University of West Florida Quality Enhancement Plan

FINAL REPORT

Assessing Project Management Skills: Managing A Total Enterprise Simulation

E. Brian Peach, Ph.D.
Associate Professor
The University of West Florida
College of Business
Department of Management/Management Information Systems
11000 University Parkway
Pensacola, FL 32514-5752
Office: (850) 474-2312
Home: (850) 968-9533
bpeach@uwf.edu

Martin Hornyak, Ph.D.
Assistant Professor
The University of West Florida
College of Business
Department of Management/Management Information Systems
11000 University Parkway
Pensacola, FL 32514-5752
Office: (850) 474-2339
Home: (850)
mhornyak@uwf.edu

KEYWORDS
Learning
Total Enterprise Simulations
Objectives

ABSTRACT

A pilot study was conducted in Fall 2005 to assess the project management skills of graduating seniors. Instructors of each of the three sections of MAN 4720 (Business Policy) used a simulated strategy competition where groups of students compete with other groups in a computer simulated market place. The simulation required participation in group decision making, and preparation of written group reports. Effectiveness in management of these course projects was assessed using a standardized rubric developed by the instructors (Appendix A). It was found that the rubric used did not adequately capture individual project management skills. It was also found that the instructors used different instructions and sources of data for capturing student performance on the rubric elements, diluting the interpretability of the results.

PROJECT OVERVIEW

Program Management is one of the UWF Core Student Learning Outcomes/University-Level Domains identified in the UWF Quality Enhancement Program (QEP). Developing and administering an appropriate assessment of program management skills is a critical aspect for both UWF and the College of Business in the development and inclusion of program management materials in the curriculum.

The COB is currently working on improving the embedding of project management skills throughout the COB curriculum. MAN 4720 is the capstone course in the COB curriculum, and thus is a logical place to assess program management skills of graduating students. MAN 4720 currently includes a Total Enterprise Simulation as an important part of the course. Because the simulation reflects all aspects of managing a firm in a competitive environment, it requires students to exercise program

management skills to ensure all components are accomplished in an effective and timely manner.

The Assessment Simulation The Total Enterprise Simulation encompasses all five of the stated domains in the Academic Learning Compact (ALC): content, critical thinking, communication, integrity/values, and project management. Project management was assessed through a combination instructor/student rubric: the instructor assessed the team's project management skills at providing timely output, and the team members assessed the internal project management process.

For the assessment, students were required to make group based decisions weekly for twelve decisions. They were also required to submit a series of written reports. Accomplishment of these tasks required students meet individual deadlines for contribution to the group, and for the group to deliver reports and make decisions by specified deadlines. The Policy course instructors developed a rubric (Appendix A) to assess the usage, efficacy and effectiveness of project management skills in completing the required tasks.

Capstone is a complex Total Enterprise Simulation allowing students to apply their disciplinary skills (marketing, management, accounting, finance, production, etc.) in a competitive environment. The following discussion elaborates on the nature and variety of required project management related tasks.

Team member assignments: The simulation's complexity requires teams go through a division-of-labor process and assign specific tasks to individual members. Failure to identify all relevant tasks will adversely affect performance. As the simulation progresses, the ability of a team to recognize unassigned tasks and reassign tasks is a

critical performance requirement. *The specific learning outcome is Project Management related due to the necessity to recognize required tasks and develop the ability to effectively assign and accomplish these tasks.*

Schedule meetings: The simulation requires both individual and group work. Meetings must be scheduled such that time is allowed for completing individual assignments before having a group meeting. One decision round is played every week requiring at least one group meeting a week. *The specific learning outcome is Project Management related due to the necessity to plan a project sequence such that component parts are completed before the group meets.*

Regulate work: Completion of individual tasks in a timely manner requires self-regulation and discipline. *The specific learning outcome is Project Management related due to the necessity to accomplish individual assignments before the group meets.*

Group Processes: The completion of a weekly decision requires group members combine individual preferences and goals into a team decision. Typically team members can become very set on personal goals and/or agendas for their products or discipline-related assignment. This requires negotiation and compromise at the team level. *The specific learning outcome is Project Management related because students must develop skill at articulating and defending their proposals while remaining amenable to flexibility in achieving personal goals versus team objectives.*

Turn In Decisions: The weekly decision requires students to come to closure on a complex decision by a specific time. This requires making a myriad of decisions about multiple products in multiple competing segments that require compromise between product managers as well as between Marketing, Production, R&D, and Finance

managers. *The specific learning outcome is Project Management related because the project requires bringing together all of the diverse data and viewpoints to develop a common agreement..*

Develop Strategies: Once the critical issues are identified, students must be able to develop effective strategies to overcome threats and take advantage of opportunities. *The specific learning outcome is Project Management related because the strategies must be capable of being implemented within the time frame and capabilities of the simulation*

Produce Reports: There were two major deliverables in this project. The aforementioned weekly decisions, and a series of written reports to assess student success at situational analysis, issue identification, and strategy development. *The specific learning outcome is Project Management related because it required students to prepare and deliver in a timely fashion reports requiring input from all team members which required collaboration and cooperation.*

Overall, the use of a Total Enterprise Simulation directly supported the QEP goal of project management. Students were intimately involved in all aspects of the project from beginning to end. In addition, through completion of the evaluation rubric, the relationship of project management skills to the actual management of an intense experience should have reinforced the value of previously learned project management skills.

Project Management Assessment

A project is a one time only set of activities with a definite beginning and ending (DeCenzo & Robbins, p415, 200?). Project management is the task of getting the activities done on time, within budget and according to specifications (DeCenzo & Robbins, p415, 200?). Typically project management has three phases: planning, scheduling, and controlling (Heizer & Render, p56, 2004). The rubric used in the assessment added outcomes as a measured component.

There were two components for the project: (a) weekly simulation decisions, and (b) written reports, both of which had a student centered assessment and instructor centered assessment.

- Students assessed their teammates on all three primary aspects of the project management *process*: (a) planning, (b) process and control, and (c) producing project deliverables.
- Instructors assessed the project *deliverables* generated by the groups: (a) simulation performance, and (b) written reports.

Development of a pilot project management assessment rubric was a major feature of this proposed project. It is shown in Appendix A. The rubric was based on relevant references (Angus, Gunderson, & Cullinane, 2003; Ghattas,& McKee, 2001; Levine, 2005; Meredith, & Mantel, 2003; Nicholas, 2001; Wysocki, 2003) and was intended to capture the aspects of project management as articulated in the course management process.

Instructional Learning Enhancements The simulation is embedded in the business capstone policy course which covers the theories and frameworks student should use in

making decisions and preparing reports. Thus the simulation provides the student the opportunity to apply in a realistic competitive environment the discipline specific skills and knowledge acquired in the BSBA curriculum. This project provided students with a structure to enhance the relationship between course concepts as an abstract and the realistic application of concepts in a competitive environment.

The use of simulations as a pedagogical tool has been supported in a variety of empirical research efforts (Gentry, 1990). Active learning/student engagement derive directly from the competitive environment of team against team due primarily to peer pressure but also the desire for a good grade. This forces students to use greater diligence in acquiring an understanding of theoretical concepts and models as they apply to real world situations.

PROJECT RESULTS AND INTERPRETATION

The rubric was administered in three sections of Policy with an N=89 completed forms. The various tasks were allocated points that added to 100. Scores over 90 were deemed exemplary, between seventy three and ninety were acceptable, and scores below 73 were unacceptable.

The initial evaluation led to the following: 57% exemplary, 35% acceptable, and 8% unacceptable. The instructors questioned the relatively high number of exemplary ratings. Closer examination of the completed rubrics found that many students rated their team mates 100% at every single task. It was considered doubtful these ratings reflected real feelings. Further discussion among the instructors resulted in identifying that each of the three instructors had provided different instructions to their classes. One simply included the rubric form as part of a packet to be completed and turned in

and the students had no guidance other than what was provided on the form. Another included as part of additional verbal instructions to the class that the forms would not be part of any student's grade, and some guidance on the meaning of the rating forms. The third instructor clearly emphasized that the forms were a research project and totally unrelated to any grade in the course, and provided additional definitional guidance as to what the items on the form meant. The first instructor's forms were generally rated 100% at everything. The majority of the second instructor's forms were rated 100%. None of the third instructor's forms were rated 100% at every task. Thus it was concluded that the nature of instructions provided the students significantly affected their assessments. Although all three instructors had left the rubric development process with what they believed was a clear understanding of the rubric administration process, it became clear that there was no common understanding. The three instructors concluded that the results were not reliably interpretable because it appeared likely that many students had inflated their assessments, and that the assessments were in any event flawed because it was likely the students did not have a common basis for interpreting the assessment categories.

The conclusion was that the rubric needed revision to increase clarity of the item categories. In addition, an instruction sheet with explicit and expanded definitions of what each assessment item was intended to capture would be provided with the rubric assessment form. And third, it would be made explicitly clear that there was no linkage between the form and a student's grade.

The Pilot Study was considered a success because it identified problems with the Pilot Rubric that will result in an improved assessment process. All three instructors had

previous experience in developing rubrics, understood the technical difficulties and challenges involved, and had expended significant effort over a period of time in developing the rubric. The authors believe that the results of the Pilot Study re-emphasize the necessity of a pilot study to uncover just such unexpected problems.

DISSEMINATION AND INSTITUTIONALIZATION

The process and results of the project have been documented and presented at conference proceedings (Hornyak, Peach, Bowen, Moes, & Wheeler, 2006; Hornyak, Peach, & Snyder, 2007) and a journal article (Peach, Mukherjee, & Hornyak, 2007). The Center for Teaching, Learning and Assessment (CUTLA) has distributed information to the various colleges through its website, and presentations have been made to CUTLA sponsored cross-community conferences and seminars. We expect this rubric to continue to be presented at relevant meetings, conferences, and workshops both on campus and throughout the country.

The lessons learned from examining project management in the Capstone Simulation have led to a revised rubric which will be administered annually in the Capstone Policy course. Thus the development of this rubric has been incorporated as a permanent part of the simulation process. All future MAN 4720 courses should benefit from this project.

CONCLUSION

The Pilot Project was a critical first step in developing a useful rubric to assess project management skills of graduating business seniors. Although data captured by the pilot rubric contained serious flaws due to inadequacies of the pilot rubric, it provided the basis for an improved rubric, and a basis for future assessment of project management

skills. It reinforced the necessity to conduct a pilot study when introducing new assessment devices, even when the rubric developers are relatively experienced. The pilot project also provided some lessons learned that when shared with colleagues can help prevent repetition of these errors.

The College of Business has developed a Project Management course available as an elective. It is expected that on ly a small percentage of the college will take this course. As the cohorts taking this class reach the Capstone course, through this assessment device it may be possible to determine the additive benefit of a course specifically dedicated to project management, providing useful feedback to curriculum developers. Project management has been identified as one of the institution's five learning objectives. Clearly assessment is necessary to identify in a useful manner whether we are accomplishing this objective. This pilot project has laid the groundwork for such assessment.

REFERENCES

Angus, R.B., Gunderson, N.R, & Cullinane, T.P. 2003. *Planning, Performing, and Controlling Projects.* 3rd Ed. Columbus, OH: Prentice-Hall.

Gentry, J. 1990. *Guide to business gaming and experiential learning*. East Brunswick, NJ: Nichols/GP Publishing.

Ghattas, R.G. & McKee, S.I. 2001. *Practical Project Management,* Columbus, OH: Prentice-Hall.

Heizer, J., & Render, B. 2003. Principles *of Operations Management. 5th Ed.* Upper Saddle River, NJ: Pearson/Prentice Hall.

Hornyak, M. J., Peach, E. B., & Snyder, S. J. 2007. Assessment and simulations: Measuring the academic learning compacts within. *Developments In Business Simulation and Experiential Learning*, *34*, 215-224.

Hornyak, M.J., Peach, E. B., Bowen, A., Moes, W., & Wheeler, R. 2006. Examining program management in business simulations: Student and faculty views. *Developments In Business Simulation and Experiential Learning*, *33*, 107-117.

Levine, H.A. 2005. *Project Portfolio Management: A practical guide for selecting projects, managing portfolios, and maximizing benefits*. San Francisco, CA: Jossey-Bass.

Meredith, J.R. & Mantel, S.J. 2003. *Project Management – A managerial approach, 5th Ed.* New York, NY: John Wiley & Sons, Inc.

Nicholas, J.M. 2001. *Project Management for Business and Technology, 2nd Ed.* Columbus, OH: Prentice-Hall.

Peach, E. B., Mukherjee, A., and Hornyak, M.J. July/August 2007. Assessing critical thinking: A college's journey and lessons learned. *Journal of Education for Business, 82(6),* 307-313.

Robbins, S.P. & Decenzo, D.A. 2004. *Fundamentals of Management:: Essential concepts and application*, Columbus, OH: Prentice-Hall.

Wysocki, R.K. 2003. *Effective Project Management 3rd Ed.* Indianapolis, IN: Wiley Publishing.

APPENDIX A – Project Management Assessment Rubric

APPENDIX B - Powerpoint presentation

RUBRIC: FALL 2005

Assessment of Project Management Skills in the Capstone Course

(How students manage the simulation project)

Name of Student: _____

Input Points:	0 - 1	2 3	4 - 5	
Project Planning	Fails to meet expectation	Meets Expectation	Exceeds Expectations	**25 Points**
Appropriate team contract written & signed				**/5**
Decision work breakdown structure & timeline				**/10**
Using acceptable models (M&O, Strategy, I&CA)				**/10**

Process Points:	**0 - 1**	**2 - 3**	**4 - 5**	
Project Process (Scheduling/Controlling)	Fails to meet expectation	Meets Expectation	Exceeds Expectations	**25 Points**
Attends group meetings				**/5**
Arrives on time for group meetings				**/5**
Arrives prepared for group meetings				**/5**
Participates in group meeting discussions				**/5**
Works effectively as a group member				**/5**

Output Points:	**0 - 1**	**2 – 3**	**4 - 5**	
Project Delivery (Controlling)	Fails to meet expectation	Meets Expectation	Exceeds Expectations	**50 Points**
Delivers complete project decisions on time				**/10**
Delivers complete project write-ups on time				**/10**
Effective professional content & well-written				**/15**
Effective professional content & well-written				**/15**

Final Rating (Circle the rating based on total points)

Points range	Rating
90 -100	Exemplary
73 – 89	Acceptable
less than 73	Unacceptable

COB QEP Capstone & Project Management Pilot Studies

- **Assessing Project Management Academic Learning Compact in COB Capstone Course**
  - Martin J. Hornyak, University of West Florida
  - E. Brian Peach, University of West Florida
  - Stephen (LT) Snyder, University of West Florida

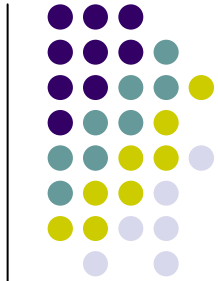
MAN 4720 Business Policy

- COB capstone course
- All graduating seniors must take
- Grade C or better
- Syllabus included exams & experiential efforts: indiv.written case study & simulation
- MAN4720 SLO's include Concepts, Critical Thinking, Communication & Project Mgmt
- Designated as COB's Assessment Location

Pilot Study : Assessment Learning Goals

- Demonstrate project management abilities

Project Management



- “One Time” only set of activities with definite start and finish
- Semester-long Capstone Simulation including individual, team practice, & team final learning events
- Three Phases of Project Management
  - Planning
  - Scheduling
  - Controlling

Standardized Expectations

- Same rubric used across all sections
- Standardized questions
- Coordination between 3 Capstone professors both for question verbiage and rubric implementation

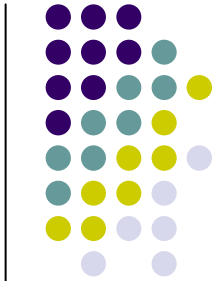
Rubric for Project Management

Pilot Study: Fall 2005
Assessment of Project Management Skills in the Capstone Course
(How students manage the simulation project)
Name of Student:_____

Input Points:	**0 - 1**	**2 - 3**	**4 - 5**	
Project Planning	Fails to meet expectation	Meets Expectation	Exceeds Expectation	**25 Points**
Appropriate team contract written & signed				**/5**
Decision work breakdown structure & timeline				**/10**
Using acceptable models (M&O, Strategy, I&CA)				**/10**

Instructor/Student Input

Rubric for Project Management



Pilot Study: Fall 2005
Assessment of Project Management Skills in the Capstone Course
(How students manage the simulation project)

Process Points:	0 - 1	2 - 3	4 - 5	
Project Process (Scheduling/Controlling)	Fails to meet expectation	Meets Expectation	Exceeds Expectation	**25 Points**
Attends group meetings				**/5**
Arrives on time for group meetings				**/5**
Arrives prepared for group meetings				**/5**
Participates in group meeting discussions				**/5**
Works effectively as a group member				**/5**

Instructor/Student Input

Rubric for Project Management

Pilot Study: Fall 2005
Assessment of Project Management Skills in the Capstone Course
(How students manage the simulation project)

Output Points:	**0 - 1**	**2 - 3**	**4 - 5**	
Project Delivery (Controlling)	Fails to meet expectation	Meets Expectation	Exceeds Expectation	**50 Points**
Delivers complete project decisions on time				**/10**
Delivers complete project write-ups on time				**/10**
Professional strategic plan write-up & effective content				**/15**
Well-written & complete strategic plan				**/15**

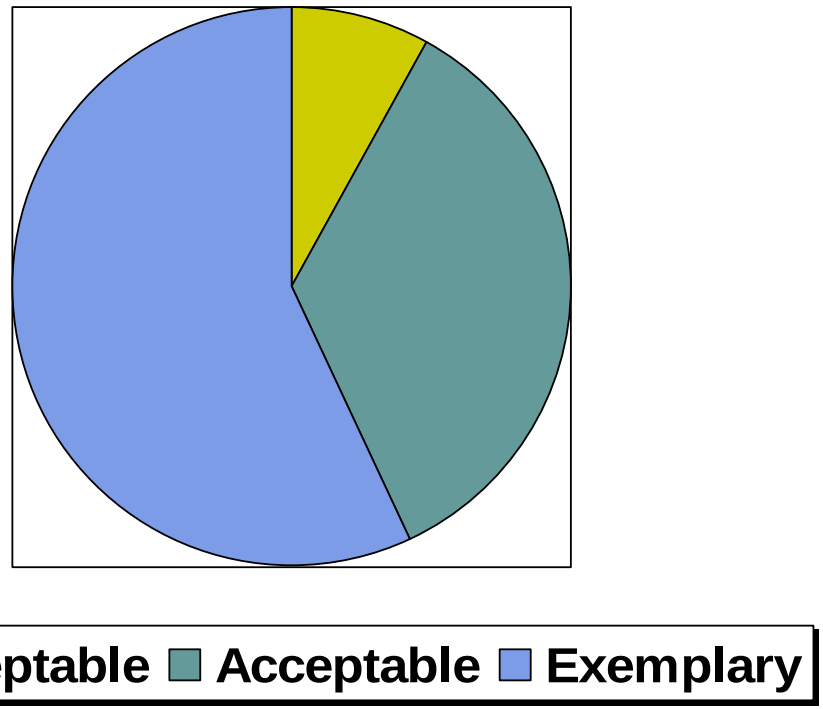
Final Rating (Circle the rating based on total points)

Points range	Rating
90 -100	Exemplary
73 – 89	Acceptable
less than 73	Unacceptable

Instructor/Student Input

FINDINGS

- Demonstrate program management ability in conducting simulation project
- n=89
  - 8% Unacceptable
  - 35% Acceptable
  - 57% Exemplary



Problems/Recommendations (PS2)

- Problems:
  - Current rubric does not adequately capture individual project mgmt skills
  - Instructors varied in data sources for capturing student performance
- Recommendation:
  - Restructure project mgmt skills rubric
  - Develop common data collection method

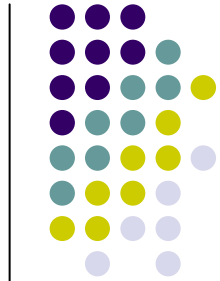
Interventions

- Examine QEP Project Management Elements To Improve Program Management Rubric; To Be Tested April 2006; Querying Outside Communities to Assess Approaches:
  - Invited speaker at South East Case Research Association (SECRA); February 2006; PS1
  - Presentation at Association of Business Simulation & Experiential Learning (ABSEL) National Meeting; March 2006;

Why we do the rubric efforts?

- To ensure graduates can take advantage of UWF's schools/colleges of Higher Learning AND Earnings

Capstone's Project Assessments



- Any thoughts concerning our pilot studies 1 & 2 assessment efforts?
- Thank you for your time, effort, & energy