

Enhancing Higher Level Learning in an Engineering Management Organizational Behavior Course

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Abstract

This paper will describe and discuss the learning strategies applied in an Engineering Management Organizational Behavior course to enhance and encourage students to go beyond rote memorization and simple understanding of concepts to application, synthesis, evaluation and creation for an organization. The learning strategies to be considered are: 1) research and delivery of a real-world case study application of an organization applying the organizational behavior concepts; 2) within-class active learning exercises applying the organizational behavior concepts; 3) developing a written paper applying the concepts to an organization; 4) exploratory surveys based upon the organizational behavior concepts; and 5) traditional quizzes and a final exam including multiple choice, true/false, and short answer essay questions.

.Keywords: Organizational Behavior, Learning strategies, Pedagogy

Introduction:

Organizational Behavior and Development concepts can be difficult to teach in a way that enhances the usability, synthesis, and application of these concepts. Organizational Behavioral textbooks provide detailed descriptions of the wide variety of theories, and supporting research that suggest ways that these concepts can be applied in organizations. The “out of the box” textbook and instructor materials provide the basis for students to apply the lower-level knowledge categories of Bloom’s Taxonomy, including remembering the facts and basic concepts, understanding and being able to explain the ideas and concepts. However, additional learning strategies are needed to enhance learning at the higher order cognitive knowledge categories including: being able to apply information in new situations; analysis, and synthesis across the concepts; evaluation and justification of decisions related to the concepts; and finally the ability to create and produce new ways to design organizations based on the organizational behavior theories. This paper will describe and discuss the learning strategies applied in an Engineering Management Organizational Behavior course to enhance and encourage students to go beyond rote memorization and simple understanding of concepts to application, synthesis, evaluation and creation for an organization. The learning strategies to be incorporated into the organizational behavior course are: 1) research and delivery of a real-world case study

application of an organization applying the organizational behavior concepts that allow the student to find, analyze and present the case studies to the class; 2) within-class active learning exercises applying the organizational behavior concepts; 3) incorporation of written assignments where students are to develop a written paper applying the concepts to an organization where they suggest how they would apply the concepts to an organization; and 4) the use of exploratory surveys based upon the organizational behavior concepts where students can understand how their personality, attitudes, emotions, perceptions and values can impact organizational behavior application and design; and 5) traditional quizzes and a final exam including multiple choice, true/false, and short answer essay questions.

Literature Review:

Bloom's original taxonomy (Bloom, 1956), published in 1956, had categories of intellectual skills consisting of increasing levels of complexity. These skill levels were revised to verbs in 2001 (Anderson and Sosniak, 2001), including remembering, understanding, applying, analyzing, evaluating and creating. They still maintained the increasing level of complexity. Many scholars have used Bloom's Taxonomy to enhance or apply the learning categories. Harris and Patten (2015) applied Bloom's Taxonomy to integrate emerging cybersecurity topics into a computing curriculum. Betts, Knaus and Winberry (2016) applied Bloom's taxonomy in a management course to match learning objectives to course elements.

Teaching methods are techniques that help motivate students to do what they need to do to learn course material. Gentile (2016) categorized teaching methods into the following types: 1) information-providing, 2) inquiry-oriented, 3) active or performance-based, 4) cooperative, 5) mastery-based and 6) creativity-inducing. Each type of learning method will be briefly discussed. 1) The information-providing learning uses lectures and demonstrations to convey information. It is one of the most traditional learning strategies, and still has a place in learning. However, active learning methods are being encouraged in classrooms. 2) The inquiry-oriented encourages students to examine and search information to discover the truth. Case studies is a typical inquiry-oriented method. Case studies are descriptions of real-world examples that can be used in the classroom to help the students apply the principles, methods and tools of the course material (Carroll and Rosson, 2006). Developing and using case studies to enhance higher level learning in engineering education is part of the active learning pedagogy (Yin, 2009). Active learning engages students in higher order thinking assignments (Bonwell & Eison, 1991). The case study can help integrate practice with theory (Swart, 2009, 2010) (Hunt, 2012). Case studies promote critical thinking (Popil, 2011). They have the potential to reveal rich contextual findings of a personal, social, and pedagogical nature, that cannot easily be obtained by other methods (Miller, 1997). One drawback of case studies is that it can take time for both the students and the instructor (Gentile, 2016). 3) Active or performance-based methods encourage students to be actively involved with and participate in their learning. Active learning is becoming extremely popular in higher education learning. It is designed to have the students practice the application of the material, including coaching from the instructor. (Gentile, 2016) 4) Cooperative methods are designed to teach collaborative skills, engaging the students together in a team or group to ensure the collaboration aspect takes place. A challenge with collaborative

learning is the need to assess learning of individuals in a group setting. (Gentile, 2016) 5) Mastery-based learning methods focus on providing a minimum mastery of the information, before moving on to the next level. (Gentile, 2016) 6) Creativity-inducing methods help the students to generate creative ideas. An example of this method is applying brainstorming techniques in the classroom. (Gentile, 2016) All of these methods are probably best applied when used with several or all of the methods together to enhance learning.

Methodology:

The purpose of this study was to incorporate learning strategies that would enhance higher-level learning. The instructor incorporated five different learning strategies into the organizational behavior course: 1) research and delivery of a real-world case study application of an organization applying the organizational behavior concepts that allow the student to find, analyze and present the case studies to the class; 2) within-class active learning exercises applying the organizational behavior concepts to extend the lecture materials; 3) incorporation of written assignments where students are to develop a written paper applying the concepts to an organization where they suggest how they would apply the concepts to an organization; and 4) the use of exploratory surveys based upon the organizational behavior concepts where students can understand how their personality, attitudes, emotions, perceptions and values can impact organizational behavior application and design; and 5) traditional quizzes and a final exam including multiple choice, true/false, and short answer essay questions.

1) Case studies from research literature:

Pairs of students reviewed a case study from the literature that they found, to discuss the application of organizational behavior elements from the course. They developed a PowerPoint presentation and discussed their findings related to the organizational behavior topic identified on the course schedule. The student team selected one or several organizations and created a case study presentation describing how the organization applied the assigned organizational behavioral element identified in the course schedule list of teams and topics. The topics could include any one covered within the textbook chapters assigned. The team presented the case study to the class using their PowerPoint presentation. The grading criteria follows in Figure 1.

Grading Criteria	Points Available
PowerPoint presentation quality and professionalism	10
Description of the best practice application of the organizational behavioral element	20
Discussion questions to engage the students in the discussion of the organizational behavioral element	20
Examples of how the organization applied the assigned element	20
Discussion of why this was successful	10
Depth of understanding of the element	10
Ability to answer questions and present the material logically	10
Total	100

Figure 1: Case Study Grading Criteria

The instructor designed the case study to help the students understand how the organizational behavior concepts were applied in a world-class organization. Students selected best in class organizations to study, such as: Apple, McDonald's, NASA, Toyota, Starbucks, Sun Microsystems, Google, Microsoft, Heineken, Hyundai, Twitter, Cargill, Facebook, LinkedIn, Boston Consulting Group, Bain and Company, TATA.

The following topics were topics that the students selected to cover in their case studies:

- Motivation, job engagement
- Job characteristics, employee involvement, rewards & recognition
- Team building, group decision making
- Team work, hiring team players, team processes
- Communication,
- Leadership, trust mentoring
- Organizational structure
- Organizational culture, climate, socialization, ethical organizational culture, spirituality
- Hiring, selection, training, development, performance evaluation
- Organizational change, stress management, organizational development, learning organization, appreciative inquiry, innovation

2) Active learning exercises to extend lecture materials:

The instructor incorporated active learning exercises into each and every class session that extended the lecture materials. The instructor began each class session with short lecture materials, interspersed with the active learning exercises. The lecture materials provided the foundational knowledge that summarized the course textbook knowledge. The active learning exercises expanded on the lecture materials, to enhance understanding and encourage application of the concepts. Some example active learning exercises follow:

Active Learning Exercise Example 1:

- What are some typical stereotypes related to the following groups in the workplace: older workers, female workers, workers with disabilities, religion and sexual orientation.

The students paired up with classmates, to discuss the typical stereotypes, and then shared their ideas with the class. The students generated the figure 2, from the exercise. The instructor designed this exercise, as many of the other active learning exercises, to enhance the level of learning from memorization of principles to application and understanding of the material. This particular exercise helped the students understand potential workplace stereotypes that can get in the way of collaboration and goal achievement.

Older workers	Female workers	Workers with disabilities	Religion	Sexual Orientation
<ul style="list-style-type: none"> ▪ Miss a lot of work ▪ Bad with technology ▪ Good experience ▪ Stubborn ▪ Don't want to take risks ▪ Higher paid 	<ul style="list-style-type: none"> ▪ Lot of discrimination within themselves ▪ Focus on non-work things ▪ Women can be better leaders ▪ Women use intuition ▪ Good at math ▪ May not be a good leader ▪ Not good listeners ▪ Too aggressive, not nice ▪ Too emotionally, or not strong ▪ Physically weak ▪ Judged upon looks ▪ Not fit for field jobs ▪ Paid less than men ▪ Good multi-taskers 	<ul style="list-style-type: none"> ▪ Skills underestimated ▪ Can't accomplish very much ▪ Employer should provide transportation or housing ▪ Lower paid ▪ Lower efficiency 	<ul style="list-style-type: none"> ▪ Discrimination in hiring ▪ Terrorists ▪ Consumption of beer is a sin ▪ All Christians are republicans ▪ Catholics perceived as hating Jews 	<ul style="list-style-type: none"> ▪ Don't have enough respect ▪ Isolated ▪ Fickle minded ▪ Don't respect their decisions ▪ Dressing ▪ Arrogant

Figure 2: Sample active learning exercise output

3) Written assignments for applying organizational behavior principles and concepts

The instructor assigned three written papers designed for the students to apply the highest Bloom’s taxonomy level of creating ideas. The goal of the assignment was for the students to design strategies that could be applied by an organization, applying the applicable section of material (individual, group, and organizational behavior principles) to an organization. The students tried to answer the questions “What does the ideal organization look like, related to the topics covered in each section?” The students were to design or redesign an organization and use what they learned from the class to support the organization. The students could pick an organization that they were familiar with, possibly one that they work or volunteer for, a club that they were in, or an organization for a start-up that they were thinking of launching. The students were to do the assignment individually; however they could talk to their classmates, bosses, friends, and others as they developed the ideas. They could use their textbook, notes and other researched sources of information. Each paper was required to be three to five pages, double-spaced, Times New Roman, 12-point font, APA format, plus references. Each student had the opportunity to present one of the three papers during the semester to the class. Every student created a PowerPoint presentation summarizing each paper. Each presentation included an executive level and brief summary of the key findings within their paper. Figures 3, 4 and 5 show the grading criteria for each paper.

Item	Points Available	Points Assigned	Feedback
Appropriate Length 3 to 5 pages, and format, Times New Roman 12, double spaced.	5		
Professional and well written	5		
Description of at least one concept from each chapter:			
Chapter 2 – Diversity	10		
Chapter 3 – Attitudes & Job Satisfaction	10		
Chapter 4 – Emotions & Moods	10		
Chapter 5 – Personality & Values	10		
Chapter 6 – Perception & Individual Decision Making	10		
Chapters 7 & 8 – Motivation	10		
Shows depth of understanding of organizational behavior elements	10		
Use of examples with references to the literature	10		
POWERPOINT presentation			
Quality of slides	5		
Impact of presentation	5		
TOTAL:	100		

Figure 3: Grading Criteria for Paper 1 – Individual Organizational Behavior Principles

Item	Points Available	Points Assigned	Feedback
Appropriate Length 3 to 5 pages, and format, Times New Roman 12, double spaced.	5		
Professional and well written	5		
Description of at least one concept from each chapter:			
Chapter 9 – Foundations of Group Behavior	10		
Chapter 10 – Understanding Work Teams	10		
Chapter 11 – Communication	10		
Chapter 12 – Leadership	10		
Chapter 13 – Power and Politics	10		
Chapter 14 – Conflict & Negotiation	10		
Shows depth of understanding of organizational behavior elements	10		
Use of examples with references to the literature	10		
POWERPOINT presentation			
Quality of slides	5		
Impact of presentation	5		
TOTAL:	100		

Figure 4: Grading Criteria for Paper 2 – Group Organizational Behavior Principles

Item	Points Available	Points Assigned	Feedback
Appropriate Length 3 to 5 pages, and format, Times New Roman 12, double spaced.	5		
Professional and well written	5		
Description of at least one concept from each chapter:			
Chapter 15 – Foundations of Organization Structure	15		
Chapter 16 – Organizational Culture	15		
Chapter 17 – Human Resource Policies & Practices	15		
Chapter 18 – Organizational Change & Stress Management	15		
Shows depth of understanding of organizational behavior elements	10		
Use of examples with references to the literature	10		
POWERPOINT presentation			
Quality of slides	5		
Impact of presentation	5		
TOTAL:	100		

Figure 5: Grading Criteria for Paper 3 – Organization Organizational Behavior Principles

4) Exploratory surveys:

The instructor used exploratory surveys developed by the textbook authors to help the students understand how the organizational behavior principles could be applied to themselves.

Following is a summary of some of the surveys given to the students that they could take to assess themselves:

- Communication and listening:
 - Communicating supportively
 - How good are my listening skills
 - Emotions by face
- Personality
 - Personality assessments
- Trust:
 - Do I trust others
 - Do others see me as trustworthy
- Leadership, Politics and Power:
 - How charismatic am I
 - How good am I at playing politics
 - How power oriented am I
 - Leadership Styles
 - What's my preferred type of power

The surveys were taken in class by each student, discussed within small groups, and then discussed within the class.

5) Quizzes and final exam:

The instructor gave traditional quizzes and exams designed to ensure that the students were keeping up with, and learning the textbook material. Four quizzes and a final exam were given for specific textbook chapters. These quizzes included some multiple choice, true and false and short answer essays. The multiple choice, and true and false questions assessed memory and recall skills, and the short answer essays could assess synthesis and application of the material.

Assessment and Results:

We used a student survey to assess the effectiveness of the learning strategies at the end of the semester. We asked five simple questions, as follows:

1. I found the case study assignment helpful to understand how organizations applied the organizational behavior principles.
2. The written paper assignments helped me to better apply the organizational behavior concepts to an organization.
3. It enhanced my learning by doing exploratory surveys where I could understand how my personality, attitudes, emotions, perceptions, and values can impact organizational behavior application and design.

4. I became a better presenter in this course through presenting my case study and one of my papers to the class.
5. The in-class active learning exercises enhanced my ability to apply the organizational behavior principles and concepts.
6. Please provide additional feedback related to the assignments and exercises for the class.

A 5-level Likert rating scale was used for the first five questions, as such: Strongly disagree, Disagree, Undecided, Agree, and Strongly agree. Ten extra credit points out of a total of 1,000 points for the course (1%), were given to encourage survey participation. The response rate was 100%, or 21 students. The last question allowed the students to provide additional feedback to improve the course and learning strategies.

The results showed that the learning strategies, from a student evaluation perspective, effectively helped the students apply the organizational behavior concepts. Figure 6 shows the percentage of ratings in each category, for each question. The active learning activities received the highest percentage of strongly agree responses at 86%. The active learning activities, the written application paper, and the case study assignment received the highest percentages of positive responses at 100% (strongly agree and agree). The exploratory surveys, although enjoyable, per the students' in-class verbal feedback, received only an 86% positive response rate, and only a 48% strongly agree response, and a nearly 15% negative response (undecided and disagree). The question asking the students if the case study presentation helped them improve their presentation skills received a 67% strongly agree response, a 96% positive response rate, and a nearly 5% negative response rate.

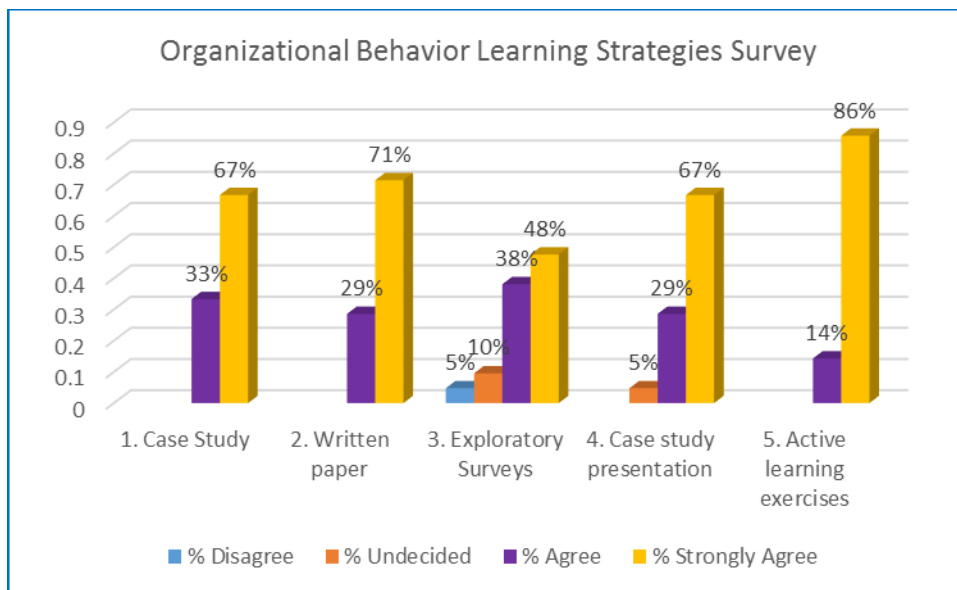


Figure 6: Organizational Behavior Learning Strategies Survey

Some of the ideas for improving the course that the students provided were:

- I found the quiz structure a little bit challenging , to answer the question it required to dig into the book . I would not vote for all multiple choices in the quiz , but half and half , half discussion about some key concepts in the course and half multiple choice.
- I think every week we need to have one whole class session for discussions alone where each one would participate.
- As far as assignments are concerned after professor grades everyone it would be better if the professor put forth strong points from the students paper. This process helps students to know their peers thoughts and helps them think different or out of the box for the next assignment.

The instructor assessed the effectiveness of the written papers across the semester. Since the instructor provided feedback after each paper, and before the next was written, this allowed for assessing whether this instructional strategy was effective in helping the students better apply the concepts across the papers. The instructor allowed the students to revise their papers if they were not initially able to generate ideas that would give suggestions for improving an organization. The students struggled with applying the principles, instead initially just describing the principles from the textbook. The instructor provided individual feedback against the grading criteria to each student, both written and if needed, verbally during office hours. The average grades on each paper is shown in figure 7. It demonstrates that the students learned how to better generate creative ideas to be applied to an organization, as they revised and submitted assignments after the first paper. Both the mean grades and the standard deviations improved during the course. The initial grade on paper one was 83.7%. Additionally, 62% of the students revised their first paper for an improved grade of 95.7%. Only 20% of the students revised the second paper. The second paper initially had a mean of 93%, and increased to an average grade of 96.7% with the revised paper. No students needed to revise the third paper, resulting in an average score of 95%. Encouraging the students to revise their papers improved learning and the ability of the students to apply the course material.

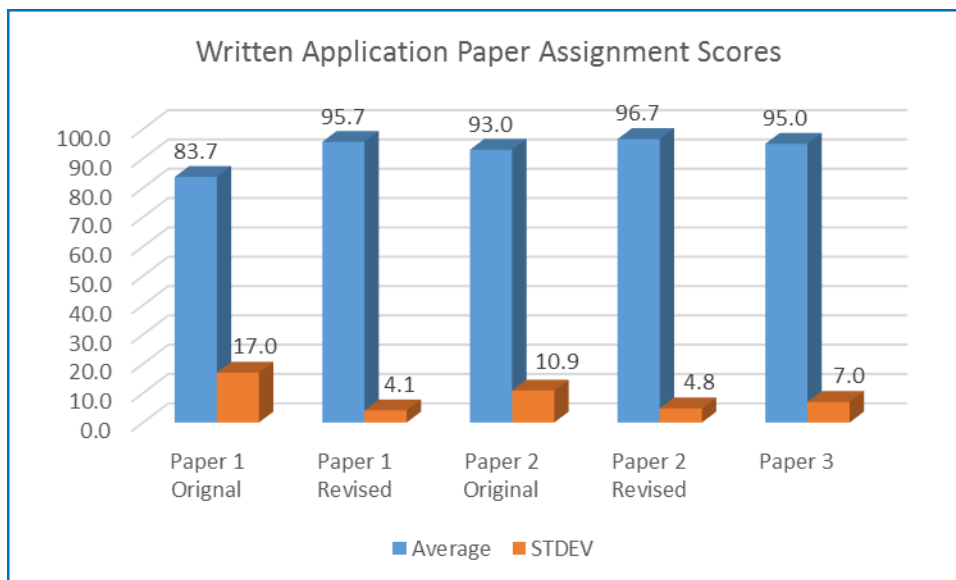


Figure 7: Grades on paper assignments.

Student Evaluation of Teaching Results:

The Student Evaluation of Teaching (SET) results demonstrate that the students rated the course highly, as shown in Figure 8. The following questions were asked in the SET survey.

- Q1: The instructor seemed organized.
- Q2: I knew what I was expected to accomplish in this course.
- Q3: The instructor presented the subject matter clearly.
- Q4: The instructor created an environment that supported my learning.
- Q5: The instructor generated a genuine interest in my success.
- Q6: The feedback I received from the instructor improved my learning.
- Q7: This course stimulated my interest in the subject.
- Q8: This course increased my understanding of the subject.
- Q9: I learned a great deal from this course.
- Q10: I would recommend this course to other students.
- Q11: I would recommend this instructor to other students.

A Likert agreement rating scale was used, from 1 – Strongly Disagree, to 5- Strongly Agree. Questions 8 and 9 best assessed the students' learning and these received high ratings of 4.6. Additionally, question 4 was very highly rated (4.9 out of 5) that asked whether the learning environment was conducive to the students' learning. The average rating by question for the course, and for the entire department (~15 instructors) was included in Figure 8.

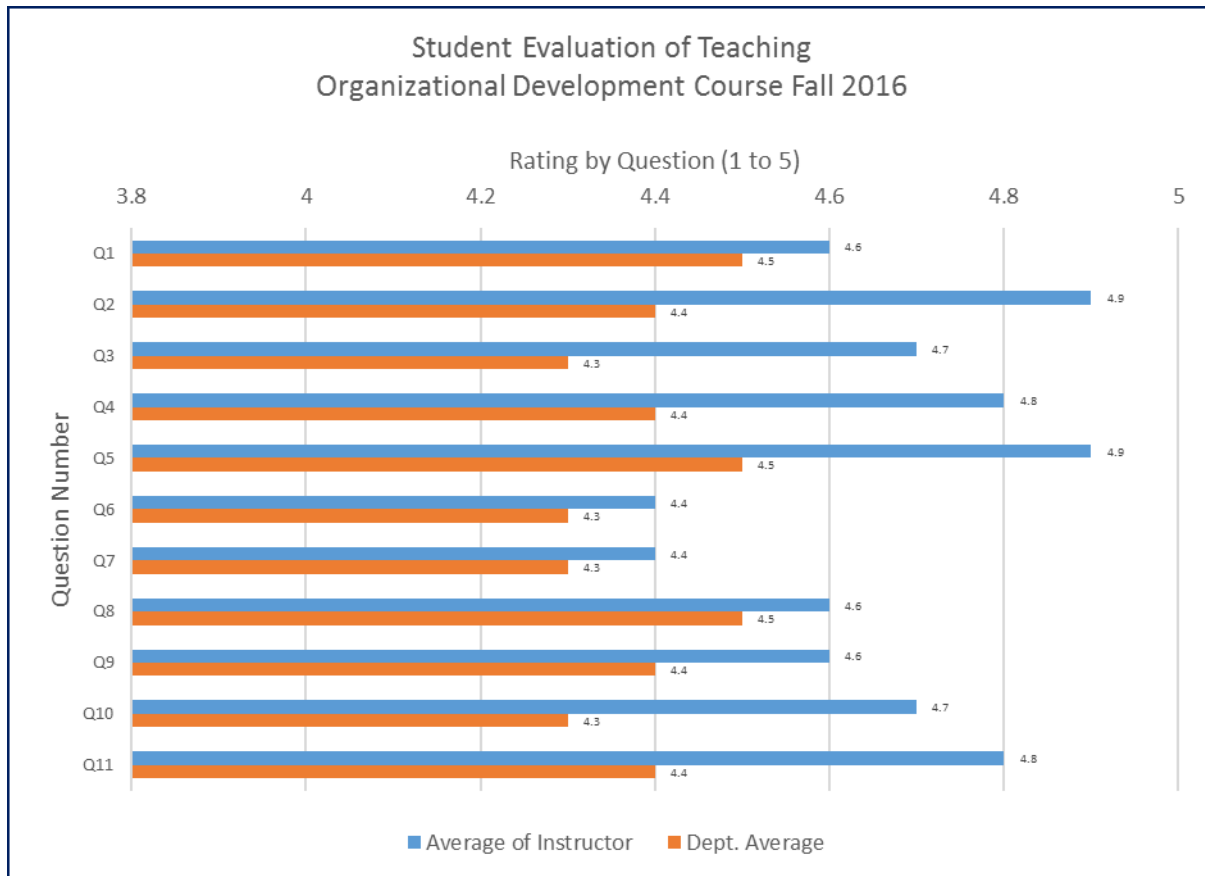


Figure 8: Student Evaluation of Teaching Organizational Development Course Fall 2016

Conclusions:

The learning strategies were highly effective in helping the students learn and apply the organizational behavior concepts. They included, 1) research and delivery of a real-world case study application of an organization applying the organizational behavior concepts; 2) within-class active learning exercises applying the organizational behavior concepts; 3) developing a written paper applying the concepts to an organization; and 4) exploratory surveys based upon the organizational behavior concepts; and 5) traditional quizzes and a final exam including multiple choice, true/false, and short answer essay questions.

Future Work:

The instructor could enhance the exploratory surveys to connect them better with the organizational behavior concepts. Additionally, re-structuring the quizzes to provide additional short answer essay questions, instead of multiple choice or true/false questions, could enhance the higher-level learning. Providing additional feedback to the entire class by extracting out key feedback to share with the entire class on the application-based written assignments could help the students understand how to improve their papers earlier in the semester, to grasp the higher-level synthesis of ideas sooner would also be helpful to the students.

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