Driving Relevance into the Introductory Information Systems Course

Emergent Research Forum (ERF)

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Abstract

Information systems play an important, strategic role in business, which is why the introductory Information Systems (IS) course has long been a staple in business school curriculum. However, as IS became more ingrained in day-to-day operations and then into strategy conversations, a technically focused introductory course was not sufficient for business students to grasp the relevance of IS in every facet of business life. This paper describes a new design of this course and the process used to get there. The course centerpiece is a common story used by faculty to connect the dots for students about the bigger picture concepts and relevant terminology. The story provides a vehicle for bringing the concepts to life. We will describe initial feedback as well as a study that we have designed to study in detail the impact of the new design and how it compares to the version that it replaced.

Keywords

Active learning, pedagogy, relevance, storytelling

Introduction

The introductory Information Systems (IS) course has long been a staple in business school curriculum. This is because of the clearly important (now strategic) role that information systems play and the world of innovation they enable. It is difficult to imagine an organization of any size that is not reliant on IS for success. Most organizations simply cannot operate without IS.

Early versions of the course tended to be introductions to technology and the discipline. Over time, as Information Systems became more ingrained in day to day operations and then into strategy conversations it became obvious that a technically focused course was not sufficient for all business students. In the early 2000's, in conjunction with rapidly declining enrollments in IS programs, a fundamental shift in focus was suggested. The alternative focus was to make the course about what every business student needs to know about Information Systems (Ives et al. 2002).

We made this change to the introductory Information Systems course through a thorough redesign in 2004 which included an inquiry based learning pedagogy and exposure to business data driven decision making contexts. Students used SQL and Excel Pivot tables extensively in the class. To orient the course more toward IS's role in the organization, a business process focus was embraced as a basis for how IS enables businesses to evolve and innovate. Although this enabled the course to meet current needs at that time, the role IS plays in business in current times now needs to be more accurately reflected in the course.

The purpose of this paper is to describe the new design of our course and the process used to get there. We have taught the course for one semester and are already making adjustments based on initial impressions. We will describe that initial feedback as well as a study that we have designed to study in detail the impact of the new design and how it compares to the version that it replaced.

The Motivation for a “Re-do”

An understanding of the redesign requires some history. Our course through spring 2004 was taught in large lecture sections (100 students) that met once per week accompanied by smaller lab sections (25) that also met once per week. The lectures were exactly that. Instructors spoke to power point slides that mostly
covered the terminology and content that the students should have read in the text prior to coming to class. Students however realized that the slides had the majority of the material on them that was needed for the exams, so in many cases they did not even purchase the text. The labs were a set of very thorough and solid tutorials that exposed students to querying data with Microsoft Access and making sense of data with Excel.

Student feedback on the course clearly indicated that they viewed the course as (1) the memorization of a mountain of terms and (2) moving through point-and-click instructions in technology labs. More concerning, it was clear that they did not take away the value that we were trying to instill in the need to understand IS and basic technologies as business students. The course was the least valued core class by exiting seniors for multiple years in a row leading up to the change. Of course, in general, there was a lot of negativity associated with IS at that time

That feedback, in conjunction with the movement to truly make the IS introductory course a course for all business students, motivated a change away from heavy technical content and replacing that class time with discussions about technology’s role in business process and strategy. Software skills that were in the course moved to a prerequisite course focused on Excel and SQL skill building. The resulting version of the course has evolved since 2004. In addition to focusing more on business process and IS’s role in strategy, it now requires students to demonstrate their technology skills in data driven decision making contexts.

In the thirteen years of teaching the redesigned course in small (vs large lecture) sections, we found the course had become very inconsistent in student experience and outcomes based on who taught it. We recognized a need to put the course back in more consistent box. This recognitions combined with the pace of change in both technology and its applications by organizations along the inability of textbooks to keep up with the changes, motivated another redesign the course. Student feedback about getting lost in all the terminology was also rearing its head again.

Inconsistent course delivery and rapidly changing technology was only part of the problem. The course was taught through the lens of technologists, meaning the focus remained on the technology itself and how businesses use it. This is an antiquated view, instead technology is woven into the very fabric of business today. As such, it became all the more important that future business professionals we teach understand the relevant role technology plays in the world they’re about to enter. By becoming more conversant in technology-based concepts, students begin to connect the dots to their chosen discipline – in short, understand the relevance of technology in their future profession. Davenport and Markus (1999) supports this notion specifically in response to our own academic community’s responsibility in producing consumable research for our undergraduate audience.

Our faculty agreed that more coverage of the rapidly evolving landscape of cloud computing and infrastructure along with the growing potential for disruption with technologies like the Internet of Things and Blockchain needed much more real estate in the class. The looming questions that the redesign set to resolve were (1) how to source it as IS textbooks struggle to keep up with what is actually happening in practice and the emerging technologies that enable practice, (2) what material would be removed to make way for the new content, and (3) how to construct a course ‘box’ that gives the best chance at a rich, relevant, and consistent student experience?

**Redesign Approach – Putting the course ‘back into a box’**

The operating tenet of the effort was to regain a consistent, relevant delivery of the course by 1) developing a common story that emanates from more than just a textbook, 2) including current tools commonly found in business, and 3) creating meaningful in-class activities which develop student’s ability to think critically about IT and its role in problem solving and innovating in business contexts. This meant assessing the components comprising the course (textbook-based lecture, group discussions on articles reflecting current tech, activity-based learning) and how much class time was devoted to each. Developing the box was a collaborative and iterative process. The redesign of the course involved 4 faculty members who routinely teach this course and are responsible for approximately 70% of the course sections.

**Textbook Selection and Role in the Course**

The textbook has long anchored how the course was delivered. With the rapid evolution of our field, and growing prominence in business today, we determined that we needed 1) a textbook which came from the
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The redesign team assessed 10 Introduction to MIS texts currently on the market, and narrowed the list to 3 which were evaluated by all faculty teaching the course. Our chosen text is slimmer than the previous book and is written from a business mindset which draws IS into the discussion rather than the other way around. The smaller footprint meant more flexibility in class time allowing for more concept reinforcing activities and discussions of current technology-related topics.

**Course Redesign**

With the textbook selected, the team met 10 times (grouped in series) during a 7 week period (May - July of 2017), and each series of meetings focused on different aspects of the course. See Figure 1.

**Series 1: Content**

Our first meeting series focused on content. Chapters of the new book were divided among the 4 faculty. Each faculty member re-read their assigned chapters, and documented key concepts and terms within each chapter. The team then came together taking turns presenting their assigned chapters. During these presentations, the presenter would field questions and challenges from their teammates regarding the selection or omission of concepts and terms to require, ensuring each chapter received many viewpoints about salient points. The discussions also illuminated the need to develop a common story – how concepts and terms come together and relate to each other. Although this in no way was meant to be prescriptive and constrain faculty. Instead, the story ensures that the common themes of the class are consistently positioned in proper context – regardless of who delivered the course.

**Series 2: PowerPoint Slide Development/In-class Activities**

Next, the team set to work building supporting elements to the common story. Initially, the team began building slide decks in PowerPoint as a way to help faculty maintain the common storyline. However, a slide deck’s look and flow depends so much on the teaching style of the individual faculty member, so this stream of activity was abandoned. The remaining focus for this series was the development and curation of in-class activities. This course has long adopted an active learning style as empirical studies show the effectiveness of active learning techniques with students over traditional lectures (Gudigantala, 2013). The redesign effort looked for activities which pair closely to the topics discussed each session.

**Series 3: Technology Days**

Advances in our field have brought a new crop of technology that we wanted our students to have exposure to. Labeled Technology Days, students are given an opportunity to experience common business tools first hand. The previous course had tool-based activities, centered on SQL and Excel Pivot Tables toolsets. These remain part of the course, but the team believed the toolsets business students will encounter in
practice go beyond data gathering techniques. After much research and in depth discussion of tool options, exposure to 2 business intelligence tools (IBM’s Watson, and Tableau) and 2 enterprise system tools (SAP and Salesforce) were selected to be added to the course. During each Technology Day, students spend ½ of class time with each tool doing in-class activities to shape the conversation and support the students with guided tutorials. The days coincide with the chapters covering these two topics.

**Series 4: Wrap-up**

The team’s final series focused on ensuring the course box (Table 1) was complete and training for the other faculty was developed. The team conducted a ‘boot camp’ for all course faculty before the semester began to inform everyone of the changes made and to offer support as they prepared for the semester.

<table>
<thead>
<tr>
<th>Course Item</th>
<th>Description</th>
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<tbody>
<tr>
<td>The Story</td>
<td>The story is about the bigger picture concepts and the terms simply provide a vehicle for bringing the concepts to life. MIS textbooks are laden with high volumes of terms which tend to drown out/distract from the more important messages we want students to leave with. Therefore, we have limited the number of required terms and outlined the key/required concepts (labeled ‘Boulders’ and ‘Shiny Pebbles’) that should be part of the story for each chapter in the outlines provided.</td>
</tr>
<tr>
<td>Real-world Activities</td>
<td>Active learning has long been a tradition in this course. To bring the concepts of our course to life, we curated a number of in-class activities. These activities were sourced from textbook and our own development. Most activities are 20-30 minutes in length and directly correlate to one or more key concept/Boulder (i.e. researching today’s disruptive technologies). We have also devised 2 2-day activities so students can apply what they’ve learned (i.e. re-engineering the business process for Chipotle on-line ordering). The redesign team selected four in-class activities for each chapter, giving the faculty choice to suit their taste.</td>
</tr>
<tr>
<td>Current Event Material</td>
<td>Our field is not static. Our discipline weaves through the fabric of everyday life in organizations today. You can’t pick up a newspaper, magazine, or newsfeed without finding an article that directly relates to topics in our course. These can serve as powerful openers to a topic (i.e. Amazon’s acquisition of Whole Foods and the concept of Competitive Advantage) or as real world backdrops to in-class activities (i.e. Equifax data breach and the concepts of Decision Making and Security).</td>
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<tr>
<td>Tools</td>
<td>This course historically incorporated business tool work into the class by giving students practice answering business questions using SQL and Excel (Pivot Tables). Previous data driven decision making and process redesign group activities remain. Two additional Technology Days, which give students an opportunity to ‘play’ with technology that they may see when the reach the workforce have been added. These provide another way to bring concepts to life. For example, when exploring Business Intelligence, the Technology Day gave students hands-on playtime with IBM’s Watson and data visualization tool, Tableau.</td>
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<tr>
<td>Textbook</td>
<td>Selected a new, shorter textbook and redefined its role as reference, rather than the primary source of content.</td>
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Table 1

**Initial Findings**

Eight faculty members have delivered the redesigned course to 581 students. Although a quantitative examination is forthcoming, we have identified four initial findings.

1. The Story emerges as the anchor. How faculty connect the dots for students is where the relevance emerges. Although not a new concept we believe that it is unique in the formal and holistic manner in establishing the story’s role. It is prominent throughout the course and elicits student comprehension. Although faculty who are more comfortable storytellers would naturally...
make these connections, our documented story (both overarching and by chapter) increases the probability that all faculty teaching styles will be able to help students make the connection.

2. Adopting the approach of a consistent, powerful story increases the flexibility with course content.
   a. The textbook, which for so long served as the anchor for this course, is moved into a lesser position. It’s used as a reference for the key concepts and terms, allowing the story to take center stage, and provides a bit more freedom to replace a text with less disruption.
   b. Although our field changes daily, the vast amount of topics and terms traditionally covered in this class left little room for current topics except for the occasional video or article. We purposely chose a text which is thorough on essential topics, but left room for current events. Vigilance in curating current events helps students appreciate the evolving nature of our field.

3. The redesign takes a 2-prong approach for students to apply the concepts for this course. The first is the more traditional approach of in-class activities. Although these activities provide students with a consistent path to reinforce concepts, we felt the need for another path for exposure and application, resulting in developing Technology Days. A student can ‘feel’ the power of AI through exposure to IBM’s Watson, or visualize data by building dashboards using Tableau.

Plan for Further Study

Beyond our initial findings, we have designed a study to determine the success of our efforts to improve the course. Our objectives were to help business students to understand the relevance of Information Systems to organizational success and ultimately their success as business professionals. Our underlying assertion is that course pedagogy will impact students’ perceptions of the field and its relevance.

To compare old and new versions of the course, we are developing a survey instrument to measure the dependent variables above with an initial collection of data at the end of the spring 2018 semester. All current students in the business school who have completed either version or are currently taking the course will be asked to complete the survey. There are roughly 2000 students who have taken the old version and 1100 who have taken the redesigned course.

This data will allow a comparison of the new and old versions from both a pedagogical standpoint as well as the associated student perceptions. The pedagogical measures will also help us to ascertain whether we have achieved the change in pedagogy that was intended across the varying individuals teaching the course. Using this data set, we can explore the relationships between the various pedagogies, as perceived by the students and their attitudes toward IS and perceptions of relevance.

Over the summer, the instrument will be refined as necessary. Then, beginning in the fall of 2018 and continuing for the foreseeable future, the attitude and perception part of the survey will be done pre and post with all sections of the course. This will help us to understand ongoing changes that are made and to compare the effectiveness of different pedagogical approaches employed by the various faculty that teach the course from semester to semester.

We hope to have interesting results to share at the conference that will help others who may be rethinking how to best deliver their introductory IS course.

REFERENCES

Harris, R. 20.