

# ASSESSING PROJECT MANAGEMENT AS AN ACADEMIC LEARNING OUTCOME (ALO)

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## ABSTRACT

*Colleges and universities ask, "how do you measure outcomes like Project Management (PM)" in our graduating students. Legislatures have directed universities and colleges to develop Academic Learning Outcomes (ALO) to meet the State's Academic Learning Compacts established within its curriculums. Students must be able to demonstrate an ALO, like PM, but this learning domain must be measurable. To evaluate PM one must assess many PM activities being done to deliver a completed project. Our students are assigned to teams in a business simulation where they are responsible for successful PM activities. This paper looks at our effort toward a more accurate measure of the Project Management ALO using team members and faculty rating each team member on their PM activity performance. This evaluation combines final team simulation performance standings in the assessment of a PM ALO.*

## INTRODUCTION

Today's academic institutions need to assess students' academic engagement. The Southern Association of Colleges and Schools (SACS) and Association to Advance Collegiate Schools of Business (AACSB) have given new university- and college-level directions how to academically engage students. The direction guides State's and university's to mandate five overarching academic learning outcomes (ALO): a) content knowledge, b) critical thinking, c) communication, d) ethics, and e) project management that students are able to demonstrate upon graduation. All five of these ALO is a work-in-process in every college at our university as we develop, test, and measure each item. Capturing PM as an ALO has been difficult for us. Collecting data on PM began in 2006 but in 2008, the rubric officially began to assess the PM learning outcome in our COB capstone course: MAN4720 Business Policy and Formulation course.

This paper's goal is to report on our progress being made to measure PM using our rubric and if it is an appropriate measure for a PM ALO in an experiential exercise, like simulations. This goal is accomplished by asking three questions: 1) "how did the PM Academic Learning Outcome (ALO) and rubric develop?" 2) "Where

ABSEL has developed the PM rubric?" and 3) "where the rubric is it headed?"

## HOW DID THE PM RUBRIC DEVELOP?

The Direction In 2003, the AACSB developed new accreditation and maintenance standards and in 2004 marked the State Board of Governors requiring all State universities to implement Academic Learning Outcomes (ALO) for undergraduate and graduate degree programs. These ALO are demonstrate the abilities a graduating students have such as: 1) content or discipline concepts, theories, and frameworks, 2) critical thinking abilities to manage information, higher-level cognitive skill sets, problem solving, and creativity, 3) communications involving appropriate written, spoken, quantitative, and technological skills, 4) integrity/values that embraces the areas of decision making, academic integrity, and professional standards, and 5) project management ability to analyze a project planning and execution functions. Corresponding rubrics matching each ALO are being developed to help determining if actual student learning is matching the mandated expectations (Association to Advance Collegiate Schools of Business, 2003; Collegiate State Board of Trustees – Academic & Student Services Committee Meeting, August, 2004, Quality Enhancement Plan, January 2005).

The Vehicle The COB's capstone course, MAN4720, has our business students to take it the semester prior to graduation. This timing sequence makes MAN4720 an ideal place to assess learning outcomes for soon to be graduates. The course is designed around a typical business policy and formulation agenda covering basic strategic management theory, case analysis, financial analysis, with a business simulation. By compiling multiple course elements in one course, assessments of several college-level ALO and learning domains can occur by separately evaluating exams and quizzes (40%), case analysis and discussion (30%) and a business simulation (40%). The percentages reflect the value each course area contributes to the course grade. The simulation is completed by groups of 3-4 self-selected or instructor determined teams. Teams are totally responsible for team decisions and reports as identified in the course syllabus.

The experiential exercise, a simulation, used in this course is a Total Enterprise Simulation called the CAPSTONE Business Simulation (CAPSIM Student Guide, 2006-2013). The simulation places student teams in charge of \$100M sensor manufacturing company. Students complete rehearsal rounds, four (4) practice rounds, and eight (8) final decision rounds. Every team develops a strategic plan using strategy models from the course such as Porter's Five Forces, or Value Chain Analysis, while making its weekly simulation decisions. With multiple decisions students are making, a PM academic learning objective begs measurement. Looking at research findings of Wellington & Faria (1995), Peach (1996), and Gentry (1990) suggests positive relationships existing between simulations and strategic management. Developing objectives, analyzing environments, choosing among strategic alternatives, monitoring and reacting to results are elementary to basic strategic management and using simulations.

With basic PM rubric's skills being derived from defining what a project is: "a complex, non-routine, one-time effort limited by time, budget, resources, and performance specifications designed to meet customer needs" (Gary & Larson, p.5, 2008). With PM typically being managed in three phases: planning, scheduling, and controlling (Heizer & Render, p.56, 2004), it is easy to understand why PM assessments are made in this course and simulation. The simulation event is a semester long, one time activity managed by student teams that address complex business situations faced in its sensor industry.

## WHAT WAS THE PM ASSESSMENT REPORTS AT ASBEL

An experiential track presentation at the 37<sup>th</sup> Annual ABSEL Conference summarized the continuing PM assessment efforts at our university (Hornyak, Lawler, & Peach, 2010). This presentation evaluated PM rubrics used from 2006-2010. The rubric attempts to see if the soon-to-graduating students display PM planning skills, both individual and team work skills, and abilities to successfully deliver project results. Yearly PM assessment results are seen in Table 1.

How can we see the evolution of our PM rubric through the years? In 2008, our rubric began to evolve with by clearly specifying the definitions we use. The PM rubric 2008 measurements clearly shows differences from the earlier measures because of the specific instructions students are given by all instructors before starting the survey (see Figure 1). The instructions provide the respondents a common frame of reference for the survey (Spector, 1992). The PM survey instructions accomplish several key items: 1) to explain why the survey is being conducted, 2) to define what are the PM skills being evaluated are, and 3) what are is the important submission areas. The instructors emphasize rating definition that rating team members a 3 or Acceptable means the team member performed PM) tasks adequately and did contribute to team's simulation success. For team members to rating people a 4 (Excellent) or 5 (Outstanding) the person's particular behavior and skills significantly gave more value to the team's simulation effort.

**TABLE 1**  
**Summary of PM Student Performance**

<b>Rating</b>	<b>Unacceptable</b>	<b>Acceptable</b>	<b>Exemplary</b>	<b>Total</b>
<b>2005</b>				
<b>Number</b>	<b>7</b>	<b>31</b>	<b>51</b>	<b>89</b>
<b>%</b>	<b>8%</b>	<b>35%</b>	<b>57%</b>	<b>100%</b>
<b>2006</b>				
<b>Number</b>	<b>6</b>	<b>73</b>	<b>32</b>	<b>111</b>
<b>%</b>	<b>5%</b>	<b>66%</b>	<b>29%</b>	<b>100%</b>
<b>2008</b>				
<b>Number</b>	<b>12</b>	<b>68</b>	<b>3</b>	<b>83</b>
<b>%</b>	<b>14%</b>	<b>82%</b>	<b>4%</b>	<b>100%</b>
<b>2010</b>				
<b>Number</b>	<b>13</b>	<b>46</b>	<b>31</b>	<b>90</b>
<b>%</b>	<b>14.5%</b>	<b>51%</b>	<b>34.5%</b>	<b>100%</b>
<b>2012</b>				
<b>Number</b>	<b>TBD</b>	<b>TBD</b>	<b>TBD</b>	
<b>%</b>				

See Figure 2 for the project management rubric used in 2008.

To make change to any rubric one should reassess the summated rating scale that was used (Spector, 1992). The authors re-checked the definitions used for the survey's PM construct and found again by content validity using its curriculum assessment university faculty. Once the construct is confirmed, the scale being used can be looked at for changes. Our assessment faculty questioned having a five point rating scale because what would be the difference of an excellent (4) and outstanding (5) member. People could not articulate a significant difference between excellent and outstanding efforts. As Spector (1992) recommends not giving respondents any more choices than they can use. Despite student knowing the survey results, do not have impacts on their grade, will not stop certain students from providing accurate scores. This results from people having poor decision-making skills, people not working hard and then trying to create a new image, teams not getting along personally with each other, and being too young or experienced about doing personal evaluations. These factors all may affect results.

A last concern out rubric discussions was having varying weights identified for various PM scale items. The last three questions on Project Delivery were scaled to 10 points rather than 5. This was done in an attempt to make sure the PM rubric results can be measured out of 100 points. However, for assessment purposes there is no need to do this because just using an 85-point baseline can be just as effective (Spector, 1992) see Figure 3.

## WHERE IS THE PM RUBRIC HEADED?

There is now a final PM rubric going to be evaluated this fall and data from the survey is going to be collected by 30 December 2012. See Figure 4 for the next version PM rubric. The PM rubric data reduction and analysis has been completed by 15 January 2013. This new rubric takes into account that the course instructors may have impact on the student's Capsim performance. Now using the team's overall simulation performance gets factored into a student's PM score. The instructor factor gets added to individual scores based on the performance position of the team.

PM is a measure of a person's ability to work as a team. New PM definitions, measures, and findings concerning PM will be discussed at ABSEL 2013.

## CLOSING THOUGHTS

This paper begins to answer a series of questions: 1) "How and why was a PM assessment rubric developed? 2) What was reported at ABSEL? and 3) Where is this PM rubric heading? ABSEL is a wonderful organization able to discuss new ideas and areas affecting educators. With evaluating measuring of student's learned abilities against educational standards means that accreditation is so important. Our university's assessment experience offers suggestions for designed PM rubric to measure State-directed learning outcomes. Carefully developed rubrics can ensure students are learning powerful tools that push

organizations toward operating excellence and better execution. In order for student's learned PM skills developing into "best practices", they must be demonstrated successfully over time, delivering quantifiable, positive results, and be repeatable (Thompson, Gamble, & Strickland, 2004). We now must verify over time and document that students can identify and rate PM team activities effectively. Again, this leads us toward future investigations in our evolving PM ALO.

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## FIGURE 1 SURVEY INSTRUCTIONS

### **Please Help the College of Business & Management/MIS Department:**

The College of Business is developing rubrics to help us assess the Academic Learning Outcomes (ALO) within MAN4720. One ALO, we try to measure is: Do students demonstrate an ability to successfully perform elements of **Project Management** as a **CAPSIM team** member. Project Management is defined as the ability to plan, schedule, and control a project from start to finish. CAPSIM is a project because teams take responsibility to operate a sensor manufacturing company with limited budgets, time, and resources...all being accomplished in one academic semester.

Project Management: the concept is measured by evaluating the skills needed to complete successful project management. **Who can evaluate what team members did for the project?** Team members! Not faculty! Because team members witness the actual skills team members contribute to the project or lack there of.

- Project Management Skills Defined:
- **Project Planning:** How did a team member assist in the development of their CAPSIM plan; Did they contribute by identifying required tasks, responsibilities, deadlines, and performance expectations.
- **Individual Work Skills:** As an individual, did the team member set appropriate completion goals, manage personal timeframes & schedule appropriately, and complete all required tasks in a timely and professional quality manner.
- **Team-Work Skills:** As a team member, did the individual positively contribute to achieving team objectives, completing their team responsibilities, mediating any conflicts among members, participating in all scheduled team activities, and responding quickly and effectively to team feedback.
- **Project Delivery:** How did this individual contribute to the final project's on-time delivery, to it complying with all MAN4720 requirements, making valid product and process suggestions, and to accurately assessing the quality of their personal contribution?

Please fill out a **SEPARATE SURVEY FOR EACH MEMBER OF YOUR GROUP.**

This survey is being used by us to assess **CAPSIM** and **WILL NOT** be used for grading purposes. Fill out separate surveys for each of your team members and yourself.

Thank you for your help and thanks for a great semester!

Drs Hornyak, Snyder, and Lawlor

**FIGURE 2**  
**ASSESSMENT OF PROJECT MANAGEMENT SKILLS**  
**IN THE CAPSTONE COURSE -- FALL 2008**

**Name of Team Member:** \_\_\_\_\_ **Team:** \_\_\_\_\_ **Self-Assessment:** \_\_\_\_\_

***INSTRUCTIONS: On a separate form for each team member, including yourself, place an X to identify level project management efforts. Use the rating definitions below for your answers.***

1. **UNSATISFACTORY:** Team member failed to provide minimal contributions for input point. Team member had a significant negative impact on team performance and/or created extra work for other team members through late or unsatisfactory contributions.
2. **BELOW EXPECTATIONS:** Significant or repeated shortfalls in performance that negatively impacts overall team performance. Team member did not significantly modify behavior after being advised of problems.
3. **MEETS EXPECTATIONS:** Team member generally performed in a manner reflective of a serious, contributing member. May have committed occasional minor errors (e.g., late to meetings) but not to the extent it was a negative impact on the team. May have occasionally done extra work or put in extra effort, but of the type you would expect a team member to reasonably do.
4. **EXCEEDS EXPECTATIONS:** Team member consistently performed in a manner beyond what would be reasonably expected, and was a strong positive influence on the team and its performance. May have done significant extra work, helped other team members with their tasks, or provided extra effort wherever needed.
5. **WELL EXCEEDS EXPECTATIONS:** Team member consistently performed task far beyond reasonable expectations, and measurably improved team's overall performance. This category is for the rare occasion of truly superior performance.

<b>A. Project Planning</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>In this section, assess performance concerning the team's approach to planning the project.</b>	<b>Pts.</b>	Un-satisfactory	Below	Meets	Exceeds	Well Exceeds
Identify Required Tasks	5					
Assign Responsibilities for Tasks	5					
Establish Deadlines for Tasks	5					
Agree On Performance Expectations	5					

<b>B. Individual Work Skills</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>In this section assess tasks accomplished individually to the best of your knowledge.</b>	<b>Pts.</b>	Un-satisfactory	Below	Meets	Exceeds	Well Exceeds
Sets appropriate goals for completing individual tasks	5					
Manages timeframe and schedule appropriately	5					
Completes all individual tasks in a timely manner	5					
Completes all individual tasks with appropriate quality	5					

<b>C. Team-Work Skills</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>In this section, grade performance as a team member towards accomplishing team objectives.</b>	<b>Pts.</b>	Un-satisfactory	Below	Meets	Exceeds	Well Exceeds
Contributes positively to accomplishing team objectives	5					
Effectively completes responsibilities	5					
Effectively mediates conflict among team members	5					
Participates in all scheduled team activities.	5					
Responds effectively to feedback	5					

<b>D. Project Delivery</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>In this section, assess the impact of the team member's performance on the overall final project.</b>	<b>Pts.</b>	Un-satisfactory	Below	Meets	Exceeds	Well Exceeds
Team projects delivered on	5					
Effectively complied with project	10					
Makes valid suggestions for improving process & product	10					
Able to accurately assess quality of personal contribution	10					

Total Project Management Points: 100  
 Exemplary: 85 – 100      Acceptable: 73 – 84.9      Unacceptable: <72.9

**FIGURE 3**  
**ASSESSMENT OF PROJECT MANAGEMENT SKILLS**  
**IN THE CAPSTONE COURSE -- FALL 2010**

**Name of Team Member:** \_\_\_\_\_

**Team:** \_\_\_\_\_ **Self-Assessment:** \_\_\_\_\_

***INSTRUCTIONS: On a separate form for each team member, including yourself, place an X to identify level the project management efforts demonstrated by each person on your team.***

***Project management is defined as the task of getting required activities done on time, within budget, & meeting project specifications. Use definitions below when answering this survey.***

1. **UNSATISFACTORY:** Team member failed to provide minimal contributions for input point. Team member had a significant negative impact on team performance and/or created extra work for other team members through late or unsatisfactory contributions.
2. **BELOW EXPECTATIONS:** Significant or repeated shortfalls in performance that negatively impacts overall team performance. Team member did not significantly modify behavior after being advised of problems.
3. **MEETS EXPECTATIONS:** Team member generally performed in a manner reflective of a serious, contributing member. May have committed occasional minor errors (e.g., late to meetings) but not to the extent it was a negative impact on the team. May have occasionally done extra work or put in extra effort, but of the type you would expect a team member to reasonably do.
4. **EXCEEDS EXPECTATIONS:** Team member consistently performed in a manner beyond what would be reasonably expected, and was a strong positive influence on the team and its performance. Performed significant extra work, helped other team members with their tasks, or provided extra effort wherever needed.

<b>A. Project Planning</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>In this section, assess performance concerning the team's approach to planning the project.</b>	<b>Pts.</b>	Unsatisfactory	Below Expectation	Meets Expectation	Exceeds Expectation
Identify Required Tasks	5				
Assign Responsibilities for Tasks	5				
Establish Deadlines for Tasks	5				
Agree On Performance Expectations	5				

<b>B. Individual Work Skills</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>In this section assess tasks accomplished individually to the best of your knowledge.</b>	<b>Pts.</b>	Unsatisfactory	Below Expectation	Meets Expectation	Exceeds Expectation
Sets appropriate goals for completing individual tasks	5				
Manages timeframe and schedule appropriately	5				
Completes all individual tasks in a timely manner	5				
Completes all individual tasks with appropriate quality.	5				

<b>C. Team-Work Skills</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>In this section, grade performance as a team member towards accomplishing team objectives.</b>	<b>Pts.</b>	Unsatisfactory	Below Expectation	Meets Expectation	Exceeds Expectation
Contributes positively to accomplishing team objectives	5				
Effectively completes responsibilities	5				
Effectively mediates conflict among team members	5				
Participates in all scheduled team activities.	5				
Responds effectively to feedback	5				

<b>D. Project Delivery</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>In this section, assess the impact of the team member's performance on the overall final project.</b>	<b>Pts.</b>	Unsatisfactory	Below Expectation	Meets Expectation	Exceeds Expectation
Team projects delivered on time	5				
Effectively complied with project requirements	5				
Makes valid suggestions for improving process & product	5				
Able to accurately assess quality of personal contribution	5				

Total Project Management Points: 85: Exemplary: 72-85 points    Acceptable: 51-71.9 points    Unacceptable: <=50-9



**FIGURE 4**  
**ASSESSMENT OF PROJECT MANAGEMENT SKILLS**  
**IN THE CAPSTONE COURSE -- FALL 2012**

Name of Team Member: \_\_\_\_\_ Team: \_\_\_\_\_ Self-Assessment: \_\_\_\_\_

***INSTRUCTIONS: On a separate form for each team member, including yourself, place an X to identify level the project management efforts demonstrated by each person on your team.***

***Project management is defined as the task of getting required activities done on time, within budget, & meeting project specifications. Use definitions below when answering this survey.***

1. UNSATISFACTORY: Team member failed to provide minimal contributions for input point. Team member had a significant negative impact on team performance and/or created extra work for other team members through late or unsatisfactory contributions.
2. BELOW EXPECTATIONS: Significant or repeated shortfalls in performance that negatively impacts overall team performance. Team member did not significantly modify behavior after being advised of problems.
3. MEETS EXPECTATIONS: Team member generally performed in a manner reflective of a serious, contributing member. May have committed occasional minor errors (e.g., late to meetings) but not to the extent it was a negative impact on the team. May have occasionally done extra work or put in extra effort, but of the type you would expect a team member to reasonably do.
4. EXCEEDS EXPECTATIONS: Team member consistently performed in a manner beyond what would be reasonably expected, and was a strong positive influence on the team and its performance. Performed significant extra work, helped other team members with their tasks, or provided extra effort wherever needed.

<b>A. Project Planning</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>In this section, assess performance concerning the team's approach to planning the project.</b>	<b>Pts.</b>	Unsatisfactory	Below Expectation	Meets Expectation	Exceeds Expectation
Identify Required Tasks	5				
Assign Responsibilities for Tasks	5				
Establish Deadlines for Tasks	5				
Agree On Performance Expectations	5				

<b>B. Individual Work Skills</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>In this section assess tasks accomplished individually to the best of your knowledge.</b>	<b>Pts.</b>	Unsatisfactory	Below Expectation	Meets Expectation	Exceeds Expectation
Sets appropriate goals for completing individual tasks	5				
Manages timeframe and schedule appropriately	5				
Completes all individual tasks in a timely manner	5				
Completes all individual tasks with appropriate quality.	5				

<b>C. Team-Work Skills</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>In this section, grade performance as a team member towards accomplishing team objectives.</b>	<b>Pts.</b>	Unsatisfactory	Below Expectation	Meets Expectation	Exceeds Expectation
Contributes positively to accomplishing team objectives	5				
Effectively completes responsibilities	5				
Effectively mediates conflict among team members	5				
Participates in all scheduled team activities.	5				
Responds effectively to feedback	5				

<b>D. Project Delivery</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
<b>In this section, assess the impact of the team member's performance on the overall final project.</b>	<b>Pts.</b>	Unsatisfactory	Below Expectation	Meets Expectation	Exceeds Expectation
Team projects delivered on time	5				
Effectively complied with project requirements	5				
Makes valid suggestions for improving process & product	5				
Able to accurately assess quality of personal contribution	5				

Total Project Management Points: 100 with Student's Assessment Points: 68 and Faculty Assessment Points 32  
 Exemplary points: > 90% Acceptable points: = 73%-89.9% Unacceptable: <=72.9