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In this issue:

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Keywords: integration, innovation, technology, management, personal success, business success, information technology management, entrepreneurship, goal setting, greatness, focused effort, review, narrative, eBusiness

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Integrating Innovation, Technology, Management, and Personal Success in a Capstone eBusiness Course

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Abstract

A capstone eBusiness course has the ambitious goal of not only integrating everything learned in the curriculum over the previous three years, but also of motivating the students and providing the skills needed to achieve meaningful success once they graduate. A framework is provided for integrating innovation, technology, management and personal success in a team-based course. Framework goals are established for each of the four major elements of the course content and include life-long learning skills, acquisition of deeper domain knowledge, goal setting skills, and self-efficacy skills to maximize business and personal effectiveness. The academic literature related to goal-setting theory, valence-instrumentality-expectancy theory, and socio-cognitive theory is reviewed to develop the framework goals selected for the course. Three integrating mechanisms are used as pedagogical tools to ensure that all the framework goals are taught during the course: narrative, key themes, and the business plan. A series of case studies from Innovation Nation are used to assist in the narrative. The three key themes established throughout the course are Greatness, Review, and Focused Effort. A business plan for a hypothetical new startup eBusiness is used as an integrating mechanism and as a way for the student to develop deeper domain knowledge, and accounts for a large portion of the final grade. A course outline is provided and the subject topics are cross-referenced against the four framework goals and the three key integrating themes for the capstone course "ITM360 - Establishing an eBusiness Operation".

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1. INTRODUCTION

In the final year of an undergraduate curriculum, students must not only acquire new knowledge, they must also learn how to apply prior knowledge to equip themselves with the skills applicable to their professional careers as they enter the workforce. A capstone class in particular must integrate prior course content and demonstrate how to apply it effectively to new situations.

ITM360 "Establishing an eBusiness Operation" is a capstone course for the eBusiness Minor and eBusiness Certificate in the faculty of Information Technology Management (ITM). The course provides an excellent context in which to integrate the concepts

and skills needed for innovation, technology, management and personal success. Students are divided into teams, each of which creates an original, hypothetical eBusiness venture, either as a new startup company or as a new operation within an existing company. The course grade is composed of the team-based venture's elevator pitch, business plan and investor presentation as well as an individual-based case study assignment and market analysis.

The team-based hypothetical venture approach provides the context within which to discuss both the theoretical and practical aspects of innovation and entrepreneurship including skills such as identifying opportunities, motivating others to commit to the vi-

sion, and capitalizing on change. It also accommodates the use of numerous case study narratives on successful new eBusiness ventures that are used to inspire and motivate students to steer their careers in ITM and achieve their long-term professional and personal goals.

Creating a hypothetical eBusiness, in particular, provides the context for integrating a host of information technology (IT) issues and encourages students to develop applied expertise in a specific IT discipline of interest to them. IT courses in particular must cope with rapid changes in the underlying technology upon which the curriculum is based and this presents unique challenges. If the one constant is change, we must train our students in life-long learning skills to help them not only cope with this reality, but thrive in it.

Core management skills are honed because the business plan incorporates many of the hard management skills of market analysis, strategy, human resources (HR), marketing, operations, and finance. Soft management skills such as teamwork, planning, presenting, and writing are integrated into the course content and are specifically graded. Management effectiveness skills are developed with particular emphasis on goal setting and self-efficacy skills.

Finally, the case studies clearly demonstrate that great companies achieve success through the disciplined efforts of the highly motivated people involved in them. Again and again the case studies demonstrate that successful companies hire great people and successful investors invest in great people. Since the vast majority of companies fail, students learn that it is only through greatness that a business enterprise stands a chance of competing in the global economy. This establishes the concept of greatness as a key integrating theme and how to achieve it in one's personal and professional life.

With so many large complex concepts to cover within a single course, an educational framework and integrating mechanisms are needed. A framework is provided in this paper along with framework goals for each of the four major subject areas – innovation, technology, management, and personal success. Three integrating mechanisms are implemented – narrative, key themes, and the business plan. Three key themes rele-

vant to the course were chosen – greatness, review, and focused effort. The four framework goals and three themes are cross-referenced against a course outline of topic subjects for the capstone course ITM360 – "Establishing an eBusiness Operation."

2. INNOVATION FRAMEWORK GOALS

Various authors have shown how innovation leads to persistent profitability (Schumpeter 1934, 1950; Mueller 1990; Jacobson 1988; Roberts 2001). Roberts (2001) builds on Schumpeter's framework to show how innovation results in temporary, but not necessarily persistent, supernormal profits. Mueller (1977, 1986, 1990) describes the process of 'creative destruction' as: innovation creates a monopoly, monopoly creates supernormal profits, supernormal profits create imitators until a state of normal profitability returns, and then a new innovation repeats the cycle.

Since innovation is a major force driving supernormal rates of return on investment, there has been tremendous interest in how to stimulate innovation for universities, companies, industrial sectors, and nations (Salé 2004; Sweeney 2003; Dahlgard 1999; de Leede 2005; Malerba 2005; Harris 2000). Developing an educational framework for innovation is also of tremendous importance in a capstone eBusiness course where the pace of technological change is higher than in many other fields.

Czuchry (1999) proposes a framework for implementing an effective marketing system for technical innovation. Carter (2001) developed a framework for explaining how technological innovations diffuse into a market. Hall (2005) provides an alternative model for evaluating innovative technologies and describes how Afuah (1998) and Afuah and Bahram (1995) argue that innovations should be viewed from the perspectives of a wide social network of suppliers, customers and complementary innovators. They give several examples of how innovations that destroy competencies of their customers, suppliers or complementary innovators can have detrimental effects on a new product or process, and that the key to innovative success is to minimize the disruption within the innovation value-added chain.

A potential framework for teaching innovation can be derived from the work of Hargadon and Sutton (Hargadon 2000, 2001). They argue that innovation success comes from the ability to generate a knowledge-brokering cycle within a company, and not primarily from lone genius inventors. As such, they show that innovation can be learned. They describe the knowledge-brokering cycle as: capturing good ideas; keeping ideas alive; imagining new uses for old ideas; and putting promising concepts to the test.

The concept of entrepreneurship encompasses the concept of innovation and includes not only finding and testing good ideas but also determining whether or not the company or individual is capable of capitalizing on the good idea and how to find, marshal and motivate the resources needed to do so (Stevenson, 1992).

The three key Innovation Framework Goals selected for the capstone course are to provide students with an understanding of:

- 1) Capitalizing on Change
- 2) Identifying Opportunities
- 3) Marshalling Resources

The ability to capitalize on change requires organizational or personal reflection and self-awareness. Before entering into any significantly new activity, the entity must understand its current situation, its satisfaction with that situation, whether or not some alternative situation is more compatible with its long term values and goals, and whether or not it can tolerate the risks involved in change.

The ability to identify opportunities and find and test good ideas is the core of the process of innovation (Hargadon 2000, 2001), and implementing this innovation process is tightly affiliated with the management concepts of market analysis, strategy, marketing planning and business planning. Thus, an ideal way to integrate these concepts is in the context of writing a business plan for a new opportunity.

Two of the primary resources that must be marshaled are people and capital. Virtually every successful executive will stress that companies succeed by hiring great people and motivating them with a compelling vi-

sion. Virtually all venture capitalists will also affirm that they invest more in great people than in their ideas or plans. The interrelation of great people, compelling vision, and the vitality of an enterprise can be integrated into the course by way of a mandatory, graded investor presentation format with specific grading criteria related to the cogency of the vision.

The general benchmark of a successful opportunity is financial viability and generation of an appropriate return on investment, given the level of risk involved. Since most new ventures are extremely risky – over 80% of all new companies fail – the anticipated return on investment must be extremely high. This means in turn that new ventures should aspire from their inception toward tremendous, not merely modest, financial success. It is precisely this compelling vision and high aspirations that are used to acquire the great people and capital needed to achieve success.

3. TECHNOLOGY FRAMEWORK GOALS

By the time students are ready to take a capstone eBusiness course, they should already have a solid foundation in all the elements of IT. Various studies have articulated the overall curriculum content of a successful IT program (Song 2004; Janicki 2004; Lee 1995). However, as is pointed out, IT programs must cope with rapid changes in the underlying technology upon which the curriculum is based (Lee 2002; Janicki 2004) and accordingly we must also train our students in life-long learning skills to help them keep up with the fast pace of change in IT.

As Rotundo, et al., demonstrated, employers actively seek employees with deep specific skills over those with broad general skills and skill specificity has a high positive correlation with salary (Rotundo, 2004). Employers are generally looking for some attribute that differentiates an applicant from others seeking the same job. The student therefore needs to stand out among a pile of resumes on a busy prospective employer's desk. Ideally then, the student should learn to be technically strong in something relevant to his or her anticipated career field. Further, Maurer, et al., show that it is critical to continue to develop new skills once on the job (Maurer, 2003).

In order to achieve these objectives, two key technology framework goals of the capstone course are to provide students with:

- 1) Deeper strength in one particular discipline of eBusiness or ITM in which they are particularly interested.
- 2) Life-long learning skills that they can use to retain expertise within their chosen specific discipline or that will assist them in switching disciplines if desired or necessary.

With these objectives in mind, the capstone course that incorporates a business plan can integrate a detailed understanding of a specific technology to develop a sustainable competitive advantage as the core of the hypothetical eBusiness company's offering. In order to write the eBusiness plan, the team must develop some level of expertise in the specific technology on which the company is based. This is important because many companies want to hire a student who is familiar with their business and/or already possesses relatively deep expertise in a given discipline rather than a generalist with no specific IT skills or industry knowledge beyond the introductory class (Rotundo, 2004). As established by Maurer, et al., this is also essential in order to bolster the student's belief in his or her own self-efficacy at learning new technologies outside of class (Maurer, 2003).

The process of writing the eBusiness plan further trains the student in critical life-long learning skills including the following elements incorporated into the course:

- Self-reflection to discover what he or she is interested in
- Exploration to research potential technologies
- Screening to determine whether the potential technology is viable as a business, whether it continues to be of interest, and how it fits into the competitive landscape
- Acquiring, assimilating and analyzing the information
- Integrating that information with what the student already knows
- Synthesizing the information into key essentials

- Articulating the information to share with others or document in a business or personal development plan

4. MANAGEMENT FRAMEWORK GOALS

To prepare for a capstone eBusiness course, students should already have a solid foundation in all the elements of hard and soft management skills. The ability to integrate most of the so-called hard management skills is readily accomplished through the process of preparing a business plan that must incorporate market analysis, strategy, marketing, operations, human resources, and finance. Soft skills such as teamwork and communication are also easily integrated through graded presentations (elevator pitches, market analysis, case study and investment presentation), written documents (market analysis, case study and business plan) and a team survey.

Again, however, a key objective of the capstone course is to prepare the student to enter the workforce. Although the student should already have learned the "what" and "why" of the hard and soft management skills, the capstone course should focus on the "how". In other words, the course should focus on implementation and effectiveness in order to achieve high performance on the job.

One of the most valid and practical theories of employee motivation and performance in organizational psychology is goal-setting theory (Lee 1992; Miner 1984; Locke 2002). It has been shown that setting specific, difficult goals consistently leads to higher performance than simply urging people to do their best (Locke 1990). Thus, in order to train students to perform well on the job and become effective employees and managers, they should learn goal-setting skills.

The goal-performance relationship is affected by a range of factors including self-efficacy, commitment, importance, feedback, and task complexity. Leaders can raise the self-efficacy of their subordinates by training, role modeling, and persuasive communication (Bandura 1997; Durham 1997). Achieving complex tasks can be facilitated by setting proximal (short-term) as well as distal (long-term) goals (Latham 1999; Dörner 1991). Higher commitment can be obtained by getting the employee to

participate in the goal setting. Locke and Latham provide a systematic 35 year review of the subject in their paper "Building a Practically Useful Theory of Goal Setting and Task Motivation" (Locke, 2002).

Valence-instrumentality-expectancy theory shows that performance is a combination of valence (anticipated satisfaction), instrumentality (the belief that performance will lead to rewards), and expectancy (the belief that effort will produce the expected performance) (Vroom, 1964). Socio-cognitive theory also focuses on self-efficacy and both theories can be used to build upon goal-setting theory given both stress the importance of conscious goals and self-efficacy. A detailed discussion of the relationship between goal-setting theory and other work motivation theories is presented in Locke (1997).

The three key management framework goals of the capstone course are thus to provide students with:

- 1) Mastery and domain knowledge of at least one hard management skill. Ideally this can take the form of positioning the student for a job title in a functional position such as sales, marketing, operations, technology development, customer support, HR or finance.
- 2) Fine tuning of their soft management skills, in particular teamwork, presenting, and writing.
- 3) Effectiveness skills, with particular emphasis on goal setting skills and self-efficacy skills.

Because self-efficacy skills are so critical to the ability to achieve business goals, the concept of personal success must also be incorporated into the course.

5. PERSONAL SUCCESS FRAMEWORK GOALS

The need to integrate the concepts of personal effectiveness and personal success into a capstone ITM course is, to some extent, a derivative requirement rather than a primary requirement. In other words, although the original intent of the course may be to teach innovation, technology and management, to do this well, goal-setting theory, valence-instrumentality-expectancy theory, and socio-cognitive theory show that

the concepts of personal effectiveness and success must also be integrated into the course.

Drucker (1967) stresses the linkage between personal and business success in the first paragraph of the preface to his landmark work on the Effective Executive, stating "Indeed, executives who do not manage themselves for effectiveness cannot possibly expect to manage their associates and subordinates." (Drucker, 1967).

In addition to self-efficacy being a strong moderator to goal achievement, Koestner, et al., provide additional rationale for incorporating personal goal setting as a means to effective business and organizational goal setting. They show that success in achieving goals is highly correlated with self-concordance and implementation intentions (Koestner, 2002). In other words, people attain goals that they themselves are interested in attaining in contrast to goals that others want them to attain.

In most instances, the academic literature is descriptive or analytical in nature rather than prescriptive. It does not provide advice on how to teach students to set and achieve goals, become more self-efficacious and achieve success. To find a framework for teaching personal success, it is useful to review the popular motivational speakers and their published works.

Jeffreys reviews the motivational superstars in the book "Success Secrets of the Motivational Superstars" (Jeffreys, 1996). A framework for teaching personal effectiveness can be found in Covey's "Seven Habits of Highly Effective People" (Covey, 1989). Hyrum Smith's "Ten Natural Laws of Successful Time and Life Management" (Smith, 1994) provides a useful framework for teaching personal success. The effectiveness of the Covey and Smith reference sources as training tools may be inferred from the high adoption rate of the popular Franklin-Covey Planner and the success of Franklin Quest, the NYSE publicly traded company that employs over 1,000 people and generates over \$160 million a year in revenue. A third personal success framework, that specifically incorporates the key integrating theme of Greatness, can be found in "Seeds of Greatness - the Ten Best-Kept Secrets of Total Success" (Waitley, 1983).

The key personal success framework goals used in the capstone course include exposure to the overlapping set of 27 habits provided by Covey (1989), Smith (1994) and Waitley (1983).

6. INTEGRATING MECHANISMS

As can be seen, a capstone ITM course has the ambitious goal of integrating innovation, technology, management and personal success while also inspiring students as they embark on their new careers. In order to achieve these objectives in a cohesive framework, it is imperative to implement integrating mechanisms.

The integrating mechanisms of narrative, key themes and the business plan were used for this course.

The role of narrative storytelling is widely regarded as an important pedagogical tool. It aids in retention, allows multiple subtle points to be made and integrated into the major point, and provides a concretization of the abstractions presented in the theoretical goals. The case study approach has been particularly useful in implementing narrative in business courses. In addition to the instructor's own personal stories, this course chose the textbook "Innovation Nation – Canadian Leadership from Java to Jurassic Park" (Brody, 2002). This book provides thirty inspirational case studies of successful Canadian entrepreneurs, each of which provides its own pearls of wisdom that can be used to reinforce the major concepts of innovation, technology, management and personal success. Each student selects a case study of interest and provides a written analysis and presentation to show how the case concretizes an abstract principle from the course and how he or she drew inspiration from the entrepreneur's success.

Given the quantity of information covered in the course – in essence recapping all of IT, management hard skills and management soft skills in only fourteen weeks – the information was consistently related back to three key themes that were used as an integrating mechanism throughout the course:

- Greatness: This key theme touches on virtually every aspect of innovation, technology, management and personal success. Since most innovative ideas fail, one needs high aspirations in order

to justify the risk and motivate great people to commit to the vision. More ambitious goals drive higher performance (Locke, 2002). New technology must offer at least a ten-fold improvement over the competition in order for customers to justify switching suppliers. Hire great people. Successful companies build on their strengths (Druker, 1967). Set extremely high, detailed goals. Don't just satisfy your customers – delight them and transform them into advocates for your product.

- Review: This key theme is described in terms of rewriting, reflection and continuously revising plans. Because writing is a guide to thinking, the concept of rewriting is used to reinforce the need to reflect, revise and learn continuously. This key theme emphasizes the fact that the first draft of any business plan or market analysis is almost certainly wrong. Successful plans are continually revised as new information or customer feedback forces revision of the original thinking. Even the best author may write a dozen drafts before submitting his or her publications. Successful business people are great communicators and they do not submit poor quality work – they constantly hone their plans, goals, visions, and presentations. This theme is particularly important for students to learn in order to improve their writing and communication skills.
- Focused Effort: Nobody ever said that success in business or in life was easy. Most companies fail and even good people with good plans and sufficient financing usually fail. Any worthwhile goal requires dedication, persistence and hard work in addition to continuous refinement.

Finally, the team-based business plan is an integrating mechanism. It helps focus the students on a specific graded deliverable that integrates everything they have learned related to management hard skills (market analysis, strategy, HR, operations, finance), technology (both specific deep technology expertise for the core technology as well as the administrative IT investment required) and innovation (how to attract financing and motivate great people with a compelling vision and plan).

A course outline is provided in the appendix that cross-references the weekly topics against the four framework goals and the three key integrating themes.

7. CONCLUSIONS

A capstone course has the ambitious goal of reviewing, refining and integrating everything learned in the curriculum. Because the underlying technology content in IT is so dynamic, the education will rapidly become obsolete unless the student is also imbued with innovation and life-long learning skills and the motivation to continue learning. Since employers want to hire students with expertise in a specific domain and will pay more for specialists than for generalists, the students should also graduate with expertise in a particular technology and/or with domain knowledge of a particular industry. Ideally, they will also possess a particular interest and skill set in a specific functional position such as sales, marketing, administration, customer support, HR or finance.

In order to teach students how to apply their knowledge effectively once they enter the workforce, goal-setting theory, valence-instrumentality-expectancy theory, and socio-cognitive theory show that the concepts of personal success must also be integrated into the course. This is particularly important because of the profound correlation of self-efficacy and self-concordance to moderating goal attainment in the organizational context.

In order to integrate innovation, technology, management and personal success the integrating mechanisms of narrative, key themes and the business plan emerge as pedagogical tools. Inspirational narrative case studies are used to reinforce the three key themes of Greatness, Review, and Focused Effort. A course outline is provided in the appendix that cross-references the four framework goals and the three key themes.

The students in ITM360 responded positively to the proposed framework, instruction method and key themes. Each semester, Ryerson University surveys all students in all courses using a standardized system with ratings on a 1 to 5 scale with 1 being the highest rating. The 68 students in the Spring 2005 course rated the course organization as 1.1, overall effectiveness of the

instructor was rated as 1.18, and overall worthwhileness of the course was rated as 1.6.

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APPENDIX: ITM360 COURSE OUTLINE**Course Outline Framework and Integration Themes**

| Date | Topics | Assignment Due | Framework Goals | Integrating Themes |
|-------------|--|----------------------------------|--|---|
| Week 1 | Why Take this Course? Course Objectives What is eBusiness? Key eBusiness Trends | | Motivation, Success Integration, Success Innovation Technology | Greatness Focused Effort |
| Week 2 | Review Innovation Nation Entrepreneurship Develop Business Ideas eBusiness Trends eBusiness Models Elevator Pitch | | Motivation, Success Innovation, Success Innovation Technology Management Hard Management Soft | Greatness Greatness Review Greatness |
| Week 3 | Business Plan Overview Market Analysis Technology Analysis | Elevator Pitch | Management Hard Management Hard Technology | Review Focused Effort |
| Week 4 | Strategy Key Success Factors (KSF) Analysis- Synthesis-Plan Key Business Screammers Building a Project Team Pitch Prizes and Feedback | Individual Market Analysis | Management Hard Management Soft Life-Long Learning Goal Setting Management Soft | Greatness Review Focused Effort Focused Effort Review |
| Week 5 | Review Course to Date Market Analysis Feedback | Team Interim Presentations Begin | Integration Success | Focused Effort Review |
| Week 6 | | Team Interim Presentations | | |
| Week 8 | Presentation Feedback Workshop on KSF for each Team The Market Plan | Individual Case Studies Begin | Integration Management Soft Management Hard | Review Focused Effort Focused Effort |
| Week 9 | The Financial Plan | Case Studies | Management Hard | Rewriting |
| Week 10 | The Technology Plan Front End Technology Back End Technology Hosting and Infrastructure | | Innovation Technology Technology Technology | Greatness Hard Work Hard Work Hard Work |
| Week 11 | Personal and Business Success Covey's 7 Habits Smith's 10 Laws Waitley's 10 Seeds | Case Studies | Integration Success Success Success | Greatness Greatness Greatness Greatness |
| Week 12 | Business Plan Guidelines Presentation Guidelines Course Summary | Case Studies | Integration Success Integration | Rewriting Greatness Greatness |
| Week 13 | | Final Team Presentations | | |
| Week 14 | | Final Plan and Presentations | | |