
Score! Using Competitive Assessment Approaches to Chart Growth in Critical Thinking and Information Literacy with Incoming First-Year Student Athletes

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Abstract

The aim of this pilot study was to improve first-year student athletes' knowledge and skills relative to critical inquiry and information literacy. NCAA Division I scholarship students were randomly selected to participate in an independent section of a two-unit, semester-long life skills course required of freshman athletes. A planned curriculum and strategically designed summative and formative assessments formed the foundation of a class that was to serve as an information literacy program evaluation for this unique population. Measuring degrees of progress happened by use of various assessment practices of each individual class session and with a pre- and posttest using the SAILS individual survey.¹The SAILS survey results found a significant improvement of the experimental group's information literacy skills. However, the most significant assessment was found during the review of each class session. Information gained allowed for adjustments in future classes and reinforcement of concepts and tools that had not been fully captured by the students.

The pilot study provided valuable outcomes to adjust the course curriculum to be more effective in providing the information and training to significantly improve first-year student athletes to be more comfortable and effective in critical inquiry and have the knowledge and skills to seek information to answer questions. Ultimately, it is hoped a formal study will determine if the course objectives impact the student athletes' academic performance.

Introduction

Studies have identified several factors interfering with an NCAA Division I student athlete's full investment in the academic process. These include

mental and physical fatigue, time management, missed class time, and the number of hours required to participate in the sport. This study is focused on ways to improve NCAA Division I student athlete academic success. One element explored is the value associated with better critical thinking and information literacy skills, including the services of professional librarians.

This pilot study was conducted during the fall 2015 semester at Pepperdine University, a premier non-football NCAA Division I member institution. During their first semester, all new student athletes are required to enroll in a two-unit life skills course, which is graded credit/no-credit. Of the 93 first-year student athletes, 21 scholarship athletes were randomly selected to participate in the study. Limiting the experimental group to scholarship athletes is based on the assumption that they selected Pepperdine University primarily to participate in their sport, and was not based on academic priorities.

A librarian and a tenured member of the faculty partnered to co-teach the experimental section of the life skills course with an emphasis on development of critical inquiry and information seeking skills. The study explored the effect embedded information literacy instruction has upon a first-semester student athlete's grades, information seeking skills, and perceptions about research.

Literature Review

McBride and Reed argue that critical inquiry is a skill needing to be explicitly taught to student athletes.² Most research in this area focuses upon providing outreach services to specific teams within the athletics departments on campus to help this

population with their information literacy and critical thinking skills. Librarians Robinson and Mack at Penn State have published on techniques they used with the football team and have argued that sports teams are easily identifiable, often underserved by libraries, and are “a ready-made learning community.”³ These librarians were able to reach an entire sports team in a targeted information literacy pilot program in 2002, though their emphasis was in distance outreach via e-mail and instant messaging services.⁴ Jesudason similarly detailed distance help provided to student athletes through e-mail.⁵ Additionally, librarians at the University of Iowa provided the history and context for their targeted program of incoming student athletes.⁶ Though limited in scope of evaluation, librarians at Valdosta State University highlight, among a number of outreach approaches for athletes, their work to improve library skills within the CHAMPS class.⁷ Petrucelli’s recently published dissertation concerning students athletes’ perceptions of learning⁸ and Jolly’s findings of challenges that student athletes confront⁹ will be useful as points in comparison upon reviewing the findings of this study.

Study Design

Formative Assessments

Nearly every class session contained at least one active learning activity with an assessable component in order to check for learning and inform the design of future lessons. With emphasis on building students’ research inquiry and information literacy skills, these activities centered on locating, analyzing, synthesizing, and presenting information. The corresponding assessment artifacts included: traditional written responses such as worksheets and one-minute reflection papers, poll tallies for anonymous and immediate discussion, completed team cards from the library scavenger hunt, quiz scores from Kansas State University’s New Literacies Alliance online modules,¹⁰ and longer (in-depth) independent class assignments.

While a sequence for the lessons had been designed prior to the start of the semester, the researchers were flexible to adjust the process as a response to feedback from the completed classes. The results from activities appearing earlier in the semester helped to determine which concepts should be re-emphasized and what types of activities would be more successful in maintaining students’ focus. Examining student performance on the individual

and group writing assignments during the latter half of the semester provided a means for evaluating the cumulative effects of the classes during the semester and measuring progress in critical thinking and information literacy skills. Conscious efforts at collecting assessment data and reflecting on the weekly lessons helped the study leaders when drafting a document with recommended changes to improve the class for future students.

Summative Assessments

Summative assessments focused on measuring changes in the students’ information literacy skills and their perceptions of research over time. By pre- and posttesting, the researchers were able to gather data on the impact of the semester of information-literacy-focused course work. This testing emphasized a student’s level of confidence in finding information and the use of outside information sources. In addition, the Standardized Assessment of Information Literacy (SAILS) testing instrument assessed information literacy skills.¹¹

Results

Overall Measure of Progress in Assessing Information Literacy Skills

The SAILS test administered in the opening week of the semester indicates the first-year student athletes in the study scored at the same level of information literacy proficiency as the benchmark data of traditional first-year students entering doctoral institutions in the United States (which includes non-athletes).

At the completion of the course, the study participants correctly answered 57% of the survey questions on the posttest. The average benchmark of correct answers for first-year students at doctoral institutions on this version of the survey is 42.8% (and 45.7% regardless of class standing).

The study participants improved their understanding of information literacy skills by 9.2% during the course of the semester. Individual score improvement ranged from -10.9% to 27.3%, with a median score of 10.9%.

Learning from the In-Class Assessments

The objectives for the in-class assessments were to (1) identify students’ areas of strength and weakness throughout the semester; and (2) to learn by the outcomes of classroom exercises how to improve the class in future years.

Reflective Writing Can Provide Assessment Data

Collecting artifacts for assessment can provide useful evidence about student learning, but these artifacts do not always need to come from directly evaluating the student's work. The study leaders were not deterred from using certain activities even if they knew there would be little or nothing in the way of assessable artifacts. One of the most successful classes came early in the semester during a brainstorming session modeled after The Right Question Institute's Question Formulation Technique exercise.¹² During this session, students gained significant experience generating, revising, framing, and prioritizing questions alone and in small groups as they responded to the phrase "myth of the dumb jock." In addition, students learned about and produced mind maps of their questions. The success of this class was measured not by counting the number of questions generated or by quizzing students later on examples of closed- and open-ended questions; rather, their learning was evaluated based on what they wrote in their one-minute response papers. Reflective writing was quite revealing of the learning and value of the evening's activities. The students' comment cards revealed that they understood the foundations of the lesson. Responding to the cue of what was learned during class, one student wrote: "*Mind maps let your brain figure things out in a creative way.*" Twenty students completed the activity and all wrote about some combination of aspects related to learning about organizing ideas, creating questions, and mind mapping. Nine responses were about organizing information/ideas/topics, and eight were about asking questions. Three of these eight students who wrote about learning how to ask questions also wrote about how to write better questions. Two students did not talk about learning to write questions but only about how to write better questions. Sixteen wrote about learning about mind maps in some shape, nine referenced the process of mind mapping, and five reflected on helpful aspects of mind mapping. Four students wrote about the class topic of the myth of the dumb jock. One wrote about the writing process and asking questions as well as using the online software mind mapping tool. Reflective writing was helpful for both assessment and in allowing students the time to think about and process what they had learned.

Baseline Assessments Help in Evaluating Initial Understanding

Early in-class assessments provided the researchers with a baseline for students. Initial activities were

designed to test students' proficiency in basic online tools as well as their ability to generate broader, narrower, and related keywords. Their first in-class activity was not prefaced by any discussion of generating keywords. The handout provided a few tips on using Google Sheets and instructed them to populate a Google Sheets template with as many keywords and phrases as they could come up with that related to the evening's topic of time management. Visual observations of their attempts during class were enough to realize that students were unfamiliar with Google Sheets and would need additional instruction in using Google Apps for Education. Evaluating student responses based on completeness, unique words, variety of terms, and range of topics, the study leaders found that only half of the students were successful in creating a Google Sheet and that the students required more guidance and practice in generating keywords related to their topics. As a result, the librarian and faculty member modified the approach during the remaining classes by providing more time for technology setup, infusing sessions with additional low- (or no-) tech activities, and modeling/practicing the activities as a group.

Competitive Classroom Assessment Activities Motivate Students

The study leaders learned early in the semester that students were highly motivated when in a direct competition with one another. With the assistance of the special collections librarian, the class used materials from the Pepperdine University Archives to evaluate audience, purpose, relevance, and context for visual artifacts. Students began with this activity so that they could later begin applying this type of critical thinking to quickly scan large amounts of text for relevancy. Pitting groups against each other, each group was attempting to generate the longest list of unique properties about their archival document. Students worked together at a fast and focused pace to identify the most properties in the time allotted and were very enthusiastic in sharing their findings with the class at the conclusion of the activity. While this particular competitive activity was highly engaging to the students, the measure for success came through observation rather than by a rubric or other formal evaluation method.

Measuring Mid-Semester Progress is Important

The results from several early classroom activities related to students' early thinking about accessibility of information were helpful in planning for follow-up discussions and activities in the middle of the

semester. Using poll prompting, students reported their level of agreement with the statement “Google indexes everything on the web.” Results showed that only one student disagreed with the statement. In another introductory class, the librarian and faculty member found that students were able to correctly identify freely available resources 80 percent of the time but could only distinguish content that came from behind a paywall 43 percent of the time. Using this information to identify areas of strength and weakness, the study leaders returned to the concept of freely available and paid content in later classes where students practiced generating keywords and searching for information in different web and library resources. Students were evaluated on their ability in several different activities to critically think about authorship, content, audience, purpose, and bias. In one annotated bibliography in-class activity, the librarian and faculty member found that all but one of the students was able to locate scholarly sources. Some struggled with finding contextually appropriate material and others continued to struggle in distinguishing articles from other scholarly materials like dissertations. A few students provided very thoughtful responses but many students did not provide enough information to show deep thinking about their choices.

Rubric Evaluations Provide Authentic Comparative Data for Culminating Assignments

An individual and a group assignment consumed much of class time during the culminating weeks of the semester. Students were provided with one of seven different research papers on topics related to the social, psychological, academic, and personal well-being of student athletes that had been written by first-year students the previous semester. They were instructed to read their assigned paper, prepare an outline of the major points addressed within the paper, locate and read three of the scholarly articles used in the paper, describe how they located the sources they selected, and then note what was learned from each article that was not covered in the paper. Students needed to submit their findings first individually in writing and then collectively during group presentations in the final class.

By using the same rubric to evaluate both the individual version and the group version of the completed assignment, the study leaders were able to determine the level of mastery reached by each individual and measure whether the collaboration from the group members improved the overall score. Students were given up to two points in

five categories: takeaways of paper, highlights from articles selected, use of scholarly materials, criteria for identifying scholarly materials, location of scholarly materials, and the role of the library in research.

No individual papers received the highest score; however, one group did obtain twelve out of twelve possible points in their presentation. Closer evaluation of rubric scores for each category of the individual papers confirmed that one team collaborated well and learned from one another in order to fully satisfy all aspects of the assignment in the final presentation. A second group saw a four-point overall group improvement over the highest individual’s score. Another group experienced a three-point overall improvement in their team presentation over the highest individual score. Unfortunately, such experience did not repeat itself in all groups. Two groups saw no improvement and the remaining two groups were awarded lower group points than the individual with the highest score in each group. It was difficult to know whether personality issues or other group dynamics were responsible for the end results, but the librarian and faculty member did learn that some groups had shown marked improvement when they reviewed the materials as a team.

Value of the Study

Despite the challenges of motivating this special population without a letter grade, it was possible to observe and document evidence of learning in the class through both formative and summative assessments and to use assessment to inform future classroom instruction. A mix of assessment techniques, assignments, and activities fostered a culture of purposeful teaching focused on continuously improving our learning environment for our students.

The assessment process involving individual class sessions was more revealing of learning progress than the survey data alone. This is primarily due to the observed involvement of individual participants in class. The surveys were administered on the first and last day of the 15-week course. It is important to reiterate that the participants were required to take the course but accountability was minimal given the credit/no credit grading process. The course has a long history and tradition of being a life skills class and introduction to university services with minimal academic rigor. Therefore, the students participating

in the study entered with low expectations relative to class involvement. Given this entering expectation and to retain the randomly selected participants, a commitment to no homework was given as long as the participants were fully engaged with each two-hour class objective. Most participants honored this commitment and were active participants in class discussions and projects. Based on the time invested in responding to the pretest and posttest surveys, 89% of students were engaged with the pretest survey whereas 72% invested the expected time on the posttest. For each of those not investing the necessary time in the posttest, there was an average 4% decline in score results on the SAILS survey. For those invested in the posttest, as measured by the time investment, scores increased by an average of 14.26%.

The project's posttest SAILS data had an average score of 57%, with the doctoral institutions' benchmark average score for first-year students being 42.8% on the posttest version of the survey. In addition, the participants' average score was also significantly higher than the overall (all undergraduate class levels represented) benchmark score of 45.7%. The average score of the participants in this study suggested a significant growth in the development of information literacy skills.

The posttest survey sought information relative to the student's first semester college experience. Not surprisingly, 65% of the participants found managing time the most difficult transitional challenge. Other challenging, but manageable, areas included learning course materials, getting help with schoolwork, and interacting with faculty.

The in-class assessments proved most helpful in understanding whether students were learning objectives of the class and determining the feasibility of the learning sequence for future years. Baseline assessment shaped the content of later lessons and the results from early activities provided assessment data relative to structuring future activities. The process confirmed students were able to put into practice the knowledge and skills presented.

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Endnotes

1. Project SAILS: Standardized Assessment of Information Literacy Skills, *The Individual*

Assessment of Information Literacy, <https://www.projectsails.org/IndividualTest>.

2. Ron E. McBride and Judy Reed, "Thinking and College Athletes—Are They Predisposed to Critical Thinking?" *College Student Journal* 32 (1998), 131.
3. Ashley Robinson and Daniel C. Mack, "Library Service to Student Athletes: Peripatetic Distance Learners," *Journal of Library & Information Services in Distance Learning* 1, no. 2 (2004), 6.
4. *Ibid.*, 10.
5. Melba Jesudason, "Outreach to Student-Athletes Through E-Mail Reference Service," *Reference Services Review* 28, no. 3 (2000): 266.
6. Marsha Forys, John Forys, Ann Ford, and Jeff Dodd, "Information Literacy Program for Student Athletes at the University of Iowa," *Research Strategies* 17, no. 4 (2000): 353–358.
7. Maureen Puffer-Rothenberg and Susan E. Thomas, "Providing Library Outreach to Student Athletes," *The Reference Librarian* 32, no. 67–68 (2000): 140.
8. S.L. Petrucelli, "Student-Athletes' Perceptions of Instructional Effectiveness and Learning in Higher Education: A Qualitative Analysis of Freshman Pedagogy, Student Confidence, and Academic Support" (Order No. 3583621, 2014), ProQuest Dissertations & Theses Global (1566348370).
9. Christopher J. Jolly, "Raising the Question #9: Is the Student-Athlete Population Unique? And Why Should We Care?" *Communication Education* 57, no. 1 (2008), 149.
10. Kansas State University, *New Literacies Alliance*.
11. Project SAILS: Standardized Assessment of Information Literacy Skills.
12. Dan Rothstein and Luz Santana, "The Right Question Strategy," *Right Question Institute*, 2016, <http://rightquestion.org/about/strategy/>.