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Looking Outside Health Care to Teach Innovation in Physical Therapy Business Practice: Use of Harvard Business School Cases at Emory University

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Background and Purpose. With profound changes in health care and the need for innovation to deliver exceptional value to patients receiving physical therapy, it is incumbent that students are prepared to look outside health care to adopt business practices from other industries and foster innovation as they begin to practice physical therapy. The purpose of this paper is to describe how the case-based analysis of Harvard Business School (HBS) cases from a variety of industries was implemented to teach business disciplines and promote innovative thinking in Doctor of Physical Therapy students at Emory University.

Method/Model Description and Evaluation. The process for developing the course including course content and objectives, pedagogical, methods, student assessment including course evaluation and alumni survey at Emory University is described in this study. In addition, quantitative and qualitative analysis of

students' course evaluation outcomes has been described in this paper.

Outcomes. A total of 57 students participated in the elective course over the past 4 academic years. Class participation, written assignments, and quantitative analysis of course evaluations indicate that students agree the course objectives were met. Qualitative analysis of anonymous student comments revealed core themes of innovative course format and innovative learning, showing that the course instilled an innovation mindset in our students. Finally, 94% of course alumni survey respondents agreed that the course created an entrepreneurial and innovative mindset that impacted their practice of physical therapy.

Discussion and Conclusion. We successfully introduced a course in a physical therapist education program to include training in innovation using HBS cases. To deliver exceptional value to patients receiving physical therapy, we must innovate. Thus, preparation of physical therapist practitioners who can innovate is critical to achieve our vision of optimizing movement to improve human experience and thereby transform society.

Key Words: Innovation, Harvard Business School cases, DPT program.

other health care providers know that simply working harder, faster, or longer cannot compensate for their steadily eroding margins on profit.²

The triple aim of health care reform, as promulgated by the Institute for Healthcare Improvement, is to improve the experience of care, improve health of populations, and reduce per capital costs of health care.³ Clearly, the goal is to achieve the best outcomes for patients at the lowest cost (the value-based health care option).⁴ One purpose of any business is to provide the best value for its customers, and health care as a business is not an exception. Indeed, businesses have looked outside their own industries (a group of companies that are related in terms of their primary business activities) to adopt methods that will provide maximum value for their customers. For example, McDonald's Corporation (McDonald's) opened its first drive-thru restaurant in 1975 in Sierra Vista, Arizona, as soldiers from nearby Fort Huachuca were forbidden to get out of their cars in army fatigues. McDonald's solved the problem by installing a drive-thru.⁵ It is possible that McDonald's got this idea from the banking industry that pioneered drive-thru windows for its customers as early as 1930.⁶ In addition, Southwest Airlines had a dismal record for on-time performance.⁷ In an effort to improve, they looked at nonairline industries and organizations that demonstrated good on-time performance to understand how to improve their operations. The National Association for Stock Car Auto Racing (NASCAR) pit crews excelled here, with employees having clearly defined roles, singular focus, a team approach, always correctly anticipating when the race car would arrive for service, and training rigorously to perfect their task. Cars are in and out of the pit within seconds. With NASCAR as their model, Southwest Airlines quickly transformed their company's performance.⁷

The health care industry can learn innovations across business disciplines including operations, finance, marketing, and customer service from other industries that have successfully navigated similar business challenges to improve value option.^{8,9} Indeed, some have

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BACKGROUND AND PURPOSE

The multiple challenges facing the health care system in the United States have been well known for some time.¹ These challenges include rising costs of care, increasing demand for services due to demographics and burden of chronic diseases, poor coordination of care, uneven level of quality and outcomes of care, shortage of providers, and a general crisis of trust among the public toward the health care system.¹ Market forces are driving increasing numbers of hospital mergers and acquisitions, and generally consolidation is occurring in the health care market.² Reimbursement rates are declining, and physical therapists and

argued that innovation is not so much coming up with the big idea (that is creativity); however, it is about executing the creative idea.¹⁰ Innovation is putting the idea into practice, and thus, a faster way of doing this is to adopt it from another industry that has successfully innovated. For example, one promising management innovation implemented by some leading health care institutions to provide better value for their patients is Lean, a quality improvement philosophy and a set of principles originated by the Toyota Motor Company.¹¹

With profound changes in health care and the need for innovation to deliver exceptional value to patients receiving physical therapy, it is incumbent that students are prepared to look outside health care to adopt business practices from other industries and foster innovation as they begin to practice physical therapy. In fact, research on innovators has shown that they depend on a cognitive skill that is called “associational thinking” or simply “associating.” Associating happens as the brain tries to synthesize and make sense of novel inputs. Development of this cognitive skill helps innovators discover new directions by making connections across seemingly unrelated questions, problems, or ideas. Innovative breakthroughs often happen at the intersection of diverse disciplines and fields.¹² Thus, looking at business practices in other industries could foster innovative ideas in health care providers including students that they could then adopt in the physical therapy services industry.

The advent of doctoral training in physical therapist education programs has led to curricula being augmented in a number of areas including business practices.¹³ At Emory University, our required Health Service and Management course is intended to provide insight into the many variables that affect the business of health care. This course builds on the Ethics and Professionalism course that focuses on ethical/legal guidelines and standards for practice; professionalism; and professional roles, responsibilities, and obligations. Specifically, the Health Service and Management course focuses on current financial, legal, and regulatory policies and the business practice of physical therapy. This course prepares the students for participation in managerial activities and includes a glimpse of primary business disciplines including market research and strategy, marketing, finance, operations, quality, and management.

In an effort to better prepare graduates with the entrepreneurial and innovative mindset needed to establish and deliver new roles and services, business practice in other industries can be analyzed in an advanced business course within a Doctor of Physical

Therapy (DPT) curriculum. At Emory University, we used the pedagogical tool of using the case-based analysis of Harvard Business School (HBS) cases to teach business skills and expose students to business practices in other industries through an elective course. With each case, students performed a situation analysis, analyzed varied and frequently ambiguous data, and assumed responsibility for an action plan to resolve the case’s business challenge.¹⁴ Next, students applied concepts from the business school case to the physical therapy services industry. Our overall goal was to teach our students to be innovative once they graduated and practiced physical therapy in this new health care environment. The words “innovative” and “being entrepreneurial” have been used interchangeably because being entrepreneurial requires one to be innovative.¹⁰ One way of teaching innovation to our students was to get them to apply ideas from other industries to physical therapy services, and thus, we innovated our business management elective course by incorporating HBS cases in our curriculum to give our students a glimpse of businesses outside health care. Although the use of HBS cases is a routine in Business schools,¹⁴ it is not a routine in physical therapy programs, and we are not aware of any published studies that describe the use of HBS cases in Doctor of Physical Therapy programs. The purpose of this study is to describe how the case-based analysis of HBS cases from a variety of industries was implemented to teach business disciplines and promote innovative thinking in DPT students at Emory University.

METHOD/MODEL DESCRIPTION AND EVALUATION

Evolution of the Course

The DPT program at Emory University is part of the Division of Physical Therapy, Department of Rehabilitation Medicine, in the Emory University School of Medicine. The curricular structure of the DPT program allows for offering of a number of elective courses over two semesters to our third-year students. The faculty is supportive of innovation in course topics and pedagogical methods, allowing this business course to be incorporated into our curriculum. In this context, the Division of Physical Therapy has three faculty members who have an MBA degree and two of us (the authors) were instrumental in initiating and designing this course. The authors felt that this course was needed because of their extensive background in the management of physical therapy practices and knowledge of the challenges

facing private practitioners with the changing health care environment (including the pressure of declining reimbursements and a need to innovate to respond to these challenges). In developing this course, the authors were responding to anecdotal reports from a marketplace of physical therapists innovating their practice models by moving to cash-based practices or developing practices with a wellness component to respond to changes in health care. The DPT program has successfully implemented a dual DPT/MBA degree with Emory’s Goizueta Business School for students who have particular interest in upgrading their management skills.¹⁵ However, exposing additional students to a variety of business disciplines and building an entrepreneurial mindset in more graduates in an innovative advanced business elective course offered to all students as part of the core curriculum was deemed beneficial by the faculty to the DPT program. Clearly, by choosing the elective format, we piloted this course for a small number of students, and we are now poised to introduce the elements of this course in our Health Service and Management curriculum that is given to all students.

The course was developed over a semester period and included selection and procurement of HBS cases that exposed students to different business disciplines that are common to health care but, for the most part, in industries other than health care. HBS uses these cases to present real-life challenges, wrapped in complicated and sometimes insufficient information for the students to problem-solve.¹⁴ We chose these cases based on a challenge related to a business discipline such as marketing, operations, etc. We used the same cases each year the course has been offered. The copyright costs of the HBS materials (cases, assigned reading, and the course analysis coach) are approximately \$95 per student for all materials.¹⁴ The course was implemented in the spring of 2012 and subsequently offered once a year. The day and time for the course were determined by first identifying the most optimal day of the week for the DPT students such that it did not conflict with other elective courses.

Course Content

Course content was structured around the purpose of instilling an entrepreneurial mindset in students, irrespective of the practice environment they would choose to work (private practice, acute care, nursing home, etc.) on graduation. The aim was to provide students the opportunity to learn various business management skills through the case-based analysis of companies in

a variety of industries. Through this analysis, students learn the application of marketing, finance, operations, and human resource activities in a real-life company. Students then apply this knowledge to the health care industry and, more specifically, to the practice of physical therapy. Overall, our goal was to instill an innovation mindset in our students. The content is further structured around the 8 objectives that the students should accomplish at the end of the course (Table 1). A sequence of course topics related to the course objectives is outlined in Table 1.

Pedagogical Methods

The primary pedagogical device used in the course is HBS cases. We chose a set of cases where the company faced a problem related to a particular business discipline (operations, marketing, etc.). We provide students general guidelines for a typical case analysis in the introductory lecture including access to an online case analysis coach tutorial from HBS as part of purchasing the HBS cases.¹⁴ Also, for each case, we give a set of unique focus questions to help students approach the problems the business was facing. Moreover, additional review articles are assigned for reading, with each case to provide the student a background and perspective on the particular business discipline central to the case. In class, to develop an understanding of these cases, we engage the students in a discussion and debate about the issues the company was facing. We serve as facilitators of the discussions, periodically posing questions to elicit further analysis of the problems facing the company from the students. The faculty are provided extensive teaching notes accompanying HBS cases that have guiding questions and points for case discussion. We provide a supplemental lecture/discussion to support business themes and topics covered in the case. In addition, we hold three lecture/discussion class periods on the topics of finance, marketing, and inviting an entrepreneur who successfully innovated a physical therapy practice to share insights into the innovative business model.

Student Assessment

Two methods of evaluation are used to assess students' learning and the final course grade during the course (class participation and team assignment of "Back to physical therapy" vignettes write-up). An additional two methods were used to assess students' learning after the course (course evaluations and alumni surveys).

Class Participation. Class participation contributes 50% toward the total course grade. The

criteria include Listening, Preparation, Quality of Contributions, Impact on Class Discussion, and Frequency of Participation. Each criterion is scored along a scale of Consistently Meets Expectations, Sometimes Meets Expectations, and Frequently Fails to Meet Expectations with an assignment of three points, two points, and one point, respectively. The participation grade is determined by the number of points earned divided by the total possible points (15). Refer to Table 2 for the detailed Class Participation Grading Rubric.

Team Assignment of Back to Physical Therapy Vignettes Write-up. Team assignment vignette write-up activities are to foster innovative application of learnings from other industries to physical therapy services. Vignette grades account for the remaining 50% of the total grade. The first vignette comprises 20%, and the final vignette comprises 30%. Criteria for grading include Identification of Themes, Application of Themes to Physical Therapy Practice, Technical Instructions, Organization, Grammar and Clarity, and Presentation Organization and Delivery. Criteria are scored along a scale of Consistently Meets Expectations, Sometimes Meets Expectations, and Frequently Fails to Meet Expectations, with three points, two points, and one point given, respectively. Total points assigned are divided by the total number of possible points (15) to determine the vignette grade. The grading rubric for the vignette assignments is shown in Table 3.

Course Evaluations. Students completed course evaluations at the end of the course each time it was offered from 2012 to 2015. The course evaluations are administered and collected anonymously using an online course management tool (Blackboard).

Alumni Surveys. A survey was sent to alumni who completed the Business Management for the Physical Therapist Entrepreneur elective course during the years 2012–2015 (see Appendix, Supplemental Digital Content 1, <http://links.lww.com/JOPT/A0>) and whose contact information was available.

OUTCOMES

Student Assessment

Class Participation. The rubric provided us a way to offer students input on their class participation. The relatively small class facilitated class participation. However, it was through the qualitative analysis of course evaluations that a subtheme of the student learning experience (see Course Evaluations) emerged, which showed that students emphasized peer learning, class participation, and overall how valuable this learning experience was for them.

Team Assignment of Back to Physical Therapy Vignettes Write-up. We assessed the students' ability to learn innovation by evaluating their ability to apply learnings from other industries to physical therapy services. This was accomplished through the evaluation of team assignment of Back to physical therapy vignettes write-up and using a rubric that we developed (Table 3). A key component of the rubric specifically measured the outcome "Application of Themes to Physical Therapy Practice" (Table 3). These vignettes provided rich examples of student recommendations based on applying business principles and innovations that they learned from HBS case studies to the physical therapy services industry. For example, one student recommended the following from the HBS case of "Design Thinking and Innovation at Apple":

At first glance, Apple has very little in common with a healthcare provider. However, they are partly an industry leader due to the commitment and culture of innovation that does not shy away from risk and encourages exceptional solutions to complexity. Similarly, PT practices will need to innovate to accommodate the healthcare landscape of the future. An example of innovation that will potentially differentiate the clinicians of the future is improved management of patient data to understand how interventions are impacting the patients at an individual, disease specific, and population level. Currently, electronic medical records are predominately designed and utilized for billing. However, physicians and health care systems are beginning to utilize new software to record and analyze data to both learn how to be more effective and also to prove their value to a patient, client, or payer. The progressive leaders in PT will recognize that payments will increasingly be linked to value based metrics (Student cited this reference: Center for Medicare and Medicaid Services. <https://www.cms.gov/newsroom/mediareleasedatabase/fact-sheets/2015-fact-sheets-items/2015-02-27.html>. February 2015. Accessed December 1, 2015). Therefore, the integration of tracking value provided and increasing patient engagement in the data acquisition process will be vital for the future of practicing PT in the new industry environment of healthcare.

Course Evaluations. Across the 4 times the course has been offered, a total of 57 students have completed the course. Fifty-three (93%) students have completed the course

Table 1. Course Objectives

Course Objectives	Business Topic	Case
1. Discuss major challenges facing the US health care system and compare the US system to other health care systems among the OECD countries.	The US Health care System: Challenges and Solutions	
2. Evaluate the totality of manufacturing, especially the link between production control and quality control.	Production Control, Quality Control	Toyota Motor Manufacturing, USA, Inc.
3. Apply and interpret advanced root cause analysis.		
4. Discuss the growing impact of health care delivery organizations on the outcomes of medical care and the implications for managers within these organizations.	Leadership, Operations Management	Virginia Mason Medical Center
5. Examine the applicability of industrial production management systems for health care delivery organizations.		
6. Analyze the difficulties associated with customer relationship management in the context of a diverse customer base.	Service Management: Customer Service, Customer Retention, Profitability	Starbucks: Delivering Customer Service:
7. Perform and discuss lifetime value calculations and a break-even analysis.		
8. Examine the relationships between "customer satisfaction" and a company's sales and profitability.		
9. Describe the role of HR programs and measurement systems in supporting product/service quality.		
10. Analyze how various elements of a business concept (employee selection and training, customer feedback, and product offerings, etc.) must work together in support of strategy and a venture's proposition to customers.	Human Resource Management, Growth/Expansion	Porcini's Pronto: "Great Italian cuisine without the wait!"
11. Discuss the implications for product/service quality associated with different growth alternatives (company ownership, franchising, and syndication).		
12. Discuss the elements of a successful marketing strategy and analyze factors that contribute to its success.		
13. Evaluate changes in the environment that require a reconsideration of the marketing strategy.	Consumer Marketing; Marketing Channels; Marketing Mix; Marketing Strategy	Callaway Golf Company
14. Evaluate and discuss the barriers to adoption of an innovation from the standpoint of all players in the value chain and develop ways to overcome them to align the parties.		
15. Explore the positioning of an innovation as a complement versus substitute to the status quo.	Business processes; Corporate social entrepreneurship; Creativity; Experimentation; Innovation; Product design; Product development; Productivity; R&D; Strategy; Technology; Vision	Apple Design Thinking and Innovation
16. Analyze and discuss the marketing strategy of a multisided platform.		
17. Discuss new business opportunities that build on a core new concept.		
18. Examine how a novel service in the health care industry can develop new product offerings to target a new consumer in a changing health care environment.		
	Entrepreneurship, Information Technology, Marketing Management	American Well: The Doctor Will E-See You Now

Table 2. Class Participation Grading Rubric

Criteria	Consistently Meets Expectations (3 Points)	Sometimes Meets Expectations (2 Points)	Frequently Fails to Meet Expectations (1 Point)
Listening	Actively and respectfully listens to instructors and peers	Sometimes displays lack of interest in comments of others	Frequently displays lack of interest and/or disrespect for comments of others
Preparation	Arrives to class prepared with thorough analysis of assigned readings and case; prepared to discuss preclass and in-class objectives	Sometimes arrives to class unprepared or with little/superficial preparation	Exhibits little evidence of reading or preparing case for class discussion
Quality of contributions	Comments are relevant and reflect understanding of class readings, objectives, comments of others, and insights about course learnings	Comments are sometimes irrelevant and reflect lack of understanding of class readings, objectives, comments of others, or insights about course learnings	Comments reflect little understanding of class readings, objectives, comments of others, or insights about course learnings
Impact on class discussion	Comments frequently assist in moving the class forward in discussion of the case and related learnings	Comments sometimes advance the discussion, but sometimes contribute little to advancement of the class	Comments do not advance the conversation and may lead the discussion in an unintended/unproductive tangent
Frequency of participation	Actively participates at appropriate times in large class or small group discussion	Sometimes participates but sometimes seems "tuned out"	Seldom participates and seems generally unengaged

_/15 = participation grade.

Table 3. Vignette Assignment Grading Rubric

Criteria	Consistently Meets Expectations (3 Points)	Sometimes Meets Expectations (2 Points)	Frequently Fails to Meet Expectations (1 Point)
Identification of themes	Identifies all major business themes from the assigned case	Identifies some of the major business themes from the assigned case	Unable to identify major business themes from the assigned case
Application of themes to physical therapy practice	Applies business themes from the case to the practice of physical therapy, with at least three clear examples	Some application of business themes from the case to the practice of physical therapy, with less than three examples and/or examples that are not clearly described	Little application of business themes from the case to the practice of physical therapy, with less than three examples and/or examples that are not clearly described or applicable to the described situation
Technical instructions	Meets requirements of paper length, spacing, font size, and referencing	Usually meets requirements of paper length, spacing, font size, and referencing	Does not meet requirements of paper length, spacing, font size, and referencing
Organization, grammar, and clarity	Organized with no spelling, punctuation, or grammatical errors; writing focuses directly on a point with minimum wordiness	Moderately organized with some spelling, punctuation, or grammatical errors; writing includes some unclear and wordy sentences	Unorganized with multiple spelling, punctuation, or grammatical errors; writing not clear or concise
Presentation organization and delivery	Organized; delivered with eye contact, without reading from paper, using loud, clear, and slow speaking voice	Moderately organized; delivered with moderate eye contact, some reading from paper, with moderate use of loud, clear, and slow speaking voice	Unorganized; delivered with minimal eye contact, reading from paper, with soft, unclear, or fast speaking voice

_/15 = vignette grade.

evaluation. Overall, there was an agreement among the students that the course met its stated objectives and the students found the

course interesting and enjoyable (Table 4). In the additional comments section of the evaluation, students offered viewpoints that

they believe are not captured in the close-ended survey question format course evaluation tool. These open-ended subjective

Table 4. Mean Percent Response From All Course Evaluations (2012–2015, N = 4 Course Evaluations Representing 53 Students)

Selected Course Evaluation Questions	Strongly Agree, %	Agree, %	Disagree, %	Strongly Disagree, %	Unanswered, %
The course met the stated objectives	86	7	3	1	3
The format of the class/laboratory was consistent with the objectives of the course and instructional material	85	9	1	1	3
The content of the course was appropriate for your needs as you see them now	76	14	3	1	5
Material in the course was easy to follow	76	17	3	1	3
The assigned readings were sufficient for understanding the material	84	10	1	1	3
You found the course interesting and enjoyable	87	7	1	1	3

comments were analyzed to develop a thematic understanding of the students' experiences and perceptions of this course over the semester.

An interpretative thematic analysis based on the phenomenological methodology of Creswell¹⁶ and Giorgi¹⁷ was used to analyze the data. The process of analysis was iterative. To perform the analysis, the following steps were undertaken. First, each author separately identified significant statements across all comments made by the students.¹⁷ This inductive, "open coding" consisted of identifying significant statements that contained common key words, phrases, and concepts related to the students' experiences and perceptions of the course. Second, peer checking of individual coding occurred over the course of several meetings and until both authors reached a consensus on the initial codes. Third, once the authors reached a consensus on all codes, the authors collapsed the codes into subthemes based on the codes that contained common properties, characteristics, or dimensions. The process of peer checking continued during the conversion of codes into subthemes to make certain both authors reached a consensus. Finally, both authors collapsed subthemes into major themes based on their similar dimensions, properties, and characteristics. We identified 168 significant statements. Of these 168 statements, 45 were positive statements (27%), such as "I loved the course," "I would highly recommend this course," and 8 negative statements (5%), such as "Readings were too long," "One negative of the class, was that it seemed a bit rushed at the end of the semester." We then focused our analysis on the remaining 115 thematic statements (68%). Twenty-one initial codes were

identified, and related codes were collapsed into 6 subthemes. Ultimately, 2 themes emerged: innovative course format and innovation learning.

Theme 1: Innovative Course Format. The theme of innovative course format appeared in 53% of the thematic significant statements, with authors coding 61 significant statements. Subthemes related to innovative course format included class format and student learning experience.

Subtheme: Class Format

Students wrote about the case method, case selection, class size, and the course materials, and examples of students' written comments corresponding to this subtheme are as follows:

I do think reading cases outside health care was good (2012)
I thought the case studies were very interesting (2014)
Using actual case studies from real businesses (2012)

Subtheme: Student Learning Experience

Students emphasized peer learning, class participation, and overall how valuable this learning experience was for them. Examples of students' written comments corresponding to this subtheme are as follows:

The open-discussion format facilitated learning and the sharing of ideas (2013)
I liked having the opportunity to ask questions and exchange ideas with classmates and professors during class. The dialogue was quite enriching (2014)

Theme 2: Innovation Learning. The theme of learning about innovation and thinking

innovatively appeared in 47% of the thematic significant statements, with authors coding 54 significant statements. Subthemes related to innovation learning included student learning of application, student learning of innovation, and business knowledge.

Subtheme: Student Learning of Application

Students wrote about relevant information to physical therapy and career enhancement. Examples of students' written comments corresponding to this subtheme are as follows:

Seeing how they applied to our profession (2015)
Allowed students to relate to common brands and learn from specific situations that can be applied to health care (2013)
Relate Harvard business review cases to health care/PT (2013)
Practical advice on how to be a leader or manager in PT (2013)
Contribute to a practice with more than just clinical skills, but sound managerial ideas on how to make a practice thrive (2013)
I was learning different skills that will prepare me in a way that sets me apart from other job applicants and future co-workers (2015)

Subtheme: Student Learning of Innovation

Students wrote about out-of-the-box thinking, critical thinking, different perspective analysis, creative thinking, and problem solving. Examples of students' written comments corresponding to this subtheme are as follows:

Challenged us to think outside the box (2013)

I liked the out-of-the-box thinking (2012)

Subtheme: Business Knowledge

Students emphasized learning about general business knowledge, marketing, and finances. Examples of students' written comments corresponding to this subtheme are as follows:

I have a new-found understanding of business principles (2013)

I feel so much more competent when talking about business, finances, and health care (2015)

Alumni Surveys. The survey was sent to 54 alumni (of 57 students) who completed the Business Management for the Physical Therapist Entrepreneur elective course. Thirty-four alumni responded to this survey (63% response rate). All responses were anonymous. A total of 94% respondents agreed that the course created an entrepreneurial and innovative mindset that impacted their practice of physical therapy (Table 5). When asked for specific examples of how the course instilled an entrepreneurial/innovative mindset that impacted their practice, we received several responses including the following:

Things learned from this course has allowed me to develop effective and innovative marketing strategies that have resulted in increase in patient volume in my outpatient orthopedic clinic. The information learned in this course, although not directly related to the practice/business of physical therapy, has provided me the knowledge and ability to think outside the box in order to improve my practice.

In my second year of practice, I had the opportunity to be promoted into a clinic manager position and from the principles from this elective course, was able to interpret the balance sheet to make effective decisions. Beyond the numbers, discussions from the course about clinic morale, customer acquisition costs, and

marketing strategies allowed me to participate in regional meetings where I was by far the youngest manager there but felt confident in my discussions.

I have taken on a lot of marketing duties for my clinic in just my first 2 years of practice that I would have otherwise not felt comfortable doing.

I felt better prepared to lead a team when I was promoted to Clinic Director. I felt more comfortable going out to market myself, my skills and my company with little mentoring.

It has helped me seek interventions that are best for patients while also focusing on cost cutting and other forms of payment that are best in the bottom line.

Applying the Toyota Production System to healthcare taught me to examine the tasks that myself and my coworkers and I perform on a daily basis and look for ways to make things more efficient. For example, we typically have to go to the supply room to get chair alarms, hospital socks, sheets, etc. for each patient. Now some of us have started using empty computer cart to stock these items and bring them with us to each room, thus reducing supply runs between patients.

Finally, 94% of the respondents said yes when asked specifically if HBS cases, in particular, helped them meet the course objectives related to gaining knowledge of business concepts and developing an entrepreneurial mindset for application of these concepts into physical therapy practice.

DISCUSSION AND CONCLUSION

The physical therapy profession has aimed to transform society by optimizing movement to improve the human experience.¹⁸ Among the guiding principles to achieve this vision are value and innovation. Value has been defined as “the health outcomes achieved per dollar spent.”^{2,4} To provide the best value to our patients/clients, the profession will have to

innovate on a number of fronts including improving its service delivery model. Looking at business practices and delivery models of industries outside health care is one method of innovating. Thus, the case-based analysis of HBS cases from a variety of industries to teach business disciplines and promote innovative thinking in DPT students is an important step toward achieving the vision for our profession. However, we are not aware that such a course is offered in other physical therapist education programs. We believe that this is the first study reporting on a course using the case-based analysis of HBS cases from a variety of industries to teach business disciplines and promote innovative thinking in DPT students.

A number of key factors have played a role in our success with the implementation of this course. The DPT program at Emory University is part of an Academic Health Center that not only includes the School of Medicine in which the DPT program is housed but also has Goizueta Business School with various formats of MBA programs. Previously, we have successfully set up the dual DPT/MBA program¹⁵ with Goizueta Business School, and thus, our students are well aware of the strong linkages we have with the business school. Coupled with this linkage to the business school is the fact that three faculty members in our program have an MBA degree, thus creating a strong emphasis on business training within the curriculum of our DPT program. Moreover, the faculty is familiar with the case discussion method, and we have adequate financial resources to access these cases via the HBS. The curricular structure of the DPT program allows for offering of a number of elective courses over two semesters to our third-year students, thereby creating “space” in the program to offer new courses. Finally, the metro-Atlanta market has a number of physical therapist entrepreneurs setting up innovative physical therapy practices who can share their innovation and alternative business models of practice with our students.

Table 5. Mean Percent Survey Responses of Course Alumni (2012–2015, N = 34 Responses)

Selected Survey Questions (see Appendix, Supplemental Digital Content 1, http://links.lww.com/JOPTE/A0)	Yes, %	No, %
1. Do you feel the Business Management for the Physical Therapist Entrepreneur course created an entrepreneurial and innovative mindset that impacted your practice of physical therapy?	94	6
2. Do you feel the Harvard Business School cases, in particular, helped you meet the course objectives related to gaining knowledge of business concepts and developing an entrepreneurial mindset for application of these concepts into physical therapy practice?	94	6

An overall goal of this course is to instill an innovation mindset in our students. The quantitative section of our anonymous course evaluation indicated that there was an agreement among the students that the course met its stated objectives. Moreover, the qualitative analysis of anonymous comments students offered as part of the course evaluation identified two core themes of innovative course format and innovation learning indicating that student participants were attuned to the overall goal of this course. This is not surprising because observational learning is well accepted as a powerful means of transmitting values, attitudes, and patterns of behavior.¹⁹ Thus, our innovative course format with the use of HBS cases, class discussion, and participation allowed us to model for our students the innovation mindset we were trying to instill in them. In addition, the students' comments pointed to innovation learning as another core theme indicating that the students' agree that our overall goal of instilling an innovation mindset was met. Creating a mindset and the resultant behavior defines the culture of an organization,^{20,21} and leadership behavior is the key mechanism by which culture is embedded in organizations.^{22,23} Although we did not explicitly set out to impart leadership training as part of this course, our thematic analysis showed one outcome of innovative learning related to career enhancement, particularly as it relates to leadership. One student wrote:

This class instills a desire and plan to transcend mediocrity and become the future leaders of physical therapy (2013).

This is not surprising, as a number of business cases discussed during this course called on the chief protagonist, either a CEO or another senior manager, to make decisions that impacted the culture of an organization. Clearly, development of leadership is important in instilling innovation in an organization. Thus, one would expect that leadership training be important if innovation mindset has to be imbued in our students. Alumni survey of this course indicates that alumni agreed we were successful in instilling the innovation mindset that resulted in several alumni being innovative in their careers and in the practice of physical therapy.

One barrier we have faced is expanding this elective class beyond 15–20 students to prevent losing the rich discussion format of the class where each student is expected to engage and contribute to the analysis of the case (a critical component of innovative learning). However, 20%–30% of our student

body can still participate in this elective, and in future years, we are considering strategies to accommodate even greater number of students. The strong subscription of this elective course is not surprising, given the emphasis on business innovation with health care reform.

We recognize that not all physical therapist education programs may have the resources to offer such a course. However, the barriers to offering this course are not insurmountable. Beyond the cost of purchasing HBS cases, faculty familiar with the business of health care could easily adopt HBS case discussion. Even in the absence of having an MBA degree, faculty are provided extensive teaching notes accompanying HBS cases that could guide them with the case discussion. Moreover, faculty and students are well versed with problem-solving and case-discussion methods, as patient cases are routinely discussed as part of physical therapist education curriculum. In fact, we would argue that our faculty and students are well adept at incorporating HBS cases in physical therapist education programs. In addition, faculty at physical therapist education programs could attend at least one 3-hour class at their local business schools to watch a business class faculty member lead an HBS case discussion to get pointers on how such a class could be conducted. Finally, given the very structured curricula in many physical therapist educational programs, the faculty could discuss one or two HBS cases as part of the existing business course in their curriculum without having to offer a complete course using HBS cases. Similarly, depending on the curricular structure of a physical therapist assistant educational program, this course could be implemented as part of advanced coursework or a capstone course or the faculty could discuss one or two HBS cases as part of an existing business course in their curriculum without having to offer a complete course using HBS cases.

As the need for innovation to deliver exceptional value to patients receiving physical therapy continues to be paramount, it is critical that our students are prepared to innovate. We cannot optimize movement to improve human experience and thereby transform society if we are found lacking in our preparation of physical therapist practitioners who fail to innovate.

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