use the accompanying software, additional ideas for projects, case studies, and links to additional project management resources. The author's website (www.kathyschwalbe.com) provides examples of student projects and presentations.

The book introduces PMI's project maturity model and best practices but focuses on project management practices. While this book would lend itself well as a module in the design for graduate level project management courses, instructors would mostly likely need to supplement it with the use of additional materials to address more advanced coverage of program and portfolio management and organizational issues. Some of the topics not addressed in-depth in this introductory text, which might be important in graduate level instruction, include aggregate planning procedures; project team dynamics; roles, responsibilities, and career paths for project management professionals; the role of project management function with the organization; and management of projects that span organizational and national boundaries. Instructors seeking to go deeper on one or more topics in their course can access additional materials or project management resources links that are provided on the two websites. In addition, when using student teams, instructors might want to provide further training on team dynamics beyond what is addressed in the book. The choice of supplemental case studies is typically customized to the teaching context. There is a set of case studies provided through the companion website and author's website, and instructors are likely to need to go beyond these sources.

With several excellent textbooks available for project management courses, a key decision when selecting the primary textbook for a course is determining which one is appropriate for the instruction level (e.g., undergraduate, graduate, professional training) and context (e.g., general management, engineering management, in-house training). By itself, *Introduction to Project Management* offers a comprehensive, introductory level coverage of the important concepts, tools, and techniques underlying project management. A project management textbook is typically integrated with other materials (e.g., simulation tools, case studies, articles). For an instructor who teaches project management in a variety of contexts, modifying and customizing pedagogy and course materials for each, this introductory textbook lends itself particularly well as a module that permits considerable flexibility in curriculum design. I am currently examining its possible integration as a resource in three course contexts:

project management for business undergraduates, product development for MBAs, and management of innovation for professional master of science graduate students.

SimProject™: A Project Management Simulation for Classroom Instruction, by Jeffrey K. Pinto and Diane H. Parente. New York, NY: McGraw-Hill/Irwin, 2003. ISBN 0-07-248087-4 Instructor's Manual (Version 1.2), 131 pages, soft cover. ISBN 0-07-248085-8 Player's Manual (Version 1.2), 94 pages, soft cover.

Reviewed by **Kam Jugdev**, Athabasca University.

Educators are constantly searching for new and relevant cases, exercises, and simulations to help students engage and stay engaged in the learning conversation. Simulations help students develop problem-solving and decision-making skills in a risk-free environment. Today's educational simulations are superior to earlier offerings, which were cumbersome and time consuming relative to their overall value. In virtual simulations, students experiment by role playing with virtual equipment and resources. Jeffrey K. Pinto and Diane H. Parente's SimProject™ would make an excellent addition to an educator's set of resources for undergraduate or graduate courses offered in face-to-face environments, online, or in blended settings. This simulation would also be appropriate for certificate courses or training programs. The simulation is relevant across disciplines and can be used in a breadth of curricula (e.g., engineering, information technology, computer science, operations management) where there is a project management component to the course.

The SimProject™ exercises help students sequentially apply project management concepts to new product development, information technology automation, and construction industry scenarios. SimProject™ uses 12 periods to guide students to make decisions in a timely manner. The instructor can monitor and control each period. SimProject™ is structured to challenge students to learn from each period, whether or not an instructor modifies the base settings. Since projects operate in real time and involve risks, instructors can introduce uncertainty into the project at any point, with such events as a mandated corporate training session, customer demands about the budget, financial difficulty in the company, national tragedy, negative

comments from the project manager, or shifting deadlines. Instructors can also make changes immediately to help students learn how to react to current events, such as a hurricane or a stock market increase or decrease.

In each round, students decide which virtual resources (virtual people) they need and bid on limited resources. Students schedule training time for their resources, assign each resource to specific tasks, and use appropriate disciplinary, motivational, team-building, and rewarding practices. These practices come at a cost and involve various degrees of positive or negative impact on each resource and on the whole virtual team. Bench penalties apply if resources are not used as bid for, and a person fired cannot be rehired for two periods of the simulation. Penalties force students to make judicious decisions about when they plan to use resources.

The SimProject™ developers clearly understand that effective human resource management is essential on projects. Instructors can modify the scenario details and resource profiles, or create new profiles, depending on the course lessons they are focusing on. For example, some instructors create identical resources (virtual people) with different gender and ethnicities, although the resources all have the same competence factors, such as training, education, and skill levels. Once teams choose virtual resources, they can discuss their rationale for specific choices. Since the only difference (as set up by the instructor) is gender or ethnicity, this can lead to interesting class discussions on diversity.

SimProject™ is not based on the Project Management Institute's® Body of Knowledge (PMBOK®) Guide and its related knowledge areas, although some instructors have mapped the simulation to the PMBOK® Guide. Instead, SimProject™ integrates these knowledge areas. As teams make decisions at the end of each period, the instructor can assess the team rankings on the basis of time, cost, functionality, and stakeholder satisfaction. Each team can also view its Microsoft Project plan to review decisions and rethink plans for the next period. In this manner, students can learn MS Project, analyze the impacts of their decisions, and apply what they are learning as they progress through the periods. By making decisions each period, students also practice their communication, leadership, and interpersonal skills.

SimProject™ is flexible because the resource profiles change every time it is run. This reduces simulation carryover whereby students think they know the "answer" and have figured out how to "win." Instructors can also change the decision parameters (causing the software's algorithms to adjust), allowing more emphasis on ethics or education criteria, so that instructors can provide customized scenarios.

In terms of pedagogy, the product is based on principles of discovery learning whereby the simulation involves a co-inquiry process for the students and instructor. SimProject™ is designed to allow instructors to focus on the process of how students make project decisions and to assess the outcomes rather than merely the mechanics of inputting data. The product provides an outcome score for each round that the instructor can assess and use for discussions purposes (similar to a project review), as well as peer evaluations that can complement the simulation and allow students to evaluate the process.

Currently, two project management textbooks— *Project Management: The Managerial Process*, by C. F. Gray and E. W. Larson (3rd ed., 2005), and *Introduction to Information Systems Project Management*, by D. Olson (2nd ed., 2003)—include appendices specific to SimProject™. The appendices depict how chapter concepts can be learned through specific simulation exercises. Sample syllabi are also available and include specific weekly topics, readings, exercises, and suggested SimProject™ decisions that instructors should make to keep the simulation on track:

SimProject™ has a clean and simple interface with uncluttered visuals. The product comes with both instructor's and player's manuals and can be learned in a few hours. The instructor's manual includes helpful hints and a section on frequently asked questions. The registration process is straightforward, and the simulations are password protected. SimProject™ has a web-based design that uses a central server to process the decisions made each period. Technical support is available from the McGraw-Hill Higher Education Helpdesk. Author Diane H. Parente is also readily available to walk instructors through SimProject™ and answer questions from a pedagogical and content perspective.

There are a few features that I would like to see in an upcoming version of the product, and Dr. Parente indicates that these revisions are under consideration. The developers intend to include new scenarios on Six Sigma, supply chain projects, and systems implementation. They also plan to build in a student assessment. In addition, with the broad number of instructors using the software worldwide, there are plans to develop a user group (D. Parente, personal communication, January 30, 2007).

Gary Hackbarth, assistant professor in the Master of Science in Information Systems at the College of Business, Iowa State University, has used SimProject™ in both undergraduate and graduate courses for 4 years. Using the Gray and Larson textbook, Hackbarth has students work on the simulation individually and then in teams. He also incorporates the nine SimProject™ resource evaluation criteria into his courses to help students develop their resumes and discuss career paths in project management. This allows the class to discuss resource criteria (e.g., interpersonal skills versus education), the relative weightings of each criterion, how they can improve their resumes, and how companies use evaluation criteria to hire project managers. According to Hackbarth, students are amazed at how resources with different skills can have such an impact on the project outcome: "SimProject™ helps students emotionally capture the concept that *planning* is important and why it is important" (personal communication, February 6, 2007). Hackbarth acknowledges that SimProject™ constitutes about 50% of his class time. An aspect he would like to see in a future version of SimProject™ is strategic portfolio management whereby students can learn how to prioritize projects across an organization.

Michael Ensby, director of Interdisciplinary Engineering and Management at Clarkson University, New York, has also used SimProject™ for 4 years. Approximately 35% of his class time is spent on SimProject™. Ensby structures his course around the PMBOK® Guide, and he uses SimProject™ to help students understand project costing. As students complete the simulations individually and then as teams, they are graded on their outcomes, as well as their ability to explain their net losses and gains. Ensby notes that "SimProject™ exposes students to the *nuts and bolts of project costs* and helps them see the impacts of their decisions, before, during, and after the simulations" (personal communication, February 8, 2007).

Both Hackbarth and Ensby emphasize that SimProject™ enhances the classroom experience and engages students in a meaningful way and that the product creates a healthy competitive rivalry between teams. SimProject™ supports project management learning. As Ensby indicates, "learning and fun can be mutually inclusive."

As academics, we are constantly searching for innovative teaching techniques. The use of simulations is a novel and effective way of engaging students in the course material, and it maintains their interest. Teaching with simulations does require receptiveness to an approach whereby the instructor is not the "sage on the stage." As Parente reflects,

"Teaching with simulations involves the ability to be able to say to students 'I'm not sure, let's look into it together.'" If you are willing to take a frank and open approach with your students and if you are ready to engage in the learning conversation on project management with your students, then SimProject™ is a one product worth considering.

REFERENCES

Gray, C. F., & Larson, E. W. 2005. *Project management: The managerial process* (3rd ed.). New York: McGraw-Hill.

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Reviewed by **Joe Houghton**, UCD Smurfit Graduate School of Business, Ireland.

For the past 3 years I have utilized the SimProject® project management simulation package as a learning aid for students on the masters in business studies (project management) in the University College Dublin Smurfit Graduate School of Business, Dublin, Ireland. The following is a reflection on the learnings which have become evident in its use, both from a pedagogical standpoint and from the viewpoint of the students, who were required to document their learnings as part of the process.

Following the principles laid down by Confucius around 500 BC: "I hear and I forget. I see and I remember. I do and I understand," the "Tools and Techniques" module is a set of very applied workshop type sessions. It is a 100% continually assessed course—no examination—and SimProject accounts for 30% of the total course grade, with all group members gaining the same grading for their SimProject work.

SimProject is a turns-based simulation package developed by Dr. Diane Parente and Dr. Jeffrey Pinto, both highly respected names in the project management field. It is an on-line tool, accessed through any web browser, via secure login. IDs and passwords are issued on a per student basis, with the cost per licence roughly equivalent to that of a good quality textbook. A scenario is selected by the lecturer, and the number of rounds the simulation is to run chosen at the start—the default is 12, which tends to equate well with a typical semester length running one round a week. Student groups are presented with a number of different tasks, which need to be completed each round, and the groups must enter decisions designed to achieve these tasks, making tradeoffs involving resources, costs and time. They can download a Microsoft Project file after each round's decisions have been processed to see how their project is faring.