Features and Expectations of Case Analysis in Information Systems

Ryan T. Miller
Carnegie Mellon University Qatar

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Carnegie Mellon University Qatar Study of Literacy

- 4-year longitudinal study of writing development at an English-medium university in the Middle East
- Focuses on the class of 2013 \((N = 92)\)
- Majors: Business Administration, Computer Science, *Information Systems*, Biology
- Methods:
  - Baseline data
  - End-of-semester surveys
  - Annual vocabulary test
  - Student focus groups
  - Faculty interviews
  - Case studies \((N = 15)\)
  - Ethnographic work
  - Analysis of course materials
  - Analysis of student writing

Data for the present study
Disciplinary Writing

• Early EAP writing research focused on features of academic writing that are generalizable (e.g., Swales, 1981; Dudley-Evans, 1987; Bhatia, 1993)

• Some features and skills less transferrable between disciplines (Hewings, 2005)

• Students need to learn both discipline content and disciplinary norms of communication

• Often not explicitly taught in disciplinary courses – “I’m not a writing teacher”
Information Systems (IS)

• Use of technology to generate, process, and distribute information so that businesses achieve their objectives effectively and efficiently

• Effective writing ability is necessary for IS professionals (Topi et al., 2010: Association for IS Curriculum Guidelines)

• IS faculty are expected to take responsibility for creating IS professionals with strong writing skills (e.g., Merhout & Etter, 2005; Pomykalski, 2006)
IS Program at CMU-Q

- Why IS?
- Requires the most writing of the majors at CMU-Q

![Bar chart showing average pages of writing required per course for different majors.](chart.png)

- IS faculty want to help IS students improve their writing
  - “To be honest I’m having the seniors do their project and their writing is horrible, horrible. So if the seniors write so poorly, how can we expect the sophomores to write better? It’s too tough at this stage [in senior year]. It should be done earlier...” (IS Professor)
Case analysis

- Common assignment type in this IS program
  - **Year 1**
    - IS 102: Concepts of Information Systems
  - **Year 2**
    - IS 250: The IS Milieux
  - **Year 3**
    - IS 329: Contemporary Themes in Global Systems
    - IS 323: Enterprise Resource Planning Systems
  - **Year 4**
    - IS 312: Strategic Information Management Planning
    - IS 352: E-Business

- “We try to see writing skills, presentation skills, analytical skills, the working as a team to solve problems; we try to have all these [...] So case studies form really the backbone” (IS Professor)
Case analysis

• Derived from Harvard Business School case method

• Case study: Company background, situation, problem

• Case ‘write-up’ is written to prepare for oral case analysis in class (Forman & Rymer, 1999)

• Written in response to questions

• “We ask them to analyze the situation, for the situation itself, apply the knowledge from the course to better think about the situation and possible solution for this situation.” (IS Professor)
Pedagogical genre? Professional genre?

• Forman and Rymer (1999) describe the business case write-up as a pedagogical genre
  • “[T]he [case] write-up resembles neither workplace writing nor the simulated workplace writing typically assigned in communication courses” (p.103)

• Some faculty describe the IS case analysis as a professional genre
  • “It’s a very common task. Companies advertise a lot through cases. Most companies do have that. Companies show how their product has been used in businesses, how their product has been successful.” (IS Professor)
  • “This course has the case exercise. I give them a standard template that is used by many companies.” (IS Professor)
Students’ roles

- Forman and Rymer (1999)
  - 3 roles:

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<td>Define significant problem(s) in case. Propose and analyze alternative solutions.</td>
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<td>Show readiness to act in business situations</td>
<td>Make logical recommendations. Develop implementation plan.</td>
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<td>Apply academic knowledge to business problems</td>
<td>Connect relevant course materials to case. Show understanding of disciplinary theories, tools, and principles.</td>
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- **Voice** (Matsuda, 2001; Tardy, 2012)
- **Textual Persona** (Don, 2007; Hasan, 2009; White, 2013)
This study

• What are features and expectations of IS case analyses?
• What roles do students perform in IS case analyses?

• Data:
  • Interviews with IS faculty and students
  • Assignment descriptions and assessment rubrics
  • Student writing
Variation across the curriculum

- **Medium:**
  - Writing: 3 courses
  - Presentations: 3 courses
  - Video: 1 course
  - Oral discussion only: 2 courses
Types of case analysis

• “Business-type” vs. “Technical-type”
  • Business: Write about the business, how it uses IS, and suggest how it could use IS more effectively
  • Technical: Create technical diagrams of how technologies or information systems are used in a business and find places to increase efficiency

• Purpose:
  • “IT to solve a problem”
    • Presented with an under-performing business, students’ task is to improve IT in the company
    • Involves less synthesis, and more application/problem-solving
  • “IT to create a new business”
    • Students think of a new, novel concept and describe how they can develop a new business model
Mixture of professional and pedagogical genre elements

- Description of assignments

  **Format Requirements**
  - This essay should be at least 3 pages long, single-spaced, and written in 12 point font.
  - Please include the essay title, your name, and page numbers.

- Students often include questions in responses
  - Results in disjointed text without a coherent argument.

- Over time, more students amalgamate responses to multiple questions

- Some elements of professional genres (e.g., Executive summary)
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- **IS 352**: “Are the solutions eBay is seeking to implement good solutions? Why or why not? Are there any other solutions that eBay should consider?”

- **IS 250**: “How successful has their strategy proven to be? What other types of IS competitive advantages might STARS seek going forward?”
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- IS 250: “For his upcoming meeting with the CEO, what should the CIO’s objectives be? How can the CIO gain the trust and support of the CEO?”

- IS 312: “As the CEO of Zipcar, where is your most threatening competition? What would you do to sustain a competitive advantage?”
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- IS 312: “Apply the *Resource-Based View* to Groupon's business model to show how information resources may be used to gain and sustain competitive advantage.”

- IS 352: “Review the concept of *Private Industrial Networks* and describe how Elemica illustrates many of the features of such a network.”
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<td>Consumer</td>
<td>Show perspective of individual</td>
<td>Consider how likely they would be to use a technology</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consider how a technology would fit into their life</td>
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- **IS 102**: “Would you be more likely to follow a health program if it was offered on your mobile device?”

- **IS 102**: “How have you used information technologies to help you connect with others for the purpose of tapping their knowledge? Why did you use those technologies?”
• IS 102: “What are other potential applications of the mHealth system?”

• IS 102: “What other ways could companies use to leverage digital music?”
• IS 352: “Pay a visit to your favorite portal and count the total ads on the opening page. Count how many of these ads are (a) immediately of interest and relevant to you, (b) sort of interesting or relevant but not now, (c) not interesting at all. Do this 10 times and calculate the percentage of the three kinds of situations. Describe what you find, and explain the results using this case.”

• IS 323: “As this investigation unfolds, research the additional costs or loss of revenue to TJX and the credit card companies involved.”

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<td>Researcher</td>
<td>Apply concepts from case to the real world</td>
<td>Gather data. Interpret data based on case.</td>
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Role
Students asked to perform multiple roles

• IS 250, Case 1:

1. What is the importance of information systems to STARS?

2. How would you characterize STARS’ competitive strategy? Where does STARS add value for their stakeholders (customers, suppliers, employees)? Apply Porter’s five forces model in your response.

3. How successful has their strategy proven to be? What other types of IS competitive advantages might STARS seek going forward?

4. Develop a list of three or four most critical challenges facing the new CIO. Include your ideas for how Khan should tackle each challenge.

5. For his upcoming meeting with the CEO, what should the CIO’s objectives be? How can the CIO gain the trust and support of the CEO?

6. What should the CIO do to control the current practice of departments contacting their “favorite IS staff member” when they need technical assistance? Justify your recommendation(s).
Roles performed over time

- **Earlier courses more often included Consumer and Applier roles**
  - IS 102: “Would you be more likely to follow a health program if it was offered on your mobile device?”
  - IS 102: “What are other potential applications of the mHealth system?”

- **Later courses more often included Problem-Solver, Manager, and Researcher roles**
  - IS 352: “Are the solutions eBay is seeking to implement good solutions? Why or why not? Are there any other solutions that eBay should consider?”
  - IS 312: “As the CEO of Zipcar, where is your most threatening competition? What would you do to sustain a competitive advantage?”

- **Most courses included the Disciplinary Thinker role**
  - IS 250: “How would you characterize STARS’ competitive strategy? Apply Porter’s five forces model in your response.
  - IS 352: “Review the concept of *private industrial networks* and describe how Elemica illustrates many of the features of such a network.”
Lack of clear understanding of roles

- **Students often not clear about what role they are to perform**

- Question: “How should TJX’s IT security be improved and strengthened? What should its short-term priorities and long-term plan be?” (IS 323 Enterprise Resource Planning)

  - **Expected role:** Manager
  - **Student’s response:** Disciplinary thinker

    - “The company’s IT security can be improved and strengthened by following the Payment Card Industry Data Standards compliance practices. There are 12 requirements to meet the objectives of building and maintaining a secure network that is regularly monitored and tested, protecting cardholder data, maintaining a vulnerability management program, and maintaining an information security policy. TJX has to meet all 12 requirements to meet the standards of PCI. Their focus should be on the areas they have vulnerabilities in.”
Adoption of correct role is important

IS 250: What should the CIO do to control the current practice of departments contacting their "favorite IS staff member" when they need technical assistance? Justify you recommendation. [Manager]

Lower-graded response:
STARS shall establish a centralized and effective "helpdesk" system to address all the IT issues that may be raised by both the internal and external customers. As defined in (5), a help desk is "a resource designed to provide end users with information and assistance regarding problems with computers and related devices or software." [Disciplinary Thinker]

Higher-graded response:
The CIO should try to create a helpdesk and keeps following if it's being properly and efficiently used. This would make all the employees go through the helpdesk if they need anything, therefore, this will definitely stop the departments from contacting their "favorite IS staff member" to help them fix technical problems. [Manager]

• Over-use of the Disciplinary Thinker role
Linguistic elements

• Student perceptions:
  • “I think that it [writing] should be precise, to the point, explaining whatever we need to mention and we shouldn’t elaborate too much. I used to interpret too much, and I [thought] different types and different ways, but the professor was like, he was like, trying to catch whatever you said and he likes to be to the point.” (Rana, Fall 2013)

• Faculty: Elaboration of ideas is strongly valued.
Linguistic analysis

• **Systemic Functional Linguistics** (Halliday, 1994)
  • Relationships between language and social purpose in the process of making meaning

• **APPRAISAL** (Martin & White, 2005)
  • Important in analytical and argumentative writing (Martin, 2002, 2004)

• Elaboration → Logico-semantic relations (Eggins, 2005)
  • Relationships between clauses
  • **Elaboration**: Restating; Details; Examples; Comments
  • **Extension**: Adding new info; Giving an exception; Contrast
  • **Enhancement**: Qualifying; Comparison; Cause; Concession

• Analysis of 10 student case analysis texts (5 higher-graded, 5 lower-graded)
Linguistic analysis: Appraisal

• Appraisal used in both higher-graded and lower-graded

• Evaluated similar targets (company, strategy, products)

• Lexical variety
  • Lower-graded responses tended to use evaluation vocabulary from questions
  • Higher-graded responses tended to use more variety of evaluations
Linguistic analysis: Appraisal

3. How successful has STARS’ strategy proven to be?

• Lower-graded:
  • They are **successful** in their strategy but they are **not successful** in using technology for that strategy. The strategy of cost is **successful** because they find ways to gain money from it. And they are **stable financially**. Their achievements also prove their **successful**. They achieve more than one achievements in one year.

• Higher-graded:
  • STARS’ competitive strategy has been **very strong**. Initially, STARS had a **rough start**, as mentioned earlier. STARS was **able to recover** from this loss by assistance provided by the Alberta Health and Services (government health services agency). Soon enough, donations were large enough for STARS to cover it costs. They sold lottery tickets and events, bringing in money to the organization. STARS also gained the supports of the Canadian Association of Petroleum Producers to develop their Emergency Link Center. Thus, STARS was able to gain the trust of such large organizations and soon with their support, began growing with more and more donations. They were not running at a loss, despite the fact that they are providing service that is almost free of cost. Therefore, STARS **has been successful** in the financial aspect.
Linguistic analysis: Logico-semantic relationships

- **Elaboration** (restating, explaining detail)
  - **Extension** (new information, exceptions, contrasts)
  - **Enhancement** (qualifying, cause, concession)

**Lower-graded:**
- They are successful in their strategy but they are not successful in using technology for that strategy. The strategy of cost is successful because they find ways to gain money from it. And they are stable finically. Their achievements also prove their successful. They achieve more than one achievements in one year.

**Higher-graded:**
- STARS’ competitive strategy has been very strong. Initially, STARS had a rough start, as mentioned earlier. STARS was able to recover from this loss by assistance provided by the Alberta Health and Services (government health services agency). Soon enough, donations were large enough for STARS to cover it costs. They sold lottery tickets and events, bringing in money to the organization. STARS also gained the supports of the Canadian Association of Petroleum Producers to develop their Emergency Link Center. Thus, STARS was able to gain the trust of such large organizations and soon with their support, began growing with more and more donations. They were not running at a loss, despite the fact that they are providing service that is almost free of cost. Therefore, STARS has been successful in the financial aspect.
Conclusions

- Large variation between courses (medium, type)
- Mixing of professional and pedagogical genres
- Students are asked to perform multiple roles
- Expected role is sometimes unclear to students
- Performance of correct role is valued by faculty
Future work

• Sharing results with IS faculty

• Work together with IS faculty to revise assignments / assignment descriptions / rubrics / instruction

• More explicit explanation of roles students are to adopt

• Raise awareness of genre demands and faculty expectations among both faculty and students

• Further linguistic analysis – linguistic features of different roles
Thank you!

Questions?

Ryan Miller
rtmiller@qatar.cmu.edu