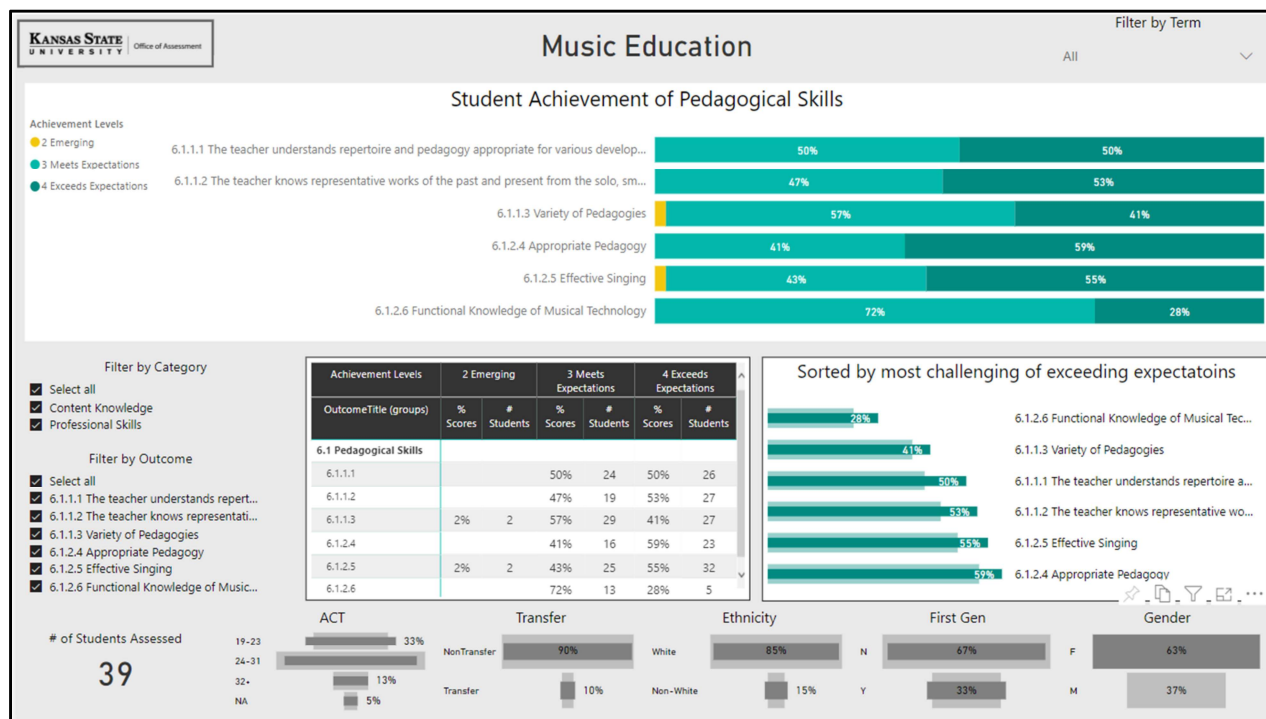
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As another example, in the assessed outcome category of Pedagogical Skills for music education, there are six assessed criteria for which you see the overall percentages of achievement for each category of emerging, meeting expectations, and exceeding expectations.

Across the bottom are five demographic categories for which we currently disaggregate. If we look at gender diversity,

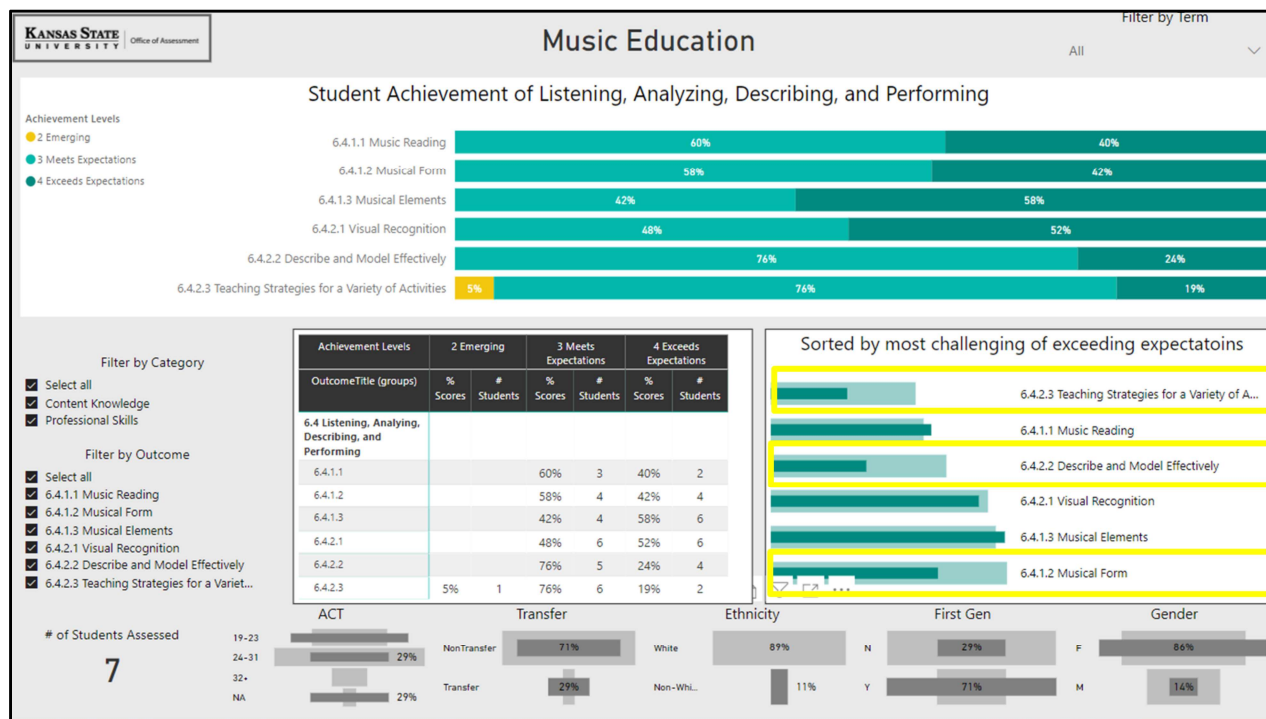
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When I filter down to show only those that identify themselves as female, we can see in the bottom right graph that females are outscoring males in all assessed criteria. Across the bottom it may also be worth to note that although females make up nearly 2/3s of the music education population assessed, there are a slightly greater percentage that are first generation and non-white.

Decisions must be made as to the educational (or possibly attitudinal) needs of male students in the assessed criteria and consider focused assessments go uncover foundational variables that influence male student achievement.

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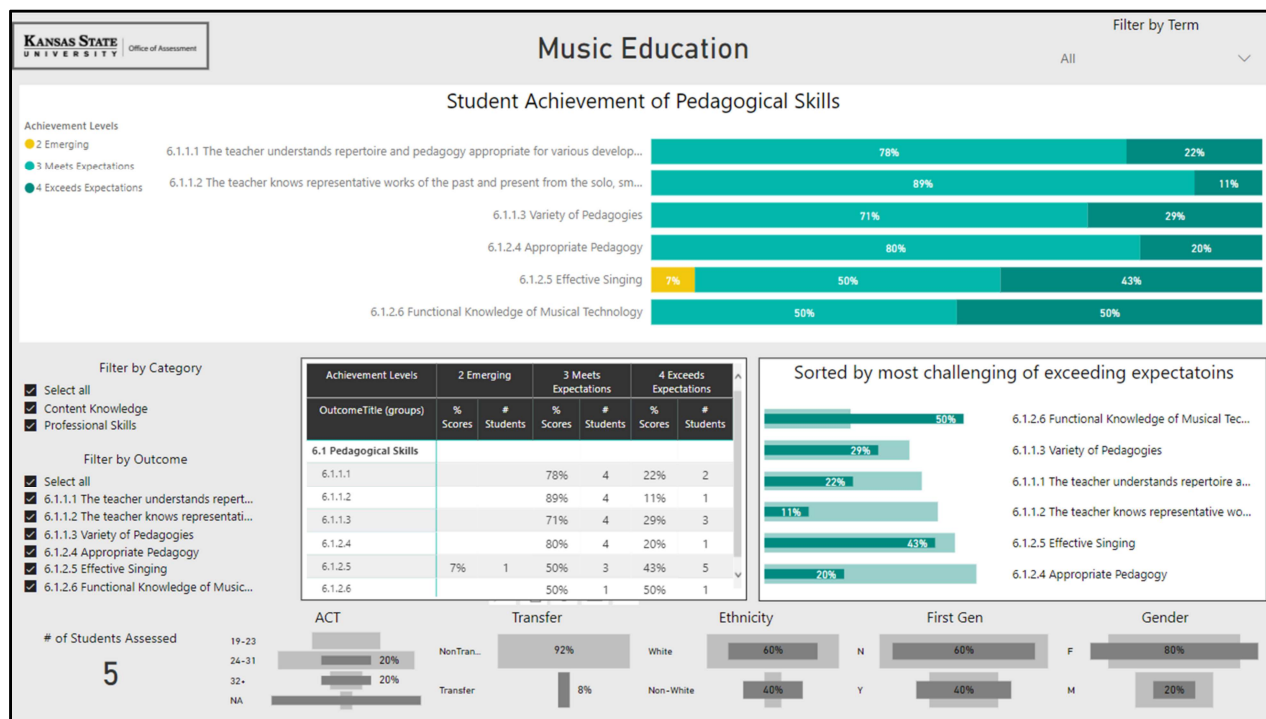


Looking at another category of learning, Student Achievement of Listening, Analyzing, Describing, and Performing,

When filtered to non-white students, we see that this cohort is doing equally well in music reading, visual recognition, and musical elements. The difficulties are coming in (CLICK1) Teaching a variety of activities; (CLICK2) Describing and modeling; and (CLICK3) Teaching musical form.

Analysis could look deeper into the foundational causes for these challenges as we see that there is a greater percentage of transfers and first generation student. An awareness of the specific challenges would suggest that there may be inequity in the instruction as there appears to be a learning need by non-white students not sufficiently being met.

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Looking at one final demographic, students that transferred in demonstrated a strong knowledge of music theory, and pretty similar in effective singing and varieties of pedagogy. But this data demonstrates that there may be inequity in the preparation that supports pedagogical application of Repertoires for developmental levels, representative works, and appropriate pedagogy. Although these constructs are taught in the latter part of the degree program, these must be foundational understandings that support pedagogical application that is not present for transfer students (or it may be a factor of ethnicity as you see in the lower graphs. Further inquiry is needed.

Using Canvas LMS learning outcomes assessment and program improvement

Outcome

- Select all
- 01.a* Communicate Effectively by Creating appropriate oral presentations.
- 01.b* Communicate effectively by Creating appropriate written documents
- 01.c Communicate effectively by Applying appropriate graphic depictions.

Outcome#	# of Scores	% Exceeds Expectations	% Meets Expectations	% Does Not Meet Expectations	Program Score
01.a*					
CNS 660 B	37	51%	49%		5
01.b*					
CNS 660 B	37	62%	30%	8%	5
01.c					
ARE 310 A	11	73%	18%	9%	5
CNS 321 01L	63	48%	33%	19%	4
CNS 321 D	1	100%			5

The Outcome Score is the average of direct and indirect assessments on shown on this page

Outcome Score

4.45

Senior Survey Response

How well is CNSM fulfilling the goal of preparing you to:	Average
01.c Communicate effectively by Applying appropriate graphic depictions.	4.19
01.b* Communicate effectively by Creating appropriate written documents	4.22

Alumni 2-year Survey Response

How well has CNSM fulfilled the goal of preparing you to:	Average
01.a* Communicate Effectively by Creating appropriate oral presentations.	3.73
01.b* Communicate effectively by Creating appropriate written documents	4.09
01.c Communicate effectively by Applying appropriate graphic depictions.	4.73

Alumni 5-year Survey Response

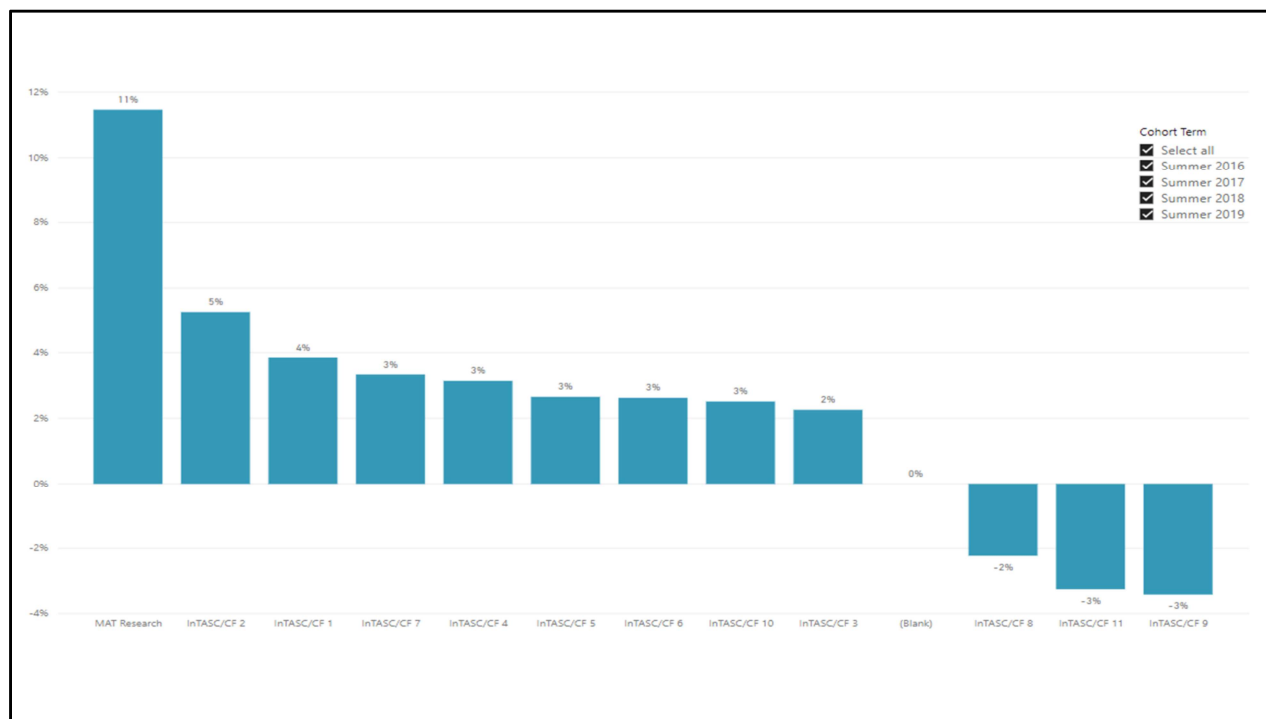
How well has CNSM fulfilled the goal of preparing you to:	Average
01.a* Communicate Effectively by Creating appropriate oral presentations.	4.00
01.b* Communicate effectively by Creating appropriate written documents	4.14
01.c Communicate effectively by Applying appropriate graphic depictions.	4.23

Employer Survey Response

How well has CNSM fulfilled the goal of preparing students to:	Average
01.c Communicate effectively by Applying appropriate graphic depictions.	3.96
01.b* Communicate effectively by Creating appropriate written documents	3.86
01.a* Communicate Effectively by Creating appropriate oral presentations.	3.77

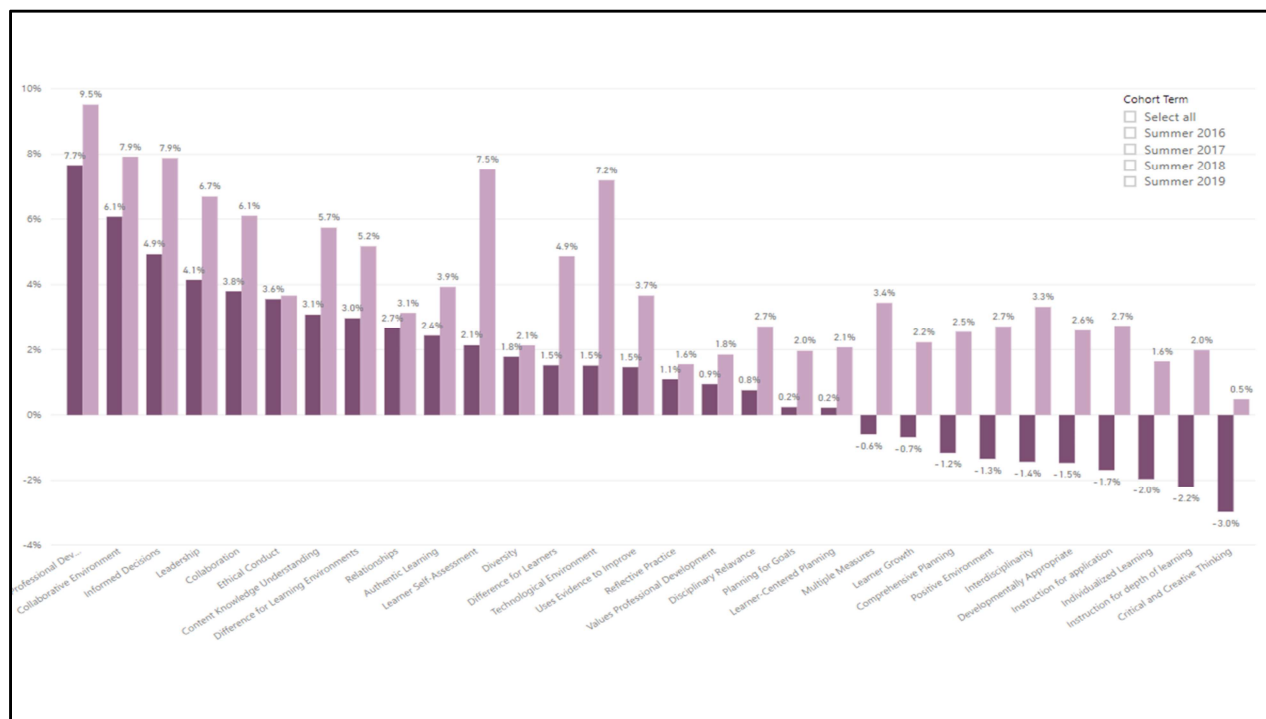
Another use of the student identifies is alignment with other data sources such as surveys and tools that exists outside of CANVAS. Programs/units have aligned outcomes used in CANVAS to questions surveyed to students, alumni, internship directors, or other data sources that can provide alternative scoring of the outcomes and assessable criteria.

Using Canvas LMS learning outcomes assessment and program improvement

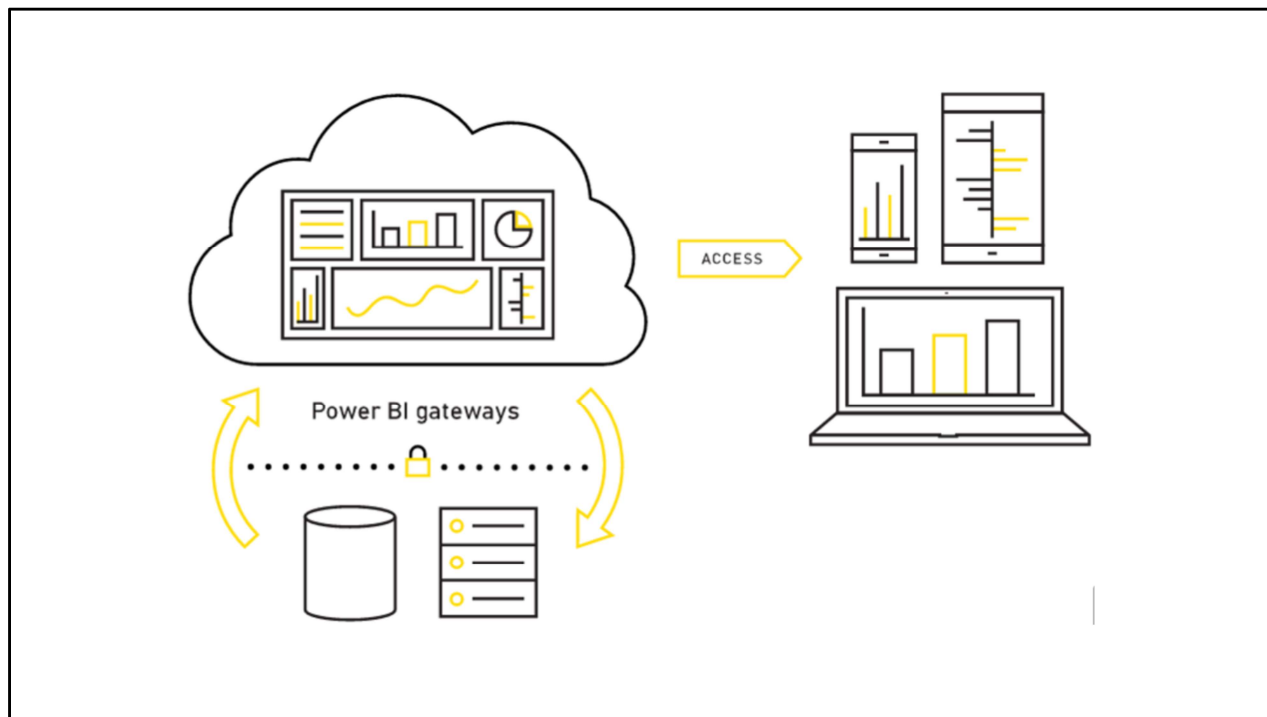


One example that some programs have found useful is to compare the score of students' perceived level of achievement to the faculty score using the same scale. When student self-assessed scores (which are indirect assessments) are compared against the faculty's direct assessment scores, what can be exposed are students' inflated concept of their learning or lack of conception of expected proficiencies. In this example, the bars that go up show the percentage students over-inflate the capabilities on certain criteria as compared to the instructor scores. Bars the go down demonstrate the percentage that student do not recognize the level of achievement as scores by the instructor.

Using Canvas LMS learning outcomes assessment and program improvement



Other ways that have been useful is comparing faculty scores of achievement in coursework as compared to internship scores for fieldwork. When validity of the measure and reliability of scoring is confirmed, these comparisons could expose the level of scoring rigor in coursework as compared to applied expectations beyond the institution.



Let me finish by talking a little about the value and process of automation in data collection. I think you can see a value of collecting achievement data without having to continually ask faculty to sort and separately report on outcome after their primary assessments have been completed for their courses. This is a value of the Canvas assessment portal.

It is possible to purchase or to build automated connections to the CANVAS data that would eliminate the step of downloading data to align into the visualizations. Our university has created an automated download of all CANVAS data into a data-warehouse. With an automated connection, data flows directly to the visualization so unit faculty can efficiently analyze and assess the meaning to support instructional and curricular decisions. Our data flow will refresh 4-times daily.



There are many other ways that CANVAS outcomes can be useful to guide instructional and program improvements. Using the automation of data collection and the organizational structure through CANVAS is the foundation necessary for effective and efficient integration.