

Curriculum Development for Teaching Qualitative Data Analysis Online

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Abstract

This paper explores the unique curriculum design issues involved with the integration of qualitative data analysis software (QDAS) in online instruction of qualitative research. The Qualitative Research III – Analysis course was designed for graduate students and offered in a blended online format using the NVivo[®] software program and the learning management system, Desire2Learn. Although embedding the NVivo[®] software into the fabric of the course afforded several advantages, it also posed challenges for the students and the instructor.

INTRODUCTION

Qualitative Research III is a course that provides doctoral students with advanced instruction in qualitative research analysis. The intent of the course is to teach student how to apply methodological skills to their theoretical and philosophical orientations related to doctoral dissertation research.

This paper explores the unique curriculum design issues involved with the integration of qualitative data analysis software (QDAS) in online instruction of qualitative research. Course design and implementation issues were categorized into three main themes: student challenges, content challenges, and technological challenges.

CONCEPTUAL FRAMEWORK OF THE COURSE

Course delivery

Qualitative Research III – Analysis was developed and taught for the first time in the spring semester of 2004 for doctoral students. Prior to the semester, graduate degree programs only offered a single course in qualitative research methods. In response to demand for more advanced qualitative course offerings, a sequence of three graduate-level qualitative research courses were developed and submitted for university curriculum review and approval during the spring of 2003.

- Qualitative Research I – Methods
- Qualitative Research II – Theory
- Qualitative Research III – Analysis

The author was selected for the 2003 Summer Program for Enhancing Teaching and Learning with Technology. This professional development university grant award provided training in a newly adopted learning management systems (LMS) named Desire2Learn (D2L). Curriculum development efforts for Qualitative Research III – Analysis began in earnest during the summer training program and extended throughout the fall.

The course was offered in two sections. One section was offered in a graduate computer lab and the other section was offered online. Integration of the two sections afforded the opportunity to teach the course in a blended mode. The blending consisted of traditional classroom lecture, lab format, and Internet delivery. Each student enrolled in the course could access the course materials by entering a password on the LMS log-in page. All content could be entered by the instructor and viewed by the students and instructor using a Web browser.

Students in either section were given the option throughout the course to attend the evening class or participate via the online offering. This flexibility provided online students who lived within driving distance of campus the option of

participating in traditional instruction on an as needed basis. By providing all course content online, students that enrolled in the weekly graduate computer lab section but were unable to attend a session could access course materials at their convenience, thus avoiding potential schedule conflicts. All students were expected to participate weekly in online discussion forums and submit assignments electronically.

Teaching Assistants

To support the delivery of all three qualitative research courses a small team of advanced doctoral students were selected as teaching assistants. Teaching assistants were expected to commit for all three semesters and assume responsibility for mentoring four to six graduate students. An ideal arrangement was envisioned whereby the teaching assistant would work with the same student group throughout the sequence. The intent of maintaining group membership was to allow relationships to build and to enhance group stability (Moallem, 2003). Three of the five original teaching assistants did complete the sequence but many of the doctoral students did not enroll in all three courses. This did not pose a significant problem since the majority of the student dissertation research studies were not clearly focused at the beginning of the third course and therefore the students were not positioned to maximize the learning value of a concentrated three course sequence.

The teaching assistant mentor role, however, was of significant value to enhancing the student learning experience. Teaching assistants were able to moderate group discussions and provide students with support and cognitive scaffolding as needed. On a support level, the teaching assistants encouraged students and fielded their questions. To enhance learning, the teaching assistants primarily functioned at the coaching level of Brescia's telementoring taxonomy (2003). Each week the teaching assistants completed the same course assignments as the other students. In this manner the teaching assistants provided a model for the depth of engagement that was expected of the students. The teaching assistants also prompted students to expand on points raised in the discussion forums.

The teaching assistants also provided an invaluable role as liaisons between the students and the instructor. Each week on the evening prior to the course meetings, the instructor held seminar meetings with the teaching assistants. Teaching assistants were enrolled in a Teaching in Higher Education Seminar. A main theme of these seminar meetings was to review proposed course content for the upcoming week and acquire course feedback directly from the teaching assistants and indirectly from the students. These discussions provided the context to explore a wide range of issues in teaching in higher education.

Course Communication

Due to the blended course delivery, students could select asynchronous and synchronous modes of communicating with the instructor and other students. The primary means of asynchronous course communication were electronic mail and asynchronous discussion forums. In some cases students also made telephone contact with the instructor. For students who elected not to attend the class sessions, a hybrid form of synchronous communication was made available through the use of the online pager tool in D2L. The pager tool, which was similar to an instant message and chat program, allowed students to send electronic messages to other users. During class times the teaching assistants visually monitored and responded to their onscreen pagers in D2L. The teaching assistant could also ask the instructor questions during the lecture portion of the class that had been sent by an online student using the pager tool. In addition, all students could obtain additional online assistance using the threaded discussion forum help line.

Software Availability

As part of the curriculum on qualitative data analysis, NVivo[®] software was taught to students. Use of the software allowed students to merge data analysis knowledge gained from the lesson with software skills. This integration was consistent with the constructivist approach of using practical contexts (Jonassen, Peck, & Wilson, 1999) and eliminated the problem of teaching software skills in isolation of practical contexts (Oberlander & Talbert-Johnson, 2004). Prior to the start of the semester, the university purchased a site license for the NVivo[®] software (QSR International, n.d.). To make the NVivo[®] software available to students who preferred to complete the class using solely the online format, the software company, QSR International, provided students the option to purchase a four month time limited version at a substantially reduced rate.

Content Delivery

Consistent with a constructivist framework, students were provided with a course syllabus and a course orientation (Liu, 2003). The course syllabus was the tool used to communicate the overall course requirements and expectations. A course orientation document provided reference links that helped guide students through the format of the online course. The orientation served as an advance organizer to inform students of how the course content would be presented.

There were two main types of course content provided for students: (a) course-level information, and (b) lesson-specific content. The course-level information included the syllabus, course orientation, and a welcome letter. The welcome letter had been distributed to students prior to the start of the course to introduce them to the blended online format of the course. Students accessed course content by clicking on the corresponding hyperlink, as shown in Figure 1.

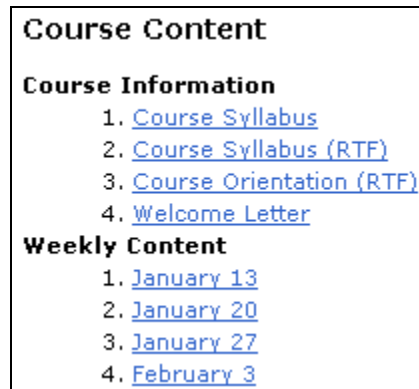


Figure 1: Presentation of course content in the LMS

The content of each weekly instruction was presented as a Web page that students could read onscreen, download, or print. Within each weekly lesson, content was divided into eight sections: (a) multimedia content, (b) a list of topics covered in the lesson, (c) a list of learning outcomes for the lesson, and (d) a list of hyperlinks to the main lesson content, (e) a list of required readings for the week, (f) the lesson content and description of assignments, (g) recapitulation of the prior week, and (h) an assignment summary. The selection of these headings was based on Gagné’s events of instruction (Smith & Ragan, 1999) and the experiences of the instructor’s graduate assistant in supporting online courses.

Student Interaction

Student interaction in the course was considered a vital element to enhance the multiple perspectives of qualitative research and to reap the benefits of social learning (Moallem, 2003). To facilitate student interaction, students were required to submit responses to questions posed by the instructor in discussion threads. The use of asynchronous discussion threads was adopted to simulate the types of discussion that would occur in a classroom environment and to allow students to apply knowledge gained in the weekly lessons. This use of discussion threads in online learning had been shown to curb feelings of isolation (Harasim, 1987; Poole, 2000) and increase collaboration (Harasim, 1987; Moallem, 2003). In addition to facilitating student interaction, discussion threads had also enhanced student learning experiences in online action research courses by providing students with a means of applying content-related knowledge (Liu, 2003). Furthermore, the use of asynchronous threaded discussions had been shown to increase the reflexivity and depth of student responses because students had more time to simulate their thoughts (Christopher, Thomas, & Tallent-Runnels, 2003). Another reported outcome of the use of online discussions was improved critical thinking when students were given learning guidance and expectations for providing constructive criticism (Astleitner, 2002).

The three types of discussion forums employed in the course were open forum discussions, lesson-specific discussions, and teaching assistant forums. The open forum discussions, as shown in Figure 2, provided students with a vehicle for posting comments, questions, and concerns about general issues in the course. For example, students could share their best practices for coping with technology issue in the discussion titled “Lessons Learned – Dealing with Technology”.

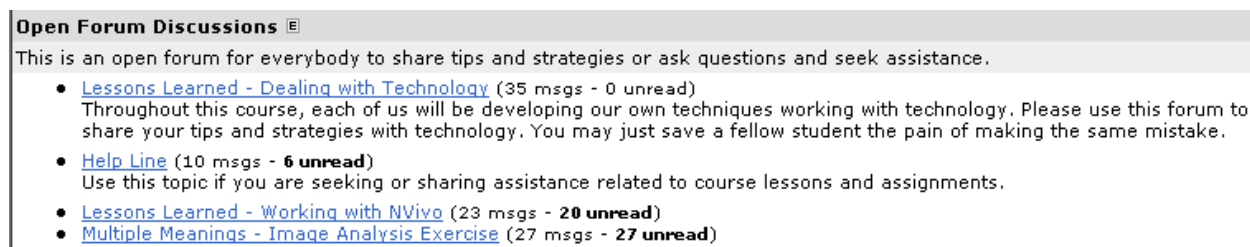


Figure 2: Open forum discussion in the LMS

The instructor, teaching assistants, and students provided support for one another by answering questions and sharing their experiences in the discussion threads. This feedback also provided valuable information for the instructor for formative evaluation and revision of the course.

In addition to the general discussions, there were also discussions that were directly related to weekly lessons. The purpose of the lesson-specific discussions was to provide students with a means of applying knowledge gained in the weekly lesson, and for providing students with constructive feedback from their peers.

Consistent with the practices of Moallem (2003) in maximizing group collaboration, students were assigned to groups of four to six students. Access to each lesson-specific discussion was restricted based on group membership. Students were permitted to view and respond to postings made only by other members of their group. The size of the groups was based primarily on the number of teaching assistants enrolled in the course, but was relatively consistent with the recommended practice of using groups of three or four students. As indicated by Moallem, the use of small groups, which remained intact for the duration of the course, provided stability in group interaction. Restricting discussion forum access by group membership also served to reduce the number of postings to which students were required to respond.

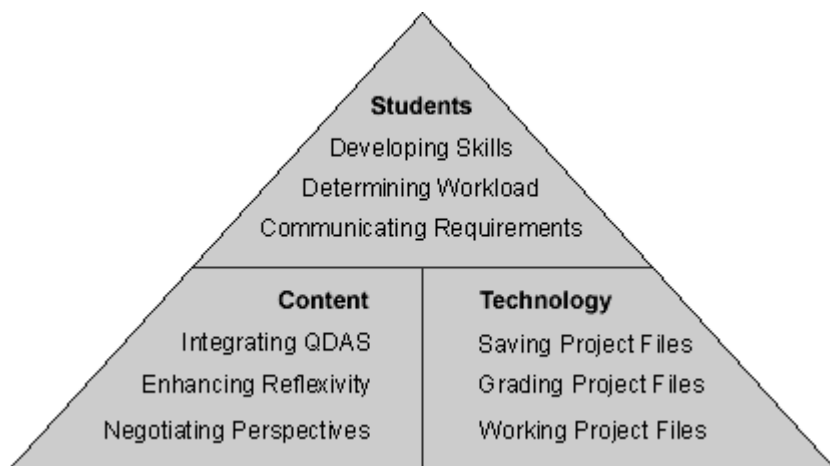
Interaction between the instructor and teaching assistants was also considered vital to the success of the course. To provide the instructor and teaching assistants with a vehicle for communication, the instructor created a teaching assistant discussion forum (see Figure 3) that was only available to him and the teaching assistants. These discussions provided a valuable exchange of information that led to formative revision of the course and assignment activities.



Figure 3: Teaching assistant discussion forum in the LMS

DESIGN AND IMPLEMENTATION ISSUES

Several components of the course framework posed unique challenges to the success of the course. While the instructor had anticipated some of the challenges during the design phase, other challenges arose during the delivery of the course. Course design and implementation issues were categorized into three main themes: student challenges, content challenges, and technological challenges, as indicated in the model.



Student Challenges

Several of the challenges to successful delivery of the course were either imposed by students or directly related to the students. These challenges included alignment of students' actual entry skills with the instructor's expectations of students' entry skills. The instructor's expectations for students who enrolled in the course were that the students have developed an understanding of their research skills in qualitative methodologies. Qualitative Research III – Analysis was designed for graduate students at or nearing the completion of all doctoral course work. The instructor's expectation was that students would enter this course at the beginning stages of their dissertation research proposal. Most students, however, had not

articulated a clear research focus at the beginning of the course. Consequently, those students had to commit additional list to assignments related to data collection.

Communicating Requirements

One of the challenges of delivering an online course was making sure that instructions, expectations, and requirements were clearly conveyed (Aune, 2002). The onus was on students to read and critically analyse each assignment because textual information was often the only source of information. Clear communication was essential for presenting information to students. Within a traditional classroom, the instructor could often determine whether students understand what is required based on looks that belie confusion. An online course delivery platform could delay this immediate feedback because the instructor had to wait until students submit completed assignments.

In this course, clear communication was facilitated by the teaching assistants. The teaching assistants also provided a weekly written summary of the class lecture. These TA Notes were posted on D2L the following day after each class meeting. This supplement to the course content provided online students with a student perspective to understanding weekly topics and assignments.

Determining Workload

A consistent research theme of online courses is that students perceive an increased workload or time commitment (Harasim, 1987; Liu, 2003). Often the basis for this sentiment is due to the amount of reading inherent with online course delivery. In addition to having to read weekly content, students must also read what would have been presented verbally during class. The corresponding challenge to the instructor was to balance the weekly content load with the assignment load. Six weeks into the semester, one of the teaching assistants voiced her concerns in one of the teaching assistant forums that the workload was overwhelming. The instructor replied,

“You raise a major question, one that I struggle with each week. We need to critically look at the assignment load each week in our Monday Seminar. I continue to feel torn on this issue. This course represents one of the last courses a doctoral student is taking prior to a solo launch into a qualitative dissertation study. The pressure of these weekly assignments is mild compared to the dissertation process. Two of our key goals are to help doctoral students improve the overall quality of their qualitative dissertations and to give the students a head start on their research.”

The other teaching assistants joined in the threaded discussion by reflecting upon the demanding duties of a teaching assistant and various coping strategies for doctoral students. Since the issue continued to be referenced by the teaching assistants and instructor in the weekly teaching seminars for the remainder of the semester, the instructor began to proactively address the workload concerns. During the weekly meetings with the teaching assistants, the instructor would present to them the proposed course content. The teaching assistants would then preview the content and assess the workload prior to the instructor making the content available to students. The LMS provided a conditional release feature which allowed the instructor to suppress content from the students until a specific date had passed or the instructor activated the content.

Content Challenges

One of the challenges faced the instructor when designing the course was how to present the content and structure activities in the online environment. To compound the complexity, the LMS had been newly adopted by the University. Consequently, there was a significant learning curve for the instructor. Three key strategies that the instructor adopted were enhancing reflexivity skills through researcher collaboration, capitalizing on the importance of negotiating multiple perspectives, and integrating computer-assisted data analysis software into the course.

Enhancing Reflexivity Skills

During the weeks where memos were the topic of the lesson, students were assigned to conduct field research related to their research interests and submit their memos in the appropriate threaded discussion. Each student was tasked with three memo topics: methods memos, researcher reflections memos, and analytic memos. This division of memos was defined for the students accordingly:

- Methods memos can be used as an audit trail of your design. These should include how your design develops throughout the process of the research. They are also good for keeping track of what has not been completed – research lines of inquiry that have not yet been taken.
- Analytic memos (Glaser & Strauss, 1967) reflect your chain of reasoning for the research. These address questions such as “what am I learning here” and “what meanings am I seeing.”

- Researcher reflections memos deal with researcher as instrument issues. While all three memo types are reflections, these specifically have to do with the impact of researcher on the site and site upon the researcher. These are also a good place to address researcher bias, researcher baggage, and struggles with premature attempts at deductive reasoning.

After submitting their memos to the threaded discussions, students were tasked with reading submissions made by other students and providing constructive feedback. Students submitted feedback by submitting replies to the students' postings. The teaching assistants facilitated the virtual group exchange and provided technical and content assistance as needed.

Negotiating Multiple Perspectives

To teach students about the importance of multiple meanings and to capitalize on the importance of negotiating multiple perspectives, the instructor devised a Multiple Meanings assignment. The multiple meanings exercise demonstrated the instructional advantages of dual activity integration. The instructor posted a photograph of the painting "Kept In" (Gilmore-Lehne, n.d.), and asked students to view the photograph (see Figure 4).



Figure 4: Photograph used in Multiple Meanings assignment

Prior to reading any other students comments, write your own comments on what this picture means to you. Submit your comments to the open forum discussion no later than Saturday. Beginning Sunday immerse yourself in the data by reading all comments, then open code and axial code all comments. Identify the major themes you have constructed from this process. Do they differ from your original comments? Briefly discuss your results by sharing in the open forum discussion.

The students were given no additional information about the title, nature, or origin of the photograph.

Integrating Computer-Assisted Data Analysis

Four weeks later, students returned to this exercise and used the NVivo® software to analyze the compiled class comments and analysis. Searching Multiple Meanings Data Assignment:

You may recall the Multiple Meanings exercise from the February 24 class and my suggestion that we may be returning to this discussion for further data mining. This assignment provides you an opportunity to refine your data mining skills and explore issues surrounding intercoder reliability. To dig into this data further we need to

really immerse ourselves into the finer meanings within the individual entries on meaning and your subsequent group analysis.

Begin by downloading two rtf files containing the Multiple Meanings data (Observation and Analysis). Next, create a Multiple Meanings NVivo project and create both documents into the project. **Do not mix this assignment with your NVivo research project.** Title this project "Multiple Meanings." Once you have the Multiple Meanings project created, code the data, keeping in mind Silverman's discussion on reflexivity, a realist approach and narrative analysis. As you build your tree nodes, draw upon the code work of other students embedded in the analysis file. Be aware of how other student's code work is shaping your coding. This is a significant point that Silverman raised in the reading.

To further refine your code analysis, use the search function tool. Submit your Multiple Meanings NVivo project as a qbk file to the *Searching Multiple Meanings Data* dropbox. This assignment will involve create project, create documents, coding, search and backup.

This assignment allowed the instructor to add an essential dimension to the learning environment. The integration of the NVivo® software technology and virtual exchange into the assignment created a synergism between learning computer-assisted data analysis and exploring negotiating multiple meanings. The value of this synergism was realized from a qualitative research perspective and a learning process perspective. From the learning perspective, the NVivo® software allowed students to construct qualitative research knowledge through the data analysis exercise while embedding knowledge of the analysis tool into the activity. Consistent with the constructivist framework, knowledge was both embedded in the activity and constructed from the activity (Jonassen, Peck, & Wilson, 1999).

Technological challenges

Although embedding the NVivo® software into the fabric of the course afforded several advantages, it also posed challenges for the students and the instructor. Most of these challenges were imposed by the functionality of the NVivo® software. The initial challenge related to the use of the software occurred when students were first required to submit project files to the instructor for grading. To submit assignments for grading, students were required to create backup files of their NVivo® project file. The students were then supposed to upload the resultant file using the dropbox tool in the LMS. During this assignment, several students had difficulty saving the file in the correct format. The difficulties of one particular student led to the instructor having to reinstall the NVivo® software on his computer.

Another difficulty experienced by the instructor occurred as he opened and closed students' project files for grading. Due to the design of the NVivo® software, the instructor was forced to rename student projects as he opened and saved them. Although the opening and closing was not specifically the problem, the software left a footprint of the project even after the project file had been deleted from the computer's hard drive. Consequently, the list of project files on the dialog box used to access the files became tremendously cluttered. Students experienced a similar problem when they created project files to submit for grading. The design of the software did not allow students to save new copies of project files with the same name as the original file. The design of the program was to append a numeric suffix to the file name. Some of the project file names (as shown in Figure 5) became rather long and cumbersome.

		Feedback Left	Apr 25, 2004 6:55 PM
		Read:	Apr 26, 2004 10:32 AM
<input type="checkbox"/>		Welfare Reform 3 2 2 2 2 2 2 Backup.qbk (288k)	Submitted: Apr 13, 2004 5:20 PM
<input type="checkbox"/>		Student Name - Welfare Reform 3 2 2 2 2 Backup.qbk (210k)	Submitted: Apr 29, 2004 1:26 PM
<input type="checkbox"/>		Student Name - Welfare Reform 3 2 2 2 2 Backup(1).gbk (210k)	Submitted: Apr 29, 2004 1:26 PM

Figure 5: Sample of project file names

Once students had mastered the concept of creating backup projects to work from, the next challenge occurred when some students created different projects for each weekly assignment. Optimally, students were supposed to build upon the work

of one project file and overwrite or otherwise replace their working version of the project file. Some students, though, began working with superseded versions of the project file, and were faced with additional tasks to integrate work done in both project files.

One particularly frustrating experience for one of the students occurred when she determined that she had two separate project files that needed to be merged. Although the NVivo® software did not include a utility for merging project files, the instructor purchased a copy of Merge® software which was designed to perform this task. During attempts to merge sample projects, though, the instructor learned that a limitation of the Merge® software was that it did not allow for merging of research models created in NVivo® projects. Due to this discovery, the student was forced to recreate all of the work that she had initially done in creating a model of her data analysis.

INSTRUCTOR AND STUDENT EVALUATION

At the end of the semester, the instructor presented the students with a standardized university course evaluation. The instructor then reviewed feedback from the completed evaluations to assist in revising the course for the next offering. The evaluation instrument consisted of 18 statements pertaining to the instructor and course, which were rated using a Likert scale. Numeric scores and written comments were consistently very positive toward the instructor and course. On nine of the items, the instructor and course received the maximum positive ratings of *excellent* or *very good*. On the remaining nine items the instructor and course achieved 80% of the maximum rating. Students' comments emphasized that the course was extremely beneficial and thought-provoking. On the other hand, students also expressed concern with the challenges of the course content. As one student stated, "The course was very labor intensive, integrating theory and two software programs presented demanding challenges."

Future Directions

Due to the generally overall positive feedback from the students, the instructor plans to offer the course again using the same blended format. Based on the instructor's experiences and the feedback from the students and teaching assistants, though, the instructor plans to make several modifications to improve the instructional delivery of the course. For example, more clarity will be provided within the first few class sessions regarding saving NVivo® projects and submission procedures to the D2L dropbox. Issues related to the alignment of the course within the three course qualitative research sequence are also being reviewed. Attention will be given to better prepare students in the first two courses of the sequence concerning dissertation research focus.

An additional curriculum development benefit has occurred with successful elements from this initiative being adopted for the Qualitative Research I – Methods course. The blended delivery format using online and traditional classroom will be implemented for the spring, 2005 semester. Teaching assistants will provide mentoring support and one class session will be dedicated to an orientation to qualitative data analysis software using the NVivo® program. The asynchronous and synchronous communication techniques will be incorporated as well as the continued development of creative dual activity learning exercises.

Suggestions for Curriculum Development

While varying course structures may pose unique challenges, the challenges presented in this paper provide insight into the types of issues that educators may face when implementing an online qualitative research course. In a broader sense, curriculum development efforts must become increasingly attentive to the rapidly evolving relationship of software program integration with course content. The union of students, content, and technology can lead to a rich learning experience when these issues are anticipated and addressed prior to course delivery.

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