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Graphic Presentation: An Empirical Examination of the Graphic Novel Approach to Communicate Business Concepts

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Abstract

Graphic novels have been increasingly incorporated into business communication forums. Despite potential benefits, little research has examined the merits of the graphic novel approach. In response, we engage in a two-study approach. Study 1 explores the potential of graphic novels to affect learning outcomes and finds that the graphic novel was related to high levels of learning experiences. Study 2 compares the impact of graphic novels with that of traditional textbooks and finds that verbatim recognition was superior with graphic novel texts. Overall, we provide the first comprehensive examination of the graphic novel as a tool for effective business communication.

Keywords

communication, comics, education, graphic novel, learning

A narrative approach has been advanced as an effective method to communicate a variety of business concepts, ideas, and strategies. For example, business communication scholars have noted the value of shareholder reports as an effective narrative for telling investment stories (Jameson, 2000). Seeing the promise of such communications, companies such as 3M have further leveraged the value of narratives by

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incorporating strategic stories into their business planning (Shaw, Brown, & Bromiley, 1998). Narratives have been espoused as a useful communication tool due to their ability to evoke rich ethical and moral concerns in ways that incorporate both descriptive and prescriptive elements (Randels, 1998).

The narrative approach has also been used as an effective educational tool. For example, scholars have found extended narratives to be effective mediums to meet the learning objectives in courses such as technology management (Austin, Nolan, & O'Donnell, 2009b). Storytelling using narratives has also been advocated as an approach that is particularly well suited to effectively communicate strategic issues (Denning, 2006). With regard to the educational context, such stories are valuable due to their potential to engage students in course materials while showing how businesses functional areas' perspectives integrate to inform decision making. For example, management scholars have suggested that Aesop's fables can be used to provide insight into many strategic management theories and concepts (Short & Ketchen, 2005).

One application of the narrative approach, the graphic novel approach, has begun to receive interest from business communication scholars (Short & Reeves, 2009). A graphic novel is a book-length narrative where the content is targeted toward a more mature (e.g., teenage or adult) audience (Green, 2003). Such works use sequential art to present a visual narrative that engages the audience (Eisner, 1996, 2005; McCloud, 2006). In contrast to traditional comics that involve relatively few panels, these stories often involve complex and lengthy storylines. For example, Jacobson and Colon (2006) published a graphic novel adaptation of the *9/11 Commission Report* (Kean et al., 2004).

The graphic novel format has increasingly been used as a technique to communicate to an adult audience in a wide variety of arenas that have not historically embraced this approach (Tabachnick, 2007). For example, Kaplan, Inc., recently incorporated the graphic novel format for SAT prep courses (Zlatos, 2007), and Harvard Business School recently adapted a case study to this format (Austin & Short, 2009). The graphic novel format is commonly used beyond the classroom context as well. For example, the famed graphic artist Scott McCloud was hired to provide a graphic introduction and explanation when Google launched their Google Chrome browser (Shah, 2008).

Despite the increasing prevalence of graphic novels in a variety of business communication settings, little empirical evidence exists concerning the efficacy of graphic novels as a communication tool (Short & Reeves, 2009). If this medium holds promise, it could provide a valuable device for communicating business topics both inside and outside the classroom setting. On the other hand, if this method fails to meet learning objectives, this information could enlighten business communication scholars' knowledge in the field at a time when graphic novels are becoming increasingly popular and prevalent.

To begin to fill the gap between "what we know" and "what we need to know" with regard to the potential of the graphic novel format as a tool for effective business communication, we engage in a two-study approach. In Study 1, we adapt Austin et al.'s (2009b) study examining the effectiveness of the extended narrative approach to gauge

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how the graphic novel may be used to manage learning objectives drawn from D. A. Kolb's (1976) experiential learning theory. Specially, we examined a graphic novel created with the aim of illustrating key concepts relevant to business and strategic management, and advocated as a potential tool to effectively communicate concepts of interest to business communication scholars (e.g., Short & Reeves, 2009). While Study 1 provides valuable insights regarding learning experiences, it is limited in the ability to make direct comparisons between traditional and graphic novel formats. To complement this approach, Study 2 provides a more controlled test by comparing students' abilities to recognize verbatim passages, recall and define major concepts, and apply materials to substantive questions. This study design builds on previous experiments where participant learning outcomes are measured after being exposed to different textbook formats (e.g., Mayer, 1989; Mayer & Gallini, 1990). Overall, this study represents an in-depth investigation of the graphic novel as a tool to meet key learning objective while also offering the first direct comparison of the graphic novel with the traditional textbook.

Study 1: Management Education and the Learning Process

Austin et al. (2009b) suggest that explanation- and experience-based approaches to management education correspond well to D. A. Kolb's (1976) four-stage cycle to learning. According to D. A. Kolb's model, an effective learner does the following:

1. Engages in actively learning through concrete experiences
2. Critically observes and reflects on those experiences
3. Integrates those observations and reflections into abstract conceptualizations
4. Actively tests those conceptualizations in real-life situations

Therefore, both explanation- and experience-based approaches seem necessary to facilitate the type of learning that allows individuals to form and refine conceptual knowledge (see Oxendine, Robinson, & Willson, 2004).

Encouraging students to move through the complete learning cycle may be a function of engaging student motivation and interest. When individuals show motivation and interest, they engage in an activity for its own sake and the activity becomes the end in itself, rather than the means to an end (Deci & Ryan, 1980). For students, such an approach is advantageous because having an interest in the course material encourages active learning and the desire to think critically about the material (Chickering & Gamson, 1991).

When students engage in a critical thinking strategy (see Bernstein, Penner, Clarke-Stewart, & Roy, 2008, p. 30), they are likely integrating expert frameworks with their own well-reasoned assertions and experiences (see Figure 1). They are likely integrating learning outcomes consistent with both the explanation- and experience-based approaches (see Halpern, 1999). For example, Edelman, Manolova, and Brush (2008) identify that the practical experiences of nascent entrepreneurs can differ materially

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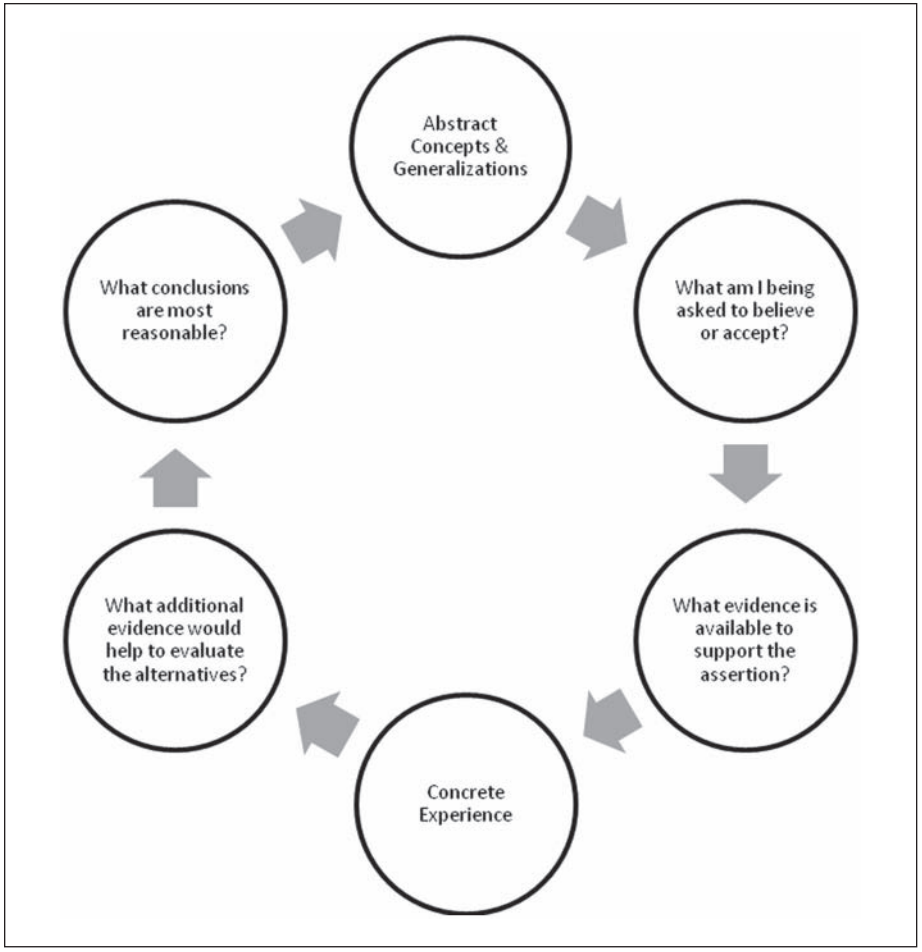

Figure 1. Critical thinking strategy and D. A. Kolb's (1976) learning cycle.

from the content of traditional entrepreneurship texts. The graphic novel approach may encourage the reader to not only apply the frameworks presented in the content of the novel but also engage in the story line personally to evaluate the scenario based on their assessment of the situation presented and update their evaluations as the story unfolds.

The Graphic Novel Approach

Austin, Nolan, and O'Donnell (2009a) developed an extended narrative, *The Adventures of an IT Leader*. This narrative is a reality-based fictional story about a newly appointed CIO (chief information officer) in his first year on the job in an IT department. The use of this extended narrative not only allowed learning to proceed

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inductively in the classroom through caselike discussions of that narrative but also encouraged deductive learning by providing opportunities for cumulative engagement of conceptualizations. Furthermore, the narrative was patterned after a literary device called a *monomyth* that encourages people to identify with the hero's journey, leading to fuller engagement (Austin et al., 2009b). Similar to this narrative approach, our empirical tests are built around *Atlas Black: The Complete Adventure* (Short, Bauer, Ketchen, & Simon, 2011). This graphic novel is particularly well suited to communicate business concepts (Short & Reeves, 2009).

Communicating Strategic Management Concepts. The context of our study of business communication efficacy is that of a strategic management course. Strategic management is often taught as a capstone undergraduate and MBA course in many business schools (Donaldson, 2002; Stephen, Parente, & Brown, 2002). A reason for relying on strategic management to provide a capstone experience is due, in part, to the integrative nature of strategic management as a field as well as the applied context in which strategic decisions take place (Jemison, 1981; Stephen et al., 2002). Consequently, knowledge of strategic decision making is relevant for future business professionals, and strategic management courses often provide a forum to incorporate key content in strategic management as well as theories and methods found in other business courses (Greiner, Bhambri, & Cummings, 2003; Useem, Cook, & Sutton, 2005).

Despite the relevance and importance of strategic management, it is arguably among the more difficult courses to teach effectively (C. W. Weick, 2003). The integrative nature of strategic management, while driving the importance of the subject, contributes to the challenge of effectively communicating the course material (Arben, 1997; Schneider & Lieb, 2004). In these courses, instructors frequently must guide a diverse group of students to draw from and synthesize materials from previous courses in order to prepare students to make and implement strategic decisions in a "real-world" context. This challenge is compounded by undergraduate students' relative unfamiliarity with strategic decision making (Short & Ketchen, 2005).

In order to meet the challenge of teaching strategic management, various methods have been suggested and tested (for a review, see Greiner et al., 2003). For example, metaphors (Audebrand, 2010; C. W. Weick, 2003) and service learning (Angelidis, Tomic, & Ibrahim, 2004) have been used. Case method, simulation, action learning (Jennings, 2002), and experiential activities (Joshi, Davis, Kathuria, & Weidner, 2005) have also been tested.

Textbooks traditionally provide the theory behind the strategic management material; however, the traditional textbook format has been criticized for poorly facilitating the connection between theory and practice (e.g., Edelman et al., 2008). Thus, identifying other teaching materials that may facilitate effective communication in strategic management courses remains an important direction for building knowledge surrounding effective business communication.

Atlas Black: The Complete Adventure. The graphic novel used in our study comprises five chapters and approximately 200 pages. The novel tells the story about a fictional character named Atlas Black. Faced with meager career opportunities after a series of

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short-term jobs, Atlas decides that his best career prospect is to start his own restaurant while completing his senior year of college.

Atlas Black: The Complete Adventure blends the story line of Atlas's quest to start his own entrepreneurial venture, with insights from key management theories drawn from the fields of entrepreneurship, organizational behavior, applied psychology, and strategic management. Originally published in two volumes, the first volume, *Atlas Black: Managing to Succeed*, was recently reviewed in *Academy of Management Learning & Education* and has been lauded for its ability to present management content in an innovative and accessible format (Brown & Härtel, 2010; Crook, 2010). Table 1 provides additional details of the content, theories, and plot of *Atlas Black: The Complete Adventure*.

The graphic novel approach has a number of potential advantages for communicating business-related content to students (Short & Reeves, 2009). For example, the story line provides a recurring set of themes and concepts where material is immediately applied to situations common to nascent entrepreneurs. In many textbooks, numerous concepts are matched with unique examples that might lead to information overload among students. In contrast, the story line offered by the graphic novel provides a consistent presentation of key characters and concepts, creating cognitive links among the concepts.

Understanding the determinants of firm performance is a key goal of the field of strategic management. One key concept illustrated in *Atlas Black: The Complete Adventure* is the multidimensional nature of firm performance. For example, the multidimensional nature of organizational performance is compared to the old fable of the blind men and the elephant (see Figure 2). When each blind man touches a single portion of the elephant, he learns only about one aspect of the whole elephant. Similarly, a single performance measure provides one indicator of a firm's performance but not in sufficient detail to fully gauge a firm's current level of success or failure (see Figure 3).

The idea of the balanced scorecard, which balances traditional financial measures with other performance measures that indicate longer term horizons (Kaplan & Norton, 1992), is presented as a management tool to help assess and monitor firm performance. The different dimensions (financial, customer, internal business process, and learning and growth) are first presented in a straightforward manner as Atlas sits in his weekly management class (see Figure 4). Later in the chapter, the balanced scorecard is applied to a coffee shop that Atlas and his best friend David frequent (see Figure 5). Finally, Atlas discusses how he might apply concepts in the balanced scorecard to help manage his own career (see Figure 6). Overall, *Atlas Black: The Complete Adventure* uses multiple pedagogical tools (e.g., text, graphics, and applications) to cover key management concepts.

Purpose of the Course Analysis

The purpose of the course analysis presented below was to assess how using a graphic novel in management instruction might relate to student learning objectives. These objectives were evaluated in a way almost identical to Austin et al.'s (2009b) analysis of their narrative approach in teaching technology management: Specifically, students

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Table 1. *Atlas Black*: The Complete Adventure Plot and Topics Summary.

Chapter	Topics covered	Plot summary
1	Overview of the management field, management history, Frederick Taylor, scientific management, Frank and Lillian Gilbreth, Eadweard Muybridge, Upton Sinclair, determinants of firm performance	Atlas Black and his best friend and sidekick David Chan are introduced. Atlas is behind on his rent, and he realizes that he needs to take dramatic steps to improve his career prospects. The mysterious "Black" appears and suggests that Atlas start his own business given Atlas's other prospects.
2	Mission, vision, balanced scorecard, triple bottom line, decision biases, rational decision making	Atlas attempts to gain funding by completing his tax returns. Much to his surprise, his ex-girlfriend Maria is working at the accounting firm he visits. Atlas explains that he is now taking school more seriously and even applying the idea of a balanced scorecard to his personal life. The chapter ends in an embarrassing appearance at a local house party when his friend Tess requests him as a delivery driver for Pilgrim Pizza, his current job.
3	SWOT analysis, Big Five personality traits, Type A and Type B personalities, Porter's five forces, environmental trends	Atlas learns that the mechanics of starting his own business are not as difficult or important as the need to develop a specific strategy. With the help of David, he concludes that a restaurant makes sense of a potential entrepreneurial venture in most college towns—but he also needs a unique hook if this idea it to truly move forward.
4	Generic business-level strategies, resource-based view of the firm, intellectual property rights (patents, trademarks, copyrights, trade secrets), human resources, substantive and contingent selection, legal and illegal hiring questions	Atlas develops the idea of the No Cover Café. This restaurant would provide free live music with modestly priced food to attract the audience associated with most college towns. Atlas interviews a classmate for a potential internship, and after a successful interview she is livid to discover that the position will be unpaid.
5	Hierarchy of authority, unity of command, span of control, division of labor, bureaucracy, simple structure, functional structure, multidivisional structure, SBU structure, synergy, strategic network, matrix structure, person-job fit, person-organization fit, ASA framework	Atlas realizes the need to become more organized if the No Cover Café is to become a reality, and visits his college's career fair to contemplate potential employees and other local firms that could supply their restaurant, such as Cat Lady Coffee—a local coffee shop that Atlas and David frequent.

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Table 1. (continued)

Chapter	Topics covered	Plot summary
6	Active and passive listening, Business plan elements, communication process, communication channels, communication freezers, effective business correspondence, entrepreneurial orientation dimensions, information overload, information richness, noise, selective perception	Atlas and David learn the importance of effective communication as they develop their formal business plan. They also learn the value of verbal and nonverbal communication in a variety of social and business settings, such as their adventure in speed dating.
7	Conflict types, general adaptation syndrome, negotiation mistakes, negotiation steps, negotiation styles, stages of moral development, stress	While Atlas is able to effectively handle the stressful environment common to an entrepreneurial setting, David faces challenges in coping with a stress-inducing environment. Atlas and David develop a negotiating strategy that allows them to effectively navigate a location for their business.
8	Board of directors, effective meeting guidelines, group decision making techniques, group stages, punctuated equilibrium, social loafing, task interdependence, team contract	Atlas and David recall their early days of friendship in a youth soccer team while learning how groups and teams are an important element in managing a workforce.
9	Equity theory, ERG theory, expectancy theory, Herzberg's two-factor theory, incentives, job design, organizational justice, Maslow's hierarchy of needs, McClelland's acquired needs theory, reinforcement theory, SMART goals	Atlas and David learn that training David's new puppy is a simple task compared to the complexities involved in managing individuals. Effective management of individuals requires knowledge of behavioral, needs-based, and cognitive theories of motivation.
10	Authentic leaders, bases of power, classic leadership decision-making styles, impression management, influence techniques, leader-member exchange theory, situational leaders, transactional leaders, transformational leaders	Atlas and David learn about the challenges of leadership. Their tales concludes with the successful opening night of the No Cover Café.

Note. SWOT = strengths, weaknesses, opportunities, and threats; SBU = strategic business unit; ASA = attraction-selection-attrition; ERG = existence, relatedness and growth; SMART = specific, measurable, attainable, realistic and timely.

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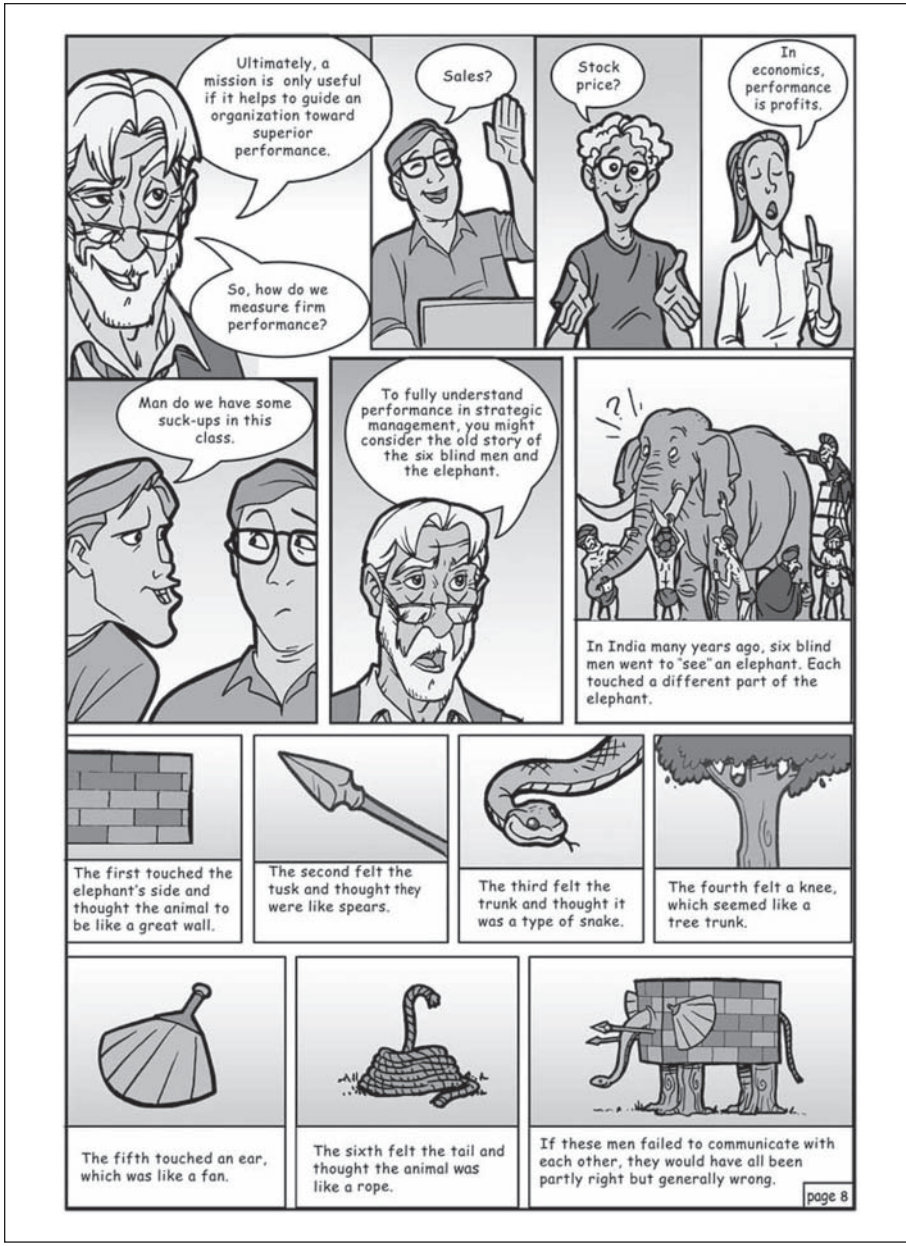

Figure 2. Graphic novel content illustrating multidimensionality of firm performance.
Source. Short, Bauer, Ketchen, and Simon (2011, p. 8). Reproduced with permission.

provided feedback in self-assessments. However, in order to better distinguish between different learning outcomes as well as perceptions of the course logistics, three subscales were created and analyzed (see Sitzmann, Ely, Brown, & Bauer, 2010).

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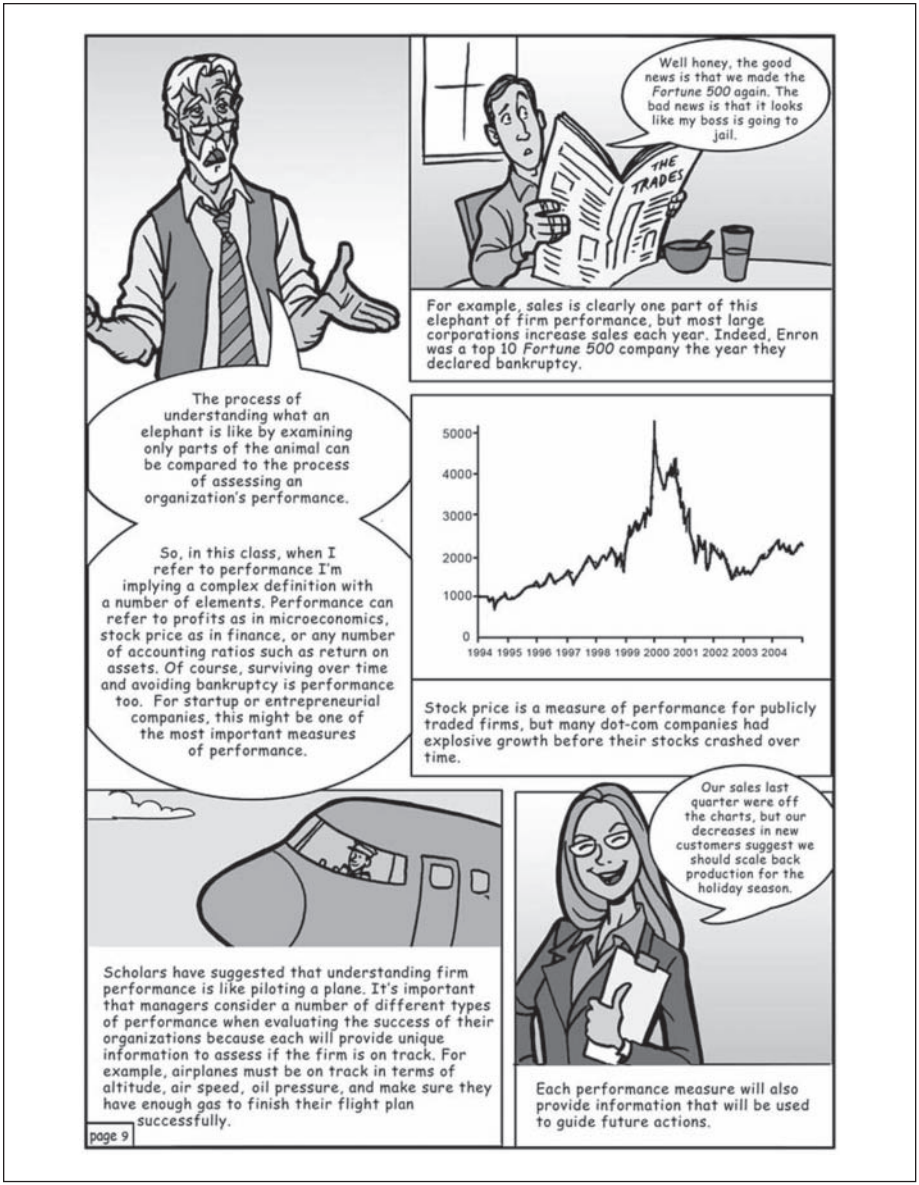

Figure 3. Graphic novel content illustrating multidimensionality of firm performance.
Source. Short, Bauer, Ketchen, and Simon (2011, p. 9). Reproduced with permission.

Method and Results

Participants. All participants were senior undergraduate business administration majors in their last semester of college. Strategic management is a required capstone course

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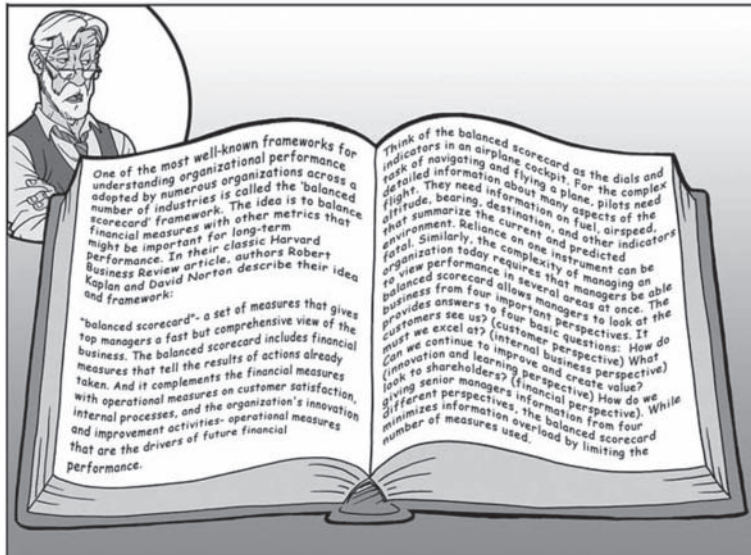

Figure 4. Graphic novel content introducing balanced scorecard.
Source. Short, Bauer, Ketchen, and Simon (2011, p. 10). Reproduced with permission.

for all undergraduate business students. Each of the students sampled took the course from one of five sections taught by the same instructor. In each section, *Atlas Black: The Complete Adventure* was used in lieu of a traditional textbook and other articles

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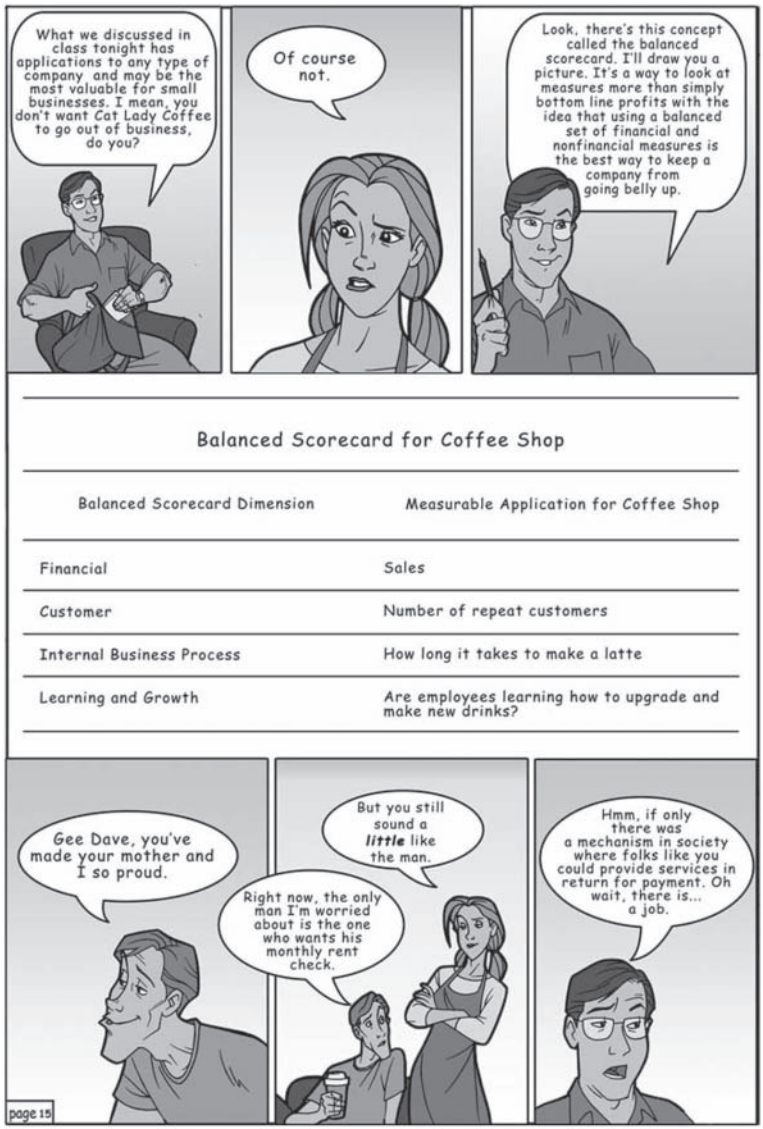

Figure 5. Graphic novel content applying balanced scorecard.
Source. Short, Bauer, Ketchen, and Simon (2011, p. 15). Reproduced with permission.

were used as supplementary materials. Ninety percent (114) of the students contacted to give course feedback returned the survey.

Procedure and Materials. Toward the end of the course, all students were given a 30-item survey by the instructor's teaching assistant and requested to provide feedback

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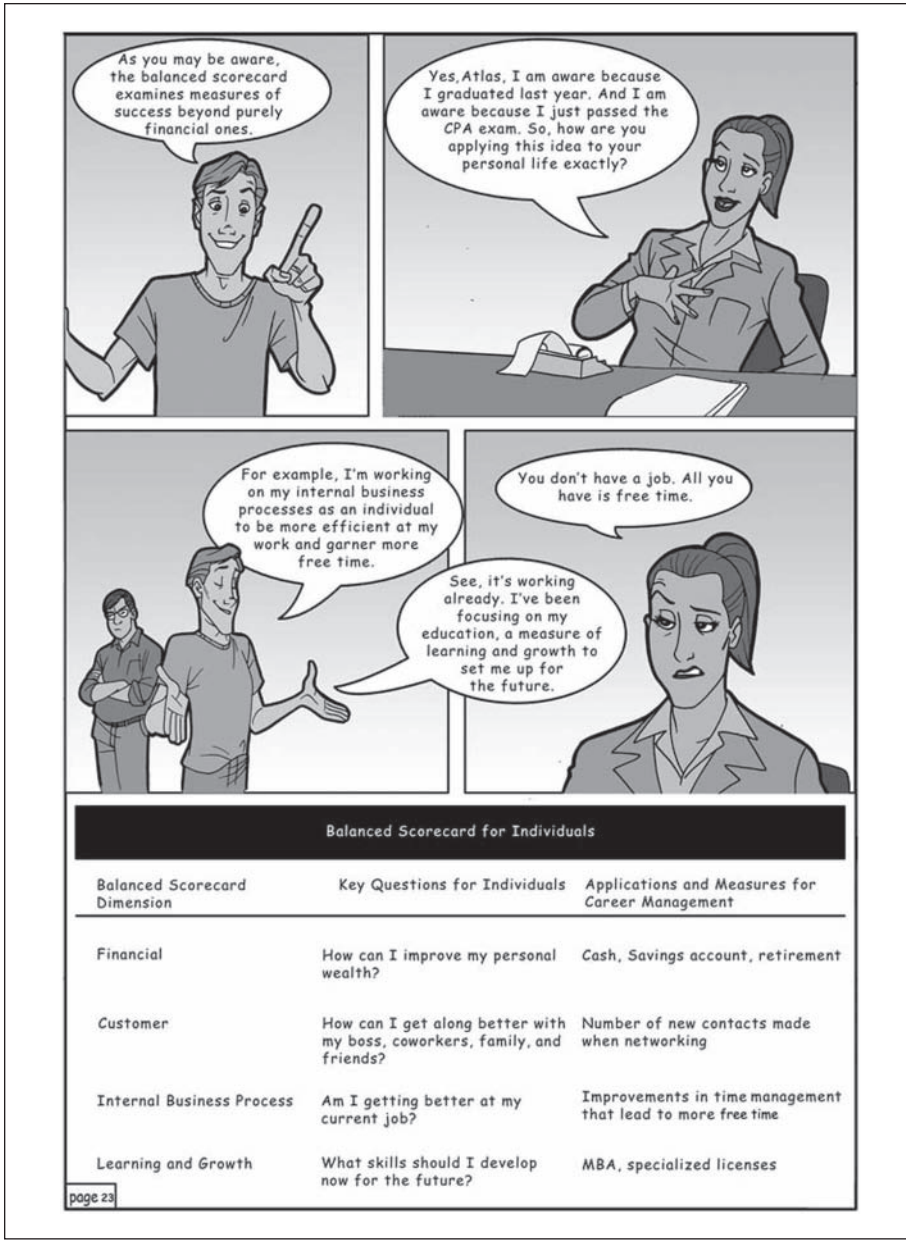

Figure 6. Graphic novel content applying balanced scorecard to career management.
Source. Short, Bauer, Ketchen, and Simon (2011, p. 23). Reproduced with permission.

concerning their perceptions of the course in exchange for extra credit. This survey was directly adapted from Austin et al. (2009b), with respondents using a scale ranging from 1 to 5 (5 = *strongly agree*). As shown in Table 2, we examined three

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Table 2. Undergraduate Student Responses to Targeted Objective Questions in Follow-Up Survey.

Objective	Survey question	Strongly agree	Agree	Somewhat agree	Disagree	Strongly disagree
Cumulative learning scale (explanation/ experience)	*Atlas Black: The Complete Adventure* provided a comprehensive overview of the field of strategic management (explanation).	46	41	11	2	1
	The business situations described in *Atlas Black: The Complete Adventure* were relevant to the current challenges in the use of strategic management as I understand them (explanation).	40	47	13	0	1
	The business situations described in *Atlas Black: The Complete Adventure* were relevant to the current challenges in entrepreneurship as I understand them (explanation).	39	44	17	0	1
	Atlas Black: The Complete Adventure helped me understand the kinds of business skills needed to be an effective manager (explanation).	35	39	23	3	1
	Atlas Black: The Complete Adventure helped me understand the role of corporate strategy in relationship to business success (explanation).	33	42	20	5	1
	Atlas Black: The Complete Adventure helped me apply frameworks and ideas about strategic management (explanation).	51	32	14	2	1

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Table 2. (continued)

Objective	Survey question	Strongly agree	Agree	Somewhat agree	Disagree	Strongly disagree
	As I got to know the characters over the course of several chapters, I was able to develop my ideas about strategic management in a more organized way than if we had been reading individual case studies each about different companies (experience).	54	26	14	4	2
	Atlas Black: The Complete Adventure has better prepared me for the job I am doing/ am about to do (experience).	17	37	31	7	9
	Atlas Black: The Complete Adventure is likely to be helpful to me in future jobs (experience).	14	47	28	8	4
Student engagement scale	The understanding I gained from taking this course was deep and useful.	35	37	21	8	0
	When reading to prepare for class, I was eager to find out what would happen next in the story.	24	23	42	6	5
	The story of *Atlas Black* was fun and engaging to read	49	34	15	2	1
	Based on this course, I am more likely to take more management courses and/or pursue a career in management.	20	24	27	18	10

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Table 2. (continued)

Objective	Survey question	Strongly agree	Agree	Somewhat agree	Disagree	Strongly disagree
	Atlas Black: The Complete Adventure was too simplistic to engage me at my level of knowledge and expertise. (reverse-worded)	7	9	13	40	30
	Atlas Black: The Complete Adventure was too difficult to engage me at my level of knowledge and expertise. (R)	3	2	3	28	63
	The understanding I gained from taking this course is likely to stay with me for a long time.	30	39	20	11	1
Course logistics scale	In-class discussion helped me form new ideas about strategic management that I would be less likely to come up with on my own.	36	45	14	5	1
	I was evaluated based on my individual ability to develop and support my own theories and frameworks for strategic management.	22	39	26	12	1
	The course included too much about the specifics of strategic management.	3	8	10	56	22
	The course needed to include more about the specifics of strategic management.	6	10	30	38	17
	The course would benefit from more supplementary materials (lectures, other cases, articles, etc.).	8	20	23	28	22

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Table 2. (continued)

Objective	Survey question	Strongly agree	Agree	Somewhat agree	Disagree	Strongly disagree
	The course would benefit from less supplementary materials (lectures, other cases, articles, etc.).	3	11	18	44	24
	I found the in-class discussion learning method more effective than lectures.	39	35	16	9	2
	The course would benefit from fewer lectures. (reverse-worded)	5	12	15	42	26
	The course would benefit from more lectures. (reverse-worded)	4	13	23	39	21
	The format of the course gave me the opportunity to be an active participant in my own learning.	43	45	9	3	0
Summary	The business situations described in *Atlas Black: The Complete Adventure* seemed true to life.	36	42	20	2	1
	Atlas Black: The Complete Adventure compares favorably to other textbooks I have had in management.	54	28	9	4	5
	I would recommend *Atlas Black: The Complete Adventure* to others.	50	32	14	2	3
	I would recommend this course to others.	54	26	11	6	3

subscales of the 30-item survey separately. Students were instructed to complete the survey in a manner that would ensure anonymity of their responses.

Preliminary Analysis. Data analysis began by creating three subscales in order to examine student motivation, interest, and perceptions of course logistics. All reverse-worded items were rescored so that higher scores indicated higher levels of the underlying

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construct. For designation of subscale items, see Table 2. Of the 101 students who answered all questions in the 9-item cumulative learning scale, the mean was 36.35 (*SD* = 6.11). Of the 100 students who answered all questions in the 7-item engagement scale, the mean was 27.17 (*SD* = 4.38). Of the 100 students who answered all of the questions in the 10-item course logistics scale, the mean was 37.92 (*SD* = 5.66).

Descriptive Results. Overall, the use of the book *Atlas Black: The Complete Adventure* in the course showed positive results based on the four summary questions (see Table 2). The vast majority of students (82%) either strongly agreed or agreed that *Atlas Black: The Complete Adventure* compared favorably to other management textbooks they have had. Furthermore, a large majority of students either strongly agreed or agreed that they would recommend *Atlas Black: The Complete Adventure* (82%) and the course (80%) to others.

The first objective was to gauge learning objectives through the cumulative learning scale. High motivation seems to have been achieved, based on student feedback (see Table 2). Examination of the cumulative learning scale revealed that, on average, the majority of students (76%) either agreed or strongly agreed with all of the questions in the scale. On the left side of the learning cycle (experience based), students overwhelmingly reported being able to develop their own frameworks. For example, 80% of students either agreed or strongly agreed that as they got to know the characters in *Atlas Black: The Complete Adventure* over several chapters, they were able develop their own ideas about strategic management in a more organized way than if they had been reading individual cases. Students also reported being able to successfully learn and apply established frameworks (right side of the learning cycle). For example, a strong majority of students reported that *Atlas Black: The Complete Adventure* provided them a comprehensive overview of the field of strategic management (87%) and that the book helped them apply frameworks and ideas about strategic management (83%).

The second objective was to gauge student interest through the engagement scale. High student interest seems to have been achieved, based on student feedback (see Table 2). Examination of the student engagement scale revealed that the majority of students (68%) either agreed or strongly agreed with all of the questions in the scale. For example, 83% of students agreed or strongly agreed that the story of *Atlas Black: The Complete Adventure* was fun and engaging to read. Furthermore, the majority of students either strongly agreed or agreed that the course materials were deep and useful (72%) and likely to stay with them for a long time (69%).

Finally, an analysis of students' perceptions of course logistics revealed that, on average, the majority of the students either agreed or strongly agreed with all the items on the scale (68%). As can be seen in Table 2, the majority of students seemed comfortable with the design of the course.

Study 2: Comparing Graphic Novel and Traditional Textbook Approaches

To maximize comparability with previous studies examining the efficacy of textbook innovation, we adapted the research design previously used to examine learning

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outcomes associated with the use of illustrations in scientific texts for our study (see Mayer, 1989). In Study 2, students read an excerpt from either a graphic novel or a traditional textbook covering the basics of reinforcement theory (Skinner, 1938) and Maslow's (1943) hierarchy of needs. While Study 1 examines key learning objectives based on student experiences with the graphic novel approach, Study 2 provides a direct comparison between graphic novel and traditional textbook formats with regard to specific elements of student learning.

Participants

In line with the design from Study 1, participants for Study 2 were senior undergraduate business students enrolled in a strategic management course. All participants were enrolled in one of six sections taught at a major university in the Midwestern United States. Of the 140 students presented with the opportunity to participate in the experiment, 139 (99.2%) volunteered to do so. Of those who answered the participant information questions, 60% were male and 56% had full-time working experience. The average participant had 2.2 years of work experience ($SD = 4.58$) and had between a little and moderate familiarity of reinforcement theory (mean = 2.84, $SD = 0.92$) and Maslow's (1943) hierarchy of needs ($M = 2.98$, $SD = 0.91$) before the experiment. Participants were not compensated for participation in the study.

Materials

The materials for Study 2 consisted of the textbook excerpt and a posttest, both of which were printed on 8.5 inch × 11 inch sheets of paper. The textbook excerpt for the graphic novel condition was drawn from *Atlas Black: The Complete Adventure* (Short et al., 2011), and the excerpt for the traditional textbook condition was drawn from *Principles of Management* (Carpenter, Bauer, & Erdogan, 2010). The *Principles of Management* textbook was selected to represent the traditional textbook condition for three reasons. First, one of the authors of *Principles of Management* was also an author of *Atlas Black: The Complete Adventure*. Second, the word length of the *Principles of Management* textbook sections on reinforcement theory and Maslow's (1943) hierarchy of needs was approximately the same as that of the textbook excerpt from *Atlas Black: The Complete Adventure*. Finally, the depth and aspects of the material covered were substantially the same in *Principles of Management* and *Atlas Black: The Complete Adventure*.

The posttest questionnaires were divided into three sections: Recall and Transfer, Verbatim Recognition, and Participant Information (see Mayer, 1989). The Recall and Transfer section tested whether students were able to reproduce and apply the information presented in the textbook excerpt. To enable direct comparisons between conditions, participants in both conditions received the same Recall and Transfer questions. Only information that was explicitly presented in both textbook formats was tested. Specifically, participants were asked to do the following:

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1. To identify and provide a definition for the four types of reinforcement
2. To identify and provide an example of the five levels of Maslow's (1943) hierarchy of needs
3. To identify what type of reinforcement is being illustrated in a short example
4. To identify the reinforcement schedule that the textbook identified as being impractical at times
5. To select the reinforcement schedule that was not covered by the textbook excerpt from a set of four reinforcement schedules
6. To identify a statement correctly describing the hierarchical nature of needs according to the textbook

The Verbatim Recognition section tested participants' ability to identify sentences that were directly quoted from the textbook excerpt they read. In this section, students were presented with five pairs of sentences. For each pair, one sentence was a direct quote from the textbook excerpt and a second sentence was produced that maintained the same meaning but was worded differently. For example, one pair of sentences from the traditional textbook condition read, "If you have observed a small child discovering the environment, you will see reinforcement theory in action" and "Reinforcement theory can be seen in the responses of a small child when discovering their environment."

Finally, the Participant Information section was used to collect data that may provide an alternative explanation for performance on the posttest. Specifically, we gathered information on participant sex, work experience, majors, previous experience with reinforcement theory, and previous experience with Maslow's (1943) hierarchy of needs.

Procedure

With permission from course instructors, the experiment was administered during the strategic management class sessions in the course classrooms during the first and second weeks of the semester. After describing the nature of the study and obtaining consent, participants were randomly assigned into the graphic novel and traditional textbook conditions. The students were given 10 minutes to read the textbook excerpt associated with their condition. After 10 minutes, a member of the research team collected the textbook excerpt from the students and provided them with the posttest questionnaire associated with their condition. Students had 10 minutes to complete the posttest questionnaire. Students who had not completed the questionnaire by the end of 10 minutes were asked to stop answering substantive questions but were permitted to complete the participant information section.

Scoring and Variables

The Recall and Transfer section of the exam consisted of two multipart free-response questions, two short-answer questions, and two multiple-choice questions. The first

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multipart free-response question asked students to identify and define the four types of reinforcement. Students were awarded 1 point for each correctly identified type of reinforcement and 1 point for each correctly matched definition for a total of 8 points. The second multipart free-response question asked students to identify and provide an example of the five levels of Maslow's hierarchy of needs. Consistent with the previous question, students were awarded 1 point for each correctly identified level and 1 point for an appropriately matched example for a total of 10 points. Each of the short-answer and multiple-choice questions was valued at 1 point. To produce an overall *recall and transfer* score, the points for the section were summed. The mean score was 15.98 out of 22 possible points, with a standard deviation of 4.97.

The Verbatim Recall section of the exam consisted of five pairs of sentences. Students were awarded 1 point for each pair of sentences for identifying the sentence was the same wording as the sentence in their textbook excerpt. To produce an overall *verbatim recognition* score, the points for the section were summed (see Mayer, 1989). The mean score was 3.02 out of 5 possible points, with a standard deviation of 1.26.

Textbook format was coded as a dummy variable. A value of 0 indicated that the student read the traditional textbook excerpt. A value of 1 indicated that the student had read the graphic novel textbook excerpt.

We created several control variables to account for confounding effects on learning and posttest performance. Dummy variables were established for each *class section* to control for potential instructor or other class-level effects (e.g., Anderson, 2008). *Sex* was coded as a dummy variable, where 1 indicated the participant was male, to control for sex differences in learning (Maccoby & Jacklin, 1974) and learning style (Severiens & Ten Dam, 1994). *Full-time work experience* was coded as a continuous variable in years to control for the effect of previous experience on new learning (Morrison & Brantner, 1992). Previous familiarity and experience with reinforcement theory (*reinforcement knowledge)* and Maslow's (1943) hierarchy of needs (*needs knowledge*) were measured on a scale from 1 (*none*) to 5 (*extensive*). Finally, dichotomous variables were established for each of the *majors* pursued by participants in the sample as studies have found that students' majors and their scholastic aptitude are reciprocally related (Nichols, 1964). Students were able to indicate both primary and, where relevant, secondary majors.

Analysis and Results

Descriptive statistics and level-zero variable correlations are presented in Table 3. For parsimony, the course section and student major variables used as controls are not presented in this table. There were four significant correlations between the control variables omitted from Table 3 and the two dependent variables: enrollment in Class Section 2 was negatively correlated with verbatim recognition ($\rho = -.22$, $p < .01$), enrollment in Class Section 5 was negatively correlated with verbatim recognition ($\rho = -.18$, $p < .05$), enrollment in Class Section 3 was positively correlated with recall and transfer ($\rho = .23$, $p < .01$), and being an economics major was positively correlated with recall and transfer ($\rho = .21$, $p < .05$).

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Table 3. Descriptive Statistics and Correlations for Study 2.

	n	*M*	*SD*	1	2	3	4	5	6	7
1. Sex	124	0.60	0.49	1.00						
2. Full-time work experience	121	2.20	4.58	.12	1.00					
3. Reinforcement knowledge	120	2.84	0.92	.06	.19*	1.00				
4. Needs knowledge	120	2.98	0.91	−.02	.16	.64**	1.00			
5. Textbook format	139	0.50	0.50	−.06	−.07	−.13	−.15	1.00		
6. Verbatim recognition	139	3.02	1.26	−.18*	−.16	−.02	.00	.24**	1.00	
7. Recall and transfer	139	15.98	4.97	−.11	.04	.14	.32**	−.22**	.14	1.00

†$p < .10$. *$p < .05$. **$p < .01$.

The effects of textbook format on recall and transfer and verbatim recognition were tested using hierarchical regression (Hair, Black, Babin, & Anderson, 2010). Model 1 examined the relationship between participants' recall and transfer scores and the control variables. Model 2 entered the textbook format variable. Similarly, Model 3 examined the relationship between participants' verbatim recognition scores and the control variables. Model 4 entered the textbook format variable. Results of the hierarchical regression analysis are presented in Table 4.

Regression results for Model 1 ($F = 1.68$, $p < .05$) suggest that previous experience with Maslow's (1943) hierarchy of needs ($b = 1.88$, $p < .01$) and being a supply chain management major ($b = -3.92$, $p < .05$) were associated with participant recall and transfer scores. Model 2 did not significantly improve upon Model 1 ($\Delta R^2 = .02$, $p > .05$) because participants' textbook format condition did not explain a significant amount of variance in recall and transfer above that explained by the control variables ($b = -1.56$, $p > .05$).

Regression results for Model 3 ($F = 1.17$, $p > .05$) suggest that the control variables collected were not associated with participant verbatim recognition scores. However, Model 4 significantly improved the amount of variance in verbatim recognition scores explained ($\Delta R^2 = .07$, $p < .01$), finding that participants in the graphic novel textbook condition scored significantly higher in verbatim recognition than those exposed to the traditional textbook condition ($b = 0.67$, $p < .01$).

Discussion

This article represents the first empirical examination of the efficacy of the graphic novel format as a communication medium. The results from the two studies presented here provide complementary insights into the utility of graphic novels as a form of business communication. The first study found that students using the graphic novel reported learning activities consistent with D. A. Kolb's (1976) experiential learning theory. The second study examined more closely the learning impact of the graphic novel format in comparison to that of a traditional textbook. This study found that students using the graphic novel textbook performed better on verbatim recognition of

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Table 4. Hierarchical Regression Results for Study 2.

	Dependent variable: Recall and transfer		Dependent variable: Verbatim recognition	
Predictors	Model 1	Model 2	Model 3	Model 4
Controls				
Class Section 2	−0.68	−0.79	−0.67†	−0.62†
Class Section 3	0.84	1.11	0.18	0.06
Class Section 4	−0.74	−0.72	−0.62	−0.62
Class Section 5	−1.49	−1.48	−0.56	−0.56
Class Section 6	−0.72	−0.68	0.03	0.02
Sex	−1.86	−1.86†	−0.34	−0.34
Full-time work experience	−0.07	−0.07	−0.05†	−0.05†
Reinforcement knowledge	−0.34	−0.38	−0.08	−0.06
Needs knowledge	1.88**	1.74*	0.06	0.12
Majors				
Accounting	−0.15	−0.50	0.02	0.18
Economics	3.02	2.88	−0.34	−0.28
Energy commerce	−0.95	−1.03	−0.10	−0.07
Entrepreneurship	0.24	−0.24	−0.36	0.57
Finance	1.19	1.23	0.32	0.31
International business	−2.26	−2.28	−0.60	−0.59
Management	−0.54	−0.55	0.18	−0.05
Marketing	−0.82	−0.85	−0.21	−0.20
Management information systems	2.66	2.10	−0.30	−0.05
Supply chain management	−3.92*	−4.10*	0.09	0.17
Nonbusiness major	−0.83	−1.09	0.52	0.63
Condition				
Textbook format		−1.56†		0.67**
n	117	117	117	117
F	1.68*	1.77*	1.17	1.69
R^2	.26	.28	.20	.27
ΔR^2		.02†		.07**

†$p < .10$. *$p < .05$. **$p < .01$.

passages than those using a traditional textbook. However, no significant relationship was found between textbook format and recall and transfer ability.

Finding that students are both engaged and feel that they are learning when using the graphic novel format provides initial evidence that the next generation of students react positively to the introduction of novel new instructional tools (see Short & Reeves, 2009). Business communication scholars have also found other nontraditional media ranging from blogs (e.g., Buechler, 2010) to immersive social media (e.g., Carmichael, 2011) to be valuable instructional tools. However, our findings also suggest that further research is needed to fully understand the strengths and weaknesses

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of each format. Future research might investigate the relative strengths and weaknesses of graphic novels against other instructional media to identify other materials that may enhance learning outcomes.

Our finding that the graphic novel communication medium is related to learning activities in strategic management courses provides a form of replication to the narrative approach called an empirical generalization (Tsang & Kwan, 1999). An empirical generalization is an approach to replication where the authors use the same measurement tools and analytical techniques as a previous study but with a different population (Tsang & Kwan, 1999). This study is an empirical generalization of Austin et al.'s (2009b) study, which looked at the use of the graphic novel format in undergraduate- and graduate-level IT courses and with IT executives. Our study adapted the measures used by Austin et al. (2009b); however, we focused on an undergraduate strategic management capstone course as well as the graphic novel as a unique type of communication narrative. Consistent with Austin et al. (2009b), we also found that the narrative format effectively met course objectives. Future studies might extend our findings by looking at the efficacy of the graphic novel format in graduate-level strategic management instruction or by examining other narrative formats applicable to the delivery of strategic management content. For example, K. E. Weick's (1995) adaptation of Holub's (1977) poem "Brief Thoughts on Maps" has been used to convey ideas about organizational sense making and enacted strategy (p. 54). As with Austin et al.'s (2009b) analysis, it also is difficult to separate out the effect of the graphic novel on student motivation and interest from other factors such as course instructor and logistics. Given that the majority of students reported being satisfied with the course logistics, additional research is needed in which these factors are clearly separated.

Based on student feedback, the graphic novel approach seems to relate to high student motivation through perceptions of positive learning outcomes from both the experience- and explanation-based approaches while maintaining high student interest. The graphic novel approach may have encouraged students to integrate and apply the course material in an effective way. Given that many of the topics in the course have been covered in greater detail in other courses, this graphic novel approach may have been particularly well suited for a capstone course. The approach may have helped students organize and assemble experiences and information from other courses into their own generalized frameworks. Furthermore, the quality of students' generalized frameworks may have been strengthened by the high level of engagement students reported with the graphic novel.

Although the current descriptive analysis did not examine the reasons why the graphic novel approach was related to high student motivation and interest, some preliminary reasons can be offered. First, the storytelling structure likely encourages the reader to become invested in learning. Second, as students follow the plot, they have an opportunity to examine characters' choices and make recommendations for how a character should proceed. Third, the story unfolds in a true-to-life context based on a realistic scenario. This encourages students to integrate and apply management theories. Fourth, the narrative structure unfolds over the course of multiple chapters, giving students the opportunity to see the results and consequences of characters' earlier

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decisions. Facilitating the development of complex mental models to enable sense making of even more complex business situations is an important pedagogical task in management education (Nadkarni, 2003). The sequential nature of the graphic novel format encourages students to reevaluate characters' decisions as new information is presented and to update their assessment of the situation and adapt their mental models to the incremental complexities of the situation.

The benefits of the graphic novel format resonate with McLuhan's (1962) assertion that the way in which the content of a message is conveyed can be as important as the content of the message itself. McLuhan (1964) goes on to suggest that the effectiveness of a medium is driven by whether it is hot or cool. As a cool medium, the graphic novel engages the reader as an active participant to complete the communication, whereas in hot media the reader is less involved in the communication (Short & Reeves, 2009). This increased level of reader engagement is thought to improve the effectiveness with which the message is communicated (McLuhan, 1964).

The high level of engagement of students using the graphic novel format is in line with recent calls for instructors to innovate and engage in a deeper, whole-person approach to student learning (e.g., Hoover, Giambatista, Sorenson, & Bommer, 2010; Verzat, Byrne, & Fayolle, 2009). The whole-person approach to student learning involves three key dimensions: cognition, emotion, and behavior (Hoover et al., 2010). The graphic novel goes beyond the cognitive aspects activated by traditional textbooks to engage students on an emotional level as well. In our survey, 47% of students either agreed or strongly agreed that they were "eager to find out what would happen next in the story," suggesting that many students may have become emotionally engaged in the story. To tap the behavioral dimension of whole-person learning, students could use the graphic novel characters to extend the story line to simulate what might happen if the characters made different decisions based on the information available at a given point in the story (Austin & Short, 2009). This allows students to apply the concepts learned in the graphic novel in a variety of different scenarios to facilitate experience-based learning.

The relative absence of graphic novels and comic books as acceptable pedagogical materials perhaps stems from the stigma introduced in the 1950s that suggested comic books may lead to juvenile delinquency. Although early in the history of comic books scholars recognized their potential for pedagogical innovation (Sones, 1944; Zorbaugh, 1944), society as a whole soon decried comic books as a key contributor to juvenile delinquency (McAllister, 1990; Thrasher, 1949). Grassroots campaigns were established to abolish comic books in the 1950s; one community even organized a comic book–burning rally in protest of the books (Twomey, 1955). In response to the public outcry, the 1954 U.S. Senate Subcommittee Hearings formally investigated comic books as a potential cause of juvenile delinquency (Twomey, 1955). This ultimately resulted in the creation of the Comics Code Authority, an entity by which the comic book industry could regulate itself with regard to providing inoffensive content (Goldwater, 1974). Our finding that the graphic novel format outperformed traditional textbook with regard to verbatim recognition provides evidence that long-standing criticism of the graphic approach should be revisited.

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Our findings may also carry implications for business communication beyond the classroom context. As Generation Y continues to enter and play a larger role in the workforce, businesses hoping to efficiently and effectively develop human capital will need to adapt the media used for instruction and training to the needs of this younger generation. Indeed, we already see this happening. In its 2011 industry report, *Training Magazine* indicated that 21.9% of all training was delivered electronically and that 1.3% was delivered by social media or mobile devices. To the extent that business communication research can identify effective ways for engaging and communicating training materials to Generation Y employees, graphic novels and other nontraditional communications media may present an opportunity for business communication research to influence the practice of business communication.

Extending the Graphic Novel Format

The initial indicators suggesting the efficacy of using a graphic novel approach in management education open the door to further research. One direction is to identify the most effective way of integrating the graphic novel media in the classroom. The unique format of the graphic novel enables the instructor to use the text in a variety of ways. In this study, we used the graphic novel as the primary reference material for the course; however, it could also be used as a case study, as a complement to the use of a traditional textbook, or as an optional textbook that students might use at their discretion. One study in this area might investigate whether treating the graphic novel as a traditional textbook or treating it as a case study leads to better subjective and objective learning outcomes. The same research strategy could be applied to separating out the influence of the graphic novel from that of the instructor and course design more generally.

Future research may also investigate how environmental and individual difference variables affect the relationship between textbook format and cognitive learning. A considerable literature has built around the environmental and personal factors that influence learning (e.g., A. Y. Kolb & Kolb, 2005; Severiens & Ten Dam, 1994). These factors may interact with different media to provide a superior learning experience for a subset of students or under certain conditions (e.g., Kozma, 1994). Building from this premise, future research might examine whether factors such as sex (e.g., Severiens & Ten Dam, 1994), primary learning style (e.g., Karns, 2005), and pace of classroom instruction (e.g., Good, Grouws, & Beckerman, 1978) influence the efficacy of the graphic novel format.

Identifying potential trade-offs between the graphic novel format and traditional textbooks may also be valuable moving forward. For example, the story-based graphic approach might in some cases take multiple pages to cover content that might be presented in a single page of bullet points in a traditional text. In addition, the story arc common to graphic novels might make a more modular approach to teaching strategy challenging. However, material looking at interpersonal interactions, as with much of organizational behavior, may be very effectively conveyed through graphic novel. A future study in this area might look at the efficacy of the graphic novel approach when conveying different types of information.

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Changing student sensibilities are increasingly disrupting the effectiveness of traditional forms of education (Austin et al., 2009b). There is a need for educators to identify new approaches that will help maintain learning across the entire learning cycle. Heeding this call, instructors have begun to look for new ways to innovate in the classroom, using serious games, simulations, interactive technologies, and others (Christensen, Horn, & Johnson, 2008; Neck & Greene, 2011). Unfortunately, significantly less attention has been given to innovation in textbooks. Textbooks are institutionalized artifacts of each field's knowledge, making even incremental changes such as incorporating new research difficult (Stambaugh & Trank, 2010). The result is that the classroom experience may be adapting to the next-generation student, but the textbooks they study from are not keeping pace. Given its early successes among students, the graphic novel format may be the catalytic change instrument we need to revitalize the way we look at textbooks.

Despite the benefits of the graphic narrative, a number of challenges may exist in implementing this medium effectively. While many of the students seemed to appreciate the graphic novel format, some students may hold a negative predisposition to learning from graphic novels. Such a perspective is understandable, because college seniors, who typically make up the majority of classes in strategic management, will have learned from traditional textbooks for the majority of their formal education. Introducing a new text format disrupts their established learning routine, forcing students to learn in a new way so it is understandable that there might be some push-back. Consequently, some education as to the merits of the graphic novel medium as a contemporary pedagogical format may be necessary to maximize their educational effectiveness and to challenge the biases that may exist concerning this teaching tool.

Conclusion

Slates, paper, ballpoint and fountain pens, and store-bought ink were all criticized by educators who did not want these innovations in their classrooms and felt that their existence would have a deleterious impact on learning and education (Bradford, 2010). The use of graphic novels presents another medium that has been lauded as an innovation by some educators while met with skepticism by others (Wojciechowska, 2010). This article illustrates that the graphic novel approach is effective with regard to critical activities relevant to effective communication and learning. For management scholars, our findings build on the work of others advocating the use of organizational narratives. For management educators, the graphic novel format provides a potentially powerful tool for learning and education. In sum, this study indicates that the graphic novel format is a powerful, yet underutilized, tool for business and professional communication.

Authors' Note

This study was approved by the Institutional Review Board of the University of Oklahoma. Partial reports of the data from the study were presented at the annual meeting of the Academy of Management, Montréal, Quebec, Canada, 2010, and the annual meeting of the Southern Management Association, Savannah, Georgia, 2010.

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