CHAPTER 6- CONCLUSIONS, SIGNIFICANCE, LIMITATIONS, AND SUBSEQUENT RESEARCH

In this chapter I adopt four categories of conclusions, suggested by Richey and Nelson (1996) for developmental research for the purpose of addressing the full range of conclusions offered by the developmental framework. The four categories of conclusions include (a) improvements to the instructional approach, (b) conditions that promote successful use of the model, (c) the impact of the model on student and teacher learning, and (d) the conditions conducive to efficient model development. This chapter also discusses limitations of the research, the significance of the research for the teaching of instructional design and for teacher inquiry. Finally, suggestions for further research are described.

Conclusions

Improvements to Instructional Approach

Representing one's instruction through a model. The reflexive model is based on a particular view of teaching, the aim of which is to be responsive to learners – to assist them in their learning. The components of the model, its social system, include its human participants, depicting instructor and student as co-learners with the same sets of engagement characteristics, but acting within different roles. Participants interact with co-participation structures in which dialogue promotes opportunity for communication. The model is reflexive due to participation which supports instructor self-examination of one's learning, design, and teaching (i.e., responsivity to learner needs), as well as student self-examination of one's learning, engagement, and performance.

The instructional design process is viewed as a systematic means to examine one's learning beliefs and analyze and construct responses to instructional problems. To benefit from the ID process one must be competent in the use of design tools within each component and in design thinking, particularly the understanding of the relationship of the components to the whole system under study. Productive use of instructional design, as a human activity, also requires human sensibilities and dispositions toward involving and learning from all constituencies within the instructional design endeavor.

Specific improvements. Based on developmental research over six cases, a major improvement was including "Learning Beliefs" as a distinct component within the ID process. The use of a mission statement as a structured learning task supported student examination of their learning beliefs and as a developmental artifact to guide their design efforts. As such, the mission statement can be seen as a broad, overarching document that keeps learning in the forefront as more detailed specifications are developed.

The use of Eisner's (1994) discussion of curriculum ideologies provided students with a complex but important reading and us with a structured task to raise participants' awareness to differing views of curriculum. Improvements to participation structures included the addition of personal conferences to support mutual learning, and electronic mail and a web site as additional means of communication. Ongoing revisions to learning tasks were based on learning from students about the complex nature of what we were asking them to perform. This understanding further shaped our in-class presentations and activities, particularly group activities in terms of

group membership, structural support, and group dynamics. Another improvement was the development of the student guide-published text that dramatically allowed us to "model what we professed" and enabled us to re-examine our view of the ID process and how it could be presented to help newcomers directly experience the process through design activity.

Content areas for improvement include the following:

- Explanations and activities for task and instructional analyses
- Encouraging research on different ways to teach intended content
- Student activities to help them with goal identification after a needs assessment
- Improved explanations and examples for content sequencing rationales
- Explaining what a "responsive" ID project means
- Promoting design thinking

ID instruction was depicted as including authentic design activities, the modeling of expert processes, reflective activities, and dialogue. Instructional strategy possibilities to support these features might include the following:

- Provide meaningful examples of design practice, either abstracted from previous ID projects, guest visits, or case studies
- Structure group activities to help students transfer thinking to ID projects
- Meaningfully address the ID issues of instructional media throughout the course
- Simplify the course

Conditions that Promote Successful Use of Model

The idea of true co-participation, the idea that all participants, teacher and student are learners (although with different roles), requires at least three conditions: (1) the willingness to share control and responsibility for learning, (2) a readiness for dialogic education, (3) a genuine desire to be reflexive in one's teaching and learning. These conditions also imply a willingness to invest in one's professional development in terms of time and effort. Sharing control and responsibility, making changes to one's educational stance, and being reflexive on professional practice, all require investment of time and effort.

Impact of Model

What students learn. The overall purposes of the model are beliefs examination and ID process understanding. According to Rowland (1993), educating instructional designers requires that teachers help them to "learn to fly" rather than walking or running, as they will be expected in practice to be able to fly. Learning in context is accomplished by students being responsible for their own design, by reaching beyond their knowledge and experiences through a needs assessment, and making decisions on how this design is constructed, enacted, and evaluated. Students are prompted to consider the consequences and influences of their learning beliefs (personal or institutional) in their design decisions. Frequently during the course, students confront their learning beliefs by the design decisions they make in their projects, as well as the "roadblocks" we as instructors throw in front of them. Particularly those participants who have taught for several years find themselves "out of sync" when we prompt them to make their beliefs explicit or provide the rationale for their design decisions.

ID process understanding. The central challenge to ID process understanding is partly a dilemma reported from many of the 113 students over the six cases: how can one understand the component parts of instructional design while at the same time have a sense of the whole ID process. Much of the course addresses how individual ID process components and the tools within each component can illuminate a clearer understanding of the instructional problem in terms of the nature of the content to be taught, the range of learners, and the reality of the learning context. Making design decisions to respond to this instructional problem lies partly in one's understanding of each ID component, but at the same time, this design response must involve an understanding of the whole system.

What teachers learn. Viewed as co-learners, we also examined our learning and teaching beliefs by being reflexive in our efforts. As we model the ID process for students, by prompting for feedback on the course and instructional materials, we came to learn from students the complexity of the individual ID components and the overall ID process. In this way we gained an improved understanding of how students viewed our representation of the ID process and made adjustments to these representations as well as learning tasks and participation structures. In addition, during the course we as instructors were constantly having students shift their thinking from the instructional design process to their project and resulting in some challenge in moving their ID process understanding to their ID project. This shift presented us with an ongoing challenge of how to support student's moving between the two.

Conditions for Efficient Model Development

The above three conclusion categories: model improvements, successful model conditions, and model impact may be generalizable to other ID settings in which teachers have similar views of teaching, learning, and the ID process. Another set of conclusions that may be more generalizable is how one's teaching approach is studied and developed. These conclusions include the following:

- A descriptive model provides the basis for subsequent development of model for purposes of exploration, prediction, and planning.
- A reflexive disposition is needed for studying one's own teaching, particularly to appropriately support the teaching of complex thinking, such as with ID.
- Model development can be guided by the structure and tenets of research. However, this structure and these views must also be examined to be clear as what knowledge, understanding, or predicting is being developed.
- Maintaining systematic data management procedures and practices are crucial for examination and replication efforts, but once in place will at least double the time and effort.

Significance of Research

The significance of this dissertation involves one way to teach instructional design based on a particular view of teaching. Additional significance includes a revised view of the ID process itself, or the content of what is taught. Finally, this research has implications for teachers studying their own teaching.

ID Instruction

The model depicts structures of participation for both instructors and learners to engage in learning the ID process together, as instructors come to better understand the ID process from student thinking about the process. These participation structures, including authentic learning tasks, among others, use dialogue between teacher and student, dialogue between peers, as well as dialogue with oneself to help participants to think, interact, enact, and reflect on designing responsive approaches to instructional problems.

The modeling of expert thought processes is inherent in openly sharing the design of the course and our instructional approach and applying what we preach, making conscious decisions to study and report our findings. The evolution of the student guide to published text provides a working example of the ID process-in-action. Another way of modeling expert thought processes is through the dialogue between the participants. Instructional design, like other disciplines, has its own language, much of it embracing the systems approach and educational psychology. This new language represents a significant obstacle for some students, particularly as much of the terminology includes multiple theories, multiple definitions (e.g., educational technology, instructional design). Students remind us of the different terms we sometimes "throw around" to refer to the same concept, idea, tool, or method (e.g., task analysis, learning task analysis). A third method of expert modeling is by sharing the ID projects of other students for public inspection, to view that their peers have negotiated the challenges of the course, and that as Rowland says (1993), "we have to help them more naturally build on the skill repertoires they already have available" (p. 37).

In addition to the examination of one's learning beliefs, another major feature in the instructional strategy for this course is the support of reflectivity, accomplished by written class feedback, self evaluation at the end of the course, and prompts by the instructors and the instructional text. A major theme to the assessment in this course is examining what people say and what they do, by what they write and construct.

The Instructional Design Process

The ID process, in our view, is that a systematic examination and design of a response to an instructional problem improves learning. To accomplish this task we have added a distinct "Beliefs" component to the ID process. The purpose of this component is to help students to examine their beliefs about learning and teaching as an essential starting point in the course. In addition we introduce students to other instructional design models to increase their awareness that other models exist. As far as we know, this beliefs examination as formal component is a unique feature to the ID process, a decision we made based on student suggestions in Case 1. Such scrutiny provides students with a foundation for subsequent design efforts, as we maintain that these beliefs will come to influence their results. In fact, it may be necessary to set aside these beliefs in light of an analyzed understanding of an instructional problem. The addition of a mission statement task in Case 2 enabled students to keep these beliefs in front of them and act as a benchmark for their ID projects.

Our dialogic view of participation positions both instructor and student as humans within the ID process rather than outside of it. Being that we view ID as a human activity whose purpose is to promote learning, then the human participants who will be responsible for this assistance as well as those who will benefit from the ID process must be a part of the process.

Teacher Inquiry

Another significance of this study is that research into one's teaching is a valid avenue of inquiry. The reflexive model, although designed for ID instruction, and perhaps for other complex human processes, is one way to operationalize teacher inquiry and reflectivity involving both teachers and their learners. There are unique challenges to conducting this research in terms of commitment to professional development in one's specialty, but also being involved in the research community and remaining conscious of the research enterprise. Teacher inquiry provides one with a means to critically evaluate and share one's efforts, but also to pay attention to each other and to learn from each other.

Limitations of Research

Specific limitations of the methodology and method are discussed in Chapter 3 in regards to limitations of data collection and data analysis along the three stages of the developmental cycle. The limitations of the research are first addressed by discussing the purposes of the research, then discussing the limitations of the data management, data analysis, and the validity of the analysis.

Purposes of research

The "trustworthiness" of research depends on "What counts as knowledge?" (Lincoln & Guba, 1985). The general purposes of research can include knowledge production, understanding, and prediction. This study has focused on the first two purposes: production of applied knowledge and process knowledge, both of which are suitable for developmental research (Richey & Nelson, 1996). Applied knowledge is context-specific, useful for the solution of practical problems, while process knowledge is usually specified in terms of models. A qualitative approach is called for in the study of context and contextual influences (Driscoll, 1991).

A second purpose of research is promoting understanding of a process; in this case, the instructional approach and the underlying phenomena, including participation and dialogue. A secondary aspect of understanding is a better understanding of what it requires in using the development cycle (i.e., planning, implementation, and evaluation) as a form of inquiry.

Data Management

Data management involves the procedures used for a systematic, coherent process of data collection, storage and retrieval for the purpose of high quality, accessible data, the documentation of analysis, and retention of data (Huberman & Miles, 1998). The design decisions, implementation, and evaluation of the instructional design course were documented in eight data sources: working logs, electronic mail, syllabi, conferences, draft ID projects, completed ID projects, course evaluations, and self-evaluations. These data sources, which were based on observations, interviews, or documents, were event-driven, meaning that they served our instructional needs to watch, ask, and examine (Wolcott, 1992). These observations, interviews, and documents were in place prior to the conceptual framework of the study. As a result, the data sources were not as complete, tightly defined, or structured across the six cases if they had been researcher-driven. Some data sources, such as syllabi, course evaluations, and self-evaluations, evolved to suit the learning needs of the students. However, because we had presented at research conferences, we had collected and stored data for each case, as well as

conducted analysis with most of the data sources, although using different methodologies. These research efforts can be regarded as interim analyses in which we became familiar with procedures in recording observations and personal conferences, as well as retaining and analyzing documents. Over the six cases, we came to have a better understanding of the instructional setting, being sensitive to research opportunities and more systematic in our data collection and management efforts, but also retaining instruction and responsiveness to learners as our top priority.

Data Analysis

Within-case analysis. Each Case in Chapter 4 was a description of "what happened and how the course proceeded" using design decisions, model implementation, and evaluation of the model as a way to describe the use and results of the model. Data displays, structured summaries, and charts allowed a condensed view of the data sources and revealed that some further analysis was needed, such as coding of structured summaries to reveal themes as well as to identify exceptions and differences.

Across-case analysis. The summary in Chapter 4 served as a means to report the changes in design decisions, implementation, and evaluation of the model across the six Cases. "Each case has a specific history–which we discard at our peril–but it is a history contained within the general principles that influence its development" (Huberman & Miles, 1998. P. 194). This summary attempted to preserve the uniqueness of each case, yet also make comparisons along the developmental cycle. In an effort to extend external validity, what participants' "did, said, or designed," were examined in multiple settings. The processes of participation and dialogue within participation were examined in six different, developmental configurations and can be viewed as a replication of the focus of the study. Chapter 5, a description of the reflexive model based on what was found from Chapter 4, provided a set of generalizations on how the model was implemented, as well as conditions necessary for its use. The danger to this generalization is that "multiple cases will be analyzed at high levels of inference, aggregating out the local webs of causality and ending with a smoothed set of generalizations that may not apply to any single case" (Huberman & Miles, 1998, p. 194). The goal was to better understand the overall processes at work across the cases; in this case, teacher and student thinking, participation and dialogue, and teacher responsivity, represented within design decisions, class implementation, and model evaluation. I did not average, for example, course evaluation results, as one way to avoid misinterpretation and superficiality and to preserve case uniqueness.

Analytic validity. In traditional instances of qualitative data collection and analysis, the research "shifts between cycles of inductive data collection and analysis to deductive cycles of testing and verification" (Huberman & Miles, 1998, p. 198). In this study, sources of data were already in place prior to conceptualizing a conceptual study framework. However, in this study the details of the conceptual framework and the subsequent data analysis of the six cases cycled back and forth to realize more appropriate matches of methodology and method to existing data sources and research objectives. The analytic cycle for this study could be better described as one which moved between conceptual framework, case analysis, and being clear as to the purpose of the study. Although being clear as to the purpose of the study is preferable before constructing a methodology, such purposes are not always clear based on the complexity of processes to be studies, amount of data, and personal involvement over time.

Potential shortcomings in this research that are sources for bias include the large amount of data which may have led to missing important information or overweighting some findings due to focusing on a particular and large set of data. Personal involvement with the course also increases the possibility that my recorded observations in working logs highlighted particular incidents while ignoring others. On the other hand, the working log recorded observations or design decisions that would have been lost to our collective memories over the five years of involvement with the course. Personal involvement as a co-instructor also implied a danger in being selective and overconfident with some data. Another shortcoming was not checking descriptions with each case of students and additional peer review outside of the co-instructor.

To address these shortcomings, I used multiple data sources for triangulation to achieve an agreement of one data source with another. Multiple sources of data, such as working logs, email, and syllabi, also provided different strengths and complemented each other. Syllabi compactly recorded design decisions, while working logs and email documented our thinking that influenced these design decisions. The data sources were a mix of student-generated (i.e., conferences, ID projects, course and self-evaluations) and instructor-generated (working logs, email, syllabi) data. A significant amount of time and effort was spent in carefully assembling the data reduction notebooks, which included data displays of structured summaries and charts. The effort was made towards a goal of being able to track in the documents the reasoning behind descriptions and summary and the generalizations made about the model.

During the analysis of these data sources I looked for contrasts, comparisons, and exemplars and reported these during the data reduction so as not to filter out outliers and extreme instances. For example, in the ID project analysis I added a column to record any unique features of the project that might not be addressed by the completeness, consistency, and coherency criteria. Replication of the conceptual framework across multiple cases helped to provide evidence that what was described in one Case was based upon the details of the instructional approach and uniqueness of the setting and participants. I attempted to remain "descriptive" in the writing for Chapter 4 and to report what decisions were made for each iteration of the ID course, what occurred during the implementation of the reflexive approach, and systematically report the evaluation of the model in terms of student performance on ID projects, their perceptions of their learning and the course and data informing our responsivity to learner needs.

Another means of addressing verification of findings and conclusions was an "auditing" by the dissertation chair who was also co-instructor in the cases under study. Through periodic reviews of methodology and analysis, numerous inconsistencies in design decisions, for example, were identified and prompted for clarification. Feedback also prompted me to clarify procedures used to analyze the different data sources. This feedback, although one of the responsibilities of a doctoral chairperson, is another aspect of the reflexive stance that we had used on previous research: the need to assume regular, ongoing, and self-conscious documentation of our teaching. The working logs also served as a "reflexivity journal" (Carney, 1990) to record these efforts.

Subsequent Research

This research was classified as Type 1 research due to its qualitative nature and conclusions that were context-specific; the use of case studies, which Richey and Nelson (1996) cite as being the predominant form of research methodology employed in Type 1 research; and

that the process, a teaching approach, and the understanding of phenomena, such as co-participation, is the focus of study. Type 2 research, meanwhile, has an emphasis on the study of design, implementation, and evaluation processes, tools, and models. Its product is new design, implementation, and evaluation processes or models and conditions that facilitate their use. Conclusions for Type 2 research are generalized to uses other than a particular context and would involve implementing the reflexive model in situations in which a complex process was being taught.

Moving this research to Type 2 research would involve extending the descriptive nature of the reflexive model, particularly with other instructors in other settings. This research has been a descriptive study of the development of a teaching model for instructional design. The model is, itself a descriptive model, being perhaps the first step in further describing and explaining the phenomena of co-participation, dialogue, and reflexivity of instructors and students in an instructional design course. Subsequent inquiry may use the model for exploratory or even predictive purposes. Some teaching models are predictive models, based on a long history of research behind them, in which if implemented as suggested, particular student outcomes will result. In other words, with a predictive model a change will be specified. Exploratory models as a next step would allow for some systematic variation of the phenomena to be described and explained in a descriptive model (Lowe, 1987). These might include:

- Restructuring in-class individual and group tasks to improve participation and transfer of this group learning to individual's ID projects.
- Incorporating a "design thinking" goal, which considers the whole context as more informative than the sum of the analyzed parts.
- Supporting shifts in students' thinking from ID process understanding to their projects.
- Simplifying the course with fewer, more meaningful tasks.
- Trying out inductive approaches to learning activities in which students might immerse themselves into a case study. This would require a change in other activities to accommodate the additional time necessary for such approaches.
- Discussion with other instructors as to their ID instructional approaches.

One venue for discussion would be to begin a yearly discussion at annual meetings of Professors of Instructional Design and Technology (PIDT). Forming study groups, who would initially share their experiences might lead to collaborative explorations or pooling of research for further dissemination. Discussing multiple instructional approaches with others in the field would enable other teachers of instructional design to share their views of teaching and to learn from each other.