

Pracademic Project Management: The Art of Blending Optimism with Reality^{1, 2}

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Abstract

Modern organizations strive to become more effective and efficient in Project Management activities but they tend to ignore the critical skills required for true success. A Pracademic approach to Project Management requires the understanding of the practical application of essential project management processes blended with realistic cost, schedule and quality constraints. The missing key to project success is the integration of essential skillsets and the unlearning- relearning application of real-world project experiences. These experiences are best learned through project management simulations. The importance of this publication is the clear explanation for why we continue to see organizations and projects make the same mistakes over and over even when they capture lessons learned and use best practices. Having the right person, at the right place, at the right time, doing the right thing is no longer the only challenge. We must add the right person, with the right set of project management skills, with the right lifelong learning objectives to the formula.

Keywords: Pracademic, Project Management Skills, Project Management Simulations, Practical Application, Unlearning-Relearning, Project Experiences, Project Management Research

Introduction

The purpose of this paper is to provide a framework of opinion, enlightenment and advanced learning based on the premise of Pracademic Project Management and current research. The clear definition of “Pracademic” is someone who is seen as both an academic and an active practitioner in their subject area. The term practitioner is not used to describe an expert, but is used more to describe someone who is on a journey of learning and experience. What we must remember is that

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² How to cite this paper: Deardorff, D. S. (2020). Pracademic Project Management: The Art of Blending Optimism with Reality; *PM World Journal*, Vol. IX, Issue XI, November.

“Project Management” is a lens of thinking that contains assumptions, interpretations and mental models that force the establishment of paradigms. These paradigms force many project managers into a predictable mindset of thinking that traditionally focuses on the execution of processes. Sometimes this is phrased as “Plan the work, then work the plan”. The philosophy of working harder, not smarter is the focus because there are no official PMI PMBOK steps for unlearning the old way we did things and re-learning new ways prior to working the plan. A quick example would be the project management skills required for an AGILE Project Management team versus a Traditional Project Management team.

The two other features of this publication will be the premise of Optimism and how it is connected to Reality. Too often we have heard about project teams that had poor execution performance indicators for schedule, quality and costs and continued to believe they were going to deliver a project on schedule or under cost. A good definition of these can be seen as the difference between Project Reality (Spundak, M, 2014) and Project Theory.

- **Project Reality** = a clear description and explanation of impacts and things exactly as they are and passes “the giggle test”.
- **Project Theory** = a theoretical foundation of processes anticipating success and failures based on what could happen under a perfect set of conditions.

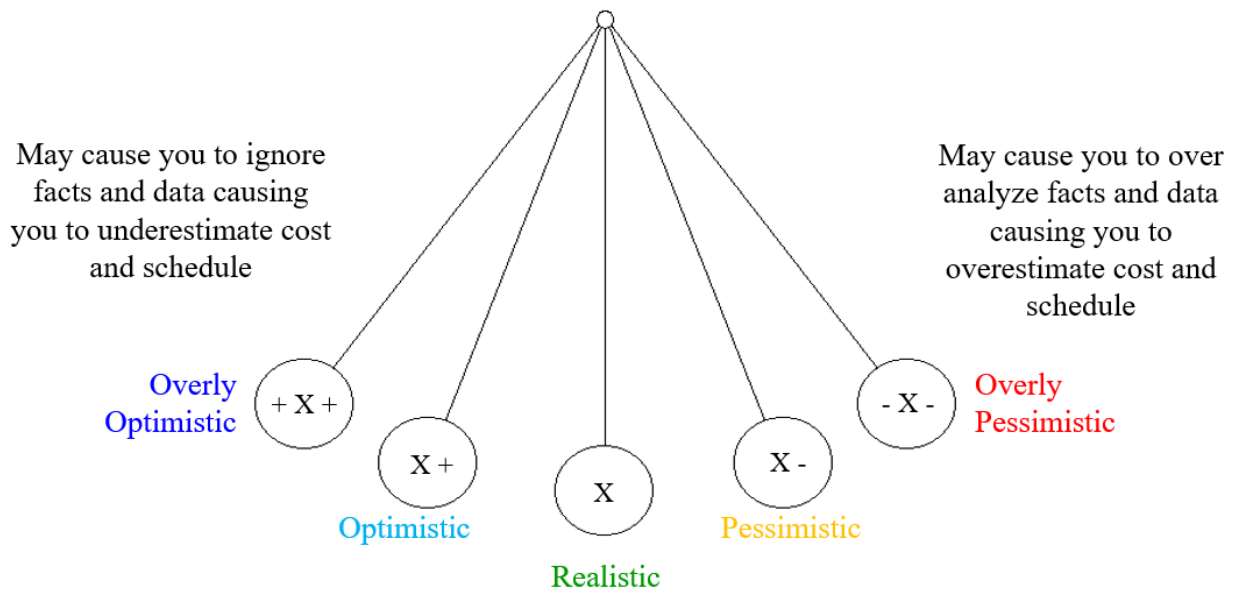
Additionally, it is proposed, by this paper’s author that organizations and the Project Managers (PM’s) working inside them function within the conceptual framework of a Project Pendulum where Optimism is on the left hand side and Pessimism (Alleman, M.,2014) is on the right hand side.

- **Project Optimism** = tending to see the brighter side of things allowing you to be convinced that things are getting better on a project.
- **Project Pessimism** = tending to see the worst aspect of things or believe that the worst will happen on a project.

A visual representation of this would look similar to the graphic provided in Figure 1.0 below:

Figure 1.0

Project Pendulum



All Project Managers have a thinking position (bias) on the pendulum where they present the cost and schedule status of their project based upon this position. This thinking position is established by their practical experience, current skills and current mental models. This unique composite is what makes all of us different. The word different for this publication does not mean “bad”, it simply means that we are not clones or identical to each other. Senior level Project Managers will tend to have more practical experience due to the length of time they have been involved in project management. They may also have more "skills" that have been refined due to this experience.

Younger Project Managers may have more academic experience and be on their personal learning journey trying to identify which PM skills are essential and need to be learned immediately to make them a solid PM. Many of them struggle with the balance between getting a PMP certification versus getting practical experience to refine their practical application skills. This paper will present these younger project managers and seasoned professionals with a list of the top 5 critical skills required to be a solid PM based on a three-year research project.

Additionally, this paper’s author will defend the use of project management simulations used in academic and professional learning applications. This defense is based upon research indicating that there is a valuable and enriching learning experience available for understanding the impacts of possible pitfalls and collaborative efforts reporting to a Project Management Office (PMO) (Darling, J., Whitney, J., 2016). A 2020 academic blind research project has been decomposed to answer two simple questions:

- Q1 – “Do project management simulations help you understand the course learning objectives better than not having a course simulation?”
- Q2 – “Does a project management simulation help you understand the role of the PMO (Project Management Office) better than not having a course simulation?”

The presentation of the research results were analytically evaluated to provide research significance and predictive reliability. Finally, this paper’s author will propose a collaborative project management augmented simulation learning experience for the future direction of academic and professional project management training.

Project Management Skills Research Study

In 2019, a SurveyMonkey survey was designed that identified 16 different project management skills and provided operational definitions for each of the skills. The survey research instrument and operational definitions are located in *Appendix A*. The online survey was run in 2019 and 2020 with data results collected and analyzed after each year’s submissions. This survey was provided to advanced project management online students (working professionals) at 3 separate universities in 5 different courses this paper’s author instructs/facilitates (see Table 1.0 below). These voluntary participants were requested to provide a simple rank ordering of 16 key project management critical skills by importance and identify any additional skills that were not listed.

Table 1.0

Research Universities and Courses

CSUN (California State University Northridge)

- XEM 911 – Pracademic Project Management for Industry Professionals
- MSE 402 – Engineering Project Management

DeVry University

- PROJ 330 – Human Resources & Communications in Projects
- PROJ 430 – Advanced Project Management

SNHU (Southern New Hampshire University)

- QSO 640 – Project Management

After the 2019 research data was collected, it was analyzed to provide a summary of the results. The 2020 data was not collected until after the start of the COVID 19 pandemic. This provided a pre-COVID 19 and a during COVID 19 snapshot of results. The ordinal structure for the top 5 skills adjusted ranking scores changed minimally over both time periods but, the same top 4 project management skills were identified in both research periods. Research results for both time periods are provided in the appendix. Finally, the results of both years were integrated to create a larger population score of results which are presented below:

Table 1A

Ordinal Structure of Top 5 Project Management Skills

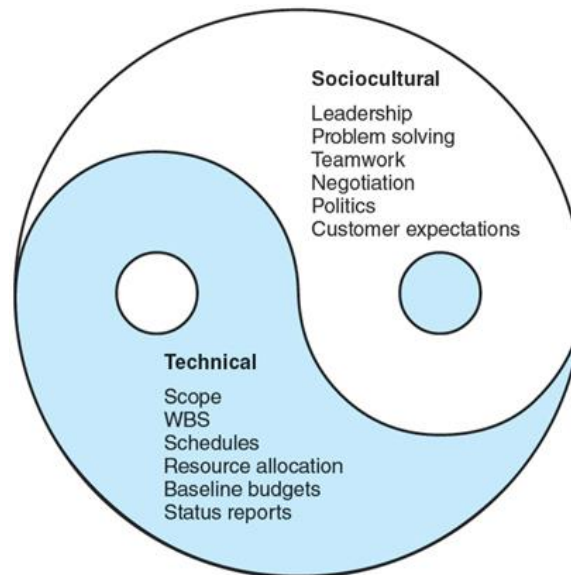
<u>Project Management Skill</u>	<u>% of Results</u>
#1 Communication	[13.21]
#2 Team Leadership	[12.28]
#3 Critical Thinking	[10.61]
#4 Planning	[10.75]
<u>#5 Time Management</u>	<u>[9.64]</u>
N=54	[Feb 13 th 2019 – Sept 17 th 2020]

Clearly, this data indicates that advanced project management training needs to encompass a blending of analytical (Critical Thinking, Planning & Time Management) and emotional (Communication, Team Leadership) intelligence elements. Project management is typically referred to as a socio-technical blending of art and skills. The term socio-technical also refers to a systems approach to complex organizational work designs that recognizes the interaction between people and technology in the workplace (Emmery, Trist, 1960).

In Figure 2.0 below, you can see the two different dimensions illustrated and the elements described. It has been proposed that the technical elements represent the science, while the sociocultural elements represent the art.

Figure 2.0

Socio-Technical approach to Project Management



Note: Image courtesy Larson & Gray, *Project Management the Managerial Process* 8E, McGraw Hill, 2021, p. 17

If we focus on the research results, the data indicates that the two most important elements required in project management are *Communication* and *Team Leadership*. The research survey definitions that support that thinking are:

- *Communication* – “The ability to listen to others and convey information, data or opinion to another effectively and efficiently with good verbal, non-verbal and written communication skills; helping to facilitate the sharing of information, data or opinion between people within an organization or entity.”
- *Team Leadership* – “The ability to provide guidance, instruction, direction and lead a group of individuals for the purpose of achieving a result or group of aligned results. Can motivate others to function in a goal-oriented manner.”

Both of these sociocultural skill elements (*Communication & Team Leadership*) require practice and exposure to multiple scenario situations to experience project management fundamental and advanced learning objectives. Situational learning is best accomplished through the use of “Simulations” which provide the learner to explore multiple answers. Learning situations can range from simplistic to complex. An example of this would be the difference between a space shuttle flight simulation compared to a simple discrete event system similar to the 1987 computer

game “Leisure Suit Larry”. “Larry” Laffer, a double entendre-speaking, leisure suit-wearing man in his 40’s did nothing more than walk around from scene to scene in pursuit of happiness.

The problem is that project management is actually a complex blend of human behaviors, interactions and decisions blended against technical project performance characteristics for cost, schedule and quality parameters. A truly accurate project management simulation model would require sophisticated AI (Artificial Intelligence) and AR (Augmented Reality). This type of learning system would be extremely expensive and would require tremendous development time. What is practical is a low-level simulation that focuses on the following 5 learning objectives:

1. Simple pro and con project management decision making scenarios with positive and negative event consequences.
2. Project Management scenario events which happen in the different project management phases of project execution.
3. Project Management Leadership activities with a project and other project team members.
4. Synchronous and asynchronous discussion opportunities with other student team members.
5. Alignment to the PMI PMBOK project phases and process philosophies.

If a simulation can accomplish these project management learning objectives, it will be valuable reinforcement to the learning required for Communication and Team Leadership. From a pracademic (Posner, L. 2009) perspective, we should recognize the impacts of the top highest ranked project management skills which did not change from year to year in the research study as described below:

Communication

Project Managers are required to provide a variety of communication methods and avenues for their internal and external stakeholders and project team members. Additionally, there are constant dynamic changes that occur creating the need to over-communicate. One of the essential identified communication skills required is the need for listening clearly and distilling critical technical information to others. PMI states that project communications management includes “the processes required to ensure timely and appropriate generation, collection, dissemination, storage, and ultimate disposition of project information.” (PMBOK® Guide, 2000, p.117)

From a practical standpoint, the project manager is the “team cheerleader” who is responsible for helping to motivate and encourage team members to increase their effectiveness and efficiency. Project Management is a blended leadership position that typically requires many management functions based on performance, cost and schedule. Project managers with poor communication

skills usually struggle and are not seen as competent compared to their counterparts who excel at communications.

Team Leadership

Team Leadership is a unique function that requires the skills of leading others and at times the necessity to anoint others to lead the team in certain technical or unique times. The Team leadership position is one where the mission/purpose of the team is to perform the duties necessary to follow the PMI SDLC (System Development Life Cycle) 5-phases. Each phase may require unique people resources and stages to successfully complete. The typical team structure that wins the proposal and starts the project is not the same team that designs and develops the hardware for testing and acceptance followed by a different team for closing the project.

From a practical standpoint, Team Leadership is required to track the project's success based on cost and schedule metrics. The project team's status, based on budgets and earned value, are responsibilities of team leadership in addition to the day-to-day project performance planning. Additionally, team leadership is the ability to mentor, coach and direct others to increase their project performance.

Critical Thinking

Project Managers and Project Teams are required to have the skills for critical thinking to help resolve problems and capture opportunities. Critical thinking, as defined by the *Foundation for Critical Thinking*, is “the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action”.

From a practical standpoint, critical thinking is the ability to think clearly and rationally, understanding the logical connection between ideas. Critical thinking is based on the skills to understand, identify, construct and evaluate arguments, detect inconsistencies and common mistakes in reasoning, solve problems systematically and identify the relevance and importance of beliefs and values.

Planning

Project Managers are required to create and execute the plan that covers how the project will be implemented, examined, and controlled. This plan is concerned with deciding in advance what, when, how, and who will take the necessary actions to accomplish established objectives. It utilizes input from the team members, team stakeholders and any previous lessons learned or best practice calculations. Additionally, the planning is broken down into project milestones or inch

stones. The day-to-day activities are evaluated to find the optimal path thru the critical path. This process requires a clear determination of activity slack and delays using activity-on-node analysis and projections.

From a practical standpoint, the project manager is responsible for getting the right people, at the right place, doing the right thing as described in the project schedule. This planning activity requires looking into the future and making predictions on what contributing factors may change and how to not only anticipate them but to exploit them for project success.

The results indicate that a blend of soft skills (Communication & Team Leadership), thinking skills and analytical technical based skills (Planning & Critical Thinking) are required for optimal Project Management personnel. Focusing on just one area in a learning format is not enough due to the interconnected nature of a project. Additionally, the dynamic and constantly changing nature of a project require real-time change and constant re-evaluation of the project's status.

Project Management Simulation

Project Management simulations are used for project management training and project performance analysis to create an interactive learning activity. They typically provide participants with situations and problems that arise in the real world. Ultimately, the participants are required to conduct some level of decision making which leads to project consequences based on the parameters of cost, schedule, quality and human factors. Some of these simulations are created as games with limited learning capabilities. Others are focused on specific project management elements such as change management, earned value management, requirements management and the evolution of a project's cost and schedule performance over a specific time period.

As proposed by Subramanyan & Moorth (2016), "Learning is at its best when it is goal-oriented, contextual, interesting, challenging, and interactive" (Clark N.Q2005). Additionally, in the context of a project management simulation, there needs to be a real situation that the participants can engage in by ongoing role play. This could also be described as a "serious game" (Djaouti D. et al 2011) that replicates the potential concepts of an educational case study. Finally, there needs to be some level of participant level motivation to explore the consequences and incentives of a simulated learning environment. The hard part is determining what this is in an advanced learning environment such as grades, certifications or future opportunities. We know that the future of today's work will be learning. You need more than a sense of accomplishment and pride, you need a hunger for complex thinking that is reflected in project decision making, team work, and the ability to learn and re-learn based on project lessons learned and best practices.

Academic Project Management Simulation

In early 2018, this paper's author and the Rocky Peak Leadership Center developed an 8 week online CANVAS professional project management course as a project management simulation called PM-911. This standalone course was designed to replicate an energy company's structure where the student participants are placed on a Project Team reporting to a member of the simulation company PMO. Each week, the company utilized the PMO representative to provide company status that offered opportunities and challenges due to weekly "curve-ball" events that occurred.

The simulation design was formulated to provide a technical challenge that continued each week, which would have possible decisions that each weekly team leader would be required to answer for a technical team. These decisions were based on recurring project management cost, schedule, quality, performance and people resource challenges that this paper's author has seen over the last 30 years while working at Lockheed Aircraft, Vista Controls Corporation, Rockwell Rocketdyne, and Boeing Aerospace and Defense Systems.

This project management simulation was uploaded and installed at UMASS (University of Massachusetts at Amherst) in a MIE 670 course module and was run as a pilot in 2018 and as part of the course curriculum in 2019 and 2020. In 2019 the CSUN (California State University Northridge) MSE 402 course was designed for a Master in Engineering program. A list of the Courses which have used the simulation are found in Table 2.0.

Table 2.0

Academic Courses utilizing PM-911 Simulation

- UMASS Sept 2018 (Pilot) – Used in MIE 670 class Technical Project Management online course
- UMASS Jan. 2019 – Used in MIE 670 class Technical Project Management online course
- CSUN June 2019 – Used in MSE 402 Engineering Project Management course.
- UMASS Jan. 2020 –Used in MIE 670 class
- CSUN June 2020 - Used in MSE 402 Engineering Project Management course.
- UMASS June 2020 – Used in MIE 670 class Technical Project Management online course
- CSUN Sept. 2020 – Used in XEM 911 Pracademic Project Management for Industry Professionals online course.

Project Management Simulation Survey

For the Sept. 2020 presentation of the project management integrated learning simulation at CSUN (California State University Northridge), the students end of course survey was modified with an additional question to allow the following question to be asked of the volunteer course participants.

“Did the ECS project management simulation help you understand the course learning objectives and role of the PMO (Project Management Office) better than not having a course simulation? (Yes or No)...please explain why – “

The blind responses were decomposed and the initial question separated into 2 separate questions with the responses analyzed individually. The survey response explanations were broken into major project management themes and categorized. The initial responses to the questions were as follows:

Question 1A first part response and comments:

Q1 – “Do project management simulations help you understand the course learning objectives better than not having a course simulation”? (**Yes – 86.67% with a 90% confidence factor**)

- Reinforced the practical application of preparing, planning, organizing, managing and revising a project.
- Allowed me to understand and apply project management concepts.
- Provided guidance and curve-balls to clearly understand project management aspects.

Question 1B second part response and comments:

Q1 – “Does a project management simulation help you understand the role of the PMO (Project Management Office) better than not having a course simulation”? (**Yes – 86.67% with a 90% confidence factor**)

- Provided a real-world representation of project management setbacks and advancements allowing a hands-on experience.
- Provided a team based collaborative project environment that represented a professional setting.
- Allowed practice and reporting to a PMO to understand these interactions.
- Accurately simulates a project management role including real-life project pressures.

The survey responses clearly answer “Yes” to the 2-part question provided. The acknowledgement that a project management simulation can help reinforce both the course learning objectives and help to clarify the role of a PMO (Project Management Office) in a project structure is a very positive position. What must also be understood is that this learning simulation is not a stand-

alone experience. The project simulation resides within an academic learning module that also contains the following:

- Live-Lectures,
- Guest Lectures
- Recorded Lectures
- Threaded Discussions
- Team Meetings
- Team Assignments
- Required Textbook reading
- Assuming a project Team Leadership position
- Team Final Presentation Out brief
- Team Project Report

All of these project management learning features are interconnected with each other creating a learning mosaic. Pointing to one specific learning element and saying that it's the specific reason that a learning course is successful cannot be stated. The simulation can be seen as an integrated stimulus that assists the learning participant in understanding project management objectives and goals.

CONCLUSION

Project Management Skills Research Study

[1] Pre-COVID 19 pandemic (2019) and during COVID 19 pandemic (2020) results for the top 5 project management skills did not vary enough to show a statistical significance.

[2] The top 5 essential project management skills identified from the summation of the 2019 & 2010 research were as follows:

- # 1 - Communication Skill
- #2 – Team Leadership Skill
- #3 – Critical Thinking Skill
- #4 – Planning Skill
- #5 – Time Management Skill

[3] Any advanced project management training/education should include a blend of both technical and sociocultural skills and elements.

Academic Project Management Simulation

[4] – The use of project management simulations helps you understand the course learning objectives better than not having a course simulation.

[5] – The use of a project management simulation helps you understand the role of the PMO (Project Management Office) better than not having a course simulation.

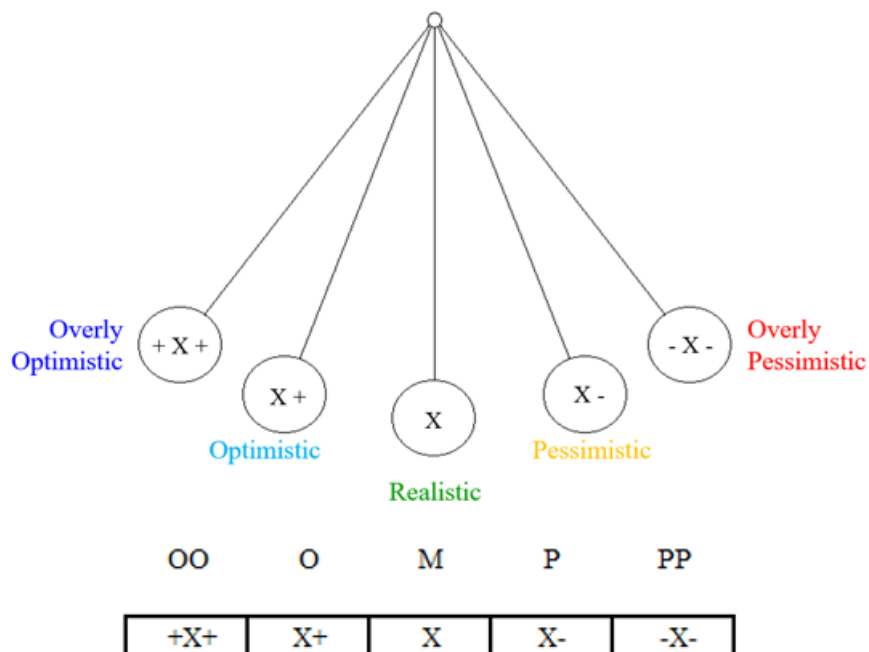
[6] – The use of a project management simulation is not a standalone learning element. It is interconnected to the learning opportunities available with project management discussions, readings, assignments, lectures and course projects.

Pracademic Project Management

[7] The illustration of a pracademic approach to project management can be enhanced with the use of a project pendulum which can highlight the bias difference between data associated with project optimism, a realistic interpretation and project pessimism for evaluations of cost and schedule. A representation of this conceptual framework can be seen in Figure 3.0.

Figure 3.0

Project Pendulum with Bias Interpretations



Recommendations

If you review the typical project management formulas for cost and schedule estimation, they are the PERT and 3- point estimating methods.

- PERT weighted average formula = $(O + 4M + P) / 6$
- Three Point Estimate = $(O + M + P) / 3$

Neither of these takes into account the pracademic project management perspective based on project reality. What can be created is a new formula that is a 5-point estimation based on the 5 following characteristics:

- +X+ indicates a measurement that is based on a bias of high opportunities
- +X indicates a measurement that is based on a bias of opportunities
- X indicates a measurement that is based on removing all bias and is neutral
- X- indicates a measurement that is based on a bias of risks
- X- indicates a measurement that is based on a bias of high risks

If we translate these project management measurements into a data set as seen in Figure 4.0, we can create a new 5 point estimating formula based on adding the criteria of both risk and opportunity:

Figure 4.0

Pracademic Estimation Formula

OO	O	M	P	PP
+X+	X+	X	X-	-X-

$$\text{Five Point Estimate formula} = (OO + O + M + P + PP) / 5$$

A sample data set using the Pracademic Estimation Formula based on a “reality situation” could be described with the following fact pattern:

(1) You look on Amazon for a house fan and you find one that meets your needs and is listed for a cost \$20.00 with free shipping. In the data set for the pracademic estimation formula, \$20.00 cost becomes the “X” or the mean cost which would be calculated as a realistic estimate without a risk or opportunity bias added.

(2) Now let's explore the possible opportunities available to you by applying an opportunity bias to the fact pattern. You are walking through your local Walmart discount store and see the same house fan you saw on Amazon listed for \$19.00 with tax included on an advertisement in the store but they don't have any merchandise in stock at the moment. This provides you the "X+" cost as indicated above for the opportunity bias element.

(3) Finally, you go to your local Lowe's home improvement store and they have a large group of the same house fans that the manager says will be delivered in 30 days which they plan to sell for \$15.00 including tax. This provides you the price for your "+X+" element in the formula for a high opportunities bias projection.

Since we have explored and identified the opportunities (X+) and high opportunities (+X+) bias projections first, next we are going to identify the risks and high risks that could cause the price of the house fan to increase above the project \$20.00 estimate.

(4) The original price we have projected from Amazon was \$20.00, but they only have two fans available. The price for either of the two available fans requires an expedited shipping cost which would bring the total projected cost to \$25.00. This is a risk based cost which would be indicated in the formula as "X-" for the formula based upon a risk bias.

(5) Finally, you have a neighbor who has 2 of the same house fans in their garage. They only need one of them and they are willing to sell you them at a garage sale planned next week, but they want \$39.00 for the fan. This cost is the high risk bias cost for the formula and can be illustrated as the "-X-".

These elements would be identified in the pracademic estimation formula as indicated below:

$$\begin{aligned} \text{OO} &= \$15.00 \text{ (based on high opportunities bias)} \\ \text{O} &= \$19.00 \text{ (based on opportunities bias)} \\ \text{M} &= \$20.00 \text{ (Based on unbiased realism)} \\ \text{P} &= \$25.00 \text{ (based on risks bias)} \\ \text{PP} &= \$39.00 \text{ (based on high risks bias)} \\ (\$15.00 + \$19.00 + \$20.00 + \$25.00 + \$39.00)/5 &= \mathbf{\$23.60} \end{aligned}$$

By applying the recommended Pracademic Estimation Formula as seen above, you would get a proposed cost of \$23.60 to use in the project estimation process. The 3-point estimate would have been \$21.33 based only on an optimistic, unbiased and pessimistic view trying to create an "ideal estimate as seen below:

$$(\$19.00 + \$20.00 + \$25.00) / 3 = \mathbf{\$21.33}$$

The PERT estimation would be \$20.67 based on creating a weighted average of three numbers to come up with the final estimate. The most likely estimate is weighted 4 times as much as the other two values but does not take into account the risk and opportunity bias as seen below:

$$(\$19.00 + (4*\$20.00) + \$25.00) /6 = \mathbf{\$20.67}$$

This paper's author feels that the use of a Pracademic Estimation Formula will increase the accuracy of both cost and schedule estimates by blending practical application of previous project skills experience with accommodation for risks and opportunities that may be available.

Lessons Learned Future Steps

A new Project Management simulation has been designed called Bio-PM 911 by the Rocky Peak Leadership Center that focuses on a course project based as a bio medical and bio pharma course project. This Project management simulation will be designed into a new CSUN course in spring 2021 for course presentation in fall 2021. The review of the lessons learned from the previous simulation provide a roadmap to succeed for the evolution of project management simulations. This author's focus will be on the following four areas for the new Bio PM-911 Project Management Simulation:

[1] The first focus area will be to provide "assistive" technologies to allow class participants with disabilities the opportunity to work easily in a collaborative environment on project teams. An enhanced video recording format will be explored with a low level of reactive artificial intelligence that creates the ability to add links to information web pages and additional learning content. The Panopto Review editor will be used to create stronger live stream capabilities, improve communication and facilitate knowledge sharing. (www.panopto.com)

[2] The second focus will be to provide a blended project management approach adding some elements of AGILE and LEAN project management into the tool sets. The use of a Kanban-style list making application which allows project team collaboration to be instituted. The Trello tool allows project team members to interactively see who is working on what and where something is in a process. (www.trello.com).

[3] The third focus will be on creating a bio medical and/or bio pharma organizational structure where the project teams will report to a Project Research Director who will indirectly provide directions rather than a typical PMO structure.

[4] The fourth focus will be to introduce a process for un-learning and re-learning for project management scope development, risk & opportunity management and communication management. A course textbook will also be added that described a personal learning (1), unlearning (2) and relearning (3) skills element. There will also be threaded discussions added to

the course module to allow the students to have synchronous and asynchronous dialog associated with these 3 elements.

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Appendix

Project Management Skills Survey Instrument

Survey Instrument Introduction Page

Project Management

Introduction

In partnership with higher education, I am conducting a research program targeted on Project Management with college students and professionals. This research will span 3-5 years and 2019 was the kickoff year!

Part of the research objective is to identify the critical skills required for Project Management topics and determine their ranked importance to the field of project management. We have identified 16 organizational and personal skills required for project management, what we would like is for you to rank order this list of skills by importance.

#1 = the most important to #16 = the least important.

This rank ordering is essential to creating a valid course curriculum and training opportunities for people to either learn, embrace or improve these skill sets.


This survey is being sent to "Project Management" professional representatives in all professional fields so we can publish these for others to build upon. If we have not identified a specific skill, please place the information in the "Comments" field with a name of the skill and a numerical ranking for it. Since this is the 2nd year we are conducting this research, it will be repeated for a min. of 3 years to cross-correlate the results against last year's results to determine trends or critical changes.

I want to thank you in advance for participating in the rank ordering and identification of the skills required for Project Management.

Thank you.

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Survey Instrument

Project Management

Project Management

Project Management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. All must be expertly managed to deliver the on-time, on-budget results, learning and integration that organizations need.

Please rank these Project Management skills from 1 (most important) to 16 (least important)

1. Please rank these Project Management skills from 1 (most important) to 16 (least important)

☰	<input type="text"/>	Broad Awareness SME
☰	<input type="text"/>	Critical Thinking
☰	<input type="text"/>	Coaching
☰	<input type="text"/>	Communication
☰	<input type="text"/>	Cost Management
☰	<input type="text"/>	Flexibility
☰	<input type="text"/>	Focus
☰	<input type="text"/>	Empathy
☰	<input type="text"/>	Negotiation
☰	<input type="text"/>	Organization
☰	<input type="text"/>	Planning
☰	<input type="text"/>	Quality Management
☰	<input type="text"/>	Risk/Opportunity Management
☰	<input type="text"/>	Schedule Management
☰	<input type="text"/>	Team Leadership
☰	<input type="text"/>	Time Management

Survey Instrument Operational Definitions

For Reference, the following operational definitions have been created to establish a baseline of understanding for the skill terms identified. These definitions have been blended, modified or pulled intact from publications, internet websites or external documentation.

Project Management Operational Definitions:

Broad Awareness SME – The ability to use a variety of technical specialty skills to strengthen productivity, provide distillation of complex information for decision making. Represents specific homogeneous characteristics and performance while representing technical competencies and cross-cutting perspectives.

Critical Thinking – The intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication.

Coaching – The ability to improve performance and focuses on the present rather than the distant past or future. Fundamentally, the coach is helping others improve their own performance by helping them to learn by mentoring and direction.

Communication – The ability to listen to others and convey information, data or opinion to another effectively and efficiently with good verbal, non-verbal and written communication skills; helping to facilitate the sharing of information, data or opinion between people within an organization or entity.

Cost Management – The ability to control the costs involved in a business by planning, estimating, budgeting, financing, funding and managing costs so that a project can be completed within the approved budget.

Flexibility – The ability to willingly and readily respond to changing circumstances and expectations and adapt to new situations, improvise, and shift priorities and strategies to meet different types of challenges.

Focus – The skill to begin a task without procrastination and then maintain your attention and effort until the task is complete. Focus helps people pay attention in the midst of distractions and setbacks and to sustain the effort and energy needed to reach a goal.

Empathy – The ability to accurately put yourself "in someone else's shoes"– to understand the other's situation, perceptions and feelings from their point of view – and to be able to communicate that understanding back to the other person.

Negotiation – The ability to achieve a benefit while avoiding argument and dispute. Requires patience and the ability to persuade others without using manipulation while maintaining a positive atmosphere.

Organization – The ability to use your time, energy, and resources in an effective way to plan and achieve goals. Additionally, orchestrating others to meet deadlines, work independently and plan for succe

Survey Instrument Operational Definitions Cont.

Schedule Management – The ability to develop, maintain and communicate day to day activities, plans and milestones for time and resources. A schedule is the timetable for a project, program or portfolio workload effectively using prioritization and delegation. The goal of defining the schedule is for development of a complete understanding for the availability of resources.

Team Leadership – The ability to provide guidance, instruction, direction and lead a group of individuals for the purpose of achieving a result or group of aligned results. Can motivate others to function in a goal oriented manner

Time Management – The ability to plan and exercise conscious control of time spent on specific tasks and activities, especially to increase effectiveness, efficiency or productivity. Focuses on managing time effectively so that the right time is allocated to the right activity.

2. Are there any essential skills that we have not included for Project Management?
Provide a title, and rank it as a high, medium, or low importance.

eg. Skill Name - Medium Importance

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Table 2A

2019 Survey Data Results (Pre COVID 19)

<u>Rank Order</u>	<u>Skill Description</u>	<u>% Results</u>
#1	Team Leadership	12.67
#2	Communication	12.64
#3	Planning	12.00
#4	Critical Thinking	11.73
#5	Broad Awareness SME	9.64
#6	Cost Management	9.36
#7	Schedule Management	8.83
#8	Coaching	8.48
#9	Time Management	8.26
#10	Focus	8.00
#11	Risk/Opportunity Management	8.00
#12	Quality Management	7.76
#13	Organization	6.82
#14	Flexibility	6.55
#15	Negotiation	4.87
#16	Empathy	3.67

N=12 [Feb 13th 2019 – Dec 17th 2019]

Table 3A

2020 Survey Data Results (During COVID 19)

<u>Rank Order</u>	<u>Skill Description</u>	<u>% Results</u>
#1	Communication	13.21
#2	Team Leadership	12.28
#3	Planning	10.75
#4	Critical Thinking	10.61
#5	Time Management	9.64
#6	Organization	9.6
#7	Schedule Management	8.52
#8	Broad Awareness SME	8.43
#9	Cost Management	7.79
#10	Flexibility	7.69
#11	Risk/Opportunity Management	7.64
#12	Focus	7.33
#13	Quality Management	7.15
#14	Coaching	7.00
#15	Empathy	5.37
#16	Negotiation	4.75

N= 42 [Dec 17th 2019 – Sept 17th 2020]

Table 4A

Integrated 2019/2020 Data Results

<u>Rank Order</u>	<u>Skill Description</u>	<u>% Results</u>
#1	Communication	13.21
#2	Team Leadership	12.28
#3	Critical Thinking	10.61
#4	Planning	10.75
#5	Time Management	9.64
#6	Organization	9.60
#7	Schedule Management	8.52
#8	Broad Awareness SME	8.43
#9	Cost Management	7.79
#10	Flexibility	7.69
#11	Risk/Opportunity Management	7.64
#12	Focus	7.33
#13	Quality Management	7.15
#14	Coaching	7.00
#15	Empathy	5.37
#16	Negotiation	4.75

N=54 [Feb 13th 2019 – Sept 17th 2020]

MSE 402 End of Course Simulation Survey Question

Question 26	1 pts
<p>Did the ECS project management simulation help you understand the course learning objectives and role of the PMO (Project Management Office) better than not having a course simulation? (Yes or No)....please explain why -</p>	
HTML Editor	
<p>B <i>I</i> <u>U</u> A A <i>I</i>_x 12pt Paragraph </p>	
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Table 5A

MSE 402 End of Course Simulation Survey Question 1A Results

Q1 – “Do project management simulations help you understand the course learning objectives better than not having a course simulation?” (Yes – 86.67%)

Survey	Q1 - B
1	Yes
2	Yes
3	Yes & No
4	Yes & No
5	Yes
6	Yes
7	Yes
8	Yes
9	Yes
10	Yes
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes

	Yes	86.67%
	No	13%
# "Yes"	15	
# "No"	2	
% of Yes	87.5%	
Conf. Level (2-sided)	90%	
CI_lower bound on % of "Yes"	0.67380694	
CI_upper bound on % of "Yes"	0.95010185	

Confidence Statement for the survey questions	I am 90.% confident that the majority people (more than 50% people) favor "Yes" to
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Table 6A

MSE 402 End of Course Simulation Survey Question 1B Results

Q2 – “Does a project management simulation help you understand the role of the PMO (Project Management Office) better than not having a course simulation”? (Yes – **86.67%**)

Survey	Q1 - B
1	Yes
2	Yes
3	Yes & No
4	Yes & No
5	Yes
6	Yes
7	Yes
8	Yes
9	Yes
10	Yes
11	Yes
12	Yes
13	Yes
14	Yes
15	Yes

	Yes	86.67%
	No	13%
# "Yes"		15
# "No"		2
% of Yes		87.5%
Conf. Level (2-sided)		90%
CI_lower bound on % of "Yes"		0.67380694
CI_upper bound on % of "Yes"		0.95010185

Confidence Statement for the survey questions	I am 90.% confident that the majority people (more than 50% people) favor "Yes" to
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About the Author



Dr. Dale S. Deardorff

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Dr. Dale S. Deardorff worked for Boeing Integrated Defense Systems and Space Propulsion Development divisions as a Project and Program manager for over 20 years. He worked for the Lockheed Burbank “Skunk” works and Aircraft division for almost 10 years and a high technology Valencia California start up for a couple of years. This 30 plus years’ experience is a “Pracademic” blending of commercial, military, government, NASA and high technology organizations. Dale has taught Project Management “on-line” for multiple universities as an adjunct instructor since 2003 and continues to contribute to project management methodologies and philosophies as a current thought leader.

He created the Rocky Peak Leadership Center in 2010 and has helped modern organizations as an enterprise and executive consultant in the areas of thinking methodologies, Innovation and leadership training and facilitation. Dr. Deardorff volunteers with youth leadership programs and supports local youth training in the areas of personal mastery and effective collaboration techniques.

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