Grounded theory analysis of comp1710 forum postings

Junjie Li (Stephanie)
Supervised by Tom Gedeon and Sabrina Caldwell
Overview

- **Introduction / Background**
  - What is the project about & Aim
  - Project Steps & stages
  - What is Grounded Theory
  - Process of Grounded theory

- **Data Analysis of the project**

- **Result & Recommendation**

- **Advantages / Benefits**
  - Importance

- **Achievement/Outcome**
What is the project about?

- **Method: Grounded theory**
  - Develop conceptual analysis of text data
  - Extract and analyze data

- **Data source: COMP1710 student forums**

- **Purpose: discover diverse phenomena and find relationships in student forums**
Four Stages:
- Brief literature survey/review
- Collect text data from past forum posts
- Analyze text data using grounded theory approach:
  - Coding procedures: open coding, axial coding and selective coding
- Summarize and report / visualize results
What is grounded theory?

- A research method that involves forming a theory based on the gathered data.
  - Theories generated only from the data collected in the study … not from other sources (e.g., textbooks, researcher opinions)

- Seeks to understand how people interact, take action or engage in the process in response to some phenomenon.
Grounded Theory Process

- Research Question
- Data
  - Ethnography
  - Intensive Interviewing
  - Textual Analysis
- Initial Coding
  - Line-by-line coding
  - Comparing incidents
  - Axial/ Theoretical coding
- Focused Coding
- Comparative Analysis
  - Memo-writing (sorting/ diagramming / integrating)
  - Theoretical Sampling
  - Saturating Theoretical Categories
- Categories
- Properties
- Relationships
- Theoretical Statements
Grounded Theory Data Analysis: Systematic Design

Open Coding:

1. Read textual data & determine different categories
2. Constant Comparative
3. Memo-ing

Eg: Today, from the data, I could find that most questions students ask are related to the assignment, maybe assignment due data is coming and the number of posts are largely increasing compared with before.
Axial Coding: Researcher selects one open coding category and places it at the center as the Central Phenomenon and then relates all other categories to it. Uses code & memos to show how categories relate to each other.

Selective Coding: writing a explanation based on the interrelationship of the categories from axial coding
Data Analysis: Open Coding

Open Coding Categories

Content
- Assignment/Quiz
- Exam
- Technical
- Other

Posts
- Technical: 62%
- Homework: 25%
- Exam: 8%
- Others: 5%

Total: 433
- Technical: 268
- Homework: 110
- Exam: 20
Data Analysis: Open Coding

Community
- Interaction
- Contribution
- Cooperation

Time/Process
- Due date
- break
- Semester Starts/Ends

Student Perspective
- Emotional
- Expectation
- Gaining

Forum Participating
- Posting

Feedback Response
## Data Analysis: Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>What</th>
<th>When</th>
<th>Where</th>
<th>Why</th>
<th>How</th>
<th>Consequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Perspective</td>
<td>The emotional feelings and logical view of a student</td>
<td>During forum posting</td>
<td>In raising questions and giving response</td>
<td>Because students are engaged in the student forum and have their own thinking</td>
<td>By posting with different attitudes and behavior manner</td>
<td>Improve students critical thinking and understanding of the course materials</td>
</tr>
<tr>
<td>Community</td>
<td>The belonging of being part of the class</td>
<td>During forum posting, communication, interaction</td>
<td>In student forum</td>
<td>Because the interactions among student and instructors</td>
<td>By students and instructors posting to forums and exchange their thinking</td>
<td>Form an academic online learning environment</td>
</tr>
<tr>
<td>Content</td>
<td>The posts of assignment/quiz/report/technical question</td>
<td>During forum posting</td>
<td>In student forum</td>
<td>Because student are concerned about their learning outcome</td>
<td>By posting different topics of questions</td>
<td>Receiving response from students and instructors, which enhancing their ability of learning and understanding</td>
</tr>
<tr>
<td>Time/Process</td>
<td>The time of postings</td>
<td>During the whole process</td>
<td>In student forum</td>
<td>Because different time will impact the forum participating</td>
<td>By posting in different time</td>
<td>It is flexible and convenient for students and instructors to post</td>
</tr>
<tr>
<td>Assessment/Feedback/Response</td>
<td>Feedback and response from instructors and students</td>
<td>During response</td>
<td>In student forum</td>
<td>Because there is sufficient feedback on forum to help student understand</td>
<td>By giving response and constructive feedback</td>
<td>Improving the understanding of the key concepts</td>
</tr>
<tr>
<td>Forum participation</td>
<td>Posts that students ask</td>
<td>During the semester</td>
<td>In student forum</td>
<td>-Interact with students and instructors -ask questions</td>
<td>Post</td>
<td>Receive response</td>
</tr>
</tbody>
</table>
Data Analysis: Open Coding to the Axial Coding Paradigm

Open Coding Categories

- Student Perspective
- Time/Process
- Content
- Forum Participating
- Community
- Feedback Response

Axial Coding Paradigm

- Feedback Responses
- Student Perspective
- Forum Participating
- Content
- Community
- Time/Process

‘Content’ is core phenomenon
Arrows indicate Selective Coding (relationships)
Data Analysis: Post frequency over time by type

Number of posts
- Number of posts
- Final/Mid Exam
- Technical
- Others
- Assignment/Report/Quiz/Lab
The type of content is influenced by the time of the semester (time/process) and the different student perspectives.

- Majority of student forum discussion is technical
- Activity peaks during weeks 7 and 11 when website assignments part 1 and 2 are due
- Instructor intervention is likely to be most effective during these spikes
The main benefit of this research is that it provides:

- insight into student community perspectives
- a benchmark for the trend of participation expected in the Comp1710 student forum
- guidelines for continual development of teaching
- recommendations to maximise instructor participation benefits
- new understanding of students behavior / needs
Achievements

- Experience with the use of grounded theory
- Experience with the analysis of unstructured text
- Experience with structured data reporting and visualization
Questions

Any Questions?