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Human Relations
CASTLE Case Study
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Introduction

As an unseasoned adjunct instructor, I am attempting to gain knowledge and insights into the realm of teaching and learning. Prior to coming to Kirkwood Community College, I spent 30 years in the corporate world working in the field of human resource management. That background lends itself well to the courses that I teach. Yet, the only exposure I have had relating to an educational setting was that of occasionally conducting various training programs. I feel that participating in CASTLE (Continuous Assessment in a Teaching Learning Environment) would provide me the opportunity to develop some of the knowledge, skills, and abilities to be successful in this new endeavor.

1. What are the important classroom teaching/learning issues in this case?

- Students feel that the test questions they receive on examination assessments are too difficult or do not relate to the lecture or textbook.
- Some students have difficulty in transitioning their learning from memorization of raw data to analysis, synthesis, and evaluation.
- The test questions for the examination assessments come entirely from a test bank in the textbook publisher's instructors manual.
- While students express concern about the difficulty of test questions on examination assessments, they also have a lack of motivation to study and properly prepare for examination assessments.

2. What teaching/learning strategies might be helpful?

- Use examination assessments designed to include questions from both the textbook publisher's instructors manual test bank and the course instructor. Divide questions on the test into categories representing lecture material and small group discussion/activities material that come from both the textbook publisher's instructors manual test bank and the course instructor.
- Encourage students to prepare for examination assessments by reviewing practice questions on the textbook publisher's web site.
- Place two practice questions from the textbook publisher's web site on each examination assessment.
- Analyze how the various sources of test questions affect learner performance on the examination assessments.
- Perform an item analysis of the test questions in each category.

3. What learning theories might support or inform these teaching/learning strategies?

- Empirical research on student-centered methods supports the contention that working together on learning (and learning how to teach) has clear advantages. “What is the most effective method of teaching? Students teaching other students.” (McKeachie, Pintrich, Lin, and Smith, 1986, p. 63).
- Even some advocates of cooperative learning share these words of caution: “Simply placing individuals in groups and telling them to work together does not in and of itself promote higher achievement and greater productivity” (Johnson, Johnson, and Smith, 1994, p. 317).
- “The task of the successful student in peer learning is to question, explain, express opinions, admit confusion, and reveal misconceptions; but at the same time the student must listen to peers, respond to their questions, question their opinions, and share information or concepts that will clear up their confusion (McKeachie, 1994, p. 149).
- A consistent finding of research on peer learning groups is improved involvement and gains in achievement (Cooper and Mueck, 1992; Cooper, Robinson, and McKinney, 1994; Johnson and others, 1981; Slavin, 1983).
- Guidelines for Implementing Peer Learning Groups (Cooper, Robinson, and McKinney, 1994, pp. 82-84).
- Courses should emphasize people working together on common projects, small group activities and discussions, and other activities that bring learners and faculty together (CROELE, Module 1, Chapter 2, p. 11).
- Content-process-content shifts increase awareness and focus attention on a presentation (Fuhrmann & Grasha, 1983).
- People, objects, events and current and topical situations that possess personal value and meaning capture the attention of people better than those that do not (Hickcox, 2002).
- Encourage learners to respond to what others have to say (Table 1-Principles for Encouraging Critical Thinking, CROELE, Module 1, Chapter 4, p.19).
- By addressing the diversity of learning styles, our learners will be more motivated to learn (CROELE, Module 2, Chapter 4, p. 21).

4. What research questions and hypotheses does this case raise that might be further investigated in a classroom research project?

- What impact does the source of a question have on student test performance?
- Is learning enhanced through discussion group exercises and other active learning activities?
- Can I as an instructor develop proper questions on examination assessments?
- How do the test questions I would write as the instructor differ from those found in the textbook publisher's instructors manual test bank?
- How do participation levels of discussion in a class impact test scores?
- How effective is the lecture compared to discussion group activities in determining student performance based on examination assessment results?
- When given the opportunity to review practice test questions on the textbook publisher's web site, will students take advantage of this and does this influence the score they receive on their examination assessments?

5. What classroom assessment data could be collected to test out these research questions or hypotheses?

To collect the data necessary to test out the above research questions and hypotheses I used the test assessments given to students throughout the entire semester. I conducted two sessions of the course *Human Relations*, one at 9:00 a.m. MWF and the other at 12:00 p.m. MWF. The lesson plans for each session mirrored each other. The semester consisted of two test assessments during the term and a final examination at the end of the semester. All three examinations were a 50 question multiple choice test that assessed the course material in three equal segments. Therefore, the final examination was not comprehensive. There were also other means of assessing student performance in the course, but these three examinations are the only assessments pertinent to this case study and from which I have drawn the applicable data.

The three examinations were similarly structured with sources of the test questions as follows:

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|-----------------|--|
| Questions 1-12 | Written by course instructor covering lecture material |
| Questions 13-24 | Written by course instructor covering small group discussions |
| Questions 25-36 | From text publisher's test bank covering lecture material |
| Questions 37-48 | From text publisher's test bank covering small group discussions |
| Questions 49-50 | From text publisher's web site to which the students have access |

Table 1. represents the data resulting from this research. The data is shown according to the three multiple choice exams of 50 questions each for both the 9:00 a.m. and 12:00 p.m. classes. The number of students taking each exam is listed along with the number of questions correctly answered in the question categories referenced directly above.

Table 1. Test Questions Answered Correctly by Question Category

Class	Exam #	Number of Students	Q 1-12	Q 13-24	Q 25-36	Q 37-48	Q 49-50
9:00 a.m.	First	23	208	203	191	207	21
9:00 a.m.	Second	20	148	179	152	132	23
9:00 a.m.	Final	19	187	171	167	130	29
12:00 p.m.	First	25	225	220	213	220	31
12:00 p.m.	Second	19	136	181	148	124	25
12:00 p.m.	Final	18	180	171	153	122	20
Totals		124	1084	1125	1024	935	149

When considering the source of the test questions, 2209 were correct out of 2976 (74.2%) for questions written by the course instructor, while 1959 were correct out of 2976 (65.8%) for questions taken from the textbook publisher's instructors manual test bank. In the lecture area covered by the test questions, 2108 were correct out of 2976 (70.8%). For the questions covered by small group discussion, 2060 were correct out of 2976 (69.2%).

The tests we give to our learners should be as valid as possible. Validity occurs to the extent that a test measures what it is intended to measure. A method for checking the validity of exam questions is to utilize a technique known as item analysis. The technique allows you to check the validity of questions by comparing student scores on the total test with how successful they were in obtaining the correct answer on the test question being analyzed. For example, how many students receiving an A grade on the exam scored the correct answer for a given question. A higher level of correctness for students in the A grade category corresponds to a higher level of validity for the question. This analysis should also occur with students receiving grades in each of the remaining grade categories of B, C, D, and F. In descending from the A grade category to the F grade category one should see a corresponding reduction in the number of correct answers at each grade level for the exam questions to have a high degree of validity.

Table 2. represents data gathered from an examination question item analysis sorted by question categories. The data shows the number of test questions answered correctly in each question category.

Table 2. Examination Question Item Analysis by Question Category

Grade/Score Category	Q 1-12	Q 13-24	Q 25-36	Q37-48	Q 49-50
A 45-50	11.7	11.2	10.7	11.2	1.6
B 40-44	10.2	10.8	9.9	8.2	1.6
C 35-39	9.3	9.3	8.2	8.0	1.0
D 30-34	8.9	8.1	7.2	6.9	1.2
F 0-29	6.9	6.6	6.4	5.7	1.1

A high degree of validity is represented in the data shown directly above. Students' grades and scores in the grade/score categories align themselves consistently in most all question categories in a descending order from the upper level of A to the lower level of F. The Q 49-50 category deviates somewhat from this, but variance is expected when looking at smaller samples of 2 rather than 12 questions.

Conclusion

In determining what impact the source of a question has on student test performance I found that:

- Regarding levels of student performance on examination assessments
 - a. Students scored more favorably on the questions written by the course instructor than on those taken from the textbook publisher's instructors manual test bank (2209 correct out of 2976 or 74.2% compared to 1959 correct out of 2976 or (65.8%). Of the course instructor written questions students scored more favorably with those from small group discussions and activities than from lecture material (1125 correct out of 1488 or 75.6% compared to 1084 correct out of 1488 or 72.8%). Conversely, when questions came from the textbook publisher's instructors manual test bank, students scored more favorably with questions based on lectures than they did with those on small group discussions and activities (1024 correct out of 1488 or 68.8% compared to 935 out of 1488 or 62.8%).
 - b. When you ignore the relationship of the test questions to the course instructor or the textbook publisher's instructors manual test bank, the students scored evenly in the areas covered by lecture material (2108 correct out of 2976 or 70.8%) and small group discussions and activities (2060 correct out of 2976 or 69.2%).
 - c. Overall student performance on the examinations was evenly matched when you compare one class session (2148 correct out of 3100 or 69.3%) for the 9:00 a.m. MWF session to (2169 correct out of 3100 or 70.0%) for the 12:00 p.m. MWF session.

- Very surprisingly, the marked difference in participation levels of the two sessions had no bearing on student examination performance. The strength of student participation levels in each of the two class sessions was monitored closely. The students in the 9:00 a.m. MWF session were very participatory in small group discussions and activities, while the 12:00 p.m. session was quite lethargic. I really had to push the students in this session to start talking with each other.
- When given the opportunity to review test questions on the textbook publisher's web site, 9 out of 20 took advantage of this in the 9:00 a.m. MWF class session while 4 of 19 did in the 12:00 p.m. MWF class session. Those students who did take advantage of reviewing these questions had an average test score of 35.3 compared to 34.6 for those who did not.
- As an instructor, I am able to develop sound questions on test assessments. The test question item analysis by category group indicates that I have proper command of my test construction skills.
- The implications that I take from this case study are
 - a. While lending some support to the role that active participation in small group discussions and activities enhances student learning, the results were somewhat conflicting. I do have some thoughts though on why the conflict may have occurred. The approach I used in setting up small discussion groups and activities varied little in nature. Also, the questions I used from the textbook publisher's instructors manual test bank were probably not as tailored as my own as to what was truly happening in the small group discussion and activities setting.
 - b. The research literature clearly supports the role active learning and student participation play in enhanced student performance. Therefore, I believe I need to change my teaching/learning approach and methods making them more varied in small group discussions and activities to keep learner interest active. I will also place greater importance on communicating the role these exercises can play in helping to develop the skills relevant to the future life and career interests of the students.
 - c. A future follow-up to review the impact of the above changes is warranted.
 - d. As a new instructor, I am confident in my own ability to write test questions. In fact, this case study has actually shown me that in some cases my questions can be just as good, and sometimes even better and more appropriate, than those of the textbook writer.

References

Cross K.P., & Steadman, M.H. (1996). Classroom Research: Implementing the Scholarship of Teaching. San Francisco, CA: Jossey-Bass Publishers

Florida Community College at Jacksonville and Virginia Polytechnic Institute and State University (2004). CREOLE: Creating Optimum Learning Environments

Greive D. (2003). Handbook II: Advanced Teaching Strategies for Adjunct and Part-time Faculty. Ann Arbor, MI: The Adjunct Advocate, Inc.