Taking Professional Action to Research Practices

Jason Kinney (268915)

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Colorado State University – Global Campus

Dr. Kimberly Smith

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For the final Portfolio Project we were expected to collate the updated data, figures, and findings from the preceding Critical Thinking assignments and write a reflection about using data, as a part of a daily practice, to make decisions and take action towards universal student success. The reflection required support from several research-based sources regarding the use of data by educators in decision making and action taking for ensuring improved achievement results for all students.

Data Available To Improve Performance (Module 2)

For this assignment, we were asked to research the different types of data which are available for our use in reaching performance, process, and program targets. We were also expected to identify the location of the data and any data targets for our students and schools. The supplied data template was to be completed with the required information.

The Available Data

The National Institute of Educational Testing Service (NIETS) is the organization responsible for conducting mandated standardized testing in the Kingdom of Thailand (Unesco, 2015). The initial source of data for students admitted to Chiang Mai University (CMU) comes from the two main tests administered by NIETS, the O-NET (Ordinary National Educational Test) and the GAT (General Aptitude Test), both of which feature an English language component. The individual student level scores of the NIETS tests are not available to the general public, or teachers at any level; therefore the only way to collect these data would be through a voluntary student survey. In addition to the nationwide standardized tests, CMU uses a proprietary admissions exam which likewise includes an English language section called the

E-Pro (English Proficiency Test). The scores of that test are also unavailable to instructors in the department, or even the administration, and are only used by the University admissions and registration department for student placement. The E-Pro data could also be contributed voluntarily by students via survey similarly to the NIETS exam scores.

During the English courses there are several required opportunities for data collection, as well as the possibility of supplementary teacher-initiated diagnostic or formative assessments. Data available from required summative (midterm and final) exams are limited to aggregate scores, while the various required performance tasks and any teacher initiated assessments offer more in-depth information.

Summary of Findings

Much of the student data produced at or before entry into the tertiary education level in Thailand is confidential and can therefore only be accessed by teachers through voluntary contribution from students themselves. Even then, only the aggregate scores will be available since those are all that are given to the test-takers. The aggregate nature of the scores limit their usefulness in planning, adjusting, or evaluating instruction; being that it is impossible to know exactly what knowledge or performance contributed to the score (Downey et al, 2009). This same issue holds true for the major summative exams administered during the course of study. Previously, instructors graded all of their students' exams by hand allowing insight into the strengths, weaknesses, and any common misunderstandings of the students. However, computer grading has recently been implemented which eliminates that possibility by returning only aggregate scores for teachers' inclusion in the grade book. This leaves the rubric graded

performance tasks and any teacher initiated diagnostic or formative assessments as the most detailed data available to improve performance.

Format and Efficiency (Module 3)

For this assignment, we were asked to identify the format of the different types of data which are available for our use in reaching performance, process, and program targets. We were also expected to identify possible time efficiency ideas for data use and add everything to the supplied data template that was begun during the previous module.

The Available Data Format

All of the pre-course diagnostic data available from the O-NET (Ordinary National Educational Test), GAT (General Aptitude Test), and E-Pro (English Proficiency Test); comes to the student in the form of a report with a simple number score (see Figure 1). Since none of these data are available to teachers, the only way to retrieve them is to survey the students directly for a voluntary submission which would arrive as the same number score that was given to them. The department-required midterm and final exams are likewise furnished with a number score with boundaries dependant on the portion of the total course score alloted for each. The required performance tasks are graded by the teacher using a rubric allowing control of and access to all raw data and any submitted student products or rubric derived scores. The same could be said for any in-class or digital diagnostic or formative teacher initiated quizzes, surveys, assignments, or tests; all raw data, scores, etc. would be available to the instructor.

Time Efficient Ideas

The bulk of time-efficiency strategies identified involve computer spreadsheets and/or internet-enabled data collection. Once an internet-based survey is created, it can be employed

instantly whenever necessary to gather data directly from students and automatically generate charts and graphs ready for interpretation. Spreadsheet programs allow for easy entry, tabulation, and manipulation of scores and data as well as creation of charts and graphs. 'Clicker' apps can also be used for interactive and expeditious formative assessment.

Summary of Findings

The data format of the rubric graded performance tasks and any teacher initiated diagnostic or formative assessments are the most detailed and therefore the most useful in planning, adjusting, or evaluating instruction and learning to improve performance. The simple total number score available for the various standardized tests can be utilized for a global snapshot of student proficiency and general comparisons between individuals or groups of students; but is of little value in evaluating instruction due to the aggregate and summative nature of the data.

With some initial time input, most or all of the identified data can be gathered, tabulated, manipulated, and graphed using computers, spreadsheets, and internet technology. Utilizing the electronic resources available can expedite data collection efforts and streamline the interpretation process.

Data Collection Method (Module 4)

For this assignment, we were asked to identify any data not being collected that may be beneficial to improve performance. Having named the required data, we were to find and develop methods to collect it, and then add the details to the supplied data template that was begun during the previous modules.

Uncollected Data

The pre-course diagnostic data available to students includes scores from standardized tests like the O-NET (Ordinary National Educational Test), GAT (General Aptitude Test), and CMU E-Pro (English Proficiency Test); none of these data are available to teachers, but could be retrieved directly from students by voluntary survey (see Figure 1). Other useful data that is not collected as a required course component or element on the syllabus include detailed pre-course diagnostic information as well as robust and comparable formative diagnostic data related to the goals and content of the Fundamental English courses. Additionally, generating a reference of student learning styles and interests could be beneficial to both students and teachers for differentiating and personalizing instruction (McCarthy, 2014).

Data Collection Methods

As noted above, the pre-diagnostic data already available to students could be collected via survey using a time-efficient, internet-based Google Form like the one that was produced for this exact purpose and linked in the 'Data Collection Method' field of Figure 1, below. For better detailed pre-course diagnostic information, either a custom instrument could be created by teachers or senior staff, or an extant online English proficiency test could be used like the ones linked in Figure 1. Since the *Life* Pre-Intermediate course books (Hughes et al, 2012) are aligned with the Common European Framework of Reference (CEFR) level B1 (Sayer, n.d.), it should be easy to use results from many of these online quizzes, of which the results of most are similarly and explicitly aligned to the CEFR.

Absent formative data, with which to adjust instruction and offer feedback, can be easily gathered during or between classes using one or more of the online quizzes or classroom

response systems (CSRs) listed and linked in Figure 1. Finally, an exercise was developed by the teacher to produce a reference of student learning styles and interests, through discovery and interpretation of Meyers-Briggs Type Indicator (MBTI) personality types, that could be beneficial to both students and teachers for differentiating and personalizing instruction (see Figure 1). The Google Slides presentation with instructions for students on how to find their MBTI personality type, using an online test, and produce a 'learner profile card', along with a Google Form for teachers to collect and analyze the information produced by the exercise are also linked in Figure 1.

The Data Template

Classroom/School/District/State Data Available: Related to Your Content and Grade Level				
Data Available (Module 2)	Targets (Module 2)	Location of Data (Module 2)	Data Format (Module 3)	Time-Efficient Ideas (Module 3)
O-NET (Ordinary National Educational Test) National standardized test administered by NIETS	Scores comprise 30% of the admissions requirements for the university. Target depends on the other aggregated scores.	NIETS • Unavailable to teachers • Could be collected with a Student Survey	Students receive report with chart showing score out of 100 and comparison to national average	Use internet based survey for automated data collection and processing into charts/graphs
GAT (General Aptitude Test) National standardized test administered by NIETS	Scores comprise a portion of the admissions requirements for the university. Target depends on the other aggregated scores.	NIETS • Unavailable to teachers • Could be collected with a Student Survey	Students receive report with score out of 150 for the English segment	Use internet based survey for automated data collection and processing into charts/graphs
CMU "E-Pro" (English Proficiency Test) Component of the CMU entrance exams	Scores comprise a portion of the admissions requirements for the university and are used for placement into English course sections.	CMU Reg/Admin. • Unavailable to teachers • Could be collected with a Student Survey	Students receive report with score correct out of total	Use internet based survey for automated data collection and processing into charts/graphs
Midterm Exam • Required • Computer graded • Formal Exam	Scores comprise a portion of the course completion requirements for the department. Target	Classroom Gradebook • Available to teachers • Only total score	Teachers receive report with earned score as a portion of total course score for	Maintain gradebook in spreadsheet for easy editing and data manipulation

• Summative	depends on the course and the other aggregated scores.	• No item level data included	inclusion in gradebook	
Final Exam • Required • Computer graded • Formal Exam • Summative	Scores comprise a portion of the course completion requirements for the department. Target depends on the course and the other aggregated scores. (50% aggregate score is normally passing)	Classroom Gradebook • Available to teachers • Only total score • No item level data included	Teachers receive report with earned score as a portion of total course score for inclusion in gradebook	Maintain gradebook in spreadsheet for easy editing and data manipulation
Performance Tasks • Required • Listening Test • Speaking Test • Role-Play • Video Production • Presentation	Scores comprise a portion of the course completion requirements for the department. Targets are based on proficiency and depend on the course and the other aggregated scores.	Classroom Gradebook • Generated by teachers • Rubric Scored • Item level data included	Raw data with student product and rubric score	Use preformatted spreadsheet for quick rubric grading and highlighting for feedback. Easily transfer scores to gradebook spreadsheet.
In-Class or digital diagnostic tests • Optional • Teacher initiated • Teacher created • Any format • Formative	Scores are only for formative assessment purposes, targets will depend on the teachers' strategy.	Paper or digital quiz, Student Survey on LMS, etc. • Generated by teachers • Hand or computer Scored • Item level data included	Raw data, score from hand or automated scoring; charts or graphs possibly computer generated	Internet based surveys and quizzes, and 'clicker' apps for formative data gathering and convenient chart rendering

Data Gaps (Module 4)	
Data Gap Identified	**Possible Collection Method(s)**
Pre-Admission Standardized Test Scores (O-NET, GAT, CMU E-Pro)	Use internet based survey for automated data collection and processing into charts/graphs (e.g. Google Forms).
Pre-Course detailed English proficiency diagnostic information related to course objectives	Premade or purpose-built, computerized test (e.g. Google Forms) based on course content and objectives.
Robust and comparable formative periodic diagnostic information	Internet based surveys and quizzes, and 'clicker' apps for formative data gathering and convenient chart rendering.
Student learning styles and interests	Internet based Meyers-Briggs Personality Type Indicator (MBTI) test and Google Forms survey; "Learner Profile Card" produced by the student from the information established above.

Data Collection Method/Tool (Module 4)

This is a teacher-made Google Forms survey for collecting voluntary information about any pre-admission standardized test scores that students may have:

https://docs.google.com/forms/d/e/1FAIpQLSeBaQVeTq3xOWluHtXgPI7048n-xIORAR434sUlBQ8HKk-Q2g/viewform?usp=sf_link

Here is a curated list of free internet based English proficiency diagnostic tests for use in identifying students' strengths and weaknesses with regard to course content and objectives. Some are quite general and others have specific sections for more detailed information:

https://www.oxfordonlineenglish.com/english-level-test?utm_referrer=https://www.google.com/
https://tracktest.eu/english-placement-test-for-websites/
https://www.examenglish.com/leveltest/index.php
http://www.englishtag.com/tests/level_test.asp
http://englishenglish.com/englishtest.htm
https://www.tolearnenglish.com/test-de-niveau-anglais-grammaire.php
https://www.englishclub.com/esl-exams/levels-test-wc.htm
http://www.world-english.org/diagnostic_grammar_1.htm
http://testyourvocab.com/

Here are four internet based apps for use in formative assessment, data gathering, and convenient chart rendering throughout the course; in-class, and online:

https://quizlet.com/
https://kahoot.com/
https://www.socrative.com/
https://docs.google.com/forms

This is a teacher-created Google Slides presentation to be shared with students for their use in accessing an online MBTI test, discovering their 'personality type', using that to understand their 'learning styles' and producing a 'learner profile card' for easy use by the instructor in personalizing and differentiating instruction:

https://docs.google.com/presentation/d/1VsoA4FYoG0n3otLomx2SSKCgRDfkyevQ4t5VwyhsKlo/edit?usp=sharing

This is a Google Forms 'Learner Profile Quiz' for use in collecting and analyzing data produced by students through the above "Creating a Learner Profile Card" Google Slides presentation and exercise.

https://docs.google.com/forms/d/e/1FAIpQLSfxF08zog6Zi3-N2_Nhc3h7f60F1Fp-M3u5LqPtkmE_aPq-1w/viewform?usp=sf_link

Figure 1. Available and unavailable data relevant to the Fundamental English Program in the English Department, Faculty of Humanities at Chiang Mai University, Chiang Mai, Thailand; the table includes information about data targets, location and format of data, ideas for time efficient data use, data gaps, and methods of collecting data to fill any gaps.

Summary of Findings

The data gaps identified and defined above are of the essential diagnostic and formative assessment informational nature which are fundamental to any effective educational

programming (MDK12, n.d.). The one benefit of such a glaring lack of data collection in the program's design is, as the authors put it, that "collecting student performance data and not using it to inform instruction would be a waste of valuable teacher time"; since almost no data is currently collected, there is no opportunity to waste time by not using it. However, the extra instructional time comes at the expense of crucial data with which to plan and direct instruction so as to be most efficient and effective. By utilizing the above proposed data collection methods and tools, valuable information can be gathered, analyzed, and insights applied to the benefit of both teacher and learners in improving performance.

Data Analysis Results with Visual Representation (Module 5)

Having already identified the available data and data gaps in previous modules, as well as discussed their locations and collection methods; for this assignment, we were asked to determine which data still needs analysis and efficient ways to do so that it may be used to improve performance. Having analyzed the data, we were to provide a visual representation of the results.

Conducting Own Data Analysis

The pre-course diagnostic data available to students, including scores from the O-NET (Ordinary National Educational Test), GAT (General Aptitude Test), and CMU E-Pro (English Proficiency Test); were retrieved directly from students by the voluntary survey described and linked in Figure 1 (Module 4). The Google Forms survey was created along with a Google Docs hyperlinked instructional 'playlist' to not only collect the aforementioned standardized test scores, but also to guide students in taking a battery of online diagnostic English proficiency tests and submitting those scores as well. As a result, several sources of data can be compared to

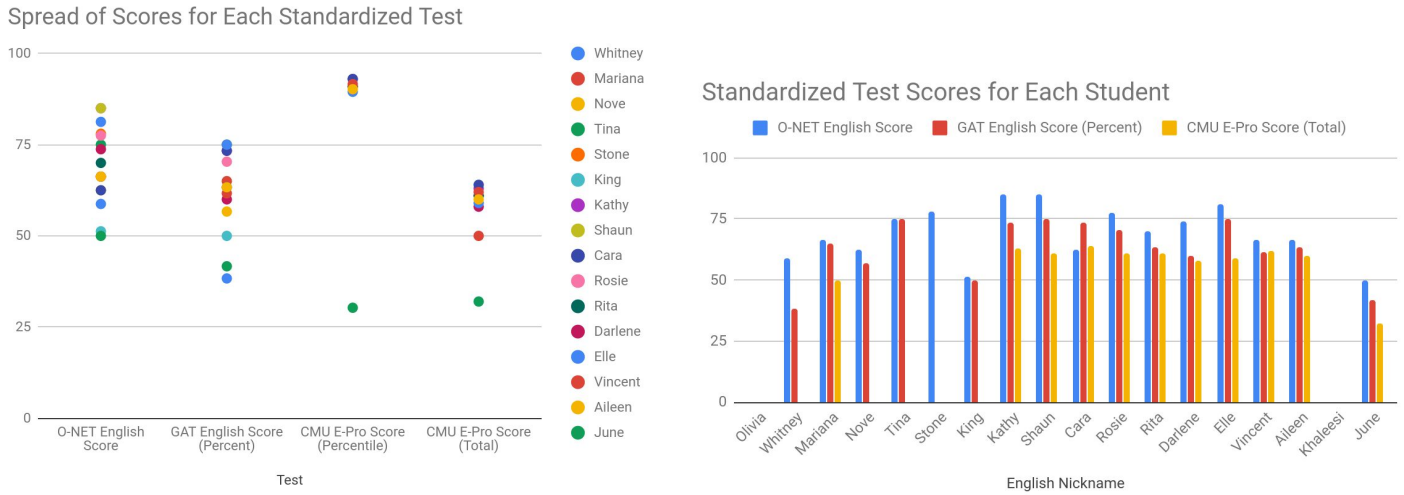
triangulate students' English proficiency levels on a variety of language skill components (see Figure 2).

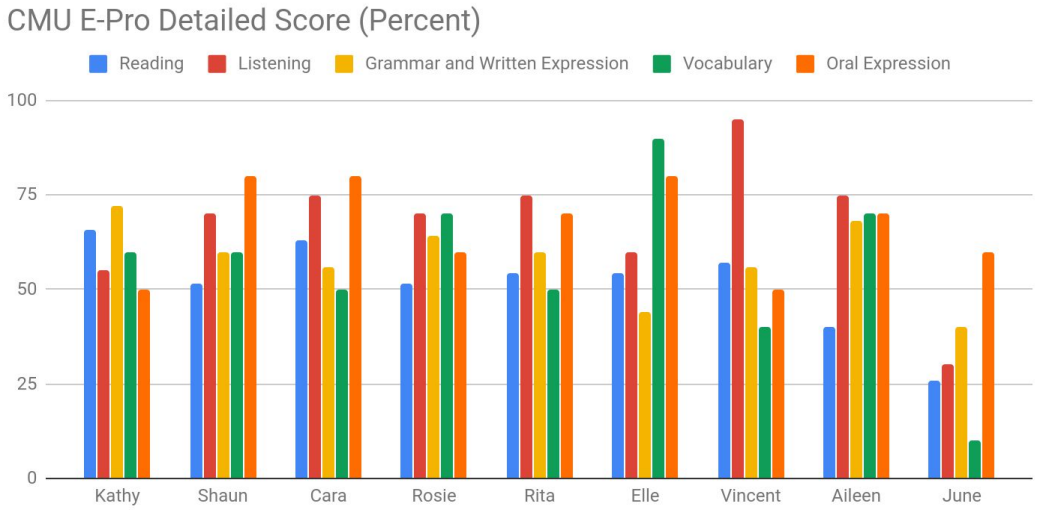
Data Analysis Methods and Tools

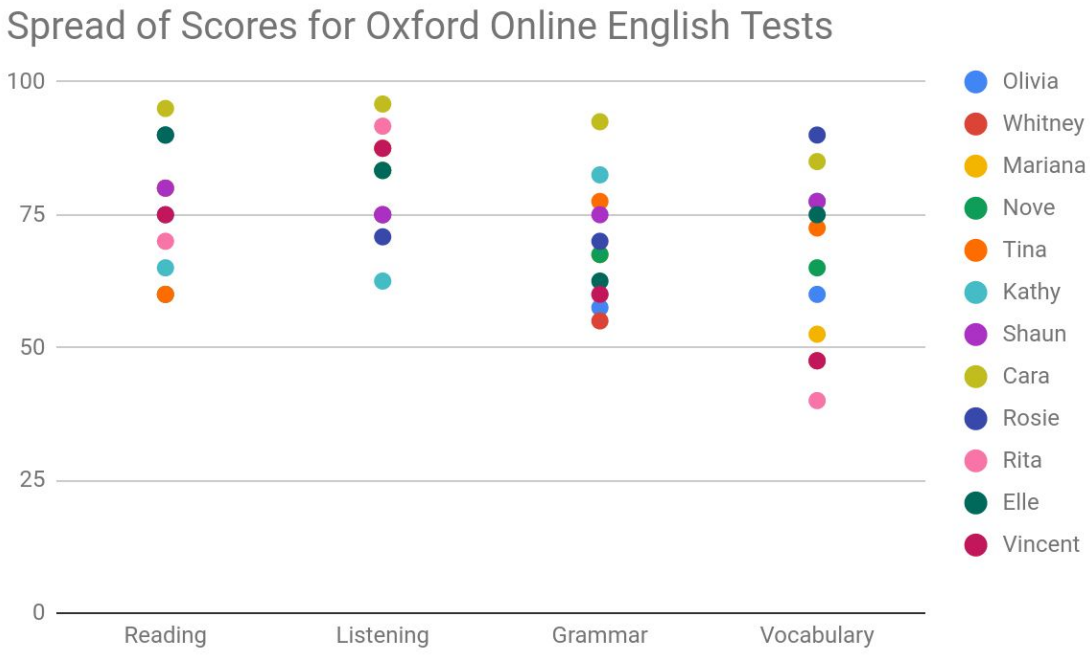
As noted above, the pre-course diagnostic data already available to students was collected using a custom-made, time-efficient, internet-based Google Form paired with a Google Doc playlist containing detailed instructions and hyperlinks to the various online diagnostic English proficiency tests. A Google Sheets online spreadsheet was automatically generated from the survey with all collected data. Via the spreadsheet, charts and graphs were produced using some operations to allow for comparisons across the different data sources (see Figure 2).

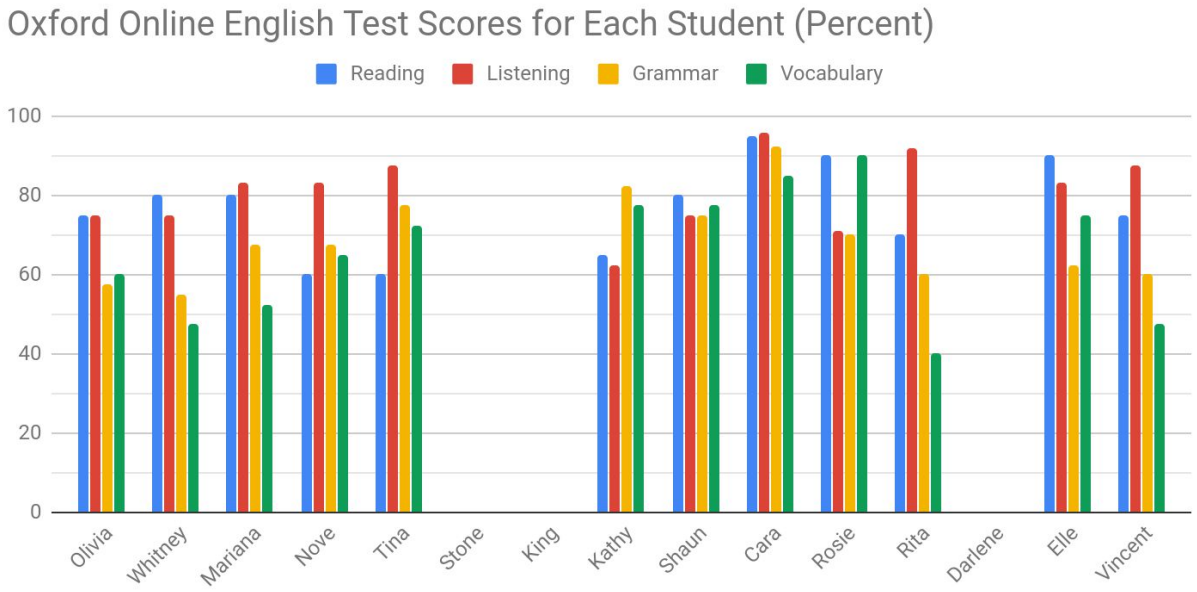
The Data Analysis

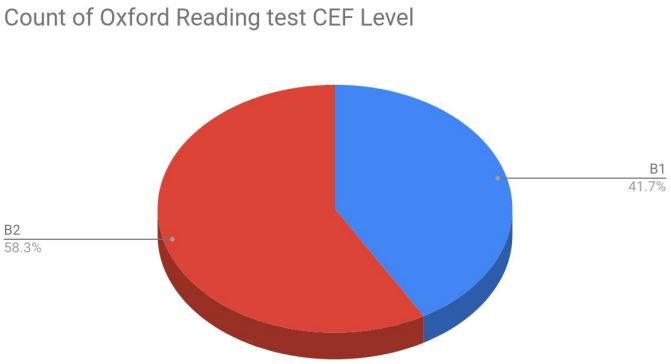
Conducting Own Data Analysis (Module 5)		
Data that Needs Analysis	Time-Efficient Data Analysis Idea(s)	Data Analysis Tool(s)
Diagnostic Pre-Tests including: • O-NET • GAT • CMU "E-Pro" • Other standardized and online English proficiency tests.	Use internet based survey (created in Module 4) for automated data collection and processing into charts/graphs that can be exported to digital spreadsheet disaggregation and manipulation.	Google Form for survey and Google Sheets for data analysis and display.
Required Course Graded Summative Assessments: • Midterm Exam • Final Exam	Maintain gradebook in online spreadsheet for easy editing and data manipulation. Data can be added to above diagnostic pre-test data spreadsheet and matching components can be graphed together to show progress. Students can be assigned an anonymous code that can be used to label their data on a shared spreadsheet that can be accessed and viewed by all students.	Google Sheets for online gradebook, data analysis and display.
Graded Performance Tasks: • Listening Test • Speaking Test • Role-Play	Use preformatted spreadsheet for quick rubric grading and highlighting for feedback. Easily transfer scores to shared gradebook spreadsheet as above which can be matched with	Google Sheets for rubric grading, instant feedback, online gradebook, data analysis and display.

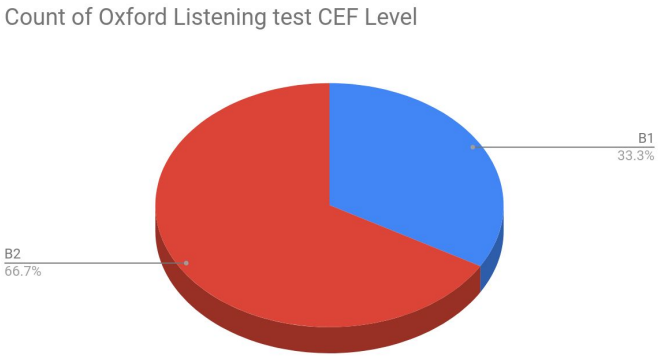
• Video Production • Presentation	corresponding components and graphed to show progress. Students can be allowed access in the same manner as above.	
In-Class or digital diagnostic tests • Online formative quiz or survey • Classroom Response System (clicker apps) • LMS assignment completion data	Internet based surveys and quizzes, and 'clicker' apps for formative data gathering and convenient chart rendering. Can be used as in-class formative assessment and feedback viewed by students in real-time or feedback automatically returned to students by survey app. Can also be added to grade spreadsheet and mapped against corresponding components as above.	Online apps for in-class formative assessment and immediate analysis and feedback, such as: • Kahoot • Quizlet • Socrative • Google Forms
Visual Representation of Data (Module 5)		
		

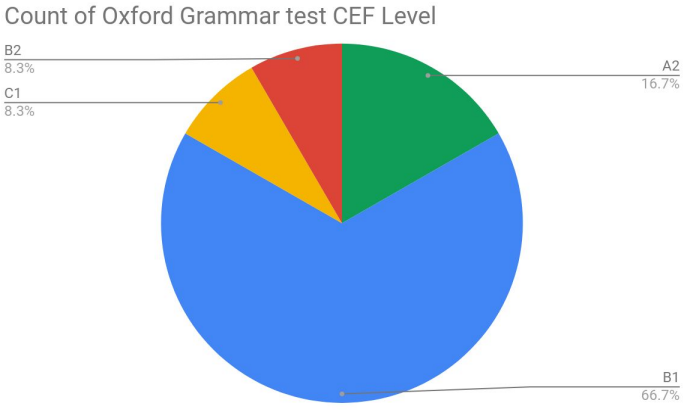

CMU E-Pro Detailed Score (Percent)
Reading
Listening
Grammar and Written Expression
Vocabulary
Oral Expression
100
75
50
25
0
Kathy
Shaun
Cara
Rosie
Rita
Elle
Vincent
Aileen
June

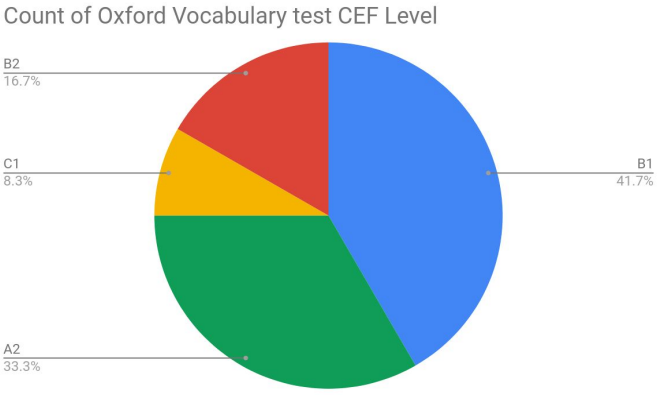

Spread of Scores for Oxford Online English Tests
100
75
50
25
0
Reading
Listening
Grammar
Vocabulary
Olivia
Whitney
Mariana
Nove
Tina
Kathy
Shaun
Cara
Rosie
Rita
Elle
Vincent

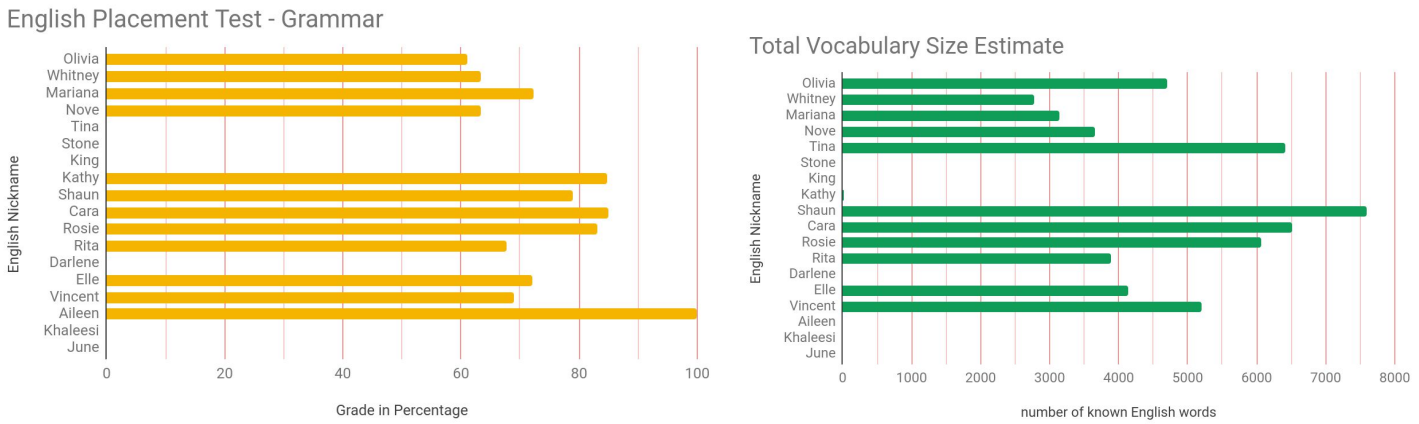

Oxford Online English Test Scores for Each Student (Percent)
Reading
Listening
Grammar
Vocabulary
100
80
60
40
20
0
Olivia
Whitney
Mariana
Nove
Tina
Stone
King
Kathy
Shaun
Cara
Rosie
Rita
Darlene
Elle
Vincent


Count of Oxford Reading test CEF Level
B1
41.7%
B2
58.3%


Count of Oxford Listening test CEF Level
B1
33.3%
B2
66.7%


Count of Oxford Grammar test CEF Level
B2
8.3%
C1
8.3%
A2
16.7%
B1
66.7%


Count of Oxford Vocabulary test CEF Level
B2
16.7%
C1
8.3%
A2
33.3%
B1
41.7%



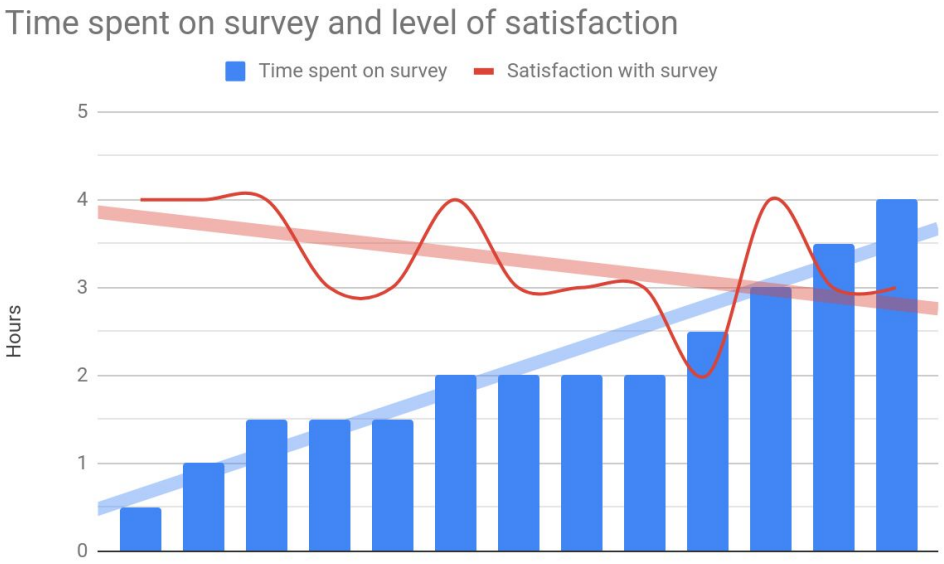


Figure 2. Identified data requiring analysis relevant to the Fundamental English Program in the English Department, Faculty of Humanities at Chiang Mai University, Chiang Mai, Thailand. The table includes information about time-efficient methods and tools for the collection and analysis of the data, along with prepared comparable graphs of newly collected diagnostic pre-test data from various sources.

Summary of Findings

By utilizing the time-efficient web-based data collection tools provided free from Google, diagnostic information about students' English proficiency was gathered and processed into usable graphs in a manner friendly and convenient to both students and teacher. The

accommodation for students can be seen in the final graph in Figure 2, which was made with data from the final two questions on the survey about the amount of time spent and level of enjoyment while taking the tests and completing the survey. Based on the trend lines mapped to that graph, it would appear that the level of satisfaction decreases as the length of time spent increases, which also makes intuitive sense; but enjoyment remains relatively high (above "indifferent") throughout the range of durations.

Some operations on the test data were necessary to transform raw scores into percentages that could more easily be compared between the multiple measurements of like language components. For example, while the O-NET and CMU E-Pro are both given scores out of 100, the GAT English test is out of 150 points total; so the scores were turned into percentages allowing all test results to be plotted onto a single graph (see Figure 2, standardized test scores). A similar process was used for the CMU E-Pro Detailed scores and the Oxford Online English Test scores. Both the standardized test scores and the online test scores were presented in two types of graphs to show the range (spread) of scores across all students for each test and language component; and to display the same scores in a side-by-side comparison for each individual student. The corresponding Common European Framework (CEF) level given alongside score results on the Oxford Online English Tests were presented in pie charts for each language component showing the variety and frequency of proficiency levels amongst students. Finally, the separate online grammar-based English placement test and vocabulary size estimates were plotted for further comparison and verification of the standardized and Oxford online test results.

Although some of the results for like test components of a few students contrast, the trends and averages for the various tests and language components (reading, listening, grammar, and vocabulary) seem to match across the various tests. This observation supports the validity of the different testing instruments, and using the additional CEF level information provided by the Oxford online tests, some conclusions can be drawn about the proficiency indicated by the standardized test scores. Most of the sampled students are within about a 30% range of scores on all of the assessments, which is to be expected since the students are generally grouped into sections based on their CMU E-Pro scores. All the tests appear to be in agreement that the students' strongest tested skill is listening, followed by reading, grammar, and vocabulary; in that order. However, there is some discrepancy with regard to vocabulary scores between the various tests and considerable variation amongst several students relative to their other language component scores. The insights gained from the analysis of these data could be readily applied for focusing and differentiating instruction to the benefit of learners in improving performance.

Taking Action: A Data-Driven Action Plan (Module 6)

Having identified, collected, and analyzed data necessary to improve performance in previous modules; we were asked to begin completing the supplied "Take Action Template" by finding and declaring our organization's Vision and Mission statements. Taking care to align our intended actions with the organization's vision and mission, we were then expected to summarize our prior data analysis and determine what decisions need to be made to inform our future action.

Vision and Mission

Chiang Mai University's vision and mission statements are about a commitment to social responsibility and sustainable development, with a strong emphasis on the "Sufficiency

Economy Philosophy" of the late king. The English Department's mission (within the Faculty of Humanities) is a bit more specific (see Figure 3) regarding language instruction and instructional research. The vision is about self-knowledge, problem solving, and developing an integrated understanding. The topics and language skills described in both the stated goals on the course syllabus for Fundamental English 2, and the more specific and measurable (SMART) goals derived from the coursebook, Bloom's verbs, and CEFR descriptors (see Figure 3); are aligned with the department's mission statement in their shared emphasis on the ability of students to use linguistic knowledge in their personal, family, and work lives.

What Decisions Need to Be Made?

The pre-course diagnostic data that was collected from students using a Google Form survey, including various online diagnostic English proficiency test scores assessed from students with the help of an instructional Google Doc playlist; were analyzed using charts and graphs produced with Google Sheets (see Figure 3). The results of analysis pointed toward several key findings that were then used to inform the future actions described in Figure 3. These findings included:

- The usefulness of having baseline data for each student available at the start of the term.
- The glaring lack of comparable formative data gathered throughout the term with which to measure student progress.
- The large variance in apparent vocabulary size amongst students, and the relatively low Vocabulary scores on the detailed diagnostic tests when compared with the other language skills tested.

- The appropriate levels (B1 and B2) for students in reading and listening but again, considerably lower average attainment (in CEF levels) for Grammar and Vocabulary.
- Finally, while the majority of students tested fall into the B1 and B2 CEF level range, the spread of scores for each test reveals the large variance in skill levels across students.

These findings elucidated in Figure 3 along with the graphic evidence of the data visualizations were then applied to the development of possible future actions needed to address the identified issues through adjustments to instruction and processes. Specific interventions and strategies were explained in detail with links to necessary resources in Figure 3.

Clarifying Vision and Targets

Having analyzed the course objectives stated on the syllabus and found them lacking in specificity and measurability, a new "SMART" goal was developed using the topics and language skills described in the coursebook, some appropriate Bloom's verbs, and more detailed CEFR B1 level descriptors (see Figure 3). The derived SMART goal is well aligned with the department's mission statement, improving the ability of students to use linguistic knowledge in their personal, family, and work lives.

Take Action Template

Organization's Vision and Mission (Module 6)
DIRECTIONS: It is important to align all actions taken by a teacher with the organization's vision and mission. Add the organization's vision and mission here and identify it as the district's and/or school's.
Organization's (District or School) Vision: ***The Vision of Chiang Mai University (CMU):*** A world class University committed to social responsibility and creating sustainable development for excellence. ***The Philosophy of the English language field:***

The Department of English will provide teaching and learning for students and graduates to gain value, know themselves and society, be able to confront, think, analyze and solve problems; to become people who can connect knowledge from various fields of study to use in their personal, family, and work lives.

The aspiration of the English language field:

Aiming to produce graduates of science and arts with a desire to be able to lead and instill in others conscience and social consciousness.

Organization's (District or School) Mission:

The Mission of Chiang Mai University:

Our five-fold mission addresses the challenges our nation faces amidst a globalizing world. Our mission is to:

1. Provide higher education and professional level training, while combining academic excellence with high moral and ethical standards under the Sufficiency Economy Philosophy.
2. Conduct research in various fields to support standards of teaching, learning, and technology transfer for the social and economic development of the region and country.
3. Provide academic services to the national community in line with the Sufficiency Economy Philosophy, particularly for Northern Thailand.
4. Preserve and nurture our religious and cultural heritage, and sustainably develop the resources of the unique natural environment of Northern Thailand.
5. Develop the University's administration systems and management under the Sufficiency Economy Philosophy while maintaining a focus on Sustainable Development.

The Mission of the English Language Department (Faculty of Humanities, CMU)

1. Provide knowledge of English to students in media skills, literature, and linguistics.

2. Promote research to develop teaching and learning about English language subjects.

3. Provide English language knowledge to communities.

4. Implement the university policy in the maintenance of arts and culture.

Objectives of the English language field:

1. To produce graduates and master's degrees in the Department of English.

2. To provide basic education in English in general education courses to students of all faculties.

3. To provide English teaching services and training for the community.

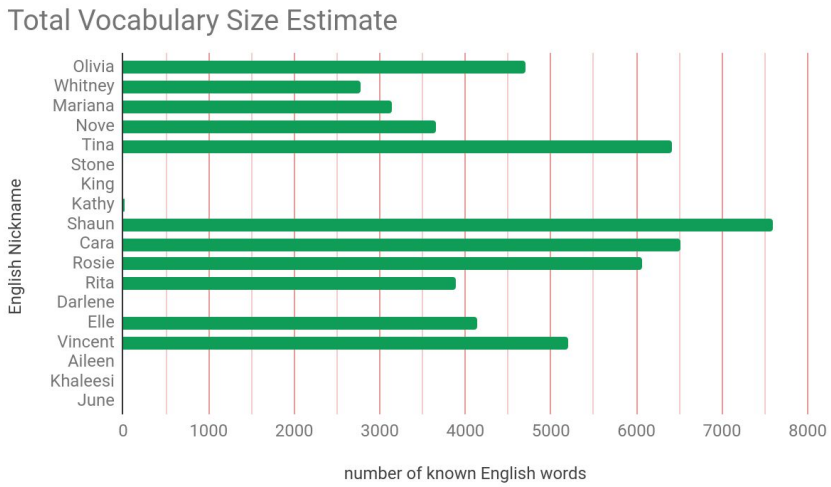
4. To be a source of education and research in languages, linguistics, and literature as well as being a source for the transmission and dissemination of local and national arts and culture.

What Decisions Need to Be Made?

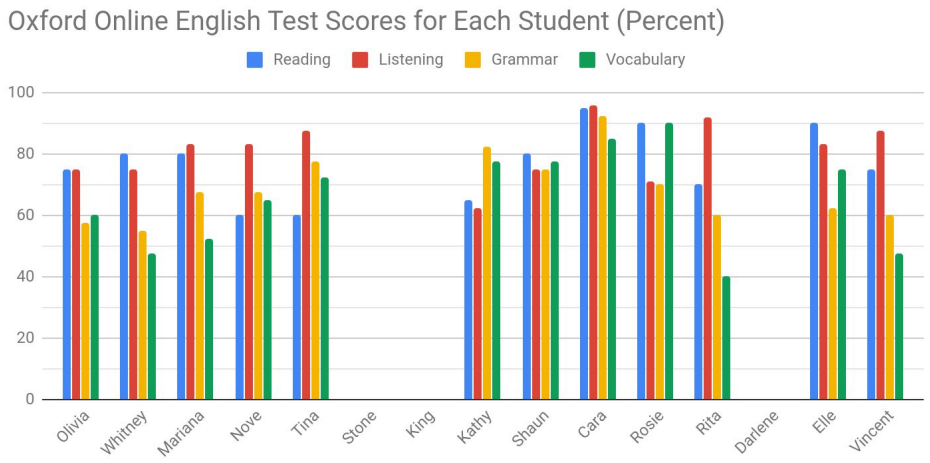
Stage 1: Clarifying Vision and Targets (Module 6)
DIRECTIONS: Based on an analysis of classroom, school, district, or state data, what decisions need to be made to inform future action?
Provide a **data analysis summary**, including **visual representation** here (e.g., chart, graph, table, etc.):

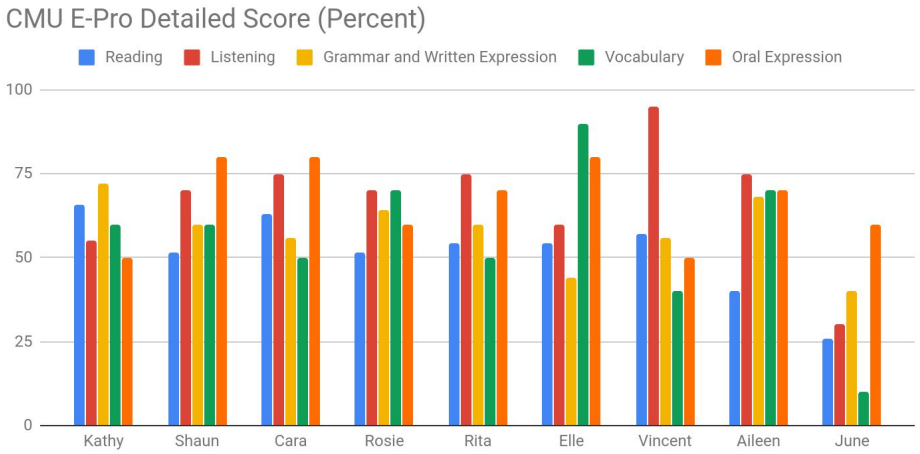
Analysis of the data collected via the internet based survey (Google Form) about any previously taken diagnostic pre-tests; including the O-NET (Ordinary National Educational Test), GAT (General Aptitude Test), and CMU E-Pro (English Proficiency Test); as well as a battery of online diagnostic English proficiency tests; including the "Oxford Online English Tests", the online grammar-based "English Placement Test", and "Vocabulary Size Estimate", indicated a few actionable insights. Among those insights are the utility in having baseline data for each student available at the start of the term, and the apparent dearth of comparable formative data throughout the term with which to measure student progress.

Additionally, the collected data seemed to suggest a few important trends regarding the students' English proficiency across the various skills. One clear trend is the large variance in apparent vocabulary size amongst students;

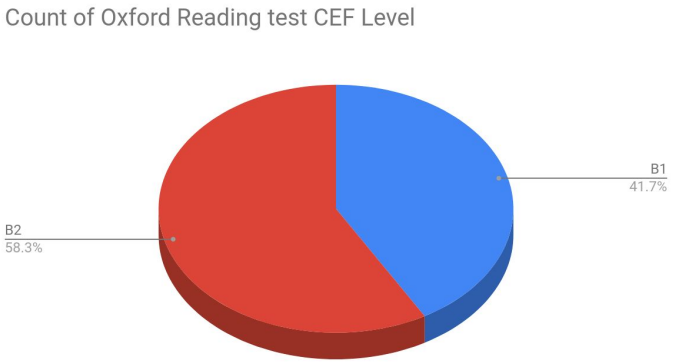


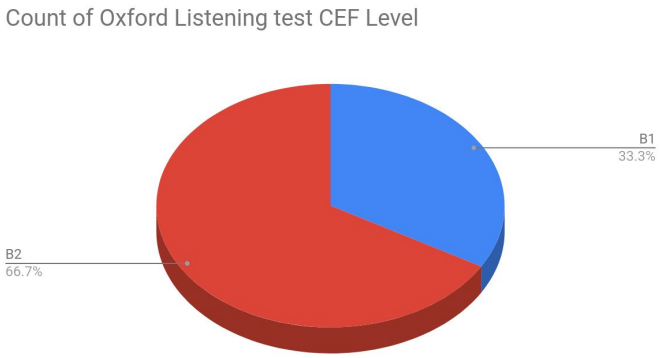
and the relatively low Vocabulary scores on two different detailed diagnostic tests (CMU E-Pro and Oxford Online English Test) when compared with the other language skills tested:

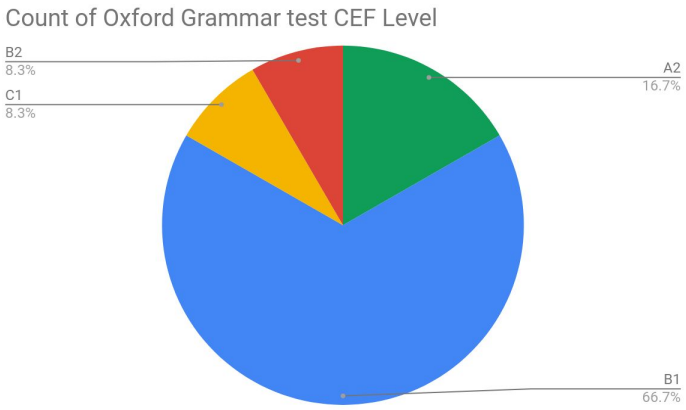


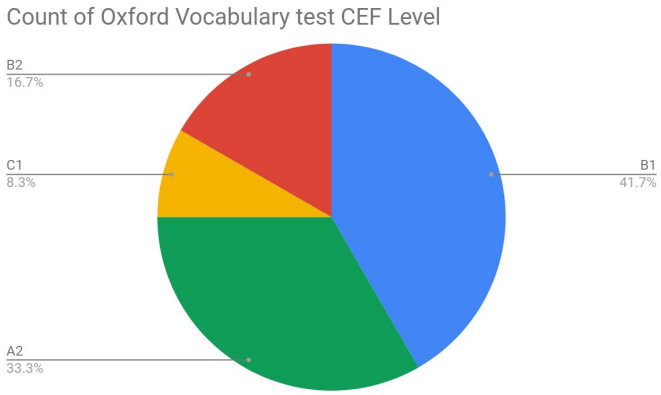


Although the Oxford Online tests show that all tested students fall into the CEFR (Common European Framework of Reference for Languages) B1 and B2 levels in the “input” skills of reading and listening; there is more variance in the CEF levels for Grammar and Vocabulary. Notably, there are several scores in the A2 range for both, signifying lower relative attainment in those skills.

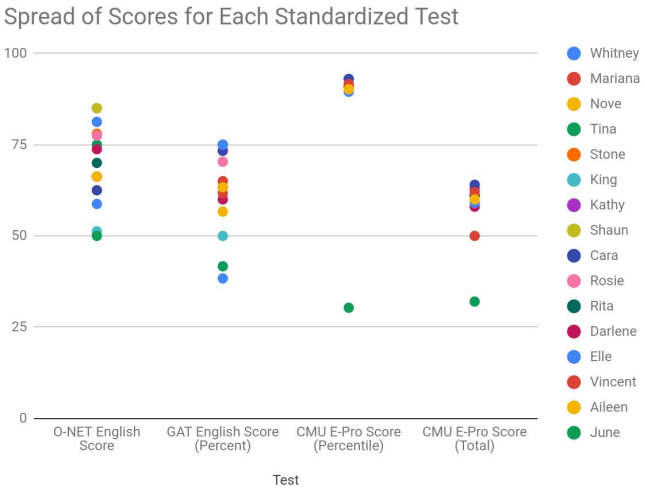


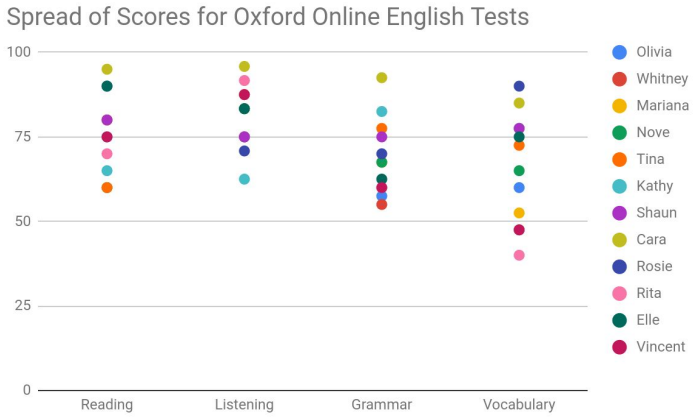






Finally, while the majority of students tested fall into the B1 and B2 CEF level range, the spread of scores for each test reveals the large variance in skill levels across students...





with each test demonstrating around a 30 point spread; and this among students within sections that have already been grouped based on common skill level according to their CMU E-Pro Percentile score, which shows a much smaller range of scores compared with the other tests.

Decisions that need to be made, based on the data above, to inform **future action** (things to be shared – handouts, resources, graph, materials, findings, etc.; amount of detail needed/method for sharing; what you want to accomplish):

Based on the data represented in visual form and summarized above, and the analysis thereof, baseline data should be established going forward for each student at the start of each term by utilizing the (Google Form) internet based survey of Standardized English Test Scores that was produced for the task, along with the Google Docs hyperlinked instructional 'playlist' to collect any extant standardized test scores, and to guide students in taking a battery of online diagnostic English proficiency tests and submitting those scores as well to be efficiently

tabulated and analyzed on a Google Sheets spreadsheet and later compared and graphed against periodic formative assessment and a course post-test using the same online diagnostic tests to show student progress.

This leads to the next action to be taken that is informed by the lack of comparable formative data to measure student progress and show growth patterns that can be used to make more detailed instructional decisions to improve student achievement. Online quizzes should be produced that are directly aligned to the objectives of each unit in the coursebook (possibly using the downloadable unit tests designed for the *Life Pre-Intermediate English* books) and which can be shared amongst all teachers to allow for formative student progress checking as well as comparisons between sections and teachers, weighted using the above pre-course diagnostic data. The results of such assessments can be shared in a cloud based document for analysis by all teachers and used to identify effective strategies employed by teachers with exceptional results.

The large variance in apparent vocabulary size amongst students and the relatively lower vocabulary scores on both detailed diagnostic tests seem to indicate a discrepancy in attainment of vocabulary skills compared with the other language skills tested. An efficient way to remedy any vocabulary deficiencies would be to implement a smartphone-based spaced-repetition flashcard app for reviewing vocabulary. Since the course in question is aligned to a CEFR B1 level and research indicates an average maximum lexical resource of 4000 words at the B1 level (Milton & Alexiou, 2009); an app-based flashcard deck like the following linked deck from *Memrise*, with the top 4000 highest frequency English vocabulary words could be issued to students for rapidly closing any lexical gaps.

Finally, the spread of scores for each test revealing the large variance in skill levels across students indicates that interventions will be required to revise for some students, extend the learning for others, and offer extra practice to those who need it. This can be accomplished efficiently by employing the wealth of extra resources made available by the course material publishers for this exact purpose. This material goes nearly, if not entirely unused by department staff, mostly due to a lack of knowledge of the available resources. Therefore, these links and guidance on how to use them must be shared amongst colleagues, as well as with students.

Specific Process, Program, or Performance Target of Action written as a SMART goal or insert rating scale:

The objectives for our Fundamental English 2 course syllabus are that “students are able to listen, speak, read and write more advanced English fluently and accurately in various social and cultural contexts, and apply listening, speaking, reading and writing strategies for effective communication.” Although it includes some useful verbs related to language skills, it’s an extremely general statement and therefore would be difficult to try and measure attainment. The entrance and exit requirements of the program are vague and often shifting, leading to further difficulty in measuring progress of students for whom instructors have no available baseline data.

The Life Pre-intermediate books from Cengage Publishing used for this course have been mapped to the Common European Framework of Reference (CEFR) and cover the majority of competencies for CEFR level B1, “threshold” level, whose primary descriptor is “students at this level can maintain conversations” (Sayer, n.d.). Adding to that descriptor the topics covered in the book including; stages in life, work, technology, language and learning, and travel and holidays (Hughes et al, 2012) provides a better description of the target competencies. The ability to maintain conversations about those topics is a measurable objective, but there are many other more specific descriptors associated with CEFR level B1 which could also be used for setting learning targets for this course.

Based on the coursebook content and CEFR B1 descriptors, a more appropriate and measurable (SMART) goal for the course could be:

"Students will be able to identify, select, and use vocabulary, grammar, and expressions at the CEFR B1 level for maintaining conversations and writing about stages in life, work, technology, language and learning, and travel and holidays by the end of the semester. They will also be able to recognize and summarize written and spoken English about the same topics through recorded conversations and written articles."

The topics and language skills described in the more specific and measurable goals derived from the coursebook, Bloom's verbs (Krathwohl, 2002), and CEFR descriptors are better aligned with the department's mission statement than the objectives stated on the course syllabus; owing to their increased specificity and maintained emphasis on the ability of students to use linguistic knowledge in their personal, family, and work lives.

Figure 3. The "Take Action Template" including Vision and Mission Statements of both the University and the English Department in the Faculty of Humanities at Chiang Mai University, Chiang Mai, Thailand. The table also includes visual representations and a summary of analyzed data collected via diagnostic tests and online survey; detailed future actions informed by the data analysis and better developed, mission aligned "SMART" goals for use in setting targets and measuring student achievement and program effectiveness.

Summary of Findings

By utilizing the time-efficient web-based data collection tools provided free from Google, diagnostic information about students' English proficiency was gathered and processed into graphs that were then analyzed to make decisions about future actions required for improving student achievement and supporting the department's vision and mission. Although the findings described in Figure 3 are clear and useful, more complete data and further insights could be obtained with a larger sample size of students by offering a greater incentive to respond to the survey.

The various beneficial future actions identified would all be reasonably easy to accomplish given the availability of online supporting resources, many of which are linked in the descriptions of the actions in Figure 3. The SMART goal created for the last part of the template is clearly superior to, and should probably be used in place of the stated goals on the course syllabus. Many of the necessary future actions described become much more obviated and imperative in light of the revised goal, which enables more relevant assessment design and

straightforward measurement of student progress. All of these components together better support the vision and mission of both the department and university in enabling students to become more self-sufficient, increase their problem solving skills and help them to use linguistic knowledge in their personal, family, and work lives.

A Data-Driven Action Plan Stage 2: Articulating Theory

Take Action Template (Part 2)

Consider the Audience (Modules 7 and 8)
DIRECTIONS: Identify the audience(s) that will benefit from the decisions identified above. Delete all that do not apply.
● Me, My Students, ~~and Their Parents~~ ● Immediate Colleagues ● Other Educators Working in the Same Context (District, State, Region) ● ~~The Education Profession~~ ● ~~Other (identify)~~
Review of What Others Have Found to Be Effective (Modules 7 and 8)
DIRECTIONS: Conduct a literature review of at least four research-based publications and interview at least one colleague to determine what others have found to be effective in addressing the target of action identified above.
Integrated Literature Review:
Based on the collected and analyzed data above, hypotheses about beneficial future actions were developed and the following related research questions were produced to guide the literature review: Research Questions: 1. What is the most efficient way to gather baseline English proficiency data on 1st year University students for required EFL courses? Is it useful to have such data, and how can it be used to differentiate and measure progress? 2. What is the most efficient way to gather periodic formative content proficiency data for 1st year University students in required EFL courses? How can that data be used to measure student progress, make instructional decisions to improve student achievement, and allow for comparisons between sections and teachers? 3. What is the most efficient way to remedy vocabulary deficiencies that may impede progress for some students in a standardized EFL course?

4. What is the most efficient way to differentiate for variously skilled students in a large University EFL course using existing revision and extension materials provided by the publishers of the coursebooks?

It is widely suggested practice to begin any instructional program with baseline data for students with regard to the course standards and objectives (Hamilton et al, 2009; Murphy, 2009) in order to assess progress throughout the course. Some free and efficient online tests are available and easily found through a simple web search (Klimova and Hubackova, 2013), some of which have been identified in the previous modules (see Figure 1) and used to collect student English proficiency data (see Figure 2). Standardized English proficiency tests have commonly been used for this purpose, however, Green and Weir (2004) point out that findings of their research indicated that the difficulty of test items is more affected "by item type than by any inherent linguistic difficulty of the element of grammatical competence being tested."(p.1) The authors interpret this to mean that these types of tests may not provide information which is useful for planning instruction. With that in mind, and considering the narrow scope of the EFL courses in question, it may be more useful to test students with a pretest created by combining all of the formative quizzes (or equivalent test items) to be used throughout the course, which are directly aligned with the course content and objectives.

Regular formative assessment is considered essential for tracking student progress and enabling teachers to modify instruction to best suit the needs of students (Leahy et al., 2005). In addition, one of the major themes in the results of the colleague survey below was the need for more support for regular formative testing in the Fundamental English Program at CMU. Murphy (2009) recommends basing formative assessments on the language objectives for the course, which the author notes are, ideally, to be tailored to each student depending on their diagnostic assessment results. Taylor and Doehler (2014) suggest using online surveys like Google Forms to efficiently collect formative data in order to diminish wasted class time and increase student engagement. Eyal (2012) argues that teachers' roles as evaluators is changing and what Eyal calls "digital assessment literacy" is becoming much more important in the modern technology rich environment. The author explains that by using a Learning Management System (LMS), the teacher can streamline assessment activities and better prioritize time spent with students. Eyal also promotes the use of these digital assessment tools in enabling students to self-regulate and self-reflect. Specifically in the context of higher education, Gikandi et al (2011) forward that "effective online formative assessment can foster a learner and assessment centered focus through formative feedback and enhanced learner engagement with valuable learning experiences."(p.1). BäLter et al (2013) even demonstrated that short web-quizzes with very basic automated feedback (correct/incorrect), could have positive effects on students with respect to changing their study habits and self-efficacy.

Fazeli (2012) discusses the importance of vocabulary acquisition in L2 language learning in reference to decades of literature which hold the lexicon as the single most important component of language. The author explains that the teaching of vocabulary has gained even more emphasis in the recent literature as a crucial factor in students' ability to use the language. According to Min (2013), not only is vocabulary the essential component in language usage, it has also been shown that 'implicit' vocabulary learning (e.g. picking up new words from reading or listening) is inefficient and doesn't always result in usable lexical additions, rather, vocabulary must be learned explicitly using various learning strategies which are then outlined in the work. In a randomized controlled trial, Wu (2014) found that students using smartphones and a flashcard-like application learned vocabulary words significantly more efficiently than the non-smartphone users. The author also alludes to the proven effectiveness of multimodal vocab learning, or learning through various means and with various inputs; such as text, image, sound, translation, etc.. A study by Farías et al (2014) confirms the benefits of multimodal vocab input, and concludes that vocabulary items presented via text, narration, and still images were the best learned; furthermore, action terms were better portrayed using video than a still image. All of these kinds of media are able to be added to any of the modern flashcard

smartphone apps identified in Figure 1. Moreover, the act of students personally adding the vocabulary items and multimedia definitions to their own flashcard decks would be comparable to keeping a vocabulary journal, which has been identified as an effective strategy by Min (2013). The vocabulary can then be reviewed at regular intervals, as the author suggests, to promote retention. It was also shown that while being especially useful in vocabulary learning, smartphones and language learning apps can help increase motivation in language learners (Klímová, 2018).

Finally, While teaching EFL to nearly 40 students in a class is not ideal, differentiating for variously skilled students may be possible using existing revision and extension materials provided online by the publishers of the coursebooks. According to Russell et al (2016), "online learning materials and frequent formative assessments using online quizzes" helped to raise student perceptions of the validity of the course, and significantly improve their preparation and engagement. By making the materials for extension and review available to students in an LMS, and facilitating their access through the use of online quizzes with automated responses linking to the appropriate intervention; learning can be effectively personalized for the large number of students, and achievement results can be improved as shown possible in the authors' study.

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Colleague Interview Results (bulleted list of relevant information to inform your work):

A Google Forms questionnaire was used to survey teachers in the Fundamental English Program at CMU. Nine questions were asked which were related to the issues identified in the data analysis and the possible corrective future actions described above. Multiple choice checklist type questions were used to help guide teachers to the proper terminology for their preferred strategies and experiences, as well as allow for easier comparability of data than would be had with only composed response type questions. A composed response "other" option was included with each bank of answer choices to enable respondents to enter their own answer if none of the given options fit. The final question was a composed response offering an opportunity for respondents to explain, in their own words, the most important changes that they would like to see in the program.

Four teachers responded to the anonymous survey, offering insights to their teaching strategies and common obstacles or deficiencies. The responses organized by question below seem to show a trend of a general lack of a formal process for establishing baseline data for students at the start of the course, as illustrated by the common response that student proficiency is assessed through observation and interaction. Even though one teacher apparently has access to the E-Pro placement test scores, those scores do not give detailed information related to the course content and objectives. Likewise, a formal and regular strategy for collecting formative data seems to be missing, with only one respondent claiming to use quizzes that they have produced to assess student understanding; all other respondents use only the coursebook along with student interaction and observation for this purpose.

According to the survey respondents, vocabulary practice is also mostly accomplished via the supplied course book and exercises within, either in-class or as the students' responsibility. Only one out of the four respondents uses games that they have created for practicing vocabulary. Again, when it comes to differentiation, the preferred strategy relies heavily on using in-class personal attention, mixed level grouping, and the coursebook to offer extra support to struggling students; with only one teacher directing advanced students to more in-depth content for extension.

Most respondents express a desire for extra support from course coordinators or other teachers with formative assessment and differentiation; half would like help with collecting pre-course diagnostic data on students; and one teacher is interested in strategies or materials for vocabulary practice with students. When asked about the appropriateness of the course material level, there seems to be general agreement that it is correct for most (but not all) students, though some students struggle with it while others need more of a challenge.

Only one teacher feels that they are given enough time to effectively teach and sufficiently practice all of the required course content, while three think that there is not enough time on the schedule. On average, the

respondents feel that more than half of their students (but not 'nearly all') achieve understanding and ability to use the learned content.

The surveyed teachers seem to be in agreement about the most important possible beneficial changes to the program. The general theme of the composed response answers are that course content should be reduced due to time constraints and to allow for better differentiation; and formative assessment opportunities and support should be increased.

Summary of findings:

Teachers need formal strategies, materials, and support for:

- Establishing baseline diagnostic data for students.
- Robust and periodic formative assessment of students' progress.
- Effectively practicing vocabulary with students.
- Differentiating learning for struggling and advanced students.

In addition to the above requirements, teachers would like more time or less content in order to more effectively teach and practice the language objectives with their students.

Responses by Question:

How do you assess your students' pre-course English proficiency level?

- I assess their level informally through observation and interaction (X4)
- I review their CMU E-Pro scores.
- As part of a pre-course feedback activity
- I ask them about their previous English experience and have them share their comfort levels for each of the four main skills: Reading, Writing, Speaking, and Listening.

How do you formatively assess your students' understanding of the course content? (Check for understanding throughout the course)

- I use the students' interaction with the course material (books and software) to assess their understanding. (e.g. checking in-class exercises/homework, using the book software on the computer/projector to elicit answers, etc.) (X4)
- I use quizzes that I have created to assess their understanding. (e.g. written, online - Google Form, Kahoot, etc.)
- I use the Unit Reviews in the book to assess their understanding.
- I assess their understanding through questioning a random sample.

How do you practice vocabulary with your students? How do you differentiate learning for your students? (i.e. support struggling students and challenge advanced students)

- I help my students use the exercises in the book for vocabulary practice. (X3)
- I use games that I have created with my students in class for vocabulary practice.
- I rely on the students to practice vocabulary on their own.

How do you differentiate learning for your students? (i.e. support struggling students and challenge advanced students)

- I direct struggling students to extra practice and review in the coursebook. (X3)

- I offer extra resources (e.g. printed worksheets, websites, videos, downloadable worksheets, etc.), in addition to the course materials, to support struggling students.
- I give extra personal attention to support struggling students (X2)
- I group students of mixed ability levels so that the advanced students can support the struggling ones. (X2)
- I direct advanced students to more in-depth content in the coursebook.

Which of the above components would you like more support with? (from coordinators and/or other teachers)

- Formative assessment (checking student understanding in-class, with quizzes, homework, online quizzes, authentic language use, etc.). (X3)
- Pre-Course Student English ability diagnostic testing or information about existing test scores. (X2)
- Differentiating lessons (extra support for struggling students and extension for advanced students) (X3)
- Vocabulary practice with students (Coursebook, flashcards, games, CRS, etc.)

Do you feel that the course material (pre-intermediate or CEFR B1 level) is appropriate for your students?

- I have some students who struggle with the material. (X3)
- I have some students who need more challenging material. (X2)
- It is appropriate for most of my students. (X2)

Do you feel that there is enough time allotted in the schedule to effectively teach and sufficiently practice all of the required course content?

- Yes
- No (X2)
- Yes and No. It depends on the proficiency level of my students. I would definitely appreciate having more time (or less content) to teach lower proficiency level students.

At the end of an average course, how many of your students achieve understanding and ability to use the learned content?

- More than half. (X2)
- Nearly all.
- About half.

If you could change anything about the course design, what would it be? (e.g. content, materials, level, amount of content, exams, in-class assessments, grading, etc.) please limit your response to 1-3 most important items, and explain:

- "1. In-class writing should be added in 101. 2. Assessment should be mainly based on language application of the students. 3. Teachers should be encouraged to pay more attention to their students. "
- The course material, the amount of content (for more in-depth study), and more frequent in-class formative assessments.
- "Eliminate one of the units so we can do 2 before and 2 after the midterm so there's plenty of time to cover them and potentially go beyond the textbook. Space out assessments better/have quizzes for each of the units to better test students' understanding- as it stands students have no grades (besides attendance, which is always fluctuating) until the midterm, and if you don't (have time to) do any other type of assessment before then you've mismanaged half the semester already and let down your students."
- Amount of time is the biggest challenge I face. There is no time in the schedule to dig deeper or use supplementary materials helping students gain a greater understanding of the content. I must rapidly fly through the material to keep them on schedule for the exams. This is challenging because many of the students begin at different proficiency levels.

What approach do I believe has the greatest potential for helping me to realize my target goal?

Stage 2: Articulating Theory (Modules 7 and 8)

DIRECTIONS: In order to improve performance, a teacher needs to identify and attend to every independent variable related to the identified target. In this stage you will graphically display the emerging theory of independent variables.

Add Graphic Reconstruction Here:

Problems:	Actions:	Target:
Lack of baseline data for students.	test students with the copyable unit tests from the teacher's book make a pretest by combining all of the formative quizzes (or equivalent test items) that are to be used throughout the course, which are directly aligned with the course content and objectives. gain access to and utilize the test items for the coursebook that are made available to coordinating staff through the publisher's website.	"Students will be able to identify, select, and use vocabulary, grammar, and expressions at the CEFR B1 level for maintaining conversations and writing about stages in life, work, technology, language and learning, and travel and holidays by the end of the semester. They will also be able to recognize and summarize written and spoken English about the same topics through recorded conversations and written articles."
Lack of formal strategies, materials, and support for periodic and robust formative assessment of student progress.	use the extra resources from the book publisher to create online quizzes using Google Forms or a similar application. divide the work amongst teachers and share the quizzes and quiz items with each other. make a quiz item bank on a shared online document for each course and unit that all teachers can access and use to make new quizzes.	
Weaknesses in student vocabularies and a lack of formal strategies, materials, and support for effectively practicing vocabulary with students.	use a premade "frequency word list" flashcard smartphone app to help students rapidly improve their vocabulary (top 2, 3, or 4 thousand words) crowdsource (from students or teachers) the production of a custom flashcard deck (for a smartphone app) made with only vocab words from the curriculum. guide students in using their smartphones equipped with a	

	flashcard app to compile their own deck from the vocab learned in class and found in the supplemental course materials. collaborate with teachers on other shared online resources like Kahoot or Quizlet questions that can be used as full class vocab review.	
Variously skilled students and a lack of formal strategies, materials, and support for differentiating learning for struggling and advanced students.	collaborate with other teachers to curate and disseminate supplementary resources for the course content provided by the publisher. connect formative online quizzes (Google Forms) through an LMS (Google Classrooms) to automate feedback for students with appropriate review or extension materials.	

Figure 4. Stage two of the "Take Action Template", including audience information, a literature review, results of a colleague interview, and a graphic reconstruction of independent variables regarding identified future action and targets from stage one of the template (see Figure 3) for the Fundamental English Program in the Faculty of Humanities at Chiang Mai University, Chiang Mai, Thailand.

Reflection

Using data to make informed decisions about program targets, processes, and materials is the only sure way to provide for universal student success (Sagor & Williams, 2017). The authors explained that achievement is due to the theory of action being applied, therefore, if improved results are desired, the methods will have to change; and making effective change efficiently will require data and analysis. Data can be collected and analyzed systematically to identify strengths or weaknesses in a program. After which, hypotheses can be generated regarding what interventions are applicable to shore up any deficiencies, or take better advantage of strong points. Any program decisions should be well aligned with the organization's vision and mission in order to support the broader goals of the community (Nagy & Fawcett, 2013).

Once possible future actions are defined, the relevant literature should be reviewed to verify efficacy and determine appropriate evidence-based strategies to enact the actions, as well as other possible actions that could be taken. Peer-reviewed research should be prioritized as it tends to be more reliable than other sources (ECS & McRel, 2004)

With time constraints always at the forefront of educators' work, strategies and tools for collecting, analyzing, and using data in a time-efficient way will be an important concern if data is to be regularly employed in improving outcomes (Sagor & Williams, 2017, p. 66). To make efficient use of time, instructors will also need to be capable and proficient with basic data literacy skills (Means et al, 2011, p. 31). Appropriately applied technology can help to make the data-cycle dramatically more efficient, regular, and robust. For example, online resources like Google Forms to collect data directly from students and colleagues, Google Sheets spreadsheet program to tabulate, manipulate, and graph data, Google Docs and Drive to share results or instruments with colleagues and stakeholders, and Google Classroom LMS to organize assessments for students and automate data collection as well as feedback. While Google provides a whole ecosystem with which to collect, analyze, and apply data; there are countless other apps and platforms online to support data-informed instruction. Essentially all of the modern digital teaching tools were made with the same idea in mind; to streamline the process of using data and ultimately save time for teachers so they can focus on building relationships with students and giving ample support

Colleagues can be an important resource in efficiently using data as duties can be shared amongst the group. For example, surveys and quizzes for data collection can be shared and even crowdsourced with a bit of coordination, drastically reducing the burden on any individual

teacher. Students can and should be instructed in how to collect, analyze, and track their own data as well (Doing What Works, n.d.), another huge time-saver for teachers with many added benefits in improving students' self-regulation and reflection abilities.

In addition to duty sharing, colleagues can be an invaluable resource when it comes to determining effective strategies for improving student outcomes, after all, they're working on the same goal. Once their input is collected, it can be combined with the hypotheses generated earlier in the data cycle, and the evidence-based information from the literature review, to produce a theory of action. The theory of action, including all independent variables should then be charted in order to visually portray the identified process (Sagor & Williams, 2017). This component of planning can help give guidance for colleagues or anyone else who may be faced with the same situation, and it can also help to clarify the program for all stakeholders.

Finally, the cycle of data should continue as the research-based actions are put into play, data should be collected on the outcomes of the new program characteristics and analyzed and compared with previous results to determine effectiveness. From this point, other decisions can be made to constantly improve achievement outcomes and support universal student success.

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