



Assessment for Rapid Pedagogical Improvement (ARPI) Showcase



Abraham Jimenez

Texas Southmost College
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Context

Abraham Jimenez is a professor in the Mathematic Department at Texas Southmost College. The college is a public comprehensive 2-year college in Texas, enrolling more than 8,000 students. Mr. Jimenez teaches Math General Education courses to predominantly Hispanic students. These courses are designed to establish a foundation for the General Education pathway into an associate degree.

In the Elementary Statistics course, Mr. Jimenez stated that the most important opportunity for students was to learn interpretation and representation of data. The students learn hypothesis testing, confidence intervals and understanding how these attributes of the course work together. The major takeaway from the course is interpretation and representation of data.

Assessment Strategies for Rapid Improvement

Mr. Jimenez implements frequent and regular formal assessments throughout this course. Some of formative assessment activities used are think-pair-share, jigsaw method, and exit tickets. The think-pair-share or the jigsaw methods allow Mr. Jimenez to see how much students were able to explain and understand the material through working in groups. In these formative assessment processes, Mr. Jimenez places students in groups and students are assigned the roles of “explainer, writer, or presenter.” Students must work on a separate portion of the problem and then share it with each other. This allows Mr. Jimenez the opportunity to observe the students’ comprehension of the problem and the process in completing the formative assessment.

For the exit tickets, students must answer one or two questions in a very short amount of time. For example, Mr. Jimenez asked students to tell him one topic from the day that they understood or were challenged by. Mr. Jimenez uses these formative assessment methods to guide the development of the discourse by students and carefully select instructional materials and content and structure the classroom activities for students’ successful achievement on the various exams. During the course semester, Mr. Jimenez adjusted the iterative revision processes by making changes to the content of the formative assessments which aligned with a particular learning objective and a specific content area in the course.

By designing quality assessment tools, Mr. Jimenez stated that this helped him to redefine and refine his lectures and teaching methods which provided him with the course structure in real time. Mr. Jimenez advised that this helped him with his pedagogical practices, *“This opened my eyes to what it meant to conduct short reteaching.”*

These quick overviews of Mr. Jimenez’s teaching methods allowed him to allot approximately fifteen (15) minutes of reteaching time in each course section and to facilitate students working through additional practice problems. The practice problems were also formative assessment used to enhance teaching and learning.

Mr. Jimenez used CANVAS as the learning management system and embedded rubrics for each assignment. In the CANVAS Learning Management system, for each discussion question, exam question or project that he creates, he indicates its alignment with a particular course learning objective and the

evaluation criterion. This CANVAS formatting allows Mr. Jimenez the ability to conduct formative assessments of student learning and provide additional teaching methodology as needed to assist the student with comprehensive development of the course material. Mr. Jimenez leveraged technology to efficiently administer formative and summative assessment, receiving immediate results, and using results to guide rapid pedagogical changes through the display of CANVAS's Learning Master Grade Book. The results visually display the achievement results of each learning objective, exam question, and each student.

Pedagogical Interventions

Mr. Jimenez examines whether there was an issue with the quality of the discussion and exam questions or project. He conducts item analysis and uses indices such as item difficulty and item discrimination to understand how an exam question behaves, then uses that information to improve the exam questions. These pedagogical reviews allow Mr. Jimenez to make rapid improvement changes within the course semester to effectively manage these teaching skills and improve the learning capacity of his students. Although all students do not make the necessary adjustments to pass the courses, many students reach out to him for assistance with course work. This builds the teacher-student relationship and enhances the rapid improvement of pedagogy. Mr. Jimenez has observed the positive impact of his assessment effort.

Mr. Jimenez teaches his course face-to-face and hybrid with online lectures. The improvement that he made in teaching and assessment can be categorized into two types: rapid and sustained changes.

The **rapid changes** happen in response to the formative assessment methods during the class time which revealed a particular area of learning gap or confusion. Mr. Jimenez provides intricate teacher responses to students that assist students with correcting their thought process in understanding the course materials.

The **sustained changes** happen when the course is completed and Mr. Jimenez would go back and review questions to better align with the discussion and exam questions. He would take additional time to systematically analyze the exam question results, understand better where students struggle, and identify the parts of the lecture and teaching materials can be improved, incorporate additional readings or resources into the syllabi or course materials for the next semester, sustaining the improvement made in the current semester to the next semester.

Examples that Mr. Jimenez provided for the sustained changes include:

- Scaffolding learning through multiple short assignments throughout the semester so that he can give students prompt feedback.
- Using the formative assessment and group activities for rapid improvement of pedagogy. For example, using fifteen (15) minutes of the classroom time to reteach materials that the students struggled with.
- During the formative assessment activities, solicit feedback from students on the assessment methods and the outcomes of their completion of these assessments.
- Self-reflection of teaching methodology to improve his teaching skills in preparation for the next semester.

Mr. Jimenez observed markable improvement in student learning through a heavy reliance on the rubric which includes a five-point Likert Scale. The assessment points are 4=Exemplary, 3=Proficient, 2=Developing, 1=Beginning and 0=Not Evident. Mr. Jimenez advised that in the initial review of the students' progress using the rubric, less than 20% were receiving a "3" or higher rubric score. He advised that this meant they were far from their success rate goal of 70% performing at a "3" or higher on the rubric, which was their target goal. In the first year of using this assessment rubric, Mr. Jimenez advised that the mathematics division conducted some strong review of the data and his co-instructor and him worked on designing future formative assessments. This change made a significant impact on students' assessment scores moving forward.

Mr. Jimenez advised that they moved from summative assessment to formal assessment by comparing the scores from 2015 to the assessment scores in 2018. The Spring data reviewed as a pilot study revealed a 15% to 20% improvement in a single course. After additional reviews and redesigning of formal assessments, approximately 40% of the students using the feedback improved their formative assessment scores.

Equity Considerations

Mr. Jimenez advised that his student population was 99.5% Hispanic. As a result of this heavily Hispanic student population, his formative and summative assessment practices were implemented within a culture context. Mr. Jimenez stated, "*Because we are significantly underrepresented as a culture in the medicine field, I used statistical activities to support this career field learning.*" This benefits students with learning challenges as non-native speakers of English. For instance, a 2016 article from the Center for Disease Control (CDC) states that 72% of Hispanic males and 78% women suffer from diabetes.

Mr. Jimenez advised that the students are not aware of these staggering percentages of individuals diagnosed with some type of diabetes in the Hispanic community. This realistic information allows him to discuss the realities that Hispanic do not seek medical attention or health care needs and that most individuals work until they die. Mr. Jimenez advised "*It is literally patch me up, keep going on PETRONAS*" and this was a plus in the Hispanic culture. Furthermore, he advised that Hispanics do not retire unless they have a health problem that doesn't allow them to work.

Mr. Jimenez encourages critical thinking by using these real-life scenarios instead of straight definition style questions. To prepare students for the application-based questions, Mr. Jimenez uses formal and summative assessment strategies to showcase the students' work in Elementary Statistics. He provided the students with what he calls a "sanctuary assignment" in the fourth and twelfth week of the sixteen-week semester to give students a chance for instructor feedback on what they were processing to complete this final assignment. From the fourth week until the end of semester, three questions were provided each couple of weeks until the project was due. During the weeks that students were turning portion of the assignment in, Mr. Jimenez would give them direct assessment feedback. This again provided formative assessment information that allowed students to reflect on their learning and completion of the assignment. Mr. Jimenez deemed this formative assessment process as an equity-centered method that allowed him to focus on students from diverse backgrounds, although most students were Hispanic. This was based on the variety of cultures in Mexico to be more inclusive.

Mr. Jimenez uses student demographics and assessment data analysis to understand where students are succeeding or are struggling and for which groups of students. Particularly, he paid attention to the first-generation students. He used his findings to help these groups of students that benefit all students. During the formative assessment process, Mr. Jimenez advises that some students who were Spanish speaking individuals were afraid to engage in the video portion of their project and those that were native writers have difficulty writing in English would conduct the video portion.

This was a problem because statistics requires a strong level of writing skills to be successful in the course as it lends on a lot of written explanations that must take place to answer the statistical problems and complete the project. Mr. Jimenez stated that the mathematics department decided to provide the students with a written option attached to the power point presentation as a remedy for the concerns of providing a video.

Personal and Institutional Factors to Effect Change

At the personal level, Mr. Jimenez exhibits a strong drive to be the best math teacher that he can for his students. He provides continuous improvement of his teaching and systematically tracks the effectiveness of the rapid improvement in pedagogy that he implemented. He is open to additional training and works with his department chair and faculty to design the most effective assessment practices for his students. One of the biggest changes for rapid improvement in pedagogy was reviewing assessment data without scores and redefining how to provide appropriate details on this challenge.

Mr. Jimenez stated that it was important to him to determine what needed to change in his teaching methods to improve student completion of the formative and summative assessments. He examined the student learning objective data and found new ways to present the formative assessments to the students to maximize their learning, understanding, and completion of the work. When Mr. Jimenez's data assessment percentage increased to 80% response rate, Mr. Jimenez was convinced that the pedagogy provided was a strategic improvement on learning for the students based on the increase in response and scores. He uses multiple data sources and has learned to use tools like Excel to track the data from one formative assessment tool to another and one semester to the next. He has learned and practiced conducting item analysis and using data to guide his teaching improvement.

Mr. Jimenez also provided real-time informative assessment information to his students and facilitated higher responses to the work. His teaching approach allowed students to feel comfortable with asking questions about the work as needed and he was able to accommodate what the students asked of him as the instructor. Mr. Jimenez advised that his teaching philosophy leaned towards the philosophy of Miyamoto Musashi who is a Japanese Samurai and considered to be one of the greatest Samurais to have ever lived. Musashi's ideology of teaching was basically *"you never stop learning and you can learn from every student you've ever had as long as you're willing to pay attention."* Mr. Jimenez advised that this was sort of his baseline teaching philosophy which was to never stop learning. In addition, Mr. Jimenez stated *"any student you take on can teach you something about yourself and teach you about what you know and what you don't know about a certain topic."*

Mr. Jimenez advised that he uses this teaching philosophy to motivate his assessment practices and inform changes in his teaching practices. As a trained mathematician, one of the challenges Mr. Jimenez mentioned is the pedagogical process of teaching and learning because he is teaching adults. Therefore, to address this challenge, Mr. Jimenez dedicated himself to researching best practices in mathematics to really dig into the understanding of how to effectively teach mathematics and how to get his students to understand mathematics in the space of fear of math.

Mr. Jimenez also has a teaching background in developmental education and co-requisites delivery in education. This became more apparent when reviewing what was needed for grant applications and performance. Mr. Jimenez began to look at high impact strategies to enhance his formative assessment delivery of think-pair-share and exit tickets. For Mr. Jimenez, this was both a personal and professional decision to enhance his teaching skills and impact student learning. Mr. Jimenez realized that the high impact strategies allowed students to be fully engaged during class time and the students were able to engage in deeper learning on the spot.

As for institutional processes, Mr. Jimenez advised that Texas Southmost College provides funding for professional development, travelling, and association memberships. Mr. Jimenez is a member of the National Association of Student Success, National Organization of Student Access, and Texas Association of Developmental Education. He also stated that specific grants like the Accelerator grant provide funding for the co-requisite courses which are important for success in core courses.

Mr. Jimenez stated that at the institutional level there were no challenges, however, the creation of rubrics and inputting them into CANVAS learning management system was difficult. The idea of creating “Signature Assignments” in such a short period of time was also difficult. Distribution to faculty without their buy-in or input was a concern and the institutional leadership did not understand these challenging dynamics. Finally, the closing of the assessment cycle, collecting the data, and building new formative assessments in a short period of time was the most difficult challenge.

Takeaways

- Clear alignment between assessment, learning objectives, and teaching content make rapid and sustained changes logical and streamlined.
- The correct use of assessment will greatly impact your teaching methodology.
- The formative assessment process leads to questioning your current teaching and learning methodology.
- Assessment is there to help, not hurt, the learning process. It provides meaningful changes in the classroom.