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# Teaching Patterns: A Pattern Language for Improving the Quality of Instruction in Higher Education Settings

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# TEACHING PATTERNS: A PATTERN LANGUAGE FOR IMPROVING THE QUALITY OF INSTRUCTION IN HIGHER EDUCATION SETTINGS

by

Daren Olson

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# ABSTRACT

Teaching Patterns: A Pattern Language for Improving the Quality of Instruction in Higher Education Settings

by

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One method for improving the appeal of instruction is found in Christopher Alexander's work on architectural design patterns. In this qualitative research study, student comments on teacher/course evaluation forms were analyzed to generate six instructional design patterns. The *teacher enthusiasm* pattern encourages teachers to show (a) increased scholarship and enthusiasm towards the subject matter, (b) genuine concern and enthusiasm towards the students, and (c) mastery of and enthusiasm towards the act of teaching. The *balanced curriculum* pattern recommends that teachers (a) determine the appropriate depth or breadth of subject matter and communicate it to the students, (b) create a balanced schedule of activities, assignments, and tests, and (c) provide a variety of subject matter topics, instructional strategies, and media delivery technologies. The *clear and appropriate assessments* pattern directs teachers to (a) communicate the learning objectives related to each assessment, (b) ensure assessment

methods are appropriate measures of the objectives, and (c) use fair criteria in grading and administering the assessments. The *authentic connections* pattern asks teachers to (a) help students understand the connections between the subject matter content and the world of work, (b) promote interpersonal connections between students through instruction and group work, as well as facilitate teacher-student connections by dealing with students honestly and fairly, and (c) encourage students to look at connections that go beyond workplace application and help students become better people. The *flow of time* pattern recommends that teachers (a) help students plan out their schedules for various time periods, and (b) synchronize the flow of instructional events with the flow of events occurring in the students' personal lives. Finally, the *negotiation and cooperation* pattern encourages teachers to apply the processes of negotiation and cooperation to solve problems related to (a) the students' lack of a sense of freedom, power, or control, (b) the conflict within the students or within the social order of the class, and (c) the general absence of a self-supporting, self-maintaining, and generating quality in the instruction. These six instructional design patterns may be used by teachers to increase the appeal of instruction in higher education settings.

(184 pages)

# DEDICATION

To my elementary school teachers: Jennie Quam, Della Williams, Helen Gunter,

Rebecca Green, Betty Jane Marley, Elaine Cobia, and Sharon Wall.

For teaching me with love and honesty.

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## The Problem

Daren is a good student. I have enjoyed him. I'm sure he will get along better with his friends when he learns to be not quite so domineering.

--Della Williams, First Grade Teacher
Note to my parents on my first report card

## The Solution

? Has respectful attitude toward authority.
? Works well with teacher.
S Practices correct sitting posture.
S Does careful thinking and pays attention.
S Works out his own problem.
S+ Shows creative ability.

--Helen Gunter, Second Grade Teacher
Ratings on parent-teacher conference report (S = Strong)

## The Goal

Daren puts forth a good deal of effort on all of his subjects. He is a good student. Daren is a great boy, and I've enjoyed him in my class. He has the ability to be a great leader.

--Sharon Wall, Sixth Grade Teacher
Note to my parents on my last report card

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And to Tom Banyas for teaching me to love music.
And to Dr. Larry Thompson for teaching me the true meaning of *Arete*.

# ACKNOWLEDGMENTS

Thanks, dad.

Daren Olson

# PREFACE

For a graduate student, the challenge in conducting dissertation-level research is to go beyond the subject matter learned in your course of study and generate new knowledge, preferably knowledge that distinguishes you as one of the world's top experts on your dissertation subject. While I think this dissertation does present new knowledge about one way to design instruction, I must admit that I do not consider myself to be a top expert on the subject of teaching. I have known many great teachers in my life and I have seen them touch their students' lives in ways that I never could. I am in awe of the profound depth of their knowledge and the extraordinary breadth of their talents, so much so that I do not think I could ever be qualified to join their ranks. Consequently, the voice you hear in the following text is not the authoritative voice of one who claims to be a top expert or great teacher. Rather, it is the voice of a practicing apprentice who has had the fortune and honor of studying what master teachers do. They are the true experts and I happily remain their student.

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# PROLOGUE

*An excerpt from "To the Lighthouse" by Virginia Woolf (1927)*

Where to begin?--that was the question at what point to make the first mark? One line placed on the canvas committed her to innumerable risks, to frequent and irrevocable decisions. All that in idea seemed simple became in practice immediately complex; as the waves shape themselves symmetrically from the cliff top, but to the swimmer among them are divided by steep gulfs, and foaming crests. Still the risk must be run; the mark made. (p. 235)

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Always (it was in her nature, or in her sex, she did not know which) before she exchanged the fluidity of life for the concentration of painting she had a few moments of nakedness when she seemed like an unborn soul, a soul reft of body, hesitating on some windy pinnacle and exposed without protection to all the blasts of doubt. Why then did she do it? (pp. 236-237)

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Can't paint, can't write, she murmured monotonously, anxiously considering what her plan of attack should be. For the mass loomed before her; it protruded; she felt it pressing on her eyeballs. Then, as if some juice necessary for the lubrication of her faculties were spontaneously squirted, she began precariously dipping among the blues and umbers, moving her brush hither and thither, but it was now heavier and went slower, as if it had fallen in with some rhythm which was dictated to her (she kept looking at the hedge, at the canvas) by what she saw, so that her hand quivered with life, this rhythm was strong enough to bear her along with it on its current. (pp. 237-238)

# CHAPTER I

## INTRODUCTION

The prologue contains a noteworthy passage from the novel “To the Lighthouse” by Virginia Woolf (1927). In this passage, one of the main characters, Lily Briscoe, works to transform her blank canvas into a finished painting of a garden hedge. Although it is a fictional description of a single act of painting, I believe this passage effectively captures many of the real emotions and intrapersonal conflicts that may occur when people attempt to design any type of artifact, event, or experience. In addition, the stream-of-consciousness style of writing exemplifies the way in which interrelated thoughts may flow within designers as they search for viable solutions to complex problems. As a teacher and as an instructional designer, I have read many academic articles and books on the nature of design and on the methods of designing instruction. I have also talked with many of my fellow students and professional colleagues about the underlying processes of design. However, none of these nonfiction accounts, nor the people I have spoken with, have been able to communicate the inner feelings that accompany the design of instruction as well as this passage by Virginia Woolf. Consequently, I believe it is worthwhile for teachers and designers to begin this study by contemplating the meaning this passage has for them and the truths that it communicates about the general nature of design.

I have chosen to include passages from “To the Lighthouse” in the prologue and the epilogue for several reasons. First, if you are a teacher or an instructional designer, I hope it will awaken in you some of the feelings that you have experienced in the design

of instruction. The method of instructional design that is addressed in this dissertation study relies heavily on the teacher's or designer's sensitivity to their own feelings. Therefore, it is important that you remind yourself of those feelings and recognize that they do exist and that they influence the way in which you design instruction.

Second, I hope these passages will help you recognize some of the complexities involved in the act of design. I believe that Lily Briscoe's struggle to achieve her artistic vision is, in many ways, the same struggle that teachers face in the design of instruction. Most teachers have a vision of what good instruction is—what it looks like, sounds like, feels like. However, in practice, the realization of that vision is an extremely difficult thing to attain. This is because the design of instruction involves numerous complex tasks requiring many interrelated decisions about subject-matter content, teaching strategies, message formulation, media delivery technologies, data management, and many other things (Gibbons, 2001). Moreover, the diversity of learners' life experiences, as well as their ever-changing nature as human beings, will complicate the task of instructional design by introducing the need for the instruction to be individualized and adaptable. After all, instruction that works with one learner may not necessarily work with another learner, and what works with one learner on Monday morning this week may not work with that same learner on Tuesday afternoon 6 months from now. Consequently, the difficulty of designing high-quality instruction cannot be overstated. As Dr. Andrew Gibbons, one of my graduate schoolteachers, once told me, "Designing instruction isn't rocket science. It's much, much harder."

Third, I hope these passages will inspire you to move forward with your design

activities, even in the face of seemingly insurmountable difficulties. With so many decisions to be made, I know it can be difficult for a teacher to know where to begin the instructional design process, much less to know where that process ends. This is not your fault.

Unfortunately, many faculty are not given any formal education or training in how to fulfill their roles as teachers. Still, they are given the primary responsibility for making decisions about the design of instruction as they work with students in classrooms, laboratories, or other learning environments. In most cases, their graduate school experience may have prepared them to be artists, writers, critics, or researchers, but it did not prepare them to be teachers. Furthermore, many colleges and universities can only offer limited assistance in helping faculty fulfill their roles as teachers. Even those faculty who would like to take full advantage of the services, training, and resources offered by their schools may find they are unable to do so because of the time constraints they face. Faculty must constantly juggle their schedules as they conduct new research, publish their findings, administer grants, advise students, attend committee meetings, read current literature in their field, supervise assistants, provide community service, and teach their courses. In the end, many higher education faculty have very little time in their work schedules for training workshops on how to design instruction. Consequently, like the painter in the prologue, these teachers may discover themselves standing alone in their offices, staring at the “glaring, hideously difficult white space” of an unfinished syllabus, facing “blasts of doubt” about where to begin the design of instruction, and wondering what the ultimate outcome will be. They know that even one

small decision can mean the difference between creating something that will be treasured by students for years to come and creating something that will be discarded in the trash bin before class is half over. Still, the risk must be run; the mark made.

## Preferability of Instructional Design Theories

Since there are so many decisions to be made, as well as limited time in which to make them, teachers may try to simplify the decision-making process by following guidelines found in one or more instructional design theories. These theories often contain a mix of general principles and specific prescriptions that may be used in the design of different kinds of instructional tools, artifacts, and activities. There are hundreds of instructional design theories that teachers may use to solve a wide variety of instructional problems. Unfortunately, many teachers are unaware of such theories, as the theories are often created to deal with instructional problems that are outside of their own subject matter areas or educational settings. However, even if most teachers were aware of the design principles and prescriptions available to them, there would still be a widespread need for further theoretical research on the design of instruction.

In regards to the state of current instructional design theory, Reigeluth (1999) has stated, “When you consider the full range of types of learning, it is clear that our current theories are not adequate. The new paradigm of instructional-design theory must address how to support learning in all its varieties and forms” (p. 21). Van Merrienboer, Seels, and Kirschner (2002) have also stated that there is a need for “a broader foundation of [instructional design]…to better accommodate a diverse, widely distributed set of

students that needs to learn and transfer complex skills to an increasingly varied set of real-world contexts and settings" (p. 62). Clearly, current theories do not sufficiently address all of the design decisions teachers have to make. There is still a need for further research on how to design better instruction. However, before such research can take place, it is first necessary to define the criteria by which we may know that the instruction is "better."

Reigeluth and Frick (1999) stated that when it comes to evaluating instructional design theories, the major concern is *preferability*. They defined preferability as "the extent to which a method is better than other known methods for attaining the desired outcome" (p. 634). In addition, they claimed that preferability depends upon at least three main evaluation criteria: effectiveness, efficiency, and appeal. *Effectiveness* is defined as the extent to which the instruction helps the learner achieve the desired learning goals. *Efficiency* is a ratio measure in which the amount of time, money, or other resources invested in the instruction is compared with the level of results obtained. *Appeal* is the level of enjoyment experienced by learners, teachers, and others involved in the instructional activities (p. 635).

Reigeluth and Frick (1999) stated that the way in which these three criteria are used to evaluate instructional design theories will depend upon the values of those who design the instruction, as well as the values of all other stakeholders involved in the design, development, and implementation of instruction (p. 634). In addition, they claimed that effectiveness, efficiency, and appeal will be "valued differently in different situations, because stakeholders' wants and needs are likely to differ" (p. 635). Thus, the

preferability of an instructional design theory is situational—the criterion used to measure the preferability of a design method in one situation may not be the same criterion used in another situation.

Regardless of how the criteria of effectiveness, efficiency, and appeal are valued by learners and other stakeholders, it is generally the case that appeal is the most difficult and most neglected criterion to be addressed in an instructional design theory. This neglect may be due to several common beliefs among theorists and practitioners.

First, there is the belief that appeal is difficult to define and measure. Many assume that the level of enjoyment experienced during instructional activities may be influenced by a wide range of personal tastes and cultural norms, making it difficult to generate standardized measures of enjoyment. Furthermore, the elusive nature of the concept of "enjoyment" also makes it seemingly difficult to find standardized, objective measurement tools to determine the level of appeal.

Second, there is a belief that what works to increase appeal for one population of learners may not work for learners in other cultures and learning environments. It is assumed that the level of enjoyment experienced during instruction may depend upon many dynamic factors, some of which may only be linked to specific communities of learners and teachers. Consequently, since many instructional design theorists want to create theories that have universal application, there is less motivation to study factors related to the appeal of instruction, especially in cases where the instruction may only involve a limited population of learners.

Third, many instructional designers and educators believe that too much focus on

the appeal of instruction may lead to decrements in its effectiveness and efficiency (Reigeluth, 1999, p. 10). Perhaps this belief may be due in part to the past history of widespread use of punishments or aversive reinforcements (Skinner, 1954) in public schools and other educational settings in which learners have been compelled to participate by law. In such settings where punishment was regularly applied, many teachers operated under the assumption that instruction does not have to feel good to the learner for it to be effective in changing student behavior. Furthermore, since punishments or aversive reinforcements often achieved quick results in changing students' immediate behavior, they were also believed to greatly enhance the efficiency of the instruction—never mind the fact these changes were short lived and that long-term use of punishment can lead to undesirable emotional responses, as well as learned helplessness (Driscoll, 1994, pp. 35-36). Such attitudes and beliefs about the use of punishment and aversive reinforcements have changed somewhat since Skinner (1954), Thorndike (1932), and other researchers have shown that punishment is not as effective in promoting desirable behavior as positive reinforcement. Nevertheless, even though attitudes about the role of punishment in instructional settings may have changed, many people still believe that instruction does not always have to feel good to be effective and efficient. As a result, appeal is often used as a tertiary evaluation criterion, one that is only considered after the effectiveness and efficiency of an instructional design theory have been established.

This tendency for researchers to promote the goals of effectiveness and efficiency in instructional design theory has been very beneficial to teachers and designers who

have selected effectiveness and efficiency as their main criteria for determining the preferability of one instructional design theory over another. They have had the luxury of selecting prescriptions from a wide range of theories to guide their design decisions. However, this has not been the case with teachers and designers who wish to make appeal the primary criterion of preferability. They have been much more limited in the range of instructional design theories available to them that emphasize appeal as a central design goal.

## General Methods of Instructional Design

In order to better understand the limitations facing teachers and designers who have made increased appeal their primary goal, it may be useful to consider the general design methods that have been commonly applied within different fields of design. It may be safely assumed that the decision of any single teacher or designer to use a specific instructional design theory will be heavily influenced by (a) the general design methods or specific theories that are well known within his or her own subject matter area, and (b) the methods or theories most commonly used within the greater community of professional designers. After all, if a theory or method is well known and widely applied, it is more much likely to be adopted by new professionals entering the field than a little-known theory or method that is not promoted within the professional community. However, if it is true that most of the instructional design theories available today do not emphasize appeal as a primary design consideration, then it may be advisable to explore some of the lesser-known design methods that may be employed by practicing educators

or professional instructional designers.

Gibbons and Rogers (2006) have identified nine general design methods used in various professional fields that may be adopted for use in the design of instruction. These general design methods include (a) reflective conversation with the problem (Schön, 1987), (b) progressive placement of or accumulation of constraints (Gross, Ervin, Anderson, & Fleisher, 1987; Stokes, 2006), (c) search within an interrelated group or system of means-ends relations (Simon, 1999), (d) application or assembly of design patterns (Alexander, 1979), (e) social process in which a shared vision is defined (Bucciarelli, 1994), (f) generation of engineering or technological knowledge (Gibbons, 2003; Vincenti, 1990), (g) prototyping and iteration of models (Schrage, 1999), (h) tinkering with the application of problem solving methods (Jones, 1992), and (i) application of process descriptions (Branson & Grow, 1987) or taxonomic category systems (Gagné, 1985). Out of all these possible general design methods, Gibbons and Rogers claimed that the dominant method of instructional design for the last forty years has been the application of processes and category systems. However, Gibbons and Rogers also stated that in recent years some theorists and designers have begun to explore the other alternative design methods.

## Alexander's Method of Design Through the Application of Patterns

Among the alternative design methods listed by Gibbons and Rogers, one stands out from all the others in its capability to support increased appeal as a central design goal. It is the method originated by Alexander (1979) in which design problems are

solved through the application or assembly of patterns. The other alternative design methods may address the importance of appeal in the design of artifacts, events, or experiences, but not to the same extent as Alexander's method. In fact, Alexander's entire method of design is based on the idea that the main purpose of applying patterns to a design is to help create something that embodies a highly desirable, emergent quality that is closely related to Reigeluth's definition of *appeal*.

Since Alexander's general design method has great potential to increase the appeal of instruction, and since the other design methods address appeal to a much lesser extent, I chose to focus this study mainly on Alexander's ideas about design patterns and how these ideas may be adopted and adapted by teachers and instructional designers to increase the appeal of instruction. In doing so, I did not reject the other eight general design methods as viable approaches to the design of instruction, nor did I assume that their use will result in less appealing instruction. Rather, I only assumed that since Alexander's method of design places appeal as the main design consideration, and since the constraints of time and other resources prohibits a complete review of all the other alternative design methods in this study, it was, therefore, prudent to focus this study on Alexander's method of design.

Alexander set forth his ideas about design patterns in the books "A Pattern Language: Towns, Buildings, Construction" (Alexander et al., 1977) and "The Timeless Way of Building" (Alexander, 1979). Although other texts have been written about the application of patterns and the development of pattern languages, Alexander's books have been widely recognized as one of the seminal works on this topic. In particular, the

book “The Timeless Way of Building” has been recognized as the most helpful in understanding Alexander’s underlying design method. Consequently, that text will be the main source cited throughout this study.

In “The Timeless Way of Building” (Alexander, 1979), Alexander described a process that architects may use to design buildings that embody a special quality that can be immediately and deeply felt by the people who live or work in the building. Because Alexander was unable to find a single word or phrase that could adequately define this quality, he referred to it as *the quality without a name*. He claimed that this quality is the “root criterion of life and that all humans experience the effects of this quality in “those moments and situations when we are most alive” (pp. ix-x). Although Alexander believed words cannot communicate the entire meaning of this quality, he understood that it was necessary to use language to communicate ideas, so he provided an approximate definition of *the quality without a name* by identifying various words that illuminate its different facets: *alive*, *whole*, *comfortable*, *free*, *exact*, *egoless*, *eternal*, *innocent*, and *real*. He also used several phrases that define key ideas about this quality: free from inner contradictions (p. 26); inner forces are resolved (p. 51); a self-supporting, self-maintaining, generating quality (pp. 53-54); a special balance between order and disorder (p. 521). While these words and phrases generally have highly positive connotations, this special quality is not completely devoid of negative meaning. Alexander stated that “it is a slightly bitter quality” and “it somehow reminds us of the passing of our life” (p. 40). However, Alexander believed that even this “bitter quality” would, in the end, make the building seem more full of life.

Alexander claimed the goal of the architect should be to design buildings that embody this quality, allowing those who live, work, and play in those buildings to invite *the quality without a name* into their own lives. To achieve this goal, he proposed that architects use a free-flowing intuitive design process based on following their innermost feelings, instead of a lock-step rational process founded on strict adherence to a particular design style or architectural theory.

For architects to engage in this design process, Alexander said that they first needed to identify interconnected patterns within the architectural elements of buildings and their environments, as well as patterns in the events that occurred within these buildings and environments. Alexander stated that by combining these patterns of elements and events, and by generating rules for making various combinations of patterns, architects may develop a "pattern language" that can be used to communicate solutions to various design problems. To that end, Alexander worked with others to identify over 250 patterns in the physical design of buildings that will help ensure that the finished buildings embody *the quality without a name*. These design patterns were defined in detail in the book *A Pattern Language: Towns, Buildings, Construction* (Alexander et al., 1977).

By adapting these design patterns and using them in combination to solve different types of design problems, Alexander claimed that it would be possible for people in any culture to greatly enhance the enjoyment they felt when working in and around the buildings they created. However, in order for this process to really work, Alexander emphasized that that the designer must begin with the central goal of creating

a building that helps people experience *the quality without a name*.

Many designers have found Alexander's ideas about the architecture of buildings to be useful in the design of other things, including computer software and web sites (Evitts, 2000; Graham, 2003). In the field of education, some researchers have used the format of Alexander's design patterns to communicate solutions to various educational problems. For example, researchers and educators involved in the Pedagogical Patterns Project (n.d.) have generated design patterns that can be applied to a wide range of teaching and learning problems. However, after an extensive review of these patterns, I found that only a few patterns that addressed problems related to the appeal of instruction. Rather, the main goal of almost all of these "pedagogical patterns" was to increase instructional effectiveness and efficiency.

Currently, there are few instructional design patterns that specifically address how to increase instructional appeal. By using Alexander's ideas about the design of buildings with *the quality without a name*, it may be possible to generate a pattern language that is focused on the design, development, and delivery of appealing instruction. The intent of this study is to identify and define an initial set of such patterns—which I refer to as "teaching patterns"—that may be used by teachers to improve the appeal of instruction in higher education settings.

# CHAPTER II

# INVESTIGATOR BACKGROUND AND HISTORICAL CONTEXT

## Investigator Educational Background and Relevant Work History

In qualitative research, it is important for the reader to understand the background and expertise of the researcher. This information increases the credibility of the research findings and helps the reader understand the unique perspective of the researcher. Therefore, this chapter will begin with a review of my educational background and relevant work history.

As a graduate student in the Department of Instructional Technology at Utah State University (USU), my program of study has included many courses in instructional design theory and qualitative research methods. Although all of the courses have influenced my perspective of the role of teachers and the nature of instructional design, one course in particular had special significance to my research on teaching patterns. In the fall semester of 2002, I participated in a 3-credit doctoral-level course taught by Dr. Andrew Gibbons that focused specifically on various methods of developing design languages. Alexander's method generating a pattern language was of special interest to both the instructor and members of this class. Certainly, Alexander's method was only one way to develop a design language. However, since his method was becoming more popular among computer programmers, it was obviously one of the most important methods for developing a design language that we could study. It was during this course that I developed an interest in adapting Alexander's ideas to the design of instruction.

As a doctoral student, I have been invited to teach several graduate-level courses in instructional design theory and technological research methods. I have also worked with the School of Graduate Studies for several years as the instructor for a one-credit online course that helps to prepare graduate teaching assistants at USU for their teaching duties. Previous to my studies at USU, I worked as a graduate assistant at Idaho State University (ISU) while I earned a masters degree in education, with an emphasis in educational technology. During that time, I trained teachers throughout southeast Idaho how to integrate educational technologies into elementary and secondary classroom instruction. I have also earned a bachelor's degree in education at ISU. After earning that degree, I worked for six years as a secondary school teacher in Pocatello, Idaho, where I taught language arts and literature classes in Grades 7 through 12. Overall, I believe my education and teaching experience has given me insight into the kinds of design decisions that instructors in public schools and universities face.

During my graduate studies, I have been employed in a variety of campus organizations as an instructional designer at USU. The general responsibilities of those positions included faculty consultation and training, as well as the design and development of courses and instructional resources. Besides my work at USU, I have been employed as an instructional designer with the Utah Department of Public Safety. My responsibilities in that position included the design and development of online courses related to professional instructor competencies and homeland security. As part of my work, I authored the text for an instructor training course that was based on the 18 instructor competencies defined by the International Board of Standards for Training,

Performance, and Instruction (IBSTPI). This instructor training course was designed to be included in a new college-level program of study for people who would be training first-responders throughout the state of Utah. I believe my experiences as an instructional designer at USU and in the Utah Department of Public Safety have helped me to better understand the many administrative and faculty concerns that accompany the design and development of courses in college-level programs of study.

In relation to my research on teaching patterns, the professional work role that has given me the most insight into USU faculty is undoubtedly the position I accepted in June of 2001 as an instructional designer and consultant in the USU Office of Instructional Support. The overall mission of the Office of Instructional Support was to simply improve the quality of instruction throughout all of the courses on campus. This was not an easy mission to accomplish, as at the time that office served over 750 full- and part-time USU faculty members that taught over 2,000 undergraduate and graduate level courses. The responsibilities of my position in that office included faculty consultation and training in the design and development of courses and instructional resources.

In my consulting work, I found that one of the most useful sources of information about the quality of instruction at USU was the “Teacher/Course Evaluation” forms (See Appendix A). These forms were completed by students in every course they took at the end of every semester. On the front of these forms, students used a 6-point scale to evaluate a variety of aspects related to (a) the overall quality of the course and (b) the instructor’s effectiveness in teaching the course. In addition, on the back of these forms, students could write comments that addressed aspects of the teaching or course content

they thought were especially good, as well as the changes they thought should be made to improve the teaching or course content.

As a consultant, I found that faculty used the comments on the back of these forms as a key source of ideas for improving their courses. Almost all USU faculty paid close attention to these comments, and most faculty made at least minor changes to their courses in response to problems mentioned in the comments. I quickly realized that if I wanted to be of assistance to the faculty, I would need to gain a better understanding of what was being said in these comments and learn how to better apply students' suggestions to improve the quality of instruction. Consequently, these evaluation comments became the main focus of my research efforts in the Office of Instructional Support. In order to better understand why these comments were so important to USU faculty, a brief overview of the evaluation's historical context will now be provided.

## Historical Context of Teacher/Course Evaluations

In the United States of America, research on student evaluation of college teaching can be traced back to the early 1900s. Much of the research conducted since then has been focused on the use of rating scales and questionnaires to evaluate teaching. Although the first published rating scale was introduced in 1915 (Spencer & Flyr, 1992), it was during the 1920s that student ratings became more widespread among major universities (Marsh, 1987; Watchel, 1998). The work of Remmers (1927) to develop a rating scale for instructors at Purdue University marks the beginning of a long line of research on the use of such rating scales that continues to the present day (Algozine et al.,

2004; McKeachie, 1990). One main reason why research on student ratings has enjoyed such a long life is that the purposes of the ratings, as well as the forms of faculty evaluation, have shifted throughout the decades. As these purposes have changed, so have the questions used and the meaning of the ratings to the various stakeholders in higher education.

In the 1920s through the 1950s, researchers used student ratings to study the effects of single variables, such as class size, on teaching effectiveness (McKeachie, 1990). Researchers also studied the effects of various teaching methods, such as lecture and discussion, on student performance (McKeachie). As scientific knowledge of human psychology and the practice of psychometric testing evolved during these decades, more sophisticated analyses were applied in research on student ratings (Algozzine et al., 2004; McKeachie).

In the 1960s, students demanded greater public accountability of higher education faculty. This led to changes in the content of the rating questions, as well as the way the ratings results were published so that students could use the information for the purposes of course selection (Ory, 1991, 2000). By the end of the decade, the purpose of ratings had changed dramatically in response to student protests at colleges throughout the country. On many campuses, students directed the development of ratings forms, the collection of ratings data, and the publication of the results. Students asked for these ratings to be a required part of every course, and they asked administrators to consider the ratings in decisions regarding teaching assignments, tenure, and promotion (Ory, 1991). Clearly, students looked at the ratings as a tool to increase their political power and

influence in higher education institutions. As a consequence of this increased scrutiny of faculty, a greater research emphasis was placed on using the student ratings to discover more about the individual characteristics of the teacher, such as their expressiveness or sensitivity towards students (McKeachie, 1990).

Due in part to the increased need of faculty to gather information related to their level of accountability towards students, researchers in the 1970s became more focused on discovering ways to help faculty develop as teachers and improve the effectiveness of their instruction (Ory, 1991, 2000). Researchers extended earlier work on the validity and reliability of student evaluations by looking at various ways ratings could be used for both formative and summative evaluations of teaching (Algozzine et al., 2004). More complex interactions between teachers, students, and the classroom environment were investigated, including the effects of various technologies (McKeachie, 1990). Researchers also sought to understand how different variables might influence the ratings, such as the effect that higher grades might have on student ratings (Greenwald, 1997). Because students had become involved in creating the evaluations, and because these evaluations played a part in tenure and promotion decisions, many faculty questioned and studied the reliability and validity of the evaluations. In summarizing this trend in student evaluation research in the 1970s, Ory (1991) stated:

> A proliferation of research articles was published addressing questions about the reliability and validity of ratings, the proper way to construct rating items and forms, essential item content, and appropriate procedures for administering rating forms. Factor analytic studies of rating results that identified dimensions of teaching ability flourished…. Somewhat absent in the flurry of ‘70s research, however, was attention to factors contributing to the usefulness or utilization of rating results. (p. 32)

It would not take long, however, for utilization to emerge as a main research topic.

During the 1980s and into the 1990s, changes in the way higher education was funded brought about budgetary constraints that forced many administrators to try to reduce the number of faculty while, at the same time, increase the number of students paying tuition. Administrators used student ratings as objective evidence to support their employment decisions, which in turn prompted legal actions from faculty that used student ratings as objective evidence that they were doing their jobs. This prompted requests from various stakeholders in the legislative and judicial branches of government for researchers to investigate the ways in which the ratings were being utilized, with special attention being paid to ethical and legal uses of student ratings and other forms of teacher evaluations (Ory, 1991, 2000). In the end, these developments within the legal system led to a more standardized approach to teaching evaluation, as well as more diffusion of decision-making power among faculty and administrators (Ory, 2000).

During these two decades, the usefulness of the student ratings in improving teaching was also addressed in a number of meta-analyses that synthesized the major findings of the research (Algozzine et al., 2004; Wachtel, 1998). Although many of the conclusions from these meta-analyses were not conclusively proven through empirical research, a general consensus among researchers and faculty emerged regarding a number of variables that correlate with high student ratings of teacher effectiveness, including (a) faculty rank, (b) expressiveness of the teacher, (c) student motivation level, (d) expected grades, (e) level of the course, (f) academic field, (g) workload difficulty, (h) anonymity of the ratings, (i) presence of the instructor during the ratings, and (j) the purpose of the

ratings (Cashin, 1995). Most faculty and administrators also agreed that, even though they had concerns about controversial issues related to the student ratings, the ratings did help teachers increase the quality of instruction (Berk, 2005; Sojka, Gupta, & Deeter-Schmelz, 2002). In addition, there was widespread agreement among faculty that student ratings should not be the only measure used in either formative or summative evaluations of teaching performance. In some institutions, faculty evaluations were also informed by other sources of evidence, including peer ratings, self-evaluation, videos, student interviews, alumni ratings, employer ratings, administrator ratings, reaching scholarship, teaching awards, learning outcome measures, and teaching portfolios (Berk). But regardless of the usefulness of these other options for evaluating faculty performance, student ratings remained the dominant source of information about teaching effectiveness, and they became viewed by many researchers and faculty as a reliable and valid a source of data (Algozinne et al.; Berk; Cashin; Greenwald, 1997; Kulik, 2001; Wachtel).

By the end of the 20th century, two general purposes for student ratings had emerged among the majority of colleges and universities in the United States: (a) to influence institutional decisions regarding faculty course assignments, tenure, and promotion, and (b) to give teachers feedback they can use to improve their teaching (Kulik, 2001). The use of teacher/course evaluations at USU mirrors these two general purposes. Tenure and review committees use information from student ratings forms to make decisions about granting tenure to individual faculty or promoting them in faculty ranks. Since these evaluations bear weight in decisions regarding the tenure and review of

faculty, this evaluation process is set forth in writing in various institutional policy statements and in the USU Faculty Code.

Other institutional uses of these evaluations have developed over time to meet the information needs of various stakeholders in their efforts to improve instruction at the USU. Every semester, the ratings on the front of these forms are analyzed by the Office of Analysis, Assessment, and Accreditation. This office creates simple reports about these ratings for stakeholders at the instructor, department, college, and university levels. Administrators at the university, college, and department levels may use this statistical information to help them gauge the overall quality of instruction at the university, make strategic plans to improve instruction, and allocate university resources needed to carry out those plans. College deans and department heads also use the information to spot potential problems in their academic programs. Faculty members who teach the courses are encouraged to analyze the ratings to determine what they need to change to improve the quality of their instruction. Students also have access to some information about the teacher/course ratings, either through online publications of the results or paper copies available at the USU Registrar's Office. Students may use this information to choose the courses they want to take and the teachers they want to learn from during their program of study.

It is clear from the research on student ratings that the purposes of the student ratings at USU are similar to the purposes of student ratings reported at other American universities. In addition, the research suggests that the way various stakeholders use the information at USU are similar to the ways student ratings information is used at the

majority of American higher education institutions. Consequently, the generalizability of this study is somewhat enhanced because the findings of this research study may be used to help faculty at other American colleges and universities meet the shared general purpose of giving teachers the feedback they need to increase the quality of their instruction.

## Students' Handwritten Comments on Teacher/Course Evaluations

Most student ratings forms consist of a series of closed-ended questions about course content and teaching effectiveness, supplemented by a few open-ended questions that solicit student written comments about the subject-matter content and the instructor (Algozzine et al., 2004). There is a considerable body of research on the use of closed-ended questions used in these ratings. In fact, it is estimated that there are over 2,000 published articles that have been cited in the research on the subject of student ratings (Berk, 2005). In all, more than 2,500 books, articles, papers, studies, and other scholarly works have addressed the general topic of faculty evaluation (Theall, 1999). The vast majority of this research and scholarly work has been almost exclusively focused on data gathered from closed-ended questions. Very little research has been conducted on students' written comments.

Braskamp, Ory, and Pieper (1981) found that even though there had been considerable research done on student ratings up through the 1970s, there had not been any research studies that focused on the written comments that accompanied those rating forms. Consequently, they conducted a study of student written comments from 60

randomly selected courses at the University of Illinois at Urbana-Champaign. These written comments had been collected during the fall 1978 semester from the Instructor and Course Evaluation System (ICES) student rating questionnaires that were administered as part of the university's regular course evaluation process. The researchers developed a classification scheme for these comments that consisted of 22 categories that were related to the instructor, the course, and the grading system. They then rated the comments according to how positive or negative they were. They compared the frequency and percentages of positive and negative comments in these three areas with the ratings the students gave the instructor, course, and grading system. This allowed the researchers to see that those students who gave the highest ratings on the closed-ended questions also gave the most positive written comments. Likewise, students who gave the lowest ratings wrote the most negative comments. This was, of course, the expected outcome. The researchers also found that most comments about the instructor were related to the communication skills, subject-matter knowledge, and personal characteristics. The most comments about the course dealt with the subject-matter content, learning materials, and course requirements. Comments about the grading system mainly addressed grading procedures and exams. No specific recommendations as to how to improve instruction were presented in this research. However, the researchers did say that, in regards to the improvement of teaching, the written comments provided more specific diagnostic information than the class ratings. Nevertheless, they concluded that if an indication of the overall instructor competence is the only information that is desired from the course evaluations, then the student rating scales are more cost efficient

than an analysis of student written comments.

Since the time that Braskamp and colleagues (1981) wrote that article, there have been only a few published research studies that have dealt entirely with student written comments. Most of these studies have involved basic content analysis procedures in which the comments are analyzed by one or more researchers and placed into one or more categories for the purpose of conducting frequency counts to see which types of comments are made the most often. Sometimes the categories are predetermined and based on a particular theory of learning or instruction. Other times the categories are created as researchers see patterns in the responses. The results of these types of studies are lists of categories or variables that influence teaching effectiveness.

An example of this type of research can be seen in a study that Friedman-Erikson and Waller (1995) conducted. They carried out a content analysis of students' written comments that were solicited as part of the end-of-course evaluations administered in four psychology classes at the University of Houston. The stated purposes of this study were to (a) determine the course components that students thought were most or least important to their learning and motivation and (b) give the instructor some ideas for making improvements. Students responded to the following questions.

1. What were the major strengths of this course?
2. What were the major weaknesses of this course?
3. Which portion of this course did you benefit from the most?
4. Which portion of this course did you benefit from the least?
5. What changes would you recommend for this course?

The researchers used content analysis procedures to develop a list of 17 categories: instructor, lecture, discussion, activities, videos, textbook, objectives, testing, written assignment, subject matter, specific topics, organization/planning, management/ interaction, applications/personal, other, nothing/none, and no response. The researchers read the responses to questions 1-4, assigned each comment to one of the 17 categories, counted the number of comments in each category, and used simple percentages to determine the rankings of the categories for the first four questions. Major strengths included the subject matter, the instructor, and the use of discussion as a teaching method. Major weaknesses included organization/planning, the textbook, and the use of lecture as a teaching method. Students said they benefited the most from the subject matter, the use of specific topics, and personal applications of the course. However, students also said they benefited the least from the use of specific topics, so there were clearly some students who benefited and some who did not from that aspect of the course. Because the sample was so small, the researchers admitted there were problems with the generalizability of the findings. However, the researchers claimed that one major benefit of developing this list of 17 categories was that it might be used in the future to develop better student rating scales at the school.

This type of content analysis study has dominated the research of student written comments for a reason. Newby, Sherman, and Coffman (1991) observed that there were few studies of open-ended questions on course evaluations because there was “no effective procedure for comparison” (p. 2). They claimed that while open-ended questions could provide more specific information about instructional improvement, it

was necessary to classify the responses to these questions and quantify the responses in some way so that they could be used to compare responses as they are related to instructor gender, class size, and schools (colleges) within the university. To make such comparisons, the researchers classified the written responses of 147 Small Group Instructional Diagnoses sessions that were conducted at Purdue University at Lafayette between April 1989 and May 1990. During these sessions, small groups of students were asked to respond to three questions:

1. What do you like about this course?
2. What do you think needs improvement in this course?
3. What specific suggestions do you have for changing this course?

Groups had 6 minutes to reach consensus regarding their responses to these questions. The responses were then written and everyone had to indicate their agreement to the responses. The researchers analyzed all the comments from these sessions and assigned 2,422 comments to seven categories: instructor, learner interaction, media, content, printed material, grading, and course policy. They then conducted a frequency count and determined percentages of comments in each category for each question. The main findings of this study were that most comments focus on instructor characteristics (31.96%) and things students liked about being actively involved in the learning process (20.73%), followed by comments regarding grading (12.10%), course content (11.27%), and course policy (11.19%). In comparing differences based on instructor gender, researchers found that male teachers received slightly more comments about learner interaction than female teachers. In addition, female teachers received slightly more

comments about grading than male teachers. As was expected, comments regarding learner interaction were fewer in large classes than in smaller classes, and comments regarding the use of media and grading increased with class size. The researchers made no general conclusion regarding patterns in the data that indicated which schools received the most comments in each category. The researchers concluded that the results of the study showed the usefulness of classifying responses to open-ended questions and using quantifiable information about those responses to identify the elements of teaching that could be improved. They recommended that this information could also be used in future research that would look for correlations between the written comments and the student ratings on the end-of-course evaluation forms.

This idea that written comments can be used to improve or interpret ratings is also found in studies that have included analysis of both open-ended questions and closed-ended questions on student ratings forms (e.g., Litke, 1995). In many of these studies, the reason researchers analyze the open-ended questions is so that they can better understand the student responses to the closed-ended questions. Cashin (1990) suggested that one of the main benefits of collecting qualitative written comments and analyzing them using content analysis methods is that they may help instructors better understand the quantitative ratings on scaled questions. Caudill (2002) also suggested that content analysis should be followed by a "Pareto Distribution" analysis that helps to identify the variables that are causing the most problems with the instruction. This process basically involves assigning comments to two main categories of (a) negative comments and (b) positive comments. These comments are then assigned to subcategories. By counting the

number of comments in the subcategories it is possible to calculate the percentage of comments that are mentioned the most often by the most people. Using a Pareto Distribution to identify the most common problems, teachers may focus their attention on those few vital areas that will bring about the most improvement in instruction.

Even though these researchers have found some use for written comments in understanding student ratings, most researchers have largely ignored student handwritten comments over the past 80 years. There are several reasons why this type of research has not received much attention. First, research using quantitative ratings data is much easier to carry out than research using the types of qualitative data found in written comments. The work involved in analyzing student comments using qualitative research methods is very time consuming, even with a very small sample of comments (Richardson, 2005). Furthermore, in the past there has been a general preference among researchers to use quantitative methods over qualitative methods (Harper & Museus, 2007).

A second reason for the lack of studies on written comments is that there have been a few research studies that have suggested that the information about teaching effectiveness gained from student ratings is highly correlated with the information gained from student written comments (Braskamp et al., 1981; Kulik, 2001; Ory, Braskamp, & Pieper, 1980). If researchers believe that there will not be much difference between what they can learn from the ratings and the comments, then they will most likely focus their research efforts on the ratings, as that data is easier and more cost effective to analyze.

A third reason why researchers have not studied written comments is that the legal requirements to protect student and faculty confidentiality, as well as institutional

policy constraints, make it much more difficult to gather, analyze, and publish research studies that use written comments. Most rating forms are designed to ensure anonymity and are administered under the condition that student anonymity will be assured by those administering the evaluations and those using the data (Algozzine et al., 2004). When students complete rating forms by checking a box, filling in the ovals on a "bubble sheet," or circling a number on a scale, there is little chance that their identify will be revealed. However, when students write information by hand, they may include information that faculty might be able to use to identify the student that is writing the comment. Even something as simple as certain words or phrases, spelling errors, and even handwriting can be used to identify students. Therefore, many universities have policies that permit faculty, administrators, and certain university personnel to view the written comments only after final grades have been posted. These kinds of policies encourage participation in course evaluations because they help reduce students' fears that the written comments might be used to identify individual students or influence the grades they receive. Because such confidentiality protects students from harmful or negative effects of their participation in the teacher/course evaluation process, it is important that researchers respect student confidentiality by keeping written comments as anonymous as possible. This requires researchers to strictly adhere to certain constraints on how the information is gathered, stored, and shared with various stakeholders. This in turn makes research data gathered from written comments somewhat more difficult for researchers to deal with than data from bubble sheets.

With these deterrents to research on student written comments in mind, it is not

surprising to find that in the past analysis of the USU teacher/course evaluations has mostly focused on the ratings found on the front of these forms. At USU, the Office of Analysis, Assessment, and Accreditation is required to conduct detailed statistical analyses of the ratings every semester and make various reports of that data available to the different stakeholders mentioned above. However, the Office of Analysis, Assessment, and Accreditation is not required to collect or report any information about the written comments on the backs of the forms. In fact, the university does not require any administrative office to analyze the students' handwritten comments. Instead, the forms are returned to the departments, where the student comments may be reviewed by the department heads, if they choose to do so. The original forms are then eventually returned to the individual faculty members that taught the courses, but only after the semester is over and the final grades are posted. Faculty are sometimes encouraged to include samples of handwritten comments in the materials they submit to their promotion and tenure committees. However, they are not required to do anything with the comments. Also, although students can see the overall ratings of an instructor for a particular class, students do not have access to any records containing the handwritten comments on the backs of the evaluation forms.

During my consultations with faculty, we frequently reviewed the ratings on the front of the evaluation forms and tried to understand how to use this information to improve the quality of instruction in their courses. However, for many faculty the most interesting and useful information was not found in the ratings on the front of the evaluation forms. Rather, the students' handwritten comments on the back were seen as

the most helpful source of information on how to improve the quality of instruction. Faculty often shared these student comments with me in an attempt to identify problems and find possible solutions.

The rules for administering these evaluations only allowed faculty to view student comments for their own courses. However, many faculty expressed a desire to see the evaluations of other professors in order to get additional ideas for instructional improvements. After hearing many requests for this type of campus-wide information about students' comments, I began to look for some way that the Office of Instructional Support could help faculty benefit from the handwritten comments from other classes taught throughout the university. I knew that the first step would be to capture some of this data so it could be analyzed. Therefore, after gaining permission from the Office of Analysis, Assessment, and Accreditation, I took all of the handwritten comments for the Spring 2002 semester, made photocopies of the backs of the forms, and stored them in a secure place for later study and analysis.

## Determining the Orientation of Qualitative Inquiry

During the summer of 2002, I read through a sample of the students' comments to determine what some of the possibilities might be for conducting research on them. I understood that there were several quantitative research methods I could use to generate descriptive data about the comments. However, I believed that qualitative research methods would allow me to explore the data in ways that would lead to a much richer understanding of the student's comments. Previously in my graduate studies, I had taken

several courses on qualitative research methods, so I was aware of the various approaches to naturalistic inquiry and inductive analysis that I could employ. Since I had direct personal contact with faculty and students, I felt that I would be able to use these qualitative methods to gain greater insight into how these comments could be interpreted and used by faculty. In effect, my position as an instructional designer allowed me to engage in a type of fieldwork that would allow me to have close personal contact with those who would be most affected by my research and gain key insights that might otherwise be lost to me (Patton, 1990, pp. 46-48).

Because of what I learned in these courses about the nature of qualitative research, I realized that my analysis would reflect my own subjective perspective of those comments that I had developed as a student, instructor, and instructional designer at USU. More importantly, I understood that my analysis would be heavily influenced by the underlying theoretical perspectives I employed as an interpretive framework for analyzing the students' comments. Such is often the case in "orientational qualitative inquiry" (Patton, 1990), because the "inquiry begins with an explicit theoretical or ideological perspective that determines what variables and concepts are the most important and how the findings will be interpreted" (p. 86). Therefore, I began to examine a number of perspectives and theories regarding textual analysis and the nature of instructional design.

During my years as an undergraduate student and as a language arts teacher, I had used a wide range of literary interpretive frameworks, including moral/philosophical, historical/biographical, formalistic, psychological, mythological/archetypal, and

sociological approaches to textual analysis (Guerin et al., 1986). Of these general approaches to interpreting literature, the formalistic techniques seemed to be the most useful in meeting my research goals. Regarding such techniques, Guerin and colleagues stated,

> Formalists begin with a careful, close reading of the text. The reader pays close attention to the language, to the meanings of individual words, as well as to such things as imagery, connotation, and tone. After individual words, formalists concern themselves with structures and patterns: the interrelationships of words, the overall form of the work. Thus formalism is sensitive to any repetition of words, images, or structural patterns in the theme, plot, or setting. (p. 8)

As an undergraduate student, I had employed these formalistic techniques to interpret various pieces of literature. As a teacher, I had shared these techniques with my students to help them gain a greater understanding of poetry, short stories, and novels. As a qualitative researcher, I had been exposed to similar methods of formalistic "content analysis" that were used to explore the possible meanings of information-rich documents gathered during field research (Patton, 1990, pp. 381-384). Such methods of qualitative content analysis may be used to generate a "subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns (Hsieh & Shannon, 2005, p. 1,278). Fraenkel and Wallen (1996) outlined a number of specific steps that may be included in content analysis research. These general steps of content analysis will be defined in Chapter III of this study—the review of literature. Specific details of the content analysis in this study may be found in Chapter IV—the methods section.

Since I was familiar with formalistic techniques for examining possible meanings of a text, and since I was primarily interested in studying written comments, I decided a

basic content analysis would be the most useful research method for to me to use to gain an initial understanding of the data. However, I had not yet chosen a specific instructional design method or theory that would serve as an interpretive framework. Therefore, I needed to find a design method that I could use to inform my analysis of the written text.

In the fall 2002 semester, I participated in a graduate-level course in the USU Department of Instructional Technology in which the students explored the development and use of design languages in instructional technology. It was during this course that I was introduced to Christopher Alexander's ideas about the use of pattern languages as a way to communicate architectural design ideas. After reading Alexander's book *The Timeless Way of Building* (1979) and discussing his method of design with my instructor and fellow students, I determined that it would be possible to use Alexander's ideas and methods as an interpretive framework for the study of the USU teacher/course evaluations.

My preference for using Alexander's method of design was due to several reasons. First, I could see a great need for selecting a design method that was focused on improving the appeal of instruction. As previously stated, the vast majority of instructional design methods and theories that I had been exposed to during my graduate studies had focused on issues related to instructional effectiveness and efficiency. But in my work with USU faculty, I did not deal with issues of effectiveness and efficiency as often as issues related to instructional appeal. In fact, many faculty had a history of producing students who did very well in the remaining courses in their degree program and went on to succeed in the workplace after graduation. These faculty felt like they

were doing their jobs because the instruction was effective. However, many of these same faculty expressed frustration that the students gave them low evaluation scores for having unappealing instruction. Alexander's method of design, with its emphasis on helping users to experience *the quality without a name*, seemed to have the potential to help these faculty members greatly improve instructional appeal.

My second reason for selecting Alexander's method of design was that about midway through the course it became apparent to me that Alexander's method could be easily understood and adopted for use by university faculty. I saw that I would be able to introduce individual design patterns within the limited time they had available for consultation. This is an important advantage that Alexander's method has over some of the other general design methods.

In the past, I had tried to help faculty use a variety of general design methods and specific instructional design theories to improve the quality of their instruction. In most cases, I found the design prescriptions in these methods and theories required extensive study on the part of the faculty members before they would be able to successfully apply the methods and theories to their courses. For example, I had tried to help some faculty incorporate van Merrienboer's four-component instructional design model to teach complex cognitive skills (Van Merrienboer, 1997; Van Merrienboer, Clark, & de Croock, 2002). However, I discovered that it would take weeks or even months of study on the part of faculty before they would be able to understand and carry out all of the prescriptions in the model. In addition, I had tried to help faculty implement the prescriptions of various other instructional design theories, including cognitive

apprenticeship (Collins, Brown, & Newman, 1989), problem-based learning (Barrows, 1998, 2000), instructional transaction theory (Merrill, 1999), and model-centered instruction (Gibbons, 2001). In every case, faculty members had to study the theories extensively before they were able to successfully apply the design prescriptions to their own instruction.

What I needed was a method of instructional design that would let me introduce simple design prescriptions incrementally, hopefully in such a way that faculty could quickly understand and apply the prescriptions within the hour or so I had to consult with them. With Alexander's design method, I would be able to gradually introduce additional related prescriptions as time allowed and as circumstances demanded. Alexander's method not only had the potential to provide easy-to-use, incrementally applied design prescriptions, but it was also very likely to result in increased instructional appeal. Therefore, I chose to use it as my interpretive framework for an exploratory content analysis of the students' handwritten comments.

## Exploratory and Extended Studies of Handwritten Comments

My first step in conducting the first exploratory study was to identify and define one pattern that would be useful to teachers. Alexander (1979) defined a pattern as an "instruction" that outlines (a) a problem existing in a particular context, (b) the conflicting forces involved, and (c) one or more configurations of the forces that resolves the problem (pp. 253, 282). Alexander used the word "force" to refer to a variety of things that are associated with a particular problem situation, including entities (e.g.,

person, family, air, walls, house), relationships between entities (e.g., ability for walls to provide privacy, placement of windows within a room), and sources/forms of energy (e.g., sunlight, gravity, heat). Alexander claimed that there were many different types of forces, including psychic/psychological, economic, physical/structural, social, political, ecological, and cultural forces (pp. 248-249). A pattern was simply a solution to a problem that describes how to alter the effects of these forces to eliminate, control, or change the initial problem situation.

Although Alexander's ideas about patterns and forces were initially used to address design problems within the domain of architectural design, their usefulness may be extended into other design-related domains, including the domain of instructional design (Gibbons & Rogers, 2006). Instructional design patterns can be derived by identifying instructional problems that occur due to conflicts among forces that interact during an instructional event. Instructional forces may refer to a variety of entities, such as learner, teacher, subject-matter content, individual instructional messages, message delivery media, and the elements found in the instructional environment. Instructional forces may also refer to relationships between various entities involved in an instructional event, such as the ability of a specific medium (a written textbook) to deliver a particular type of message (step-by-step instructions) regarding unique subject-matter content (cooking French toast) within the context of one or more learning environments (a home kitchen or a middle school home economics classroom). In addition, forces may refer to particular sources or forms of energy. At a microbiological level, the forms of chemical and electric energy used within the human body and brain would qualify as an

instructional “force.” Also, instructional forces may consist of various forms of energy that are used to transform and communicate an instructional message, such as the energy found in the sound waves produced when a teacher gives verbal directions. For the purposes of this study, an examination of the biochemistry or physics involved in instruction was deemed to be not as useful as a study of higher-level entities and forces that students themselves identify as important factors in their overall experience of a course. Consequently, this study did not include an exhaustive examination of all forces, but rather only those that could be identified from an analysis of the students’ written comments.

Keeping Alexander’s methods for identifying and writing patterns in mind, I read through students’ comments to identify common problems that occurred in many USU courses. I immediately noticed that there were several interrelated problems involving a lack of teacher enthusiasm towards the subject matter, the students, and their work as a teacher. Further analysis of the comments led to the development of a single teaching pattern that solved these types of problems—the *teacher enthusiasm* pattern.

At this point in this narrative, it is necessary to explain that whenever pattern names are used in this text they will be formatted in small caps. The names will be printed entirely in capital letters, with the first letter of each word being larger, and the remaining letters being smaller (e.g., *teacher enthusiasm*). This mode of representing pattern names is a convention introduced by Alexander and colleagues (1977) and Alexander (1979). This convention, as well as other conventions involving the capitalization of words in pattern names (e.g., Evitts, 2000), have been used by other

authors who have written about different kinds of design patterns or pattern languages. The purpose in formatting the pattern names in this way is to signal readers that the author is specifically referring to a pattern, rather than using the words as a descriptive phrase.

The general idea of the *teacher enthusiasm* pattern is that students enjoy being taught by teachers who show enthusiasm towards (a) the subject matter content, (b) the students, and (c) the act of teaching. This teaching pattern may be used to address a variety of instructional problems involving decreased motivation and interest levels for both students and teachers. The pattern can be applied generally to an entire course, or it can be applied specifically to the design of individual instructional events and learning resources used within a course.

The successful generation of this first pattern showed that Alexander's theory of architectural design patterns and pattern languages could definitely be used as an interpretive framework for conducting qualitative research on students' comments. My success in identifying the *teacher enthusiasm* pattern in Fall Semester of 2002 prompted me to continue my research into 2003 and 2004. This research led to the generation of two additional design patterns: (a) *balanced curriculum* and (b) *clear and appropriate assessments.* (These two patterns, along with the *teacher enthusiasm* pattern, will be defined in detail in Chapter IV.) As I authored these two additional patterns, I discovered that all the patterns seemed to be interrelated in many ways. I found that while the individual teaching patterns were useful on their own, more powerful instruction could be developed when the three patterns were used in combination. The results of this study

indicated that further research was warranted to develop additional teaching patterns and to define the interrelations among those patterns.

Although true experimental research on the use of these three patterns was not conducted, in my work as a faculty consultant, I found opportunities to share these teaching patterns with faculty and worked with them to implement these patterns into their courses. I discovered that I was able to quickly describe the individual patterns to faculty. In addition, the faculty readily understood them well enough to immediately apply them to their courses. In my follow-up consultations, many of these faculty indicated that they believed the changes they made to their courses by applying the teaching patterns did improve the appeal of the instruction. However, these three patterns did not solve all of the problems they faced. Faculty needed more teaching patterns to help them deal with additional problems that were not addressed by the *teacher enthusiasm, balanced curriculum,* and *clear and appropriate assessment* patterns.

In 2004, I accepted a new position as an instructional designer within the Utah Department of Public Safety. Consequently, my new work responsibilities with made it necessary for me to postpone additional research on teaching patterns until several years later. However, after completing my work with the Utah Department of Public Safety, I returned to work at USU as an instructional designer within a university research center. I then continued my research on teaching patterns and conduct an extended study of the students' comments from November 2006 to February 2007. In that study, three additional patterns were generated from the students' comments: (a) authentic connections, (b) flow of time, and (c) negotiation and cooperation.

During the time of this extended study, I no longer worked in the capacity of a faculty consultant/instructional designer for all faculty at the university. Therefore, I was not able to test out these patterns by recommending them to faculty and observing the results or listening to feedback from the teachers, as I did with the first three patterns. Still, based on the initial reactions I received from faculty for the first three patterns, as well as the similarities in format and the interrelationships that are shared between all the patterns, I am confident that all six patterns can be successfully applied both individually and as a related group of patterns. Furthermore, I am confident that these patterns may be applied to educational settings that are similar to those found at USU. In order to better understand the extent to which these patterns may be used, as well as the overall generalizability of the research findings, a brief description of USU will now be provided.

## Description of Utah State University

The information in this description is based on a report of USU's 2007 Self-Study (retrieved April 25, 2007, online at http://aaa.usu.edu/Assessment/2007SelfStudy.asp). This self-study was conducted to meet accreditation requirements of the Northwest Commission on Colleges and Universities (NWCCU). The report contains a wide variety of documents by various authors, but it is published by the USU Office of Analysis, Assessment, and Accreditation.

Utah State University is a state land-grant university, and one of two public research universities in Utah, the other being the University of Utah in Salt Lake City,

Utah. The only other research university in the state is Brigham Young University, a private university located in Provo, Utah. Under the current university classification system scheme defined by the Carnegie Foundation, USU has been designated as a Doctoral Research University—High Research. The university offers 200 undergraduate, 95 masters, and 38 doctoral programs. The USU Board of Regents has chosen the following schools as peer institutions: University of California-Davis, Colorado State University, Iowa State University, New Mexico State University-Main Campus, North Carolina State University at Raleigh, Oregon State University, Pennsylvania State University-Main Campus, Texas A & M University, Virginia Polytechnic Institute & State University, and Washington State University. These peer institutions share many of the same characteristics of USU, and comparison data from these schools has been used in both internal and external evaluations and accreditation reports.

According to the 2007 NWCCU accreditation report, in the Fall Semester of 2006, USU had a faculty of approximately 725 instructional faculty, 109 noninstructional faculty, and a staff of 1,778. This resulted in an average student-teacher ratio of 19 to 1. In comparison, peer institutions have only a slightly lower ratio of 18 to 1. More than 23,000 undergraduate and graduate students attended both on-campus and distance education programs. Approximately 4.7% of new students identified themselves as minority students. There were slightly more females (56.3%) than males entering USU this last year. In addition, international students accounted for only 1.4% of new undergraduate students. The NWCCU report also stated that in the 2005-06 school year the average ACT score of entering students was 23.7. Average high school GPA was 3.5.

With this information in mind, it may be claimed that the generalizability of this research study is most likely limited to schools that have the same Carnegie designation as a research university, similar peer institutions, a comparable student-teacher ratio for classes, and similar demographics for the undergraduate student population. It is also possible that the teaching patterns may be applied in other types of training environments involving adult learners. The patterns are probably not as generalizable to elementary school settings or preschool settings, as several patterns assume students have attitudes and skills related to long-term planning that are not well developed in children.

Now that the investigator background and historical context of these two research studies has been described, the stage is set for the remaining chapters in this text. A review of literature pertaining to both studies is found in Chapter III. The research methods of both the exploratory and the extended studies are covered in Chapter IV. The results of both studies, including full descriptions of all six patterns, is found in Chapter V. This is followed by a summary and conclusion of both research studies in Chapter VI. Finally, two more passages from Woolf's (1927) novel *To the Lighthouse* provide a brief epilogue, which I believe is a fitting conclusion to the part of the story contained in the prologue, as well as this qualitative research document.

# CHAPTER III

# REVIEW OF LITERATURE

## Teacher/Course Evaluations in Higher Educational Settings

Teacher/course evaluations are used in almost all colleges and universities in the United States (Berk, 2005). These evaluations are usually incorporated into some kind of ongoing research program conducted by university administrative staff. Evaluation reports and research findings are most often written for internal use by various stakeholders within the university community. In general, such research can help teachers and administrators (a) identify problems and seek solutions, (b) enhance professional practice, and (c) support local professional development efforts (Borg, Gall, & Gall, 1993, p. 391).

Various models and methods of research have been developed to meet the needs of teachers who wish to solve problems in their classroom and in their educational organizations. For example, Bodgen and Biklen (1998) outlined a simple four-step model that can be used by teachers to improve their teaching in their own classroom: (a) pick a problem, (b) take detailed notes, (c) look through data to identify patterns, and (d) use the data to make decisions (p. 235). The value of this model is that it emphasizes the power that teachers have to use research methods to make decisions—especially instructional design decisions—that lead to better teaching practice. Obviously, this simple method is mostly intended for informal studies that only impact the teacher's classroom. For problems that extend throughout an educational organization, a more detailed research

method may be required.

Borg and colleagues (1993) outlined a general method of research that can be used to solve a wide range of educational problems both inside and outside the classroom: (a) define the problem, (b) select a design, (c) select a sample, (d) select measures, (e) analyze the data, (f) interpret and apply the findings, and (g) report the findings (p. 392). This research method may be used by a single school to solve particular problems and to report the findings to others within the organization. Since such research often focuses on solving internal organizational problems, and since there are a limited number of stakeholders impacted by the results, the reports of research studies carried out at a single school are not always published for use within the greater academic community. Still, the importance of this type of research should not be overlooked. Such research has great potential to help solve instructional problems that may be unique to a university and not covered in published research journals. In addition, the economic benefits of even small-scale efforts to solve local instructional problems may be substantial. Consider the amount of money that a single university can spend on teaching salaries, classroom maintenance, and other instructional resources. Instructional budgets can easily add up to tens of millions of dollars every semester. In addition, in the current competitive education market, many universities find that they must be able to provide high-quality, appealing instruction in order to attract new students and increase the amount of tuition money brought into the university budget. To do so, university administrators and teachers must continually invest in both small- and large-scale efforts to improve the quality of instruction on campus. Such instructional improvement efforts

are not cheap. Even small instructional improvement projects can cost thousands of dollars. Extensive improvement programs can require budgets that run into several million dollars. Consequently, even if a research study only results in small changes at the local level, it may still have the potential to help the university save hundreds of thousands of dollars and bring in additional funds by attracting more students.

The research conducted in the exploratory and extended studies shares many of the same characteristics one would expect to find in a research study carried out for local purposes only. The research was highly specific to one university—USU; it was focused on solving a particular instructional problem—how to increase the appeal of instruction; and it was initiated with the intent to mainly benefit a limited number of stakeholders—mostly local USU teachers and the instructional designers that work with them. Nevertheless, the teaching patterns generated from this study of the USU teacher/course evaluations may have broader application to other universities at the state, regional, and national levels. It may be of special interest to teachers and instructional designers who would like to use their schools' teacher/course evaluations to solve their own local problems. In particular, these teachers and instructional designers may wish to understand how the research findings contained in this document may be related to other types of research on teacher/course evaluations. For that reason, the following section contains a brief overview of the types of research that have been conducted on teacher/course evaluations and the way that research has been used to improve college teaching.

## Teacher/Course Evaluations and College Teaching

Numerous studies of teacher/course evaluations have been conducted at state, regional, national, or international levels. McKeachie and Svinicki (2006) reported, "There has been more research on student ratings than on any other topic—something over 2000 studies" (p. 352). Cleary, an exhaustive literature review of all the findings contained in these studies would be well beyond the scope of this research study. Nor would such a review be appropriate for inclusion in this research document. Most of these studies dealt with the types of survey questions that may be found on the front of the USU teacher/course evaluation form (see Appendix A), rather than the types of handwritten responses to questions found on the back of the form. Consequently, a comprehensive overview of the research on teacher/course evaluation ratings would be of limited use to the reader. With the above limitation in mind, it still may be useful to review the general types of research that have been conducted on teacher/course evaluations. This will help the reader to understand how this text fits into the greater context of research on teacher/course evaluations.

There has been great variety in the purposes of teacher/course evaluation research. Some researchers have sought to establish the validity and reliability of student evaluations and the survey questions contained in them (Abrami, Apollonia, & Cohen, 1990; Theall, Abrami, & Mets, 2001). Other researchers have focused on finding correlations between the ratings and such things as the teachers' demographic characteristics, the instructional strategies employed by the teacher, the use of media technologies, the grades given by the instructor, and many other variables (Marsh, 1980;

Theall, 1999). In addition, some studies of student ratings have been undertaken with the more political goal of changing the underlying purposes and processes of teacher evaluations in universities and colleges (Arreola, 1995; Feldman, 1989; Knapper & Cranton, 2001). Finally, researchers have used the evaluations to help identify and promote widespread trends or patterns in the improvement of college teaching practice (Bain, 2004; McKeachie & Svinicki, 2006; Perry & Smart, 1997).

The last purpose in the above list is the one most related to the purposes of the exploratory and research studies described in this text. The general goal of this type of research is to simply discover new insights into ways the practice of teaching can be improved. However, the exploratory and extended studies had a more specific aim of discovering ways to improve the appeal of instruction. Some research on teacher/course evaluations has addressed topics related to instructional appeal. For example, Marsh (2001) reported that students will be less likely to give teachers high evaluations if the workload is so difficult that they cannot complete it all. In addition, the research on student handwritten comments has included the examination of instructor and course characteristics that are related to appeal. For example, Caudill (2002) included a number of categories in his analysis of student comments that are related to instructional appeal: (a) made class interesting, (b) enjoyed stories and examples, (c) liked outline/study sheet, and (d) interesting, entertaining, fun. However, like most of the other research on student ratings, the research on student written comments is focused mainly on discovering ways to increase instructional effectiveness and efficiency. Appeal is usually only addressed as an afterthought. Because of the limited nature of the questions asked in the teacher/course

evaluations, the literature related to student ratings is not the best source of research findings related to instructional appeal. Rather, there is another body of literature that can provide more useful insights into variables related to instructional appeal—the literature found on human motivation in the fields of psychology and education. Therefore, some important points about that literature will now be explored.

## Motivation and Instructional Appeal

In the first chapter of this text, it was claimed that appeal is often used as a tertiary criterion in the evaluation of instructional design theories—a criterion that is most often considered after the effectiveness and efficiency of an instructional design theory have been established. Nevertheless, it should be recognized that there has been considerable research in psychology and education fields on the topic of human motivation that is directly relevant to instructional appeal. This research provides teachers with many individual principles that can be applied to the design of appealing instruction.

One example of such motivational research is Clark's CANE model (1999a, 1999b). This is a general model of motivation that is based on cognitive load research (Sweller, Van Merrienboer, & Paas, 1998), as well as Bandura's (1997) theories on how self-efficacy influences motivation to engage in certain types of behavior. This model suggests a number of instructional design prescriptions for managing the learner's level of mental effort and influencing the learner's level of commitment and self-efficacy in performing a task. From this general model, Clark (2004) derived a number of more specific prescriptions for increasing motivation for learners in various instructional

situations, including distance education settings.

Another example of research that can be used to increase the appeal of instruction can be found in Keller's (1987, 1999) ARCS model of motivation. This is an approach to instructional design which involves the use of various actions or "tactics" that can be applied by the teacher or designer to (a) gain learner attention, (b) enhance the relevance of the instruction to the learner's own goals, (c) increase the level of confidence learners have that they will be able to complete the instruction, and (d) help provide the learner with a sense of satisfaction upon completion of the instruction. More specific principles related to this general model can be found in Keller and Burkman's (1993) work on motivational principles related to instructional message design.

Many other theories and models concerned with improving the motivation to learn and engage in various work-related tasks may be found in the fields of psychology, education, and business management. These theories contain a wide variety of principles and prescriptions for improving motivation by changing a learner's internal psychological or emotional condition or the external learning environment. However, it should be noted that in many cases, the underlying purpose for applying these motivational prescriptions is to get people to engage in particular behaviors or acquire particular dispositions that help improve the effectiveness and efficiency of their work, not to improve the level of appeal the task has to the learner. Consequently, if teachers and instructional designers wish to help learners experience the feelings that Alexander mentions in his definition of *the quality without a name*, they should use these motivational prescriptions with care. It should also be noted here that in the review of literature on student written comments it

was found that none of the researchers used any particular theories of motivation to guide their development of categories during their content analyses. Rather, the researchers attempted to derive their categories from other sources or directly from the student comments.

Now that the exploratory and extended research studies have been placed within the greater context of qualitative research, teacher/course evaluation research, and research on human motivation, it is now necessary to focus attention on the specific research methods that were used in both studies. Therefore, the remainder of this chapter will be dedicated to a discussion of the methods of content analysis, pattern writing, Alexander's (1979) ideas about the nature of design, and the way those ideas are related to the USU teacher/course evaluations.

## Content Analysis Methods

Qualitative research often involves the inductive analysis of many different types of data gathered from primary sources or participants—such as interview transcripts or written responses to questions—or of descriptive data gathered by the researcher, including field notes or reflective journal entries. An inductive analysis begins with attempts to fully understand the meanings that can be found within data related to individual cases of a particular phenomenon. As more and more individual cases are analyzed, the researcher may be able to identify related meanings or repeated properties/events within the data. The analysis is concluded when general patterns are identified in the data. These general patterns can, in turn, be logically combined into

descriptive theories that explain the nature of the original phenomenon. Because the general patterns can be tied back to the specific cases, the theories that are developed can be said to be grounded in real-world data (Patton, 1990, pp. 44-45).

There are many different qualitative research methods that can be employed to aid the inductive analysis of data. Some qualitative researchers prefer to let the specific research methods emerge over time as they become more familiar with the data. Other researchers may select a specific method before they begin and adhere to it strictly throughout the study. Still other researchers may select a general research method and modify it as they see fit. Qualitative researchers have great flexibility in making decisions about their methodologies. They may follow a road laid out by past researchers, or they may strike out on their own path, making it up as they go. In the end, the question is not if one method was followed correctly, but rather if the findings are trustworthy—if they are credible, dependable, transferable, and confirmable (Lincoln & Guba, 1985).

The research method used in the exploratory and extended research studies followed some basic steps that are common in many types of qualitative research, including methods related to content analysis. An example of these general steps can be found in Fraenkel and Wallen's (1996) method of content analysis: (a) determine objectives, (b) define terms, (c) specify unit of analysis, (d) locate relevant data, (e) develop a rationale, (f) develop a sampling plan, (g) formulate coding categories, and (h) analyze data (pp. 407-412). Fraenkel and Wallen claimed that these general steps can be applied to quantitative content analyses in which (a) coding categories are identified, (b) words, phrases, or other units of analysis are assigned to each code, and (c) frequency

counts, correlations, and other statistical analyses are conducted on the resulting data. The steps may also be applied to qualitative analyses, in which deriving statistical information about the words is not as important as discovering the meanings and connections that may be brought to the original text through the coding process (p. 407).

Another general method of content analysis can be found in Mayring's (2000) model of deductive category application. The general steps in this model include: (a) define the research question and objectives; (b) determine the theoretical based definition of the aspects of analysis, main coding categories, and subcategories; (c) determine the theoretical based formulation of definitions, examples, and coding rules for the categories and collect them in a coding agenda; (d) revise the categories and coding agenda and perform a formative check of reliability; (e) return to the first or second step if it is necessary to revise the research question or theory definition; (f) complete a final working through the texts and perform a summative check of reliability; and (g) interpret the results. This method of content analysis, like many others, involves a recursive step that allows the researcher to revisit previous decisions and make changes to the codes and reanalyze the data.

As previously mentioned, content analysis was one of the primary methods of analysis in the research conducted on student written records. Researchers used methods that were very similar to the method outlined by Fraenkel and Wallen (1996). Most researchers used similar steps to first generate categories, then assign comments to those categories, and finally analyze the data using frequency counts and correlations. The method used in this study differs from those found in this previous research in that the

analysis of the comments was not focused on generating frequency counts or correlating the written comments with the student ratings on the front of the evaluation form. Rather, through the process of assigning comments to categories, I sought to find connections between ideas in those categories and broad patterns among the categories that addressed specific problems related to instructional appeal.

The method used in both the exploratory and extended study involved a method similar to Fraenkel and Wallen's (1996) general method of content analysis. It also involved a recursive step in coding and analysis similar to that found in Mayring's (2000) model of content analysis. An additional step was also added for generating teaching patterns through the writing process. There are several methods that can be used to generate such patterns, and it may be helpful to the reader to understand how the pattern writing methods used in the exploratory and extended studies compares to the methods used by others. The details of the research method used in both studies may be found in chapter 4, so a full description of the writing process will not be given at this point. Instead, a brief overview of some general pattern writing methods will now be provided so that the reader may understand how the methods described in Chapter IV are related to pattern writing methods that have been used by others.

## Pattern Writing Methods

Numerous patterns have been written by professionals within the fields of architecture (Alexander, 1979), computer software programming (Gamma, Helm, Johnson, & Vlissides, 1995), and education (Bergin et al., 2006). The historical accounts

of how these patterns were generated have shown that pattern writing activities have typically followed one of four general methods.

The first method involved a single author that identified a problem—usually one related to the design and development of something--and then used his or her expertise to draft a pattern that communicated possible solutions. This pattern often followed a predetermined format that had been chosen by an existing community of professionals who were committed to developing a pattern language. The author then shared the pattern with a selected group of peers to get feedback for revision. After several rounds of revision and feedback, the pattern was then shared with the larger community. This community then either (a) showed its approval of the pattern by using it and including it in documents that defined their pattern language, or (b) rejected the pattern through non-use and exclusion from the canonized list of patterns. Many of the patterns found in the Pedagogical Patterns Project (Bergin et al., 2006) were developed using this method.

The second method is similar to the first, but instead of a single author, a small team of colleagues worked together to author the pattern. The problem and solutions were generated through various brainstorming activities. Then the pattern was written to include all information required to meet the standardized format. Finally, the pattern was shared with the professional community once everyone in the group came to a consensus that the pattern was ready to be shared. Gamma and colleagues (1995) and Bergin and colleagues (2006) reported that some of their patterns were developed this way.

The third method involved a single author or a small group using a preexisting pattern that had been developed in another field and modifying it for use within their own

field. The patterns that were transferred were usually more abstract patterns that dealt with general-level design problems. Bergin and colleagues (2006) discussed the potential of using a number of such modified patterns to develop a pattern language targeted at computer science educators that worked with novice computer programmers.

The fourth method of pattern writing was similar to the first two methods, but it included a step in which the pattern author(s) interviewed both professionals and non-professionals about their thoughts and/or observed their actions as they designed certain things. This allowed the author to explore possible problems and solutions that were outside his or her understanding of local culture and community norms. This method was suggested by Alexander (1979) in his accounts of how he worked with people to discover what aspects of a building that helped them experience *the quality without a name*. Alexander also reported using the other methods in his work, but it was this last method that helped him understand the importance of having the users shape the construction of the building to meet their needs, as well as having the user take an active role in maintaining and repairing the buildings.

Each of these methods of pattern writing has been adapted by the authors to help meet some of the unique needs of designers within their respective fields. For example, Alexander (1979) included drawings or diagrams in his patterns to help architects understand spatial relationships between elements. Gamma and colleagues (1995) included code samples to help explain their computer programming patterns. Bergin and colleagues (2006) included example instances in their patterns to help computer science instructors understand specific instances in which the patterns could be applied. Such

differences in pattern contents would indicate there were at least some minor variations in the pattern writing methods used in different fields of practice. However, in most instances, patterns have been authored using the general methods defined above.

Another commonality shared by most patterns was that they included some type of information that was recommended by Alexander in his general pattern format. This pattern format was, in many ways, the foundation upon which many other pattern formats have been built. In fact, the pattern format used for the exploratory and extended research studies is entirely based on Alexander's work. Consequently, an understanding of Alexandrian patterns is prerequisite to understanding the remainder of this text. Therefore, a review of Alexander's method of design, along with some of his ideas about the ways in which those patterns can be used, will now be presented.

## Alexander's Method of Design with Pattern Languages

Alexander's design process began with the identification of patterns of events and the space in which they occur. According to Alexander, "Each pattern is a three-part rule, which expresses a relation between a certain context, a problem, and a solution" (p. 247). He further detailed the structure of a pattern by referring to the forces involved in the solution and the process through which the forces resolve.

> As an element in the world, each pattern is a relationship between a certain context, a certain system of forces which occurs repeatedly in that context, and a certain spatial configuration, which allows these forces to resolve themselves.... The pattern is, in short, at the same time a thing, which happens in the world, and the rule which tells us how to create that thing, and when we must create it. It is both a process and a thing; a description of a thing which is alive, and a description of the process which will generate the thing. (1997, p. 247)

Thus, Alexander defined a pattern as an “instruction” which outlines (a) a problem existing in a particular context, (b) the conflicting forces involved, and (c) one or more configurations of the forces that resolves the problem (pp. 253, 282). Alexander also pointed out the importance of identifying any transitions or relationships between patterns, as these relationships form a type of grammar, which can bind patterns together into a complete *pattern language*. For the purposes of this study, the term *pattern language* is considered to be closely related to the term *design language*, the latter often being preferred, as it connotes the main purpose of the language—the design of things.

With the above definition of a pattern in mind, it is possible to define the general design process as a series of mental activities in which design problems are (a) defined within a meaningful context and (b) solved by balancing conflicting forces within the event or artifact that is being designed. To start the process, an initial design problem is chosen and the designer applies one or more related patterns to solve the problem. The process continues as the designer considers additional problems that arise from the requirements and constraints of the project. Additional patterns are applied until the designer is satisfied that all design problems have been adequately addressed through the application of patterns.

Alexander’s ideas about building patterns have yet to be widely accepted in the field of architecture. He has claimed that only a few thousand buildings have been influenced by the pattern language he and his colleagues generated (Alexander, 1996). However, his influence has extended into other design-related fields, where patterns have been found to be very useful in the design of other things. Alexandrian patterns are

especially popular with designers of computer software programs and websites (Evitts, 2000; Gamma et al., 1995; Graham, 2003). As some computer scientists and programmers who are familiar with patterns have begun to tackle problems related to teaching and instructional design, they have made a number of attempts to generate "pedagogical patterns" to facilitate the design of the various instructional materials and activities that are necessary to teach new computer programmers. An example of many such patterns being applied to a wide variety of education problems may be found in the Pedagogical Patterns Project (Bergin et al., 2006). The results of this project is an online listing of patterns that have been written with the purpose of capturing best practices in teaching and learning computer science.

As is the case with pattern languages developed in other fields, the history of the Pedagogical Patterns Project, as well as similar efforts like it, has shown that it is not easy to generate useful patterns that can be broadly applied. Fincher and Utting (2002) reported that initial attempts to generate "pedagogical patterns" were broadly focused and resulted in a collection of individual patterns tied to a common design theme. However, these patterns were too abstract to be useful to many teachers and instructional designers. They claimed that in more recent years the patterns have begun to become more practical in nature and more tightly focused on the design of specific learning activities or instructional materials. Fincher and Utting stated that both types of "pedagogical patterns"—(a) broadly stated, abstract patterns and (b) specific, concrete patterns—still lack widespread acceptance because "they are either so abstracted from the domain (of tertiary computer science education), and therefore generic, that they lack insight; or they

are so tightly coupled to specific instances of practice that they are not transferable" (p. 201).

Probably the most significant criticism of the majority of "pedagogical patterns" is that while they may share the written form or structure of Alexander's architectural design patterns, they do not always reflect the original intent of Alexander's work—to increase the opportunities people have to experience *the quality without a name*. Consequently, while most of these patterns may help teachers solve different types of problems, they do not necessarily result in instruction that allows the student to experience *the quality without a name*.

This same criticism can be found in other types of pattern languages. In his critique of the many software design patterns that have been written, Alexander (1996) stated:

> I understand that the software patterns, insofar as they refer to objects and programs and so on, can make a program better. That isn't the same thing, because in that sentence "better" could mean merely technical efficient, not actually "good." Again, if I'm translating from my experience, I would ask [if] the use of pattern language in software has the tendency to make the program or the thing that is being created morally profound—actually has the capacity to play a more significant role in human life. A deeper role in human life. Will it actually make human life better as a result of its injection into a software system? (p. 71)

The point Alexander makes in this statement is that when patterns are authored it is not enough to simply identify problems and their solutions. It is also necessary to show how the patterns are capable of producing artifacts and user experiences that are infused with *the quality without a name*. With that criticism in mind, this literature review will now focus on what *the quality without a name* is and how the teaching patterns generated in this study may help learners experience that quality in higher education settings.

## Definition of the Quality Without a Name

In his description of *the quality without a name*, Alexander (1979) did not begin with a list of specific words associated with the quality. Instead, he described "a corner of an English country garden, where a peach tree grows against a wall" (p. 25). His garden description indicated how this nameless quality is not found in abstract words alone. Rather, *the quality without a name* is embodied in the real things--some of which are created from a purposeful design—and the relationships these things have with everything else in their environment. He maintained this quality is objective and precise, yet it cannot be defined by any single word or combinations of words. He claimed that words alone will never completely capture its essence, and he insisted that the quality remain unnamed and be referred to as *the quality without a name*.

> The fact that this quality cannot be named does not mean that it is vague or imprecise. It is impossible to name because it is unerringly precise. Words fail to capture it because it is much more precise than any word. The quality itself is sharp, exact, with no looseness in it whatsoever. But each word you choose to capture it has fuzzy edges and extensions which blur the central meaning of the quality. (p. 29)

Although (1979) stated that words cannot communicate the total meaning of *the quality without a name*, Alexander admitted that it is necessary to use a verbal and written pattern language to communicate a design to other people, especially those involved in using a design to develop the actual event or artifact. Moreover, Alexander believed it is necessary to use the pattern language to acquire mastery of the underlying design concepts. However, he suggested that once this design language is mastered, it will no longer be needed. The patterns will then be able to be generated in the human

mind in ways that transcend language. In fact, he stated that the pattern language itself is a rather useless design instrument unless the "language is able to awaken you to your own innermost feelings, and to what is true" (p. 544). Alexander argued "the pattern language does nothing really, except to wake these feelings once again" in the designer (p. 547). Once this awakening occurs, the designer will have transcended the constraints of the design language.

> So finally you learn that you already know how to create this ageless species which is the physical embodiment, in buildings, of the quality without a name, because it is a part of you—but that you cannot come to it until you first master a pattern language, and then pass beyond the language, once it has taught you to allow yourself to act as nature does.(p. 548)

Alexander's end goal was to help architects learn to free their minds to combine design patterns in new ways that do not depend upon language. He claimed that after extended experience in applying the patterns, the architects would achieve a state of mind in which designs would be naturally generated through the spontaneous combination of patterns, and there would eventually be no need to resort to verbal or visual languages to facilitate thinking about the design. Mature designs would instantly emerge from the mind of the designer. Of course, the designer would then need to use language to communicate the design to others involved in building the artifact, but the design itself would arise from an unconscious process in which a designer can intuitively see how to build artifacts with *the quality without a name*.

## Identifying Patterns

If teachers wish to adopt Alexander's goal and create instruction that has *the*

*quality without a name,* a pattern language must be generated. The first step in this process is to identify those patterns of events or instructional artifacts that might possibly possess this quality. This raises a critical question: How will we know when a pattern found within one or more artifacts has *the quality without a name*? Alexander's answer to this question was simple: It feels good.

> When you first see a pattern, you will be able to tell almost at once, by intuition, whether it makes you feel good or not…. If a pattern does make you feel good, there is a very good chance that it is a good pattern. If a pattern does not help you feel good, there is very little chance that it is a good pattern.(pp. 289-290)

Alexander emphasized that this feeling is an instant, direct, and honest reaction to the pattern, not a thought out, rationalized opinion. He claimed that if people will honestly ask how they feel about a pattern and allow themselves to be guided by their first reactions, they will be able to more easily identify those patterns with *the quality without a name*. In addition, Alexander stated that people within a culture will share "an extraordinary degree of agreement… about the way that different patterns make them feel" (p. 292). He maintained that this level of agreement, which he claimed often ranges from 80% to 90% (Alexander, 1996), qualified these feelings as scientific proof that the quality exists in the pattern. Consequently, these feelings should not be dismissed as valueless, irrational, and subjective opinions.

If these feelings can be accepted as proof of the possible existence of a pattern, it is possible to proceed to identify the patterns related to *the quality without a name* by asking those involved in an instructional event one simple question: "Does that feel good?" Conversely, we may also find some patterns by asking what does not feel good, much like a doctor diagnoses illness and determine possible treatment by asking the

patient “Does that hurt?”

## Teaching Patterns in Teacher/Course Evaluations

At USU, similar questions were asked on the teacher/course evaluation form. After filling in the “bubbles” for the items on the front of the form (see Appendix A), students were then asked to give handwritten feedback to two questions on the back of the form: (a) What aspects of the teaching or content of this course do you feel were especially good?; and (b) What changes could be made to improve the teaching or the content of this course?

One would expect such general questions to elicit a wide variety of responses, many of which would be completely useless for the purpose of discovering teaching patterns. Such was the case, as there were many short responses that had little or no information about the course. Nevertheless, there were some information-rich responses that may help identify those patterns that could qualify as possible candidates for inclusion in a pattern language. By analyzing a sample of the information-rich responses in course evaluations from a wide range of departments and courses, it should be possible to identify some teaching patterns that will help instructors increase instructional appeal by creating courses in which students can experience *the quality without a name*. This list of teaching patterns will be a new, unique contribution to the literature related to (a) qualitative teaching evaluation and (b) instructional design theory. A description of the methods used to locate and analyze these information-rich comments may be found in the next chapter.

# CHAPTER IV

# METHODS

## General Research Methodology

Both the exploratory and extended studies followed a method of qualitative content analysis that allowed for the coding and data analysis to be guided by a specific theory or perspective. Patton (1990) defined this type of theoretically directed research as "orientational qualitative inquiry" in which the "focus of the inquiry is determined by the framework within which one is operating, and the findings are interpreted and given meaning from the perspective of that preordinate theory" (p. 86). The preordinate theories that were used in both studies have been previously mentioned in Chapter II of this text. That chapter contained information about how my educational background, work experience, and the general historical context influenced my choice of (a) a qualitative content analysis as the general method of inquiry, and (b) Alexander's general method of design as the underlying design theory that would inform the data analysis. Therefore, that general-level information will not be reviewed again in this chapter. However, additional information about the specific method of content analysis will be presented to provide a more detailed account of the research methods used in both studies.

As previously mentioned in Chapter III, Fraenkel and Wallen's (1996) general method of content analysis included the following eight steps: (a) determine objectives, (b) define terms, (c) specify unit of analysis, (d) locate relevant data, (e) develop a rationale, (f) develop a sampling plan, (g) formulate coding categories, and (h) analyze

data (pp. 407-412). The method used in both the exploratory and extended studies consisted of six similar steps: (a) determine purposes and objectives, (b) specify the unit of analysis, (c) develop a sampling plan, (d) locate information-rich comments, (e) code and analyze comments to find possible patterns, and (f) generate teaching patterns through the writing/rewriting process.

There are three important points about this method that should be noted. First, this method was developed to work with data that had already been collected. Consequently, information about that data influenced decisions regarding the first three steps in this method. Second, the last three steps in this method were heavily influenced by the pre-determined theory that was used to define the coding categories and guide the analysis and writing of the teaching patterns. Third, the processes of coding and analysis are listed in the same step in order to emphasize the recursive nature of these activities. This recursive step is similar to one employed by Mayring (2000) in his model of deductive category application. This recursive step allowed me to revisit previous decisions about the coding of the data as the analysis revealed new relationships among the data.

This same general method was used in both the exploratory and extended studies. However, there were several important differences between the two studies in the way certain steps were completed, especially in the steps involving data sampling and data analysis. Therefore, whenever necessary, these differences will be separately addressed in the following descriptions of each of the six steps. After these steps are defined in detail, this chapter will be concluded by a review of some of the methodological issues related to the trustworthiness of the research findings.

## Purposes and Objectives

The general purpose of both research studies was to identify and define teaching patterns teachers and instructional designers may use to increase the appeal of instruction at USU and similar higher education settings. My objective was to generate at least three teaching patterns that were closely tied to Alexander's definition of *the quality without a name*. I also wanted to generate patterns that could be easily and immediately applied to instructional problems in USU classrooms and in similar higher education settings.

## Unit of Analysis

The back of the teacher/course evaluation form contained two questions that students could respond to with handwritten comments. The first question asked, "What aspects of the teaching or content of this course do you feel were especially good?" The second question asked, "What changes could be made to improve the teaching or the content of this course?" In analyzing the responses to these two questions, it was important to first determine the unit of analysis. Patton (1990) defined a *unit of analysis* as the "primary focus of data collection," and he stated that in qualitative research studies these units of analysis may consist of "particular kinds of events, occurrences, or incidents" (pp. 166-167). Furthermore, Patton claimed that "each unit of analysis implies a different kind of data collection, a different focus for the analysis of data, and a different level at which statements about findings and conclusions would be made" (p. 167). Previous research studies that focused on student written comments have used units of analysis that have included phrases and sentences (Caudill, 2002), paragraphs

(Litke, 1995), and entire written responses (Braskamp et al., 1981). In most cases, researchers have analyzed individual words, phrases, or sentences for the purpose of conducting frequency counts to find the teaching characteristics or environmental variables that are most often mentioned by students.

In the two studies that I conducted, the unit of analysis used was simply whatever a single student wrote in response to one of these two questions. If a student only responded to the first question with a word or phrase, that was considered to be a single unit of analysis. If a student responded to the second question with only a brief sentence, the whole sentence was a single unit of analysis. If a student responded with a paragraph or two of detailed comments, that was treated as a single unit of analysis. In short, the entire response to each question was treated as a single unit of analysis. The purpose in doing this was to help maintain as much of the context as possible during the analysis. When words or phrases are separated from the greater context of the sentence, paragraph, or entire response, contextual clues that can be used to interpret their meaning is lost. Therefore, I determined that the entire response would be the unit of analysis, which would help preserve the context and provide valuable insight into the underlying meaning of individual words and phrases that might be related to Alexander's definition of *the quality without a name*.

## Data Sampling

### *Initial Data Collection*

The student comments evaluated for both studies were taken from the USU

teacher/course evaluations for Spring Semester 2002. According to the USU Office of Analysis, Assessment, and Accreditation, during that semester 2,036 courses were offered in eight colleges. Other classes were offered through continuing education and cooperative extension, the honors program, or jointly administered through departments in several colleges. Continuing education and cooperative extension classes were not included in the analysis of these exploratory study. However, samples of comments from these classes were included in the extended study. The reason for this is that at the time I conducted the exploratory study my focus was on how to improve undergraduate instruction for the courses held on campus. However, the continuing education and extension classes were later included in the extended study.

The USU Office of Analysis, Assessment, and Accreditation collected a total of 46,062 teacher/course evaluation sheets for Spring Semester 2002. Working in cooperation with that office, I photocopied the backs of these forms and organized the copies by course, department, and college. These photocopies were then stored in a secure room so that no one else could access the documents, thus reducing the chance that any documents might be removed from the data sample.

Not all of the students chose to include handwritten comments on the backs of these evaluation forms. However, the majority of students wrote some type of comment, and the Office of Instructional Support estimated that over 35,000 photocopies of student comments were made. The photocopies were organized by course, department, and college.

*Exploratory Study Sample*

The sample drawn for the exploratory study included the evaluation forms for one course from each of the 47 departments in the eight colleges, including jointly administered departments. Forty-seven courses were included in the sample, with the following breakdown by course level: 15 Freshmen (1000), 11 Sophomore (2000), 12 Junior (3000), 8 Senior (4000), and 2 Graduate (5000+) level courses. Undergraduate courses (1000-4000) were selected whenever possible, although there were some departments that focused exclusively on graduate-level instruction. Because the Office of Instructional Support and the university administration was, at the time, concerned with the quality of undergraduate courses, graduate courses were purposefully avoided in order to focus on undergraduate instruction.

The evaluation forms for each course were drawn from the stack of evaluations collected for each department. There was no attempt to truly randomize the selection. Steps were taken to ensure that a different instructor taught each course in the sample. In addition, course enrollment size was a consideration in the selection of courses. An attempt was made to select a balanced variety of small (5-19), medium (20-50), and large (51-100+) courses for this sample. It was assumed that courses with a high student-teacher ratio would have different kinds of comments than courses in which there is a low student-teacher ratio. There was no attempt, however, to analyze the responses by student-teacher ratio.

*Extended Study Sample*

The sample drawn for the extended study included the evaluation forms for three

courses from each of the 47 departments in the eight colleges, including any jointly administered departments. In addition, nine courses were chosen at random from the distance education and extension courses, including online courses delivered through WebCT and courses delivered through video-conferencing technologies or face-to-face at regional campuses in Brigham City, Roosevelt, and Tooele. A total of 150 courses were included in the sample, which is over three times the number of courses sampled in the exploratory study. This sample did not include courses used in the exploratory study.

Both undergraduate courses (1000-4000) and graduate courses (5000-7000) were included in the sample. The sample was selected by simply drawing three courses from the stack of evaluations collected for each department. Once again, this was a purposive sample, and there was no attempt to truly randomize the selection. The courses were selected so that each course was taught be a different instructor. The sample was purposefully balanced between Freshman, Sophomore, Junior, Senior, and Graduate levels, with 30 courses in each level. See Appendix B for a table that shows the number of courses that were sampled for each class level in each department.

In addition to course level, enrollment size was a consideration in the selection of courses. For each department, I attempted to select a small (5-19), medium (20-50), and large (51-100+) course for this sample. The rationale for this selection strategy is that my previous experience in analyzing students' comments led me to believe that courses with a high student-teacher ratio have different kinds of comments than courses in which there is a low student-teacher ratio. This may be due to several factors: (a) the amount of personal attention an instructor may give to students, (b) the types of interactions students

have with other class members, (c) the availability of resources, and (d) the types of instructional strategies that are possible with different group sizes. It was not the specific purpose of this study to analyze the relationship between group size and the types of student comments. Consequently, there was no attempt to analyze the responses using student-teacher ratio comparisons. However, it is assumed that class size does make a difference in the types of comments made, so steps were taken to sample comments from courses of different sizes. Not all departments had large courses. In such situations, I selected an additional medium sized course to replace the large course. In the end, I sampled 67 small, 52 medium, and 31 large courses. See Appendix C for a table that shows the number of small, medium, and large courses that were sampled in each department.

*Data Collection Context*

USU instructors are required to distribute "Teacher/Course Evaluation" forms to all of their students at the end of every course at the university. The only way to omit this requirement is to get special permission from the college dean. Among USU faculty, such permission is rarely asked for or given. The way in which the evaluation forms are distributed and collected may vary. The teacher may pass out the blank forms and then leave the class, but they do not collect the forms, as this would violate school policy about giving teachers access to the forms before final grades are posted. Teachers may enlist the aid of administrative assistants within the department or college, or they may recruit one or more students to help with the distribution and collection of the evaluation forms. Students have the option of filling out the forms anonymously, or they may also

forego filling out these evaluations entirely. Some students may opt to fill the forms out perfunctorily, giving little thought to the ratings and simply giving the same rating to every statement on the form. The evaluations are usually collected by department office staff and delivered to the Office of Planning and Analysis, where the data is scanned and tabulated. Results from these evaluations are not returned to department heads or instructors until after final grades have been posted for the semester.

The conditions in which the evaluation forms are filled out may vary, depending upon the physical environment and the social relations between students. Sometimes, small group discussions may take place, while at other times the person handing out the forms requests that students remain silent until all forms have been completed. If the forms are handed out at the end of class and students are in a hurry to get to their next class, they may not take the time to write detailed comments. The amount of time needed to complete the form typically varies between 5 to 15 minutes, although students can take less or more time if they wish. Also, some teachers may attempt to influence the ratings by bringing treats, granting privileges, or reducing workload requirements before the test in order to gain favor with the students. In addition, some teachers have learned from experience that it is not a good idea to have students complete the evaluations directly after a class in which one or more assessments have been administered, as student anxiety levels are particularly high at such times.

The front side of the evaluation form consists of 20 statements in which students are asked to rank instructors using a 6-point Likert scale ranging from “Excellent” to “Very Poor” (see Appendix A). The form has four major sections. The first section

contains two general evaluation statements about the quality of the course and the instructor's effectiveness in teaching the subject matter. The scores of these two questions are the only data required by the university in determining tenure and promotion. Scores from the other sections are not required, but may be considered if the faculty member chooses to do so. The second section consists of 8 statements dealing with information about the course, including the course objectives, the appropriateness of the workload, the relevance of course content and exams, and helpfulness of the assigned readings. The third section contains 10 statements about the instructor and instructional activities. These statements include aspects of the instruction related to the way the instructor prepared for class, the in-class activities that were used, and the opportunity students had to ask questions and express opinions. The fourth section consists of demographic data about the student, including their current GPA, their level of interest in the subject matter and the grade they expect to receive. Analysis of this demographic data shows that on average students expect to receive grades that are higher than their average GPA, with most students expecting an A or a B grade. This may be due to the fact that it is not unusual for students to hope they can improve their GPA by doing better in the current course than they have done in previous classes.

There are two important points about this evaluation form and the overall evaluation process that could influence the content of written responses students include on the backs of these forms. First, the students usually fill out the instructor ratings before writing any handwritten comments. Thus, the content of these 20 statements may influence those aspects of teaching that are on the minds of students as they begin writing

their own comments. Second, even though the evaluation forms are anonymous, students in courses with handwritten assignments may suspect that the teachers will be able to identify them by their handwriting. The possibility that they might be identified may deter some students from writing statements that might be interpreted as being negative towards the teacher. Obviously, these two contextual factors had the potential to influence the types of comments some students will make. Consequently, these factors were kept in mind during the data collection, sampling, and analysis.

During the analysis for the exploratory study, it became quite clear that many comments were related to the 20 ratings statements on the front of the evaluation form. However, there were also student comments that did not seem to be directly related to those ratings statements. It was determined that both types of comments could be used to identify possible patterns, so no attempt was made to separate the comments into different categories. In addition, it was determined that it is quite possible that some students may have restrained themselves from making negative comments due to fears of being identified by the teacher. Nevertheless, there were so many negative comments about teachers in the sample that it was evident that the majority of students who wrote comments did not fear being identified.

## Location of Information-Rich Comments

The exploratory study involved the study of a more limited sample of students' comments. Therefore, I was able to read through the sample and find information-rich comments very quickly. These comments contained information that provided specific

details about the teacher or the course, rather than short, general evaluative comments like “Great course” or “I thought he did a pretty good job.” After reading through the entire sample once, and keeping field notes to identify possible patterns, I identified some possible patterns. I then read the comments again and identified information-rich comments that seemed to be related to these patterns. These comments were typed up in an electronic text file to be used later for analysis and pattern generation.

Since the extended study sample size was much greater, and since I wanted to gather a broader range of comments for analysis, my process for recording information-rich responses was different. For the second study, I typed the contents of the information-rich comments as I read through the sample for the first time. The information-rich responses were entered into a separate text file for each class. Then all of the individual class files were combined into one large text file consisting of 130 pages of typed comments. This large file was then prepared for coding by importing a copy into the Nvivo 7 qualitative research software program.

## Data Coding and Analysis

### *Exploratory Study Coding and Analysis*

In the exploratory research study, the coding and analysis of the data did not occur in distinctly separate time periods. Rather, as the coding process proceeded, a certain amount of preliminary analysis was conducted to determine if the results of the coding would be useful. Such preliminary analysis informed the selection or generation of coding categories and the way in which comments were assigned to one or more

codes. This process reflects a common characteristic shared by other qualitative research methods in which codes or categories emerge during analysis. Guba (1978) suggested that the value of codes or categories can best be determined by (a) how well the data that is assigned to a certain code is related in a meaningful way and (b) how well the codes clarify differences among data assigned to different codes. The students' comments often contained references to multiple aspects of instruction, so individual comments could often be assigned to more than one code. Consequently, the value of the codes used in the first study was determined by how well those codes helped to identify possible patterns in the data.

The data coding and analysis for the exploratory study began with an initial overview of the students' comments. All evaluations in the sample were read and notes were made of any aspects of instruction that were repeatedly mentioned, as well as any other observations about the data. Repetition of any aspect of instruction by two or more students qualified it as a candidate for a design pattern. Field notes were written to help define emerging patterns and reflect upon possible interpretations of the patterns.

Students identified many aspects that made the courses "especially good." They mentioned aspects related to group work, instructional pace, curriculum sequence, teacher wardrobe, teacher enthusiasm, class size, teacher communication skills, learning environment, quality of instructional materials, availability of web-based resources, assignment directions, lab assistance, lab coordination with in-class lectures, authenticity of assignments, and the appropriateness of assessments. These aspects of instruction became the initial codes I used to try to identify possible teaching patterns.

In-depth analysis of these repeated aspects indicated that a wide variety of design patterns could possibly emerge from them. The limited scope of this exploratory study prohibited me from conducting an exhaustive analysis of every aspect. Consequently, I chose to focus on those aspects that seem to be related to three problems often mentioned by students. One problem dealt with the level of teacher enthusiasm. A second problem dealt with issues related to areas of balance within the curriculum. A third problem was the appropriate use of assessments by the teacher. These three problems were chosen for further investigation because many of these comments related to these problems also seemed to be related to one or more of the characteristics of Alexander's *quality without a name*. I also decided that it would be necessary to generate at least three patterns in order to investigate the different kinds of possible interconnections that could develop between patterns. I was aware that I could continue the analysis to try to discover more patterns, but this was a limited, exploratory study, and I would be able to stop once I reached a point where continued research could be justified. I thought that if I could just find three prominent, useful patterns that would be enough to warrant continued research later on.

Using field notes as a guide, the teacher/course evaluations were reread and student quotes that were related to these problems were recorded and analyzed. All names and other identifying information were changed to assure the anonymity of students and professors. Any changes to student quotes were identified in brackets. Quotes used in the analysis were selected from a variety of departments and instructors. The analysis revealed a number of relationships that suggested these aspects could be developed into

three distinct design patterns that were named (a) Teacher Enthusiasm, (b) Balanced Curriculum, and (c) Clear and Appropriate Assessments. The Teacher Enthusiasm pattern was presented to members of the investigator's graduate class that was studying instructional-design languages. Feedback from that presentation was used to further modify the patterns and establish a standard framework for expressing the patterns.

*Extended Study Coding and Analysis*

The coding and analysis of the extended study data differed from methods used in the exploratory study. In the exploratory study, I used codes derived from the aspects of instruction that students thought helped to make the course especially good. I then analyzed those comments to determine if they also contained words and phrases that were associated with Alexander's definition of *the quality without a name*. In the extended study, I felt that those initial codes could no longer help me identify additional patterns. Consequently, I decided to use a new coding scheme that was based on the words and phrases that Alexander (1979) used to describe various facets of *the quality without a name*: (a) *alive*, (b) *whole*, (c) *comfortable*, (d) *free*, (e) *exact*, (f) *egoless*, (g) *eternal*, (h) *innocent*, and (i) *real*. Each of these words were used as a "node" in the Nvivo 7 program. A node is simply a coding category that is used to create a collection of text references related to a specific theme or idea. In addition to these 9 main nodes, 5 phrases that fit under one or more of these words were also used as nodes: (j) *free from inner contradictions* (p. 26); (k) *inner forces are resolved* (p. 51); (l) *a self-supporting, self-maintaining, generating quality* (pp. 53-54); (m) *a special balance between order and disorder* (p. 521); and (n) *a slightly bitter quality* (p. 40). The purpose in coding the

comments this way was to try to identify the student comments that seemed to be most related to *the quality without a name*. This would help ensure that any teaching patterns that would be generated from the comments would reflect at least one of the aspects of *the quality without a name*.

A sample of recorded student quotes were assigned to one or more of the nodes, depending upon the content of the quotes. I looked for specific words or phrases that seemed to be related to the words or phrases Alexander used to define *the quality without a name*. For example, the following quote was assigned to the node labeled *Alive* because the words and phrases that are highlighted in bold print seemed to be related to Alexander's ideas about how people felt alive when they experienced *the quality without a name*.

> The topic of this class was very **interesting** but for some reason the class was very **dull**. I found myself becoming **less & less interested** as the class went on. Maybe there should be a smaller size of class members & **more enthusiasm** put into the topics discussed.

The main complaint in this quote seemed to me to be related to a lack of energy or a lifeless quality that the student experienced in the instructional activities, as well as in the instructor. Therefore, it was assigned to the *Alive* node.

Not all of the quotes on all 130 pages of the recorded comments were assigned to a node. Rather, the quotes that seemed to contain important or unique information were assigned to the nodes. This was done because it seemed unnecessary to continue to assign additional quotes to a node once sufficient quotes had been gathered to be able to identify the main points contained in the text.

The quotes assigned to each node were then reviewed again to identify any

aspects of instruction that were repeatedly mentioned in student comments. Key words and phrases were highlighted and observations about these nodes were made in a research journal. Field notes were written after each analysis session to aid in describing emerging patterns and reflecting upon possible interpretations of the patterns. As with the previous study, all names and other identifying information were changed to assure the anonymity of students and professors. Changes to student quotes were identified in brackets. My initial analysis suggested three additional design patterns that could be generated. This time I chose to develop only three patterns for slightly different reasons. First, during the exploratory study, I found out how time consuming it is to identify and generate patterns. The first three patterns were relatively easy to find, but I knew these last three would require much more work. Since I had a limited time in which to conduct the study, since three patterns seemed to me to be a substantial number to add to the pattern library, and since the generation of an exhaustive list of patterns was well beyond the scope of any single study, I decided at the beginning of the study to limit my research to the development of three new instructional design patterns. By the end of the study, I found that three additional patterns did require much more work. When I completed authoring the last pattern, it seemed to me that even though there may be other patterns to investigate, these three patterns were the most important ones that were suggested by my analysis of the student comments.

## Pattern Generation

The final step in the method used for both studies involved a recursive writing

process in which patterns were generated. As comments were coded, repeated words, phrases, and themes were noted in field notes. A journal was also kept in which thoughts about potential patterns were recorded. The field notes and journal entries were then used to draft preliminary patterns. After this initial draft, the pattern was reviewed to determine its potential for further development. Patterns were rejected if they did not seem to be well-supported by quotes or that did not seem to be logically related to Alexander's definition of *the quality without a name*. Patterns that survived this culling process were then rewritten several times until the reasoning behind each pattern fully emerged. This resulted in a detailed description of each pattern, supported in part by students' comments.

Once this detailed pattern definition was generated, a shorter version of the pattern was written to help quickly communicate this pattern to others. This version of the pattern followed a descriptive framework defined by Alexander (1979). His framework included a pattern name, a statement of the problem underlying the pattern, the context in which the problem occurs, one or more solutions to the problem, and any related information that might aid others in connecting the pattern with other related patterns.

Throughout this process, as new patterns were generated, previously written patterns were revised in order to clarify any new relationships that were discovered to exist between the patterns. The patterns were considered to be complete when they could be used to (a) explain the content of students' comments that seemed related to the pattern and (b) suggest instructional interventions that might help students experience *the*

*quality without a name* to a greater degree.

## Methodological Issues

In a quantitative research study, methodological issues may be reviewed in order to answer questions related to the validity and reliability of the studies. *Validity* in a quantitative study may be defined as the extent to which a test or instrument measures what it claims to measure or is capable of achieving certain aims or purposes (Isaac & Michael, 1997, p. 128). *Reliability* may be defined as the extent to which the test or instrument is accurate and consistent in its measurement across time (Isaac & Michael, p. 134). In quantitative studies, the instrument is the test, survey, or some other measurement tool. In qualitative studies, however, the instrument is the researcher (Patton, 1990, p. 14). Consequently, the concepts of validity and reliability are somewhat different for qualitative researchers. In fact, in discussing methodological issues, many qualitative researchers prefer not to use the terms *validity* and *reliability*, because the words are so strongly associated with the philosophical and methodological assumptions that are associated with traditional quantitative research—assumptions which qualitative researchers do not always share (Isaac & Michael, p. 218). Instead, qualitative researchers talk about the credibility, dependability, transferability, and confirmability of the research (Lincoln & Guba, 1985). *Credibility* may be defined as the extent to which the research findings are believable and convincing. *Dependability* may be defined as the extent to which the findings are consistent with similar investigations. *Transferability* may be defined as the extent to which the findings may be applied to contextually similar

settings. *Confirmability* may be defined as the extent to which the processes of data collection and analysis, as well as the resulting products or findings, may be audited by an outside party (Isaac & Michael; Lincoln & Guba). These four elements are often referred to collectively as the *trustworthiness* of the study.

Very little of the research on student rating scales and teaching evaluation has been carried out using an exclusively qualitative research approach. In a review of the Journal *New Directions for Institutional Research*, Harper and Museus (2007) stated that in the last decade of the journal—up to the Winter 2007 issue—there had been a number of mixed-method studies that focused on balancing quantitative and qualitative methods, but not a single article had been published that focused exclusively on qualitative research. Consequently, Harper and Museus called for increased use of qualitative research to (a) uncover the critical role that context plays in understanding the phenomena that are being studied in research on teaching in higher education, (b) discover factors that influence behavior, shape experiences, and effect the outcomes of the work done on college campuses, and (c) illuminate the voices of people throughout higher education institutions (p. 3). In addition, they state that the most commonly used quantitative research methods will not provide an adequate response to those who seek more compelling evidence that the college experience is providing value to students and society (p. 1).

Clearly, qualitative research methods have much to offer in the generation of new knowledge regarding the evaluation of teaching. However, in order for that knowledge to be trustworthy, a number of methodological issues must be addressed. Some qualitative

methodological issues can be identified before a study begins, allowing actions to be taken to minimize any problem areas. Other issues can only be seen during the study or after it is completed (Glesne, 1999, p. 32). In the end, there is almost always something else that could have been done during a study to increase the overall trustworthiness of the findings. However, an extended explication of a study's every possible weakness is usually not as helpful to the reader as is a listing of those things that were done to enhance trustworthiness. Therefore, this section will first focus on how the method used in this study served to enhance the credibility, dependability, transferability, and confirmability of the findings. Then a brief discussion of its limitations will be presented.

*Credibility*

The credibility of the research was enhanced by using actual quotes written by many different students regarding their experiences in a wide variety of classroom situations. Thus, the research findings are grounded in these students' comments, which reflect the entire spectrum of teachers and courses in a university setting. My prolonged engagement in studying thousands of records over several years also improved credibility. This is because my observations and interpretations of the data were not limited to a brief time period. Rather, I had many opportunities to reflect on the research findings and think about how the patterns might be applied to the design, development, and delivery of instruction. Therefore, these patterns can be said to have withstood the test of time. In addition, the successful application of the first three patterns to instructional problems experienced by several USU faculty increased the likelihood that these patterns were grounded in real instructional events.

*Dependability*

The dependability of the findings was enhanced by acknowledging my background as a student, teacher, instructional designer, and researcher. Notes about my background should help readers recognize possible sources of bias in the interpretation of the data. For example, because I tend to view instruction through the eyes of a former teacher and instructional designer, I am more likely to be sympathetic to the instructors and not blame them when problems with the instruction occur. Instead, I try to find problems that occur due to the design of the overall instructional system. Consequently, I tend to not give much weight to statements that criticize an instructor's personality or style, which other researchers (e.g., Litke, 1995) might consider to be more important in their studies of student written comments. Statements about my background also help readers understand the level of professional expertise that has informed the data analysis. In addition, extensive information was provided about the historical context of the research within the university, allowing readers to see how that history influenced decisions regarding the collection, sampling, coding, and analysis of the data.

*Transferability*

The transferability of the findings was increased through a thick description of the context in which the research occurred. Limitations regarding the generalizability of the findings were also explicitly stated. In addition, the purposeful sampling of data from all colleges and departments in the university increases the probability that the findings can be applied to a variety of courses. Furthermore, by purposefully including small, medium, and large courses in the sample, it is more likely that the patterns may be used in many

different classroom settings.

*Confirmability*

The confirmability of the research was enhanced by collecting data from a wide variety of classes across the university. The written comments that were sampled and coded came from every department in the university, making it easier for more readers to acknowledge that the findings might be grounded in real-world events. Confirmability was also enhanced through prolonged engagement with the data through multiple rounds of analysis. The details of my engagement with the data are outlined in more detail in various sections of this text that deal with the historical context in which the research was carried out and the research methods that were used.

*Methodological Limitations*

At this point, mention should be made of several methodological issues that may reduce the trustworthiness of the findings from the two research studies. These issues may be related to (a) the methods and techniques of data collection and analysis, (b) the qualifications, experience and perspective of the researcher, and (c) the underlying credibility of the theoretical orientation and assumptions in which the study is grounded (Patton, 1990, p. 461).

*Data collection and analysis.* The data collection method used in these studies limited the types of information that could be gathered and the types of analysis that could be done. In the data collection, students' comments were simply photocopied and organized according to department. No attempts were made to gather information that

could be used to correlate the types of comments on the backs of the forms with the survey questions listed on the front of the forms. In addition, no attempts were made to correlate students' comments with particular teachers or departments.

These limitations partly arose out of time and resource constraints under which the data were collected. Since there was a limited time in which all the comments could be recorded (approximately 1 week), and since all of the students' comments were written on paper forms, a quick method of copying these comments was required. The university did not have a high-speed electronic copier that could have made the copies as fast as a photocopier, so it was necessary to use paper copies of the students comments. Because of the problems that commonly occur in making large numbers of photocopies—faded copies due to low toner levels, paper jams, multiple pages run through the feeder—there were certainly some copies that were missed. However, the sheer volume of the data set minimizes any concerns that might arise due to these factors.

The requirements set in place by the USU Office of Analysis, Assessment, and Accreditation also restricted the identification of student comments with particular teachers or courses. Access to the data set was given with the understanding that no attempts would be made to identify teachers or students. Furthermore, it was understood that the data analysis would not involve correlations between the types of comments made and the instructors or departments.

*Researcher credibility.* It is clear that the findings of this type orientational qualitative inquiry are heavily dependent upon the subjective perspectives of a single researcher. Readers may question whether they would arrive at the same conclusions if

they were to examine the same data using the same research methods. Regarding researcher credibility, Patton (1990) claimed, “the credibility of qualitative inquiry is especially dependent on the credibility of the researcher because the researcher is the instrument of data collection and the center of the analytic process” (p. 461).

In relation to these studies, readers may ask two questions about researcher credibility. First, it may be asked if the researcher has the expertise necessary to understand and interpret the data. To help readers determine the answer to this question, I have tried to address this issue in part by including information about education and work experience as teacher, student, and instructional designer.

Second, it may be asked if the researcher’s understanding of the data is so unique and constrained by individual perspective that the findings are relatively useless to others. This second question cannot be completely answered through the sharing of information about the researcher. It requires the reader to examine their own assumptions about the data, their own beliefs regarding the value of qualitative research methods, and their own opinions about the role a researcher should take in analyzing and interpreting the data. In any type of orientational qualitative inquiry, it is assumed that the study will be bounded by a unique perspective. What is asked of the reader is to consider the usefulness of the perspective in providing new insights into the phenomenon being studied. So, much is up to the reader when it comes to determining the credibility of the researcher. Regarding what the researcher can do to help readers establish credibility, Patton (1990) stated, “What is required is that the researcher be very clear about the theoretical framework being used and the implications of that perspective on study focus, data collection,

fieldwork, and analysis" (p. 87). Some of this information has already been shared in this study. Some information will be found in the next chapter in which the results of the studies will be shared. It will be up to reader to examine all of this information and determine if the findings and the researcher are credible or not.

*Theoretical orientation and assumptions.* The main issue that most readers will probably have with the theoretical orientation of the two studies is that the coding and analysis was based on Alexander's (1979) ideas about the quality without a name and his method of design through the application of patterns. As previously noted, Alexander's method of design is not one that is commonly used among teachers or professional designers. Consequently, the assumptions upon which his theory is based may seem peculiar to readers who are not familiar with Alexander's work. The mere fact that he used the phrase "the quality without a name" to name the quality he wished to describe is somewhat ironic, and this may confuse some readers. After all, if it does not have a name, can it really exist? However, readers should understand that Alexander used that phrase in part to emphasize the precise nature of the phenomenon and remind the reader that when they experience this quality they may have difficulty communicating the entire experience through individual words. Nevertheless, even though it may be difficult to describe this quality and to understand it intellectually, it should be remembered that Alexander claimed this quality is real and that it can be readily identified by asking the simple question of whether or not the artifact, event, or experience feels good. If readers wish to check the trustworthiness of the findings, they may wish to simply ask themselves if they believe the patterns would result in instruction that would feel good to

them. This is a simple but effective test that will help readers check their own theoretical orientation and determine if they can accept Alexander's assumptions, as well as the assumptions of the researcher.

An additional methodological issue stems from the fact that there is still much left to be studied and learned from the data. This is an issue that is common in many qualitative research studies. The data that is collected is often so information-rich, and the time and resources available to support the research are so limited, that it is impossible to address every possible interpretation of the data. With qualitative research, there is almost always some additional analysis of the data that may be conducted or some additional interpretations that might be made. The main goal, however, is not to squeeze every possible bit of "truth" out of the data. Rather, the main goal is to achieve a satisfactory answer to the questions initially posed in this study—in this case, the identification of useable teaching patterns will suffice to achieve the goal of this study. In the end, the usefulness of this study will be determined by the extent to which it is beneficial to those interested in developing an understanding of teaching patterns and applying them in higher education settings.

# CHAPTER V

# RESULTS

## Pattern Format and Writing Conventions

The six patterns generated in both the exploratory and extended studies will be defined in this chapter. Each pattern will be given a name, followed by an overall explanation of the ideas behind the pattern. This explanation will be supported by quotes from students that epitomize the pattern. In addition, a general interpretation of how each pattern relates to *the quality without a name* will be included. A summary definition of the pattern will then be presented in a standardized format that can be used to communicate the pattern and its uses. Finally, suggestions will be made regarding the application of the teaching pattern to the design of instruction.

Before proceeding to those results, there are a number of things that should first be addressed. First, it is important to remember that the first three patterns generated from the exploratory study were coded and analyzed using a different method than the last three patterns, which were generated in the extended study. In the exploratory study the first three patterns were (a) generated from a smaller sample of student comments, (b) based on a coding scheme that emerged from the student comments, and (c) later reviewed to ensure that the comments and the patterns were related to the words and phrases Alexander used to define *the quality without a name*. In the extended study the last three patterns were (a) generated from a larger sample of student comments, (b) based on a coding scheme that was predetermined and derived from Alexander's

definition of the quality without a name, and (c) analyzed and organized using the Nvivo 7 software program. Although the methods in these two studies differ, the patterns that were generated both have the same format and share common connections to Alexander's definition of *the quality without a name*. These connections will be clearly stated below as each pattern is defined and interpreted.

Second, please note that the student quotes include many of the original errors in spelling, grammar, and punctuation. In certain cases where the errors were difficult to reproduce in an electronic document, or if their inclusion made the text difficult to read, corrections have been made. However, whenever possible errors have been left in the quotes to help give them a more authentic feel to the reader. This is a common practice in recording and reporting quoted material in qualitative research studies. These errors will not be marked by the conventional use of the marker [*sic*], as is recommended by the American Psychological Association style manual. Since there are so many errors, repeated use of [sic] would interfere with the easy reading of many quotes, as well as detract from the character or personal quality present in many quotes.

Finally, another convention will be used within the quoted material involving the use of brackets. In order to protect the confidentiality of the students and teachers referenced in the quotes, some types of identifying information have been removed from the quotes, including names and any information that might identify the teacher, class, or department in which the student was enrolled. This information is substituted by generic names or phrases that describe the information removed. The insertion of such substitutions are indicated by placing the alternate words or descriptive phrases in

brackets (e.g., “Dr. [Smith] is the best [subject matter] teacher I’ve ever had!”).

## Teacher Enthusiasm Pattern

One of the most often repeated aspects of instruction mentioned by students had to do with the level of enthusiasm that teachers exhibited during class. Students stated that they enjoyed being taught by teachers that show enthusiasm towards three main things: (a) the subject matter of the course, (b) the students, and (c) the act of teaching. The quotes related to this pattern show that while students may emphasize one of these types of teacher enthusiasm, there is a close connection between all three. Sometimes, they are even mentioned in the same sentence.

### *Subject Matter*

Students greatly admire teachers who have mastered the knowledge and skills in their domain of expertise. However, students recognize that enthusiasm for the course subject matter includes an affective element that must accompany content mastery. Teachers with this enthusiasm do not just exhibit highly positive dispositions towards course content. They are also able to facilitate the transfer of their passion into receptive students. The quotes listed below indicate some of the ways teachers have shown enthusiasm for the course subject matter.

> Dr. [Smith] <u>really</u> knows the subject well. His lectures were interesting and I liked how the class was organized as compared to other classes. The material was also more exciting than I expected it to be.

> Dr. [Smith] makes sure that the ideas he is trying to convey are well understood by the students. His enthusiasm and understanding for the subject matter is also clear.

> I like how he's so passionate about this work & really tries to make you understand the concepts & the importance of it all.

*Students*

While students will admire teachers who care about the subject matter, they tend to make strong personal connections with teachers who also care about them and are genuinely concerned with their success. This does not mean students expect teachers to coddle them through the course. On the contrary, students often interpret high expectations and standards as a sign that the teacher honestly cares about them. Students appreciate teachers who relate to them and strive to ensure student success both in the classroom and in professional endeavors after graduation.

> Dr. [Smith] has excellent knowledge of the subject matter and is one of the greatest instructors @ this institution. He <u>wants</u> us to succeed and that desire is obvious if the students ask him for help.

> [John] brings extraordinary enthusiasm and expertise to class. He captures students' attention & interest, while still holding them to high standards. He made the material come alive—I even had [subject matter] dreams!

> Dr. [Smith] believes in everyones success individually. She was always approachable and willing to help the learning process.

> I think the thing that I am most grateful for is the fact that Dr. [Smith] is the first teacher who cared enough to let me come shockingly close to failing a class.

*Act of Teaching*

Professional mastery of the subject matter and personal concern for the students may win student admiration and affection, but students especially appreciate a teacher who shows enthusiasm in carrying out their professional role as a teacher. Scholarship and compassion must be accompanied by enthusiasm in carrying out a variety of teaching

activities that will be referred to collectively as the "act of teaching." The act of teaching involves a host of technical skills. However, students place a premium upon those skills that allow a teacher to communicate with them and guide them through the course to successful completion.

> Dr. [Smith] did an amazing job with this course. She always made it fun to learn. The students could tell that she loved what she was doing, & it helped me love what I was learning. Also, she is just an amazing instructor. She presents the info. in such a way, that I always felt prepared for my exams. What an amazing example to look up to.
>
> The teaching was incredible. Some of the material by nature can be boring but he makes it so interesting & fun. I'm actually disappointed when class ends. The willingness to help students learn was impressive. He's the only teacher I've had that I felt really wanted students to learn & would be disappointed if they didn't. The educational system needs more teachers like [Smith].
>
> Although he scares the living crap out of me, Dr. [Smith] is one of the few teachers I've had who knows how to teach.

*Interpretation of the Teacher Enthusiasm Pattern*

The *teacher enthusiasm* pattern that emerges from these comments can be defined as a balanced combination of teacher enthusiasm towards the subject matter, students, and the act of teaching. In order to qualify *teacher enthusiasm* as a pattern, it must be shown that students feel *the quality without a name* when *teacher enthusiasm* is present in an instructional event. The central point of the comments above is that students do feel especially good when there is a strong connection between professional scholarship, personal concern for the students, and expertise in teaching. While teachers may have strengths in only one of these areas, such as outstanding enthusiasm towards the subject matter, students recognize they feel better when there is a complementary mix of all

three. Using Alexander's terms, one may say it is the combined enthusiasm towards subject matter, students, and the act of teaching that makes the instructional experience come "alive" and provides a sense of "wholeness" and "freedom." For example, one student mentioned how an instructor kept "Bringing in different topics to keep things alive." Interestingly, this sense of "life" can be found in the student comment, "I'm actually disappointed when class ends…." This sense of disappointment is the type of "bitter quality" Alexander (1979) mentioned which accompanies the realization that such an experience cannot continue indefinitely—it "somehow reminds us of the passing of our life" (p. 40). Students may even feel a sense of regret when they cannot continue the instructional experience and learn more.

One explanation of the sense of wholeness and freedom that arises from this pattern is that students recognize they have more options or choices because the instruction has somehow changed them. They see that new skills and increased knowledge have been integrated into their own personal and professional lives. Indeed, an enthusiastic teacher has the power to alter students' lives in a very deep and lasting fashion. Occasionally students express this type of life-altering change in their comments, often as notes directed personally to the instructor.

> I loved how organized this course was… I really felt like I knew what it was I was supposed to learn, how what I was learning applied to real life, and what I was being lead to learn in the future. Really organized and sequential… I loved it. Dr. [Smith] is also one of my favorite professors. She is flexible & sensitive to the needs of her students, but still is a driving force to help us learn, grow, and be better people.
>
> Thank you Dr. [Smith] for sharing all you know with us. You filled my day with joy and hope. Thank you so much.

> Wonderful class! I have never had an instructor who was so prepared & so determined to provide students with the necessary knowledge and skills. Dr. [Smith], you have had a large influence on me both as a professional & as a person.

Clearly, students appreciate teacher enthusiasm in any form. However, the instruction comes alive and feels whole when instructors enthusiastically pursue their roles as scholars, counselors, and coaches to provide new opportunities to students by helping them develop life-long knowledge and skills.

### *Framework for Communicating the Teacher Enthusiasm Pattern*

Returning to Alexander's definition of a pattern, we see that each pattern includes (a) one or more problems, each one defined as "system(s) of forces," (b) the context(s) in which the problems occur, and (c) a solution in which the forces are resolved. Along with these three pattern elements, it is necessary to provide a name for the pattern so that it can become part of the pattern language. In addition, it is helpful to include information that will aid in connecting this pattern with other related patterns. These pattern elements have been incorporated into a simple framework that can be used to communicate teaching patterns in written form. This framework includes a pattern name, a statement of the problem underlying the pattern, contributing forces that drive the problem, the context in which the problem occurs, one or more solutions to the problem, and any related information that will aid in connecting this pattern with other related patterns.

**Pattern Name**: Teacher Enthusiasm

**Problem**: How to increase the sense of enthusiasm that students associate with the teacher.

**Contributing Forces**: (1) Attitudes of the teacher towards the subject matter, the students, and the act of teaching. (2) Attitudes of the student towards the subject matter, the teacher, and the act of learning from the teacher.

**Context**: An instructional setting in which there is considerable interaction between the teacher and the students, or in which the teacher chooses to be the main medium for the delivery of instructional messages. This applies to both long and short-term instructional settings, ranging from individual instructional activities within a single class or over an entire curricular program.

**Solution**: Teachers may increase the level of enthusiasm that students feel by showing (a) increased levels of scholarship and enthusiasm towards the subject matter, (b) genuine concern and enthusiasm towards the students, and (c) mastery of and enthusiasm towards the act of teaching. Teachers should seek to provide a complementary mix of these three areas, as deficiency in any one area decreases the overall effect. By modeling positive dispositions towards these areas, the teacher improves the possibility that students will adopt these same attitudes towards the subject matter and the act of learning. In addition, the level of concern and enthusiasm reflected back towards the teacher is likely to increase.

**Related Patterns**: Use this pattern in connection with the *balanced curriculum* pattern to ensure that students have an appropriate course workload. By combining this pattern with the *clear and appropriate assessments* and *authentic connections* patterns, there is a greater likelihood that students will feel that the teacher cares about them and is enthusiastic about providing helpful feedback.

This pattern is also closely tied with the *negotiation and cooperation* pattern, and teachers should consider applying both patterns simultaneously in order to increase opportunities to show enthusiasm towards the student and build trust.

This particular framework is only one possibility for the communication of teaching patterns. In fact, there are many types of patterns in the fields of architecture and computer programming, each one with its own strengths and weaknesses. The above framework is simple, concise, and closely matches Alexander's ideas of what a pattern should include. As research continues in this area, more useful pattern templates may be developed. Nevertheless, even this single simple pattern framework can be applied to a wide variety of teaching and instructional design patterns. As new applications are discovered, changes in the text may be accommodated. In addition, diagrams or drawings may be incorporated into the overall description of the pattern.

### *Application of the Teacher Enthusiasm Pattern*

The *teacher enthusiasm* pattern can be applied to instructional problems involving, decreased motivation, and interest levels for both students and teachers. It can be used to generally improve an entire course, or it can be applied to individual instructional events in which there is interaction between teacher and students. Since this pattern resonates so closely with characteristics of Alexander's *quality without a name*, attention should be paid to its application early in the course design process. This allows the pattern to permeate instruction at many levels, providing a type of fractal quality in which the pattern is repeated in all instructional events and artifacts used in the course.

## Balanced Curriculum Pattern

Students expect teachers to provide balance to a number of aspects of instruction. In this pattern, teachers are asked to focus on (a) the *depth and breadth* of the subject matter, (b) the *pacing* of learning activities, and (c) the *variety* of what students learn and how they learn it. These three aspects of instruction work together to provide a sense of balance to the overall course curriculum. While each aspect may be appreciated on its own, these three aspects have the greatest influence on student learning when they are all present at the same time.

Before reviewing each aspect of this teaching pattern, a note about the student quotes is in order. While the *teacher enthusiasm* pattern was primarily based on the positive aspects that students notice in their teachers, the *balanced curriculum* pattern is primarily based on negative aspects students noticed about the content and the way it was delivered. A few students do take notice of certain aspects of a well-balanced curriculum, but it is easier for most students to notice when the curriculum is out of balance. Consequently, many of the quotes used to describe the *balanced curriculum* pattern will reflect negative experiences with the teacher and the course.

### *Depth and Breadth*

Students often are concerned with what they see as imbalances in the depth and breadth of the course content. Their perceptions of this are partially predisposed by the way in which the course title and description are listed in the university catalog. Perceptions are also heavily influenced by the course information provided on the

syllabus and during the first week of class. Student expectations are set during this time, and if the course does not go according to those expectations, they will frequently become frustrated and feel like they have been misled by the teacher. Consequently, it is important that teachers outline the expected depth and breadth of the curriculum in two areas: (a) the subject matter content, and (b) the academic and real-world applications of knowledge and skills.

*Subject matter content.* Students want to know if a course is going to go into a few ideas in depth or if there will be a broad overview of many ideas. It is typical for students to complain that breadth courses do not go into enough detail about the concepts and the ideas. It is also typical for them to complain that depth courses do not provide them with enough information about other important ideas. This can lead to seemingly contradictory statements about their wishes. From the comments listed below, it is clear that some students prefer to go into depth on topics, whereas others want to explore a broader scope of ideas. Teachers must try to understand their students' level of expertise in order to select an appropriate balance between the depth and breadth of the subject matter. In addition, teachers must balance the content requirements of the department, college, and university. Whatever that balance may be, students should be given a sense of how broadly and how deeply they will need to study to pass the course.

> The course was very broad. It was hard to know exactly what was expected. He went over a lot of information and was somewhat knowledgeable about all of the topics but it seemed that the lack of focus on two or three areas made it hard to teach and hard for us to understand. I would rather pick a few pieces of [subject matter] and go into more detail. I think this would provide more valuable information and make the course a lot more effective.

> I thought that the way the course assignments were set up allowed for one to learn

> a great deal about a small number of subjects. The drawback was that the rest of the [subject matter] was neglected. For example I learned a lot about the topics in my annotated bibliographies, but learned almost nothing about many other important subjects which I would have liked to learn about. I would also like to see a few class periods devoted entirely to [subject matter] and discussion of [subject matter].
>
> The course is fairly deep for a breadth course. I had very little knowledge about the subject and found it was a little difficult to follow at some points. maybe the content could be lightened a little bit.
>
> This is only a 2000 level course. It should be simpler. the instruction was way too in depth, for the understanding of the students.
>
> No improvements are needed on the part of the instructor, however the course material was very broad and difficult to grasp toward the end of the semester. I've been wondering why this course is so broad based? What is the purpose? That should be clarified on the first day of class.

*Academic vs. real-world applications.* Students are very concerned about how useful their academic knowledge and skills will be in pursuing a real-world career. Students appreciate instruction that allows them to see how they will be able to apply what they learn in their professional lives. They especially enjoy those classes in which they have an opportunity to engage in learning activities that allow them to practice what they have learned. While it may not be possible to provide such activities in every class period, teachers should try to find a balance of academic and real-world applications of knowledge and skills.

> [John Smith]! The class was everything I expected in other [subject matter area] classes but did not receive. [John's] enthusiasm & teaching methods were fantastic! I learned more in this class that will prepare me for a career than all my other [subject matter area] class combined.
>
> I loved how the instructor used real world examples (current events) to show how [subject matter area] relates to real life events. He was very enthusiastic and I learned a lot.

> This was the best teacher I have ever had at USU. He was born to teach. The class was difficult. Up till this semester I had worked throughout all of my college experience. I couldn't have been able to work with the homework load of this class alone. At the same time I have learned the most & most applicable info. This class alone prepared me for a [subject matter area] career.
>
> You really live and practice what you teach, so it made the course more real. I think that your ideas and theories for [subject matter] will benefit me in my personal and professional future. Thanks!!

*Pacing*

Nothing discourages a learner more than falling behind in class. Moreover, nothing bores a student more than not having an appropriate level of challenge in the content and instructional activities. Students want teachers to provide a pace that allows them to learn the maximum amount without feeling overloaded. They particularly want teachers to manage the pacing of (a) in-class activities, (b) homework, and (c) tests and other assessments.

*In-class activities.* Students do not enjoy feeling rushed to get through all of the lecture materials or instructional activities that the teachers provide in class. They want teachers to pace the in-class activities so that there is a smooth progression of ideas and sufficient time to complete all of their assignments. If the teacher rushes things, students tend to view it as a problem that the teacher has with organizing content and managing time, not as a problem that they have with keeping up with the workload. In contrast, some students resent it if the teacher seems to be wasting their time. Teachers must find a balance that keeps students engaged in challenging activities but is relaxed enough so the students do not feel rushed. Students appreciate well-organized classroom activities that allow them to proceed at a pace that keeps the subject matter interesting, yet they do not

want to be overwhelmed with information to the point that they become anxious about achieving the instructional goals. Teachers must adjust the pacing of in-class activities so that the abilities of the students are challenged at an appropriate level.

> Don't rush through difficult material, just to make sure that it has been mentioned. Perhaps pick only the most important aspects when the class is struggling.
>
> It seemed the professor ran through material and lectures too fast so she could get to our peer reviews, which I think were too excessive. It almost seemed to me like an excuse not to lecture. It would have been more helpful if she would have given us more time with her, prepared and not reading straight from a handout. I found myself not wanting to come to class because I felt I wasn't benefitting from it.
>
> I seem to recall a day where we spent more than half the class period just talking about [class assignment]. Honestly, I was angry because it was a waste of time which I could have been using catching sleep. If I had known beforehand, that day, we would be wasting time I wouldn't have gone to class. Some of us had no problem understanding the format.
>
> Better organization as to where the info we are being tested on is coming from. More clear lectures. Move faster through the material. We could cover more.

*Homework.* Homework assignments are an important part of the overall instructional experience that should be provided as part of any course. At USU, as well as many other universities, students may be expected to spend two to three hours doing homework out of class for every hour spent in class. This expectation can, of course, vary widely depending on a variety of circumstances. For example, courses taught during the Summer semester typically require less homework, since if the class meets for 3 hours a day for 4 days a week, it would be difficult to complete 9 hours of homework between classes. Consequently, teachers must consider the way in which student homework assignments are balanced throughout the course. Students want freedom to pursue homework assignments on their own schedule, yet they want strict assignment due dates

to keep them from procrastinating. They also want the in-class information on homework assignments to be provided on a timely basis so that they do not feel the anxiety of getting closer to an assignment due date but still not understanding what the teacher's expectations are for completing the assignment. Teachers must try to balance the pacing of homework so that students are given a fair chance to complete all assignments within a reasonable time frame.

> Too much information, too fast. I had a hard time keeping up with this class along with my other classes.
>
> Message for future students
> This class is a journey into hell! Those who are followers of the Marquis de Sade will enjoy watching their fellow students being slowly crushed to death under the pressure of Dr. [Smith's] class load! Make yourself a schedule and keep to it!
>
> I've found in many [subject matter] classes the instructors wait until near the deadline of an assignment to discuss it. This is not very helpful for those who like to complete assignments as early as possible. I've often had to let good [subject matter activity] time simply pass by because the next step has not been covered in class yet. This can get frustrating when I try to work ahead to ensure a good solid [product] and provide time for homework due in other classes.
>
> Deadlines throughout the semester. Most of us are procrastinators and now have a ton to do to finish up this class.

*Tests and other assessments.* Students are naturally more anxious about graded tests and other assessments than they are about non-graded learning activities and homework assignments. The pacing of tests throughout the course is an important factor in how much they learn and what kinds of grades they receive. In general, students prefer having more assessments over small amounts of material, rather than a few tests that cover major portions of the course. The pacing of tests should be considered along with the pacing of homework assignments so that the workload remains relatively even and

balanced throughout the course. This helps students manage their schedules better and keeps them from becoming "burned out." This also helps the teachers, as they can better manage the quality and quantity of feedback that they provide on tests or assignments. This improved level of feedback leads to greater learning gains for students.

> I really liked having more tests over less material. I feel I was able to learn the material better that way.
>
> The tests could be improved. I think the #1 problem is they cover way too much material on one test. I would much rather have 5-6 little tests instead of 3 huge tests. Also, they are so in detail that it's hard to remember the nitty-gritty details the questions ask about.
>
> The labs in and of themselves are VERY time consuming so those plus all the quizes online was a lot, especially since the exams, and the labs, were almost 2 completely unrelated things. I just seemed like too much workload to actually have time to learn the concepts Dr. [Smith] wanted us to know.
>
> There was a bucket-load of assignments that became quite overwhelming for this course. I felt like we had as many assignments in [class name] as in all other 4 classes combined.
>
> Meeting 4 times a week with something due everyday + a lab has burned me out.

*Variety*

The old adage that "variety is the spice of life" rings true for many aspects of instruction. Students take notice of things that continually change and those that always remain the same. They will even note small details about the teacher's appearance that are always the same. For example, one student wrote, "What's with the sweaters?" Another wrote, "I wonder what you'd look like w/out a beard." Students expect variety in certain aspects of a course, and they appreciate it when they experience variety on a regular basis. Students especially appreciate variety in (a) the subject matter, (b) the

instructional strategies, and (c) the message formats and media delivery technologies.

*Subject matter.* Students want variety in the subject matter that is covered in class. They particularly want variety in the examples used to clarify concepts and to show how knowledge and skills may be applied. Most of all, they do not want to feel they are wasting their time by going over material they already know.

> Specific, real life examples & stories helped deepen understanding of the subject greatly.
>
> Give more specific examples of [subject matter] & how the things taught are used.
>
> [John] is very enthusiastic about [subject matter area]. The class was very interesting. Most professors just get up and give a boring lecture and the students don't get anything out of it, but this class was interesting all the way through and the things we learned will actually be applied in real life. Excellent job!
>
> It seemed like the material was drawn out & beat to death! More material is needed in lectures.
>
> Don't drone on about nothing please say something to keep me coming to class and keep me from contemplating suicide to put me out of my misery.

*Instructional strategies.* Along with variety in the subject matter, students enjoy variety in the way that the course content is taught. Students especially want variety in the instructional strategies used during in-class learning activities. Note in the following quotes how many different types of strategies are suggested by the students.

> The class got kind of boring at times with the same things going on. Maybe the teacher could take a different approach by showing more movies, having more guest speakers, and having more group activities.
>
> The study guides really helped. The examples and videos and guest lectures were good. The handouts were helpful. She kept us interested the whole time, even though it was 2 hours long. The assignments helped in learning.
>
> I personaly don't like powerpoint presentations <u>every</u> day. More student involvement in research/teaching.

> Use of overhead projections, analogies, visual examples really helped. Repeating important information and speaking precisely and clearly. Maybe more visual aids and inclass experiements (like a Bill Nye teaching style).

*Message format and media delivery technologies.* Variety in content and strategies is enhanced by variety in the message formats or media delivery technologies used to convey content and carry out learning activities. If teachers feel that they must reinforce the same content or use the same strategies, they can often introduce variety by saying and doing the same things using different media.

> I loved how you used multi-media w/ overheads, slides, film clips, articles, etc. It made the class a lot more interesting.
>
> Give more variety to the class-room experience, i.e. videos, visual aides etc.
>
> I thought the teacher was very knowledgeable about the material & provided plenty of aids to help the learning process, such as outlines, useful homework, & practice exams.

### *Interpretation of the Balanced Curriculum Pattern*

The argument may be made that the three elements contained within the *balanced curriculum* pattern—depth and breadth, pacing, and variety—could probably be listed as their own individual patterns. However, since there are so many interconnections between these three elements, it is clear that they have a complimentary nature. The depth and breadth of the content covered depends to a great extent upon the ability of the teacher to set an appropriate pace for the course. In addition, the pacing of the course helps determine the variety of instructional strategies and media delivery systems that may be used. However, the pacing of the course is difficult to determine without

considering the depth and breadth of the content, the teaching skills of the instructor, and the availability of certain types of media delivery technologies. Consequently, these three elements must be considered in parallel when designing a course. They must also continue to be adjusted during the course according to the needs and abilities of the students. When teachers are able to find and maintain the right balance for the course curriculum, students are then able to maximize learning gains because they can be continually challenged without experiencing work overload.

*Framework for Communicating the Balanced Curriculum Pattern*

**Pattern Name**: *Balanced Curriculum*

**Problem**: How to ensure balance within key aspects of the curriculum, including (a) the depth and breadth of the subject matter, (b) the pacing or timing of learning activities, (c) and the variety of learning activities and teaching strategies.

**Contributing Forces**: (1) Expectations of the teacher and students regarding what is to be learned. (2) The limited amount of time in which learning goals must be met. (3) The skill level of the teacher in using a variety of instructional strategies and media delivery technologies.

**Context**: An instructional setting in which there is considerable interaction between the teacher and the students, or in which the teacher chooses to be the main medium for the delivery of instructional messages. This applies to both long and short-term instructional settings, ranging from individual instructional

activities within a single class or over an entire multi-course program.

**Solution**: Teachers may ensure a balanced curriculum by (a) determining the appropriate amount of depth or breadth of subject matter and communicating it to the students, (b) keeping a balanced schedule of activities, assignments, and tests, and (c) providing a balanced use of a variety of subject matter topics, instructional strategies, and media delivery technologies. By keeping these aspects of the curriculum balanced, the instructor improves the chances that students will be able to achieve the instructional goals without being overwhelmed by the workload.

**Related Patterns**: Use this pattern in connection with the *teacher enthusiasm* pattern to increase levels of enthusiasm students associate with the teacher and to increase the positive attitudes they have towards the subject matter and learning activities. This pattern should also be used in close connection with the *clear and appropriate assessments* pattern, as the scheduling of tests and other assessments will influence how students view the fairness of the assessments. If this pattern is applied together with the FLOW OF TIME pattern, students will have a greater sense of balance in the pacing of course learning activities. In addition, if the *negotiation and cooperation* pattern is applied in concert with the *balanced curriculum* pattern, it gives the instruction a generative quality, allowing the teacher and students to work together to determine what will be learned and how it will be learned.

### *Application of the Balanced Curriculum Pattern*

The *balanced curriculum* pattern can be applied to instructional problems in which students feel either overwhelmed by the course workload or bored by the lack of interesting content and instructional activities. It can be used during the design and scheduling of a course, but it is also a pattern that lends itself to daily adjustments of the curriculum. Successful application of this pattern depends upon the teacher's knowledge of the overall curriculum in which the course is set. It also depends upon the teacher's ability to manage time and willingness to hold students accountable for their work. Teachers must also be willing to take a certain amount of risk. They must be willing to expand their subject matter knowledge in order to bring in a variety of new ideas. They must be willing to learn and then try out new instructional strategies. They must also be willing to move out of their technological comfort zone and experiment with new message formats and new media delivery technologies. To mitigate this risk, teachers should take time to explain to students what they are doing and the reasons why. Students will then be more likely to cooperate and share some of that risk because they realize the teacher is just trying to provide a better quality learning experience.

## Clear and Appropriate Assessments Pattern

The title of this teaching pattern and other language used to describe the aspects of this pattern is partially based on Stiggins' (2005) work on student-centered assessment. Stiggins claimed that assessments are an essential part of the learning process, and that these assessments should be based on (a) clear learning objectives, (b) appropriate

assessment methods, and (c) fair assessment criteria (pp. 27-28). While Stiggins' work has informed my own thinking about assessment and the formation of this basic pattern, this teaching pattern is well-supported by student comments.

*Clear Learning Objectives*

Students want to know what they are expected to learn. Without clear learning objectives, students spend a lot of time and attention just trying to figure out what the teacher wants. In addition, without clear learning objectives, teachers have difficulty holding students accountable for learning. Many times, if teachers will simply explain what they want students to learn, the students will do whatever it takes to learn it, no matter what the teacher does or does not do to facilitate learning. When teachers provide clear learning objectives, they set the stage for student success. When they do not, they increase the probability of student failure on all forms of assessments. Moreover, when students fail tests based on unclear objectives, they will lay the blame on the teacher, not themselves. However, it is not enough for teachers to just state the objectives. Students need to see a clear connection between those objectives and the assessments. Note how in the following quotes that students not only ask for clear learning objectives, they also demand that those objectives be related to their assessments.

> I felt like I didn't know exactly what my responsibilities were and felt that [subject matter] could be more thouroughly explained.
>
> Make the objectives for the assignments and test more clear.
>
> Make assignments more clear and not so vague. Give more specific instructions. Don't expect us to know everything in the book and everything that was talked about in class. We don't have photographic memories.

> Sometimes the tests were worded in ways that I felt were confusing. Some of the questions did not appear to truly test the persons knowledge of the subject. I know this stuff & my assignment scores are great but my test scores are not.
>
> The tests, if you will, needed to be more applied to what we did on the homework. It is unfair to give tests that have topics that we didn't even cover in the homework. Every professor does this so this message is in vain.
>
> The object of his teaching was to get us to pass the tests. The object should be to learn the subject. I haven't learned Jack in this class except for how to memorize past tests. [Assessments] are a joke. They should at least be questions about the class or the subject. This is the crappiest teacher I have ever had!

*Appropriate Assessment Methods*

Once the learning objectives for the test are known, it is important for teachers to use assessment methods that can measure the attainment of those objectives in an appropriate way. Certain assessment methods lend themselves better to certain types of learning objectives. Students know that not all of what they have learned can be measured using a multiple-choice test. They want to be able to show their mastery of skills using performance tests. They want to explain what they have learned by communicating with the teacher verbally and through written assignments. However, regardless of the assessment method used, students want teachers to make sure every assessment is thoughtfully crafted so that it is a valid and reliable measure of what they have learned. In addition, they want the measures to reflect the type of authentic assessment that occurs outside of academic settings.

> The quizes were terrable! If 3/5 of my grade is going to come from them then a hell of a lot more work needs to go into them.
>
> I think at times instead of testing what we know, we were tested on our test taking abilities.

> Tests compared to the teacher's lectures are irrelevant. Nothing he spoke of was on the tests.
>
> I felt lectures should have been more thourough & relate more to what was going to be on the exam. This could be just me, but I feel I can learn better when I'm told & could write it down. My lecture notes never really pertained to exam material.
>
> I felt that the exams and assignments did not represent what was taught in the course or in the text book. I was very dissapointed in the assignments and felt that they weren't relevant to what was taught. I felt the exams did not accurately show my knowledge of the subject matter.
>
> I was very confused about what the term paper was all about. I found it very hard with our limited knowledge of [subject matter] to write such a detailed term paper. I think the term paper should be toned down a few notches.
>
> I thought the test and test reviews were very unapplicable. Questions on tests were directly from the book and had no relationship to the real world. It was more memorizing facts. A good example is the [subject matter] test. There is no real world application to memorizing such [subject matter] without a resource.

*Fair Assessment Criteria*

In addition to clear learning objectives and appropriate assessment methods, students want assessments to contain fair assessment criteria. They want the test to be an accurate reflection of what they have learned. They want the test to be straightforward and not include "trick questions" that are designed to purposefully mislead them. They also want the testing and grading procedures to be fairly applied and openly stated so that there is no mystery about how and why they received a grade. Students want teachers to set reasonable, objective grading standards that will equally apply to everyone in the class.

> [Smith] needs to learn how to test what he teaches. These stupid tricky questions are really quite dumb. Quite frankly, it doesn't represent really anything about if we have learned anything or not.

> Test on material that is taught. Teach subject matter. Test on subject matter. Trying to trick students into getting a bad grade is not an education. I received the worst grade I've ever received on the last test. I knew the material very well and deserved a better grade.
>
> When a standard for a test or assignment / project is given grade to that standard on what was given and not to what some else has done.
>
> The grading on the projects I feel should have been not as strict. If a person shows that they have a grasp on the knowledge the grading should be high for that person. The tests too. Knowing the material should get a high grade.

### *Interpretation of the Clear and Appropriate Assessments Pattern*

The comments above indicate that students appreciate instruction in which (a) the assessments are related to clearly stated learning objectives, (b) the assessment methods are an appropriate measure of those objectives, and (c) the assessment is graded using standard criteria that are openly communicated before the assessment is administered. If these three aspects are not present in the course assessments, the students will not feel that the assessments are valid, reliable, and fair indicators of their learning. However, when these three aspects are present, students are more likely to feel good about their test performance and the overall course. This is evident in the comments of one student who made the connection between the quality of the assessments and the overall quality of the course:

> I loved the tests because I felt that I finally could prove I knew the material instead of playing multiple choice word games. I felt the lectures were very applicable. This has by far been the best quality course I have taken in my 4 years here.

When teachers use the *clear and appropriate assessments* pattern to guide the generation

and use of various assessments, they will greatly increase the likelihood that students will experience *the quality without a name* throughout the course.

### *Framework for the Clear and Appropriate Assessments Pattern*

**Pattern Name**: *Clear and Appropriate Assessments*

**Problem**: How to provide valid, reliable, and fair assessments of student learning.

**Contributing Forces**: (1) Attitudes of the teacher and students towards assessment. (2) Organizational policies or cultural traditions related to assessment and grading. (3) Student test-taking ability or "testwiseness."

**Context**: An instructional setting in which there is considerable interaction between the teacher and the students, or in which the teacher is the main author and administrator of course assessments. This pattern may be applied to short-term, in-class tests that cover a few specific learning objectives or to large-scale assessments covering many interrelated learning objectives that span an entire course or academic program.

**Solution**: Teachers may improve the validity, reliability, and fairness of course assessments by (a) clearly communicating the learning objectives that are related to each assessment, (b) ensuring that assessment methods are appropriate measures of the stated learning objectives, and (c) using fair criteria in grading and administering the assessments.

**Related Patterns**: Use this pattern in connection with the *balanced curriculum* pattern to schedule appropriate times for assessments throughout the course. This

pattern may also be used with the *teacher enthusiasm* pattern to increase student confidence in their ability to do well on the assessments. In doing so, students will be more likely to think the teacher cares about them and wants them to succeed. Furthermore, this pattern should be applied with the *flow of time* pattern in mind, as this will help teachers communicate the value of different types of assessment for measuring learning over different time periods.

### *Application of the Clear and Appropriate Assessments Pattern*

The *clear and appropriate assessments* pattern can be applied to any and all assessments administered as part of the course. It can be applied to individual and group assessments for any type of learning objective. This pattern is closely related to *teacher enthusiasm*, *balanced curriculum,* and *flow of time* patterns, and it should be used in conjunction with those patterns in the design, development, and implementation of all course assessments. Teachers who do not follow this pattern will put students at greater risk of failure and reduce the level of cooperation they receive from students, as students who think tests are unfair will be less likely to continue to participate in instructional activities that are clearly not leading them to better performance on the assessments.

## Authentic Connections Pattern

Learning is, in many ways, a process of making connections. At the biological level, *learning* is a natural process in which one or more brain systems use information and/or energy (e.g., electrical, biochemical) from the external world to create lasting

connections between the various internal structures of the human brain (LeDoux, 2002). For example, in the field of cognitive psychology, theorists assert that the brain generates internal, mental representations of objects and events by establishing patterns of activity within interconnected groups of neurons (Squire & Kandel, 1999). Some researchers refer to these dynamic, networked, internal representations as *schemas* or *mental models* (Brien & Eastmond, 1994; Gentner & Stevens, 1983; White & Frederiksen, 1990; Winn & Snyder, 1996). Over time, the brain reuses and modifies these mental models by strengthening the connections between some neuronal structures and pruning away less useful connections. Thus, learning is a process in which mental models are generated or modified and stored for later reuse in long-term memory.

In contrast to learning, *instruction* is a process in which information and/or energy is purposefully introduced into the natural learning process to facilitate the generation or modification of certain types of connections (Gibbons, 2001). A teacher can use a wide variety of instructional materials and instructional activities to regulate the flow of information (subject matter content) or channel certain types of energy (activities) in a learner so that the desired connections are made between mental models. If the right connections are made in the right sequence, the instruction works and students feel confident in their mastery of the subject matter content. If the connections are not made, the instruction fails and students experience confusion.

While there are many qualities about these connections that could be explored, there is one key quality that students seemed to appreciate above all others—they want the connections to be authentic. They do not want the connections to be forced. They

want genuine, honest, real connections, and they will be critical of anything that feels artificial or invented.

The types of connections that students seek are not limited to the connections made between the ideas in a textbook or the individual skills they must learn as part of the curriculum. They also seek out practical connections between what they learn in the world of academia and what they will be asked to do in the world of work. In addition, students want to experience interpersonal connections between themselves, their peers, and their teachers. Finally, they look for intrapersonal, emotional connections in themselves that help them understand who they are, what they believe in, and what they want to do with their lives. Consequently, this pattern focuses on the ability of the teacher to facilitate (a) authentic connections between the subject matter content and instructional activities and the practical use of that knowledge in the world of work; (b) interpersonal connections between themselves, their fellow students, and the teacher; and (c) intrapersonal, emotional connections within the students themselves.

### *Connections Between Subject Matter Content and Instructional Activities*

If students have clear learning objectives, as is recommended in the *clear and appropriate assessments* pattern, many students may find the connections they want on their own. Clear objectives are prerequisite to making authentic subject matter connections. Also, if teachers apply the *balanced curriculum* pattern, additional connections will be made with the subject matter content and the academic versus real-world applications. There are, however, some other things teachers can do to facilitate

authentic connections between the subject matter content and the instructional activities.

Students appreciate teachers who show real mastery of the subject matter area by sharing their expertise on a regular basis. Students expect teachers to provide additional insights and perspectives to those found in the textbooks or other instructional materials required for class. They also like having guest speakers share stories of their professional experience in dealing with problems related to the subject matter. These speakers help students understand the connection between what they learn in class and what they will be doing in their careers. Furthermore, students want the assignments, examples, and case studies they complete in class to reflect real (versus theoretical) application of knowledge and skills in the "real world" of their professional work. The student comments sampled in this study contain a number of suggested improvements that show how important it is to them to be shown the practical application of the knowledge and skills taught in the course.

> Real-life examples & not just reading from the book. Assignments & in-class study of [subject matter organizations] & why they're successful. I feel like I didn't learn anything that can be used in the workplace.
>
> More examples, real world evaluations and case studies should be used to make subject mater more interesting. Lectures should be done more from experience than just reading out of the book.
>
> Although I enjoyed the review, it was a bit long due to the organization of [author's name] text. I would rather take less time reviewing fundamentals and spend more time on application and case studies as they tend to reinforce material naturally.
>
> The course objective. This is a senior seminar and students are graduating with most of us unsure of what we are doing with our education. I would like to see this course changed to help students see clearly what they can do with their degrees. Help provide a network between the students and the industry.

> I think the projects that were presented could be more closely related to our majors and help prepare me more for the work-world.
>
> I think he should teach material that is relevant to today's technology. Learning about material that was hot stuff 10 years ago isn't going to help us when we graduate.
>
> It all seemed self explanatory. You'll learn more in one hour of actual work than you will in an entire semester of this pointless class.

Along with these somewhat critical suggestions, students also expressed appreciation for those teachers who made authentic connections between the subject matter and their future careers.

> Dr. [Smith] relates things to the real world. He often shows us current events that deal with what we are learning at the time.
>
> The instructor gave numerous examples and ideas of [subject matter] activities which I thought were great. I also enjoyed doing authentic tasks for assignments instead of just doing busy work for a grade—it helped us put to use the knowledge we gained and helped us develop an idea of what works and what doesn't.
>
> Course material was very well related, whether by current example or class discussions, to issues outside of the classroom—I really feel that everything I learned in this class will be desiredly applied outside of the classroom.
>
> I feel as though I have learned so much more than I generally do in one semester, just by taking this course—especially in being given practical info. which I can apply to 'real-life'.
>
> Having us do some current research was good. It was nice to hear things that are very current and see the debate behind them.
>
> I liked that I will actually use the material that I learned when I finally graduate. The books were excellent & I will keep them to use in my practice. I'm excited that I haven't wasted my time or money! Thanks.
>
> Bringing in guests was very interesting, and [John's] use of past experiences made learning more interesting. This made the material seem more relevant to what we will actually be doing in the future. I loved this class! I learned a lot!

These and many other comments indicate that if teachers want to increase the appeal of instruction, they must pay attention to the authenticity of the connections made between the subject matter content and the ways in which students will integrate that content into their personal and professional lives.

### *Interpersonal Connections Between Students and the Teacher*

Instruction is an inherently social activity, and students expect to develop basic social connections between themselves, their fellow students, and their teachers. The key component of high-quality interpersonal connections is the level of trust that students are able to place in one another and the teacher. Interpersonal trust between students is generated as they exchange ideas through discussion and group work, with the understanding that there is mutual commitment to one another's academic success. Trust between the students and the teacher is created when the teacher shows that the students' best interests drive all instructional decisions, and when the teacher shows fairness and flexibility in dealing with the problems that inevitably arise. Part of this trust is dependent upon the teacher's willingness to enforce consistent discipline concerning course rules and university policy. Students want a teacher who is relaxed and willing to allow students to experience a bit of freedom in what they study and how they study it, but not at the expense of losing control of the classroom to students who continually interfere with the learning of others. The following quotes show some of the positive reactions students have had to teachers with strong interpersonal connections with students, as well as their appreciation of opportunities to make connections with their fellow students in a

well-managed learning environment.

> [Joan] was very organized, clear and understandable. I appreciated her ability to maintain control over the class at times when students could have derailed discussion! Really enjoyed the moments when [Joan] seemed to loosen-up and enjoy the class! Great job.
>
> Everything in this class was excellent. I really liked the atmosphere of the class. Feeling comfortable and relaxed made it easier to express opinions. Dr. [Smith] is a great professor and he's been very helpful throughout the semester. This is my favorite class!!
>
> Dr. [Smith] always has very good examples to along with what he is teaching. He is more than willing to help out any student that comes with questions or concerns. His upbeat personality really sets a good mood for the class. I was very impressed with the effort he made to learn everyone's names & obtain a more personal level with all the students. He goes above the line a duty in helping the class understand the concepts. He was faced with some challenging questions during class discussion & I feel he handled them very well. Outstanding!!
>
> I feel [Joan] was my favorite teacher here at the university. Not only did she teach well but treated us as friends and supported us in doing our best. I learned a lot about gaining information and research in many different ways that is going to be beneficial in many papers and presentations I have here at the university. I liked the relaxed atmosphere and the group work we did. She was good in trying to know us on a personal level and working with us and our schedules. Thanks for all your time and efforts in this class and making it a positive experience.
>
> I appreciated all the examples Dr. [Smith] presented in class. I felt they really helped to clarify certain aspects of the material. I also really appreciated how Dr. [Smith] made a huge effort to know everyone's names. I felt the class was much more personal and I felt that Dr. [S.] really cared whether or not I <u>personally</u> learn.
>
> Dr. [Smith] is amazing! She always comes to class prepared and well organized. She encourages participation and appreciates everyones comments. She never makes anyone feel stupid or alienated, which is especially important in a class of such a sensitive subject matter. She's extremely willing to help students outside of class time. I can tell that she genuinely wants her students to succeed & that she'll do whatever she can to help. She has realistic expectations for her students instead of being too demanding. On top of everything, she's nice too. Great teacher! And not all professors are.
>
> Mr. [Smith] loves teaching and it shows. He is always enthusiastic and energetic.

> He always has our class planned out with educational, yet entertaining activities. He always clearly explains everything we do and if we don't understand all we have to do is ask—he will drop everything to make sure we understand (and that is a hard thing to do with a class our size) he makes each of us feel special because he takes a personal interest in each of us.

These comments show that students pay attention to the way teachers treat all students in the class. Consequently, when students see that a teacher treats other students with fairness and respect, they are more likely to trust that teacher and cooperate with any requests that teacher might make regarding their studies outside of class or their behavior inside the class.

*Intrapersonal Connections*

The most difficult connections to facilitate are those that help students make internal, emotional connections that help them define themselves as human beings. Teachers must go beyond just showing students how the subject matter content is related or how mastery of the subject matter will help them achieve career goals. Teachers must help students understand how what they are learning can help them change who they are, how they think, and the way in which they will develop as a person throughout their lifespan. In short, students are interested in ways the course will help them develop life-long learning skills.

> I really enjoyed the overall atmosphere of the class. Prof. [Smith] handled all questions, interruptions, and problems with absolute professionalism. His examples took the text and made it applicable to my life, and more important in my opinion. I have really enjoyed his lectures. He came to class prepared everyday and expected the same out of us. The quality of learning is exceptionally high, I believe!

> I liked having the workbook. I think the assignments helped the students grasp the information & learn to adapt it into everyday life. I liked having guest speakers. I

> liked going to the [outside class learning activities]. I enjoyed broadening my view of [subject matter area] and how indepth it can be.
>
> This was a really fun class. I learned a lot of new skills and information that will be helpful to me in my life. I especially thought the teacher did a great job. He really knew about what he was teaching, and that helped us to learn.

Intrapersonal connections are not easily made. The teacher must help students understand how to consider how the subject matter and skills they have learned in class may have affected them at a personal level. This means the teacher must give students opportunities to engage in self-reflection about who they are and what is important to them, as well to encourage self-evaluation of their progress towards their own life goals. Therefore, it is recommended that the teacher purposefully integrate self-evaluation exercises into classroom activities, homework assignments, and assessments.

### *Interpretation of the Authentic Connections Pattern*

One way that this pattern helps students feel *the quality without a name* stems from the way in which it helps students feel free and comfortable. As this pattern is applied, the teacher's own ego becomes less of a focus in the classroom. When the teacher shares personal experiences, it is not to show students how much they know, but rather to freely share important connections that have been discovered during a lifetime of study and work. Clearly, students like it when teachers' ideas are not the focus of the class 100% of the time. Students also appreciate teachers who allow students to learn from each other when appropriate, as well as from guest speakers.

Students also may find a certain level of comfort from feeling that they have been treated to a complete, comprehensive view of the subject matter. Students like it when

there is variety in a *balanced curriculum;* however, in the end they do not want that variety to keep them from experiencing a holistic view of what they have learned. Students like it when course content seems to fit together and every individual concept or skill they have learned seems to connect with everything else in meaningful ways. When the lectures complement the text, when the homework seems relevant to the test material, when the extra credit opportunities resonate with the required assignments, students come to appreciate the subject matter in a way that is very powerful and deep. This feeling of completeness is closely related to the "whole" and "eternal" aspects of *the quality without a name*.

When teachers make efforts to facilitate authentic connections, they may be surprised at the strength of the personal attachments students form with the subject matter and people they interact with during the course. When authentic connections are present, students may feel a void when they are unable to continue their participation in class and feel a sense of loss when end of the semester arrives. They come to see the class as an integral part of who they are and what their lives are about, and they do not want such a fulfilling experience to end. In fact, many of them will try to take additional courses from the teacher in the hopes that they may repeat the experience.

> It is a rare thing in life, that you have a teacher that is so good at what he does that you come to class even while deathly ill, and actually miss class during vacations, not because you want to pass the class, or even learn the material, but because you actually want to listen to the lecture and hear what he has to say. I have had only three such truly great teachers in my entire life: 8th grade history, high school chemistry, and [John Smith]. This is the best class I have had in a long, long time.
>
> Dr. [Smith] is an amazing teacher. This class is one I found myself coming to for fun. I honestly felt a void in my day the days we didn't have class. I have learned so much about my life not just the class subject.

Teachers that use the *authentic connections* pattern make it possible for students to experience *the quality without a name* long after the course has been completed and grades have been assigned. As students reflect upon the course, they will remember the feelings of freedom, comfort, wholeness, and life that accompanied the learning activities and the interpersonal relationships they had with fellow students and the teacher. Hopefully, such reflection will lead to new authentic connections with the subject matter and facilitate their ability to make similar connections with their colleagues and coworkers.

### *Framework for Communicating the Authentic Connections Pattern*

**Pattern Name**: *Authentic Connections*

**Problem**: How to provide authentic connections that facilitate learning in class and promote personal development throughout the lifespan.

**Contributing Forces**: (1) Relationships the teacher has with the subject matter and students. (2) Student ability to form interpersonal relationships. (3) Student ability to engage in introspection about how the course affects them at a personal level.

**Context**: An instructional setting in which there is considerable interaction between the teacher and the students. This pattern is especially useful in settings where students are (a) taking the course to prepare for their careers or (b) taking it because they are interested in how the course can help them learn more about themselves.

**Solution**: Teachers may improve the authenticity of connections by (a) helping students understand the connections between the subject matter content and the world of work; (b) promoting interpersonal connections between students through instruction and group work, as well as facilitating teacher-student connections by dealing with students honestly and fairly; and (c) encouraging students to look at connections that go beyond workplace application and that can help them become better people.

**Related Patterns**: Use this pattern in connection with the *balanced curriculum* pattern to ensure connections between subject matter content and skills are made by covering the material in sufficient depth and breadth. This pattern may also be used with the *clear and appropriate assessments* pattern by establishing clear objectives that show a strong connection between what they learn in the course and the assessments used to measure their progress. Clear learning objectives are the key to establishing authentic connections between subject matter areas. In addition, this pattern is supported by a strong level of *teacher enthusiasm* towards the students and the subject matter.

### *Application of the Authentic Connections Pattern*

The *authentic connections* pattern can be applied to any type of course, but it is especially useful for courses that emphasize career preparation or personal growth and development. It can be applied to individual and group learning activities, as well as personal interactions with students during after-class consultations or tutoring sessions.

Teachers who ignore this pattern are more likely to have confused students who see little application of the subject matter to their career or to other activities they may engage in throughout their lifespan.

## Flow of Time Pattern

If teachers want to bring a course to life, they must pay close attention to the way in which students think about the passing of time both in and outside of the learning environment. The *flow of time* pattern is somewhat related to the pacing of instructional activities and assessments, which has been addressed in the *balanced curriculum* pattern. However, this pattern requires teachers to consider more than just the pacing of instruction. It requires them to understand how students use various time periods to think about the course and how their views of time are related to the "eternal" aspect of *the quality without a name*.

The students' comments contain references to at least five distinct time periods that they use to think about a course. First, they think about the course as an individual class that consists of a specific number of minutes. For a 3-credit class, this means students will usually have either (a) a 50-minute class that meets 3 times a week, (b) a 75-minute class that meets twice a week, or (c) a 150 minute class (2½ hours) that meets once a week. Second, students think about the course in terms of weekly periods (or sometimes biweekly periods) defined by particular routines that the teacher sets up for the completion of instructional activities or assessments. This way of thinking about time is reinforced by weekly quizzes or other assessments, recurring weekly due dates for

assignments, or certain types of activities that occur on a weekly cycle, such as reviews of current events that occurred over the weekend. Third, students think about courses in terms of semesters, consisting of a 4-month time period for fall and spring semesters, or time periods of 4 to 8 weeks for the summer semester. Fourth, students think about their entire college experience as a distinct period of time, spanning from the day they register for their first course to the throwing of their caps at graduation. This time period can be between 3 to 6 years for most undergraduate students, 1 to 3 years for masters-level graduate students, and 3 to 8 years for doctoral-level graduate students. Students often contemplate this time period when they are planning their course of study with an advisor or registering for classes. At these times, they must think about how each course fits into their overall course of study and make decisions about when to take a course. This decision is often based on prerequisites for the other courses required for completion of their degree. Fifth, students think about the period of their entire life, from birth to death, and how the courses they are taking fit into all of the major activities of their lifespan, especially their careers and family life.

Teachers who want to make a course feel “alive” should consider the impact their decisions will make on how students experience the flow of time in all five of these time periods. This is necessary because certain types of activities will make more sense when they are carried out in the context of specific time periods. For example, assessments are typically carried out within the framework of weekly or semester time periods. Likewise, syllabi and assignments are often designed on a week-by-week basis. Consequently, this helps students detect patterns in the weekly workflow and adjust their schedules early on

in the semester so that they can manage their workload throughout the semester better. If an established weekly workflow is interrupted, students can sometimes become confused about the best way to adjust. There are other types of connections between activities in the different time periods. The *flow of time* pattern deals with the way in which a teacher (a) facilitates student planning for all five time periods and (b) manages the dynamic, interactive flow of events associated with all five time periods.

*Student Planning*

Successful students are continually making and revising plans for the future based on their past performance. For example, if they do poorly on a quiz because they failed to do all the reading, they may adjust their daily and weekly schedules to allow for more study time before the next quiz. Likewise, if they fail a class required for their degree, they will be forced to make new plans for the next semester to take the class again, or possibly revise their entire course of study or future career plans. Teachers facilitate student planning by providing feedback about their progress related to all five time periods, as well as guidance in how to use that feedback to improve future performance and meet their individual long-term goals. Note how in the following quotes the students mention the usefulness of feedback. Also, note how the feedback relates to different time periods.

> A group of students talked every class all class period and no comments were made to them to help the environment. Was frustrating. NEED A SYALLABUS!!! Students learn to not function on day to day assignments & need to see the semester layout!

> I didn't learn a thing from this class. My husband took this class last spring from a different professor. He had an excellent learning experience. He had a great

> capstone class. This has not been a capstone class. This hasn't even been a 1010 level class. I emailed the professor to get clarification on the paper it took 8 days for him to reply. I was still confused and asked for more clarification. He never bothered to acknowledge my email.... I paid a lot of money to be educated and the only thing I get for my money was learning that this guy is stupid!! I can't say enough bad about this class. It was an absolute waste of time!!!
>
> The midterm review was weak and the test had a lot of questions that weren't covered in class. It really seemed like the test was recycled from a previous semester which I didn't appreciate at all.
>
> Workload is overbearing. It is hard to read 5 chapters a week when we have other classes. It seemed as though teacher just talked about whatever came to her mind instead of having structured lectures. NEED MORE ORGANIZATION! It is hard to follow her train of thought! Need better instructions for group papers! Tests are messed up! It's not like she was a terrible teacher, it's just that she makes everything upper division and we aren't there yet!
>
> The comp final was a joke. Who is really going to remember stuff taught from the 1st week. You really need a couple of tests during the semester to offset the final.

When giving feedback to students, teachers should think of how that feedback might help students to plan their schedules for one or more of the five time periods. For example, teachers often give immediate feedback on their students' performance of a specific skill during a single class period. This feedback would be more helpful if it also guided students in their preparations for weekly assignments or an end-of-semester test. If the feedback could also help students understand the importance of that skill to their whole college experience, the feedback would be even more valuable. Furthermore, if the feedback could be related to the students' past, present, and future lives, the stage is then set for students to experience the "eternal" aspect of *the quality without a name*.

*Flow of Events*

In addition to giving feedback, teachers should also pay attention to how well the

instruction relates to the flow of events in students' lives. In particular, teachers should consider how the instruction is able to meet both the short- and long-term needs of students. If the instruction does not meet short-term needs, which are dealt with on a class-by-class and week-by-week basis, students become bored or distracted. If the instruction does not meet long-term needs, which are related to semester-, college-, and life-long goals, students become apathetic or frustrated. In the following quotes, note how these types of emotional reactions to the instruction are related to different needs in different time periods.

> The group project is stupid. I do not have that much free time to meet with a group each week. I work go to school and am trying to plan a wedding. I think when students ask questions the answers are not explained well at all. I think it confusses us more. I feel this class was a waste of my time.
>
> Do something a bit livelier for the straight out [subject matter] lectures. They were extremely BORING and I missed a lot because my brain had shut off.
>
> It was a good thought to try and get students to critically think about pressing topics, but it's not what the students needed most the last semester of their education.
>
> I would make more of the [subject matter] events possible, for those of us who work full time besides school and do not have time for anything extra.
>
> I didn't like having to go to [outside class learning activities]. It was hard to get the time off of work.
>
> The class time conflicts with my nap time.
>
> It would help to have a better outline of the course—dates not week #s. I would like to know ahead of time when stuff is due.
>
> Why are we as seniors wasting our time doing presentations after we have already completed 4 years of school. This doesn't help. Change this class to freshmen to help with school for the next 3 yrs.
>
> As a married individual with a part time job with a full class load I am at a

> disadvantage as compared with others that don't have the time demands I do. Please make the tests reflect the time a regular 4 credit class should.
>
> The workload is too much. On one test there was six weeks of material. There is not enough time in the world for anyone to study & actually know all of the material! This is the hardest course I have ever taken. I have more than one class to worry about, and cannot devote every spare minute to this class.

*Interpretation of the Flow of Time Pattern*

The *flow of time* pattern increases instructional appeal by helping students plan for success and facilitating the flow of events that occur in their lives. Student comments reveal that the pattern also leads to improvements in instruction effectiveness and efficiency. This is due, in part, to the fact that much of the conflict that students experience in a course is brought about by time constraints that limit their ability to master the subject matter content, prepare for tests, and complete required assignments. Still, the primary purpose of the *flow of time* pattern is to help students experience *the quality without a name*. The main point of the pattern is that teachers should pay attention to issues of effectiveness and efficiency in order to increase appeal. In addition, teachers should be aware of the flow of events in students' lives so that they can plan a course schedule that does not contradict the students' values and goals related to the way time should be spent.

When this pattern is applied, students will experience a high level of synchronicity between the events in their personal lives and the events of instruction. Thus, use of this pattern facilitates the resolution of conflict and helps students feel free from inner contradictions. It also helps students feel the "eternal" aspect of *the quality*

*without a name* by infusing teacher feedback with a timeless quality, allowing students to not only see how the feedback helps them achieve short-term goals but also see how the feedback benefits them in the long run. Students appreciate teachers who help them make plans for the different time periods, and they are especially grateful to teachers who facilitate student learning by finding ways to fit the instructional activities into the flow of events in students' lives.

> Overall the course has been amazing, but it helped me the most in helping me decide what I will do after my 4 year degree.
>
> I really liked Dr. [Smith]—he understood that most of us couldn't/didn't want to spend hours & hours on this class & structured it accordingly. Also, though I had little interest in the subject before, the class was surprisingly relevant & engaging. I'm glad I was in there, which is more than can be said for most GenEd.
>
> I liked the fact that the lab was available to us all week. We could go at whatever time suited us best and we only had to stay as long as we felt we needed to.

### *Framework for Communicating the Flow of Time Pattern*

**Pattern Name**: *Flow of Time*

**Problem**: How to facilitate student planning related to various time periods and synchronize instructional events with events occurring the lives of students.

**Contributing Forces**: (1) Time constraints of class time, study time, and semester deadlines as set by the university. (2) Students' ability to plan their schedules. (3) The natural flow of events in students' lives.

**Context**: An instructional setting in which students and teachers must negotiate instructional events in order to assure successful completion of a course. This pattern is especially useful in settings where students are (a) taking the course to

prepare for specific life events or (b) taking the course as a prerequisite for another course or to fulfill a graduation requirement.

**Solution**: Teachers may improve the appeal of instruction by (a) helping students plan out their schedules for various time periods and (b) synchronizing the flow of instructional events with the flow of events occurring in the personal lives of students.

**Related Patterns**: Use this pattern in connection with the *balanced curriculum* pattern to appropriate pacing of subject matter content. This pattern may also be used with the *authentic connections* pattern in helping students see connections between subject matter content and their future careers. In addition, this pattern is strengthened when teachers show a strong level of *teacher enthusiasm* towards the students.

### *Application of the Flow of Time Pattern*

The *flow of time* pattern can be applied to instructional events that occur in various time periods. It is especially useful in situations where teachers give feedback to students regarding their level of performance on a complex task that students will need to succeed in meeting their short- and long-term needs. It can be applied to group learning activities, but it is especially powerful in one-on-one interactions with students. Teachers who do not apply this pattern risk having students who are apathetic, bored, frustrated, and confused. When this pattern is successfully applied, students are more likely to experience the eternal aspect of *the quality without a name*, as they are less likely to be

hampered by the inner contradictions that arise when their desire to complete their schoolwork conflicts with their desire to participate in naturally flowing life events.

The effects of this pattern are especially notable in settings in which students experience cultural and community pressure to engage in certain types of time-consuming life activities. In my work with USU faculty, some expressed concern that students simply did not commit enough time outside of class to master the content. Faculty reported that many students had the expectations that while they are completing their degree they would also get married, begin having children, and hold down a full- or part-time job to pay for school. These students had to carefully plan out their schedules, sometimes weeks in advance, in order to meet such expectations. In relation to this study, the question is whether or not such time pressures for students at USU are so unique that it would be unlikely that the *flow of time* pattern would apply universally to students at other universities. The answer to this question is "probably not." While USU students may experience certain types of time constraints due to their cultural and community expectations, all students face some kind of challenges in arranging their schedules to complete their schoolwork while managing their personal lives. Whatever that challenge level is, teachers can help students deal with such time constraints by applying the *flow of time* pattern.

## Negotiation and Cooperation Pattern

For instruction to occur, a negotiation of wills must take place. This negotiation occurs when the teacher and the learners determine the nature of their roles during the

course, the scope and sequence of the instructional goals that will be pursued, and the instructional strategies that will be used to achieve those goals. If the teacher and learners are able to reach a common decision, the stage is set for instruction to take place. However, if the teacher and students have different intentions and are unwilling to compromise, a number of instructional difficulties may arise (Gibbons, 2001, pp. 512-513).

For some courses, the level of negotiation between teacher and students is minimal. The teacher decides what the students' roles will be, what the students will learn, and how they will learn it. If the students want to pass the course, they are required to simply accept the decisions of the teacher and follow the directions they are given. In contrast to this scenario, there are some courses in which the students are required to define the nature of their roles, the learning goals, and the learning strategies—all with minimal input by the teacher. The type of negotiation that occurs depends greatly upon the teaching philosophy of the teacher and the willingness of the students to engage in the negotiation process. It also depends upon the constraints placed on both the teacher and the students by the university, college, or department. There are rules, policies, and codes of conduct that govern many aspects of the teacher-student relationship, the violation of which can result in the firing of the teacher or expulsion of the student. In addition, the negotiation is bounded by the laws and norms of the communities in which the teacher and students live.

Once negotiation occurs, it must be followed by cooperation between both teacher and students in carrying out the decisions that have been made. Failure by either party to

fulfill their negotiated roles will bring about an end to the instruction. Also, instruction stops if it becomes apparent to the teacher and students that the goals they have or the strategies they are using are no longer working for them. Of course, the preferred ending of instructional activity comes through the completion of the instructional goals. But regardless of how instructional activity might be terminated, new negotiations must take place and both parties must commit to cooperate before instruction can resume.

There are three types of problems addressed by the *negotiation and cooperation* pattern. The first problem occurs when students lack a sense of freedom, power, or control concerning their interactions with the teacher or the subject matter. The second problem arises when students feel conflict within themselves or within the social order of the class. The third problem happens when the instruction lacks the "self-supporting, self-maintaining, generating quality" Alexander (1979) claims is associated with *the quality without a name* (pp. 53-54). The *negotiation and cooperation* pattern is simply a prescription for the teacher and students to engage in a general problem-solving process that can be used to solve all three types of problems. This process is, of course, negotiable and may contain a number of steps. However, at minimum, this process must include activities in which (a) problems regarding roles, goals, or strategies are recognized and discussed, (b) solutions are proposed, (c) both parties commit to one or more solutions, and (d) both parties move forward in a spirit of cooperation.

Throughout this process, it is crucial that the teacher and students treat one another with respect and focus on finding workable solutions. If ego comes into play for either party, it will hinder the negotiations and decrease their willingness to cooperate.

Teachers must show that they are willing to recognize mistakes, and that they are not so afraid of being wrong that they will not budge on questionable test items or revise their curriculum when it does not seem to be meeting the needs of the students. Students want teachers who care about what they think, and they despise teachers who are condescending and disrespectful of students' ideas. However, this is not to say that they want a teacher to abdicate all authority or decision-making power that comes with the role of a teacher. Rather, they want a teacher to assert authority in ways that benefit them as students and protect them from other students who interfere with their right to learn. This ensures that there is a balance between order and disorder in the way the class is conducted.

Returning to the three types of problems this pattern addresses, the student comments sampled in this study contain many complaints about a lack of freedom, as well as conflict in themselves or in the social order of the class.

> You have to be in charge & you take things personally. Be more open & kind to students.... Evaluate your teaching style & see how the students react. Be more open to suggestions & feedback. The teacher shouldn't always be in control.
>
> Don't let students take control. You're the boss.
>
> Control the class. Ask people questions. Walk up and down the sides. When students start talking, do—something to get them under control.
>
> I like that you enforce policy. It's destractive for people to come in late especially on exam or quiz days. By not giving exams to late comers it seemed to stop that.
>
> I like it how you like the class to be quite during the class period. I find it very rude when people talk & are noisy during class—so I liked how you would want it quiet.
>
> I didn't appreciate the fact that some things we had to experience were offensive, but we had to see them anyways, there were no alternatives.

> I don't think we should be made to [engage in outside learning activities] that contradict our personal values.

In addition, the comments reflected an appreciation of teachers who made the instruction self-supporting and self-maintaining by negotiating with students about the roles, goals, and teaching strategies.

> I liked that we did a report and that we were able to choose the topic that interested us most. Dr. [Smith] is fair, friendly and enthusiastic about the material.

> The variety of cultural experiences. Was great to let us choose what we would like to attend.

> I felt that the teacher was layed back & spontanous, & it was refreshing not to always have everything set in stone as to when things were due. The teacher was flexible & easy to work with.

> The use of multimedia resources used source/types of teaching methods. There was plenty of opportunity to ask questions. Very interactive.

> She explains things very clearly & is not bugged when people ask her to take a different approach & explain things in a different way. She loves what she teaches and she is really good at it. The class is full of opportunities to participate & ask questions. I never get bored. This class is easy to enjoy.

> I felt the professor did very little to prepare to teach this course. I felt that it was a waste of my time to sit & listen to the professor read word for word from the text book slides. I could do that on my own.

Student comments also revealed the extent of their frustration when teachers do not provide them with choices and who adopt roles that are in conflict with student expectations.

> My criticism begins with the student presentations. Although I can see the benefits of this, I don't feel that I learned as much as I could have. I didn't pay tuition to listen to students teach. I wish that the instructors would have taught all of the course instead of half of it—I feel cheated out of half of a good course.

> I think that more formal instruction may be beneficial because so much of the

> instruction we received was from our peers & ourselves. [John] is the expert, so he could teach more about the use of [subject matter] in different settings.
>
> He kind of had a professor vs. the student mentality where he didn't like being wrong and thought that admitting a mistake was not an option for him. He really wasn't very flexible or trusting of the students at all. Maybe this is what you have to do in a big sophomore class, but I didn't like it.
>
> A better, less serious & formal relationship between the instructor & the students. More friendly/comfortable atmosphere that would have to be created by the general friendliness of the instructor.

These comments plainly show that students like learning from teachers that share some decision-making power and provide them with choices in the course goals, class activities, and homework assignments. The comments also indicate that one way to make instruction more self-supporting and self-maintaining is to allow students to engage in negotiation and set up class rules that facilitate cooperation among students. By doing so, the teacher helps to ensure that students can manage inner conflicts better and deal with social conflicts in an appropriate and constructive manner.

### *Interpretation of the Negotiation and Cooperation Pattern*

This pattern provides students with a sense of power and control that is often associated with the "free" and "whole" aspects of *the quality without a name*. Instruction is free when students feel they have real choices in the roles they take in the class, the goals they pursue, and the teaching strategies employed in the class. Instruction becomes whole when the processes of negotiation and cooperation are used to solve problems, adding a self-supporting, self-maintaining, generating quality to the course. Teachers that appropriately apply the *negotiation and cooperation* pattern do not abdicate the

responsibility and authority that comes with their role, but rather they effectively build a sense of community within the students so that they are more willing to collaborate with one another and with the teacher in setting and achieving all of the course goals.

### *Framework for Communicating the Negotiation and Cooperation Pattern*

**Pattern Name**: *Negotiation and Cooperation*

**Problem**: How to deal with conflicts related to (a) teacher and student roles, (b) instructional goals, and (c) teaching strategies.

**Contributing Forces**: (1) Relationships the teacher has with the students. (2) Teacher's and students' willingness to engage in the processes of negotiation and cooperation. (3) Cultural, community, and institutional laws, norms, rules, policies, and codes of conduct.

**Context**: An instructional setting in which the teacher and students must work together to achieve course goals. This pattern is especially useful in settings where students are (a) learning how to work collaboratively to solve problems or (b) involved in determining what they learn and how they learn it.

**Solution**: Teachers may apply the processes of negotiation and cooperation to solve problems related to (a) the students' lack of a sense of freedom, power, or control, (b) conflict within themselves or within the social order of the class, and (c) a general absence of a self-supporting, self-maintaining, and generating quality in the instruction.

**Related Patterns**: Use this pattern with the *teacher enthusiasm* pattern to

improve relationships between students and the teacher covering the material in sufficient depth and breadth. This pattern may also be used with the *balanced curriculum* pattern and *authentic connections* pattern to ensure curricular goals are met and the instructional activities are synchronized with the flow of events in students' lives. In addition, this pattern is closely tied to the *clear and appropriate assessments* pattern in that it deals with the generation of clear objectives.

### *Application of the Negotiation and Cooperation Pattern*

The *negotiation and cooperation* pattern should be considered at the beginning of the course design, as students may be involved in the central decisions of what to teach and how to teach it. The level of student involvement depends greatly on the teaching philosophy of the teacher, as well as the constraints placed upon the course by the university, college, and department requirements for graduation. Consequently, teachers may have to inform students of these constraints before the negotiation process begins. Teachers who do not apply this pattern risk having students who are resentful of their authority and uncooperative in following class rules and carrying out instructional activities.

# CHAPTER VI

# SUMMARY AND CONCLUSION

There is a great need to use qualitative research concepts and methods to investigate the benefits that colleges and universities provide (Harper & Museus, 2007). One particularly important area of research is the delivery of effective, efficient, and appealing instruction (Reigeluth & Frick, 1999). In the two studies described above, I chose to make instructional appeal the central focus of the research, rather than effectiveness or efficiency. Instructional appeal may be defined as the level of enjoyment experienced by learners, teachers, and others involved in the instructional activities (Reigeluth & Frick, p. 635). The findings of these two studies may be applied to improve the appeal of instruction in higher education institutions.

This research is especially useful to teachers and instructional designers who wish to approach the study of instructional appeal through the interpretive lens of Christopher Alexander's (1979) theories of architectural design and his ideas about the nature of *the quality without a name*. Obviously, other theories could have been used to explore the qualities of appealing instruction and the ways in which instruction may be designed to improve its appeal. In this study, however, it was assumed that most students would find the instruction to be appealing if it was designed to maximize the potential for students to experience the feelings that Alexander mentions in his definition of *the quality without a name*. To accomplish this design goal, six useful design patterns were generated that may aid in the design of appealing instruction.

The results of both the exploratory and extended studies indicate that it is possible

to use Alexander's (1979) ideas about pattern languages to generate teaching patterns that can be used to increase the appeal of instruction in higher education settings. The six patterns defined in this study will be most useful to teachers and instructional designers who are willing to use a general design method that consists of the application or assembly of interrelated design patterns. Certain benefits may also arise if the application of these patterns is considered in parallel with other general design approaches, such as prototyping and iteration or the application of problem solving methods. However, it is suggested that the usefulness of these Alexandrian patterns will be significantly reduced when the central purpose of the design strays away from helping students experience *the quality without a name*.

Although each of the teaching patterns defined in this study can be used individually to increase the appeal of instruction, their usefulness is extended when all six patterns are used in concert. Also, the effect of these patterns is greatest when they are considered in the initial phases of instructional design, rather than being applied as an afterthought. Still, they may be applied at any time during the act of teaching. Obviously, these patterns will be most useful to teachers whose central focus in the design (or redesign) of instruction is to increase the level of appeal. Teachers who wish to primarily increase effectiveness or efficiency will probably find it more difficult to apply these patterns successfully. Nevertheless, it is possible that they would make some gains in effectiveness and efficiency by incorporating these patterns in the design of instruction.

Teachers and instructional designers who apply these patterns will undoubtedly discover ways to improve upon the patterns defined in this document. It is hoped that

they will feel free to adopt the patterns by including new information or rewriting them to better fit local use. Pattern languages are evolutionary in nature. They change over time as new design problems arise and as new design requirements are introduced. Consequently, the patterns defined in this study will change as new demands are placed on teachers and students in higher education settings. Over time, the practical application of the patterns in the design of instruction will eventually lead to the modification of these six patterns and the identification of new patterns.

Further development of the pattern language may also be facilitated through continued research involving many sources of information pertaining to the appeal of instruction, including research on student ratings forms and student written comments. Previous research supports the six patterns in this study in many different ways. Braskamp and colleagues (1981) found that students wanted instructors who could clearly communicate content, who were knowledgeable in their field, and who could maintain good rapport with students. Onwuegbuzie and colleagues (2007) also found that students tended to want enthusiastic teachers who were experts in their subject-matter area and student-centered in their approach to teaching. These findings partially support the *teacher enthusiasm* and the *negotiation and cooperation* patterns defined in this text. Litke (1995) found that students wanted more variety in the course content and teaching methods used, and that they also wanted instructors to be realistic about the amount of content that could be covered in a course. Cashin (1995) found that students preferred a course where the workload/difficulty was challenging. Wachtel (1998) also reported that the pacing of a course could have an adverse effect on the ratings the teacher received.

These findings partially support the *balanced curriculum, flow of time,* and the *negotiation and cooperation* patterns. Regarding the topics of grading and assessment, Wachtel and Cashin claimed that students who expected higher grades tended to give higher teacher and course ratings. Watchel and Cashin also agreed that students who have a desire to learn or a good reason for taking the course tended to do better on assessments and get higher grades. In addition, Wachtel suggested that the impressions students receive about grading and assessment during the first examination may play a key role in establishing overall expectations for the course. Such research on grading punctuates the importance of applying the *Clear and Appropriate Assessments, Authentic Connections,* And *Flow of Time* patterns early in the course.

Obviously, the research studies cited above are only a small sample drawn from a vast host of research findings that might be used to support part or all of the design prescriptions found in the six instructional design patterns. A complete listing of all supporting research would clearly be impossible, considering the enormous number of studies on student ratings that have been carried out. Therefore, it is easily recognized that the six design patterns defined in this text are only a small contribution to the overall research effort to improve instructional effectiveness, efficiency, and appeal. However, the studies reported in this text provide a unique perspective on this research that is based on Christopher Alexander's ideas about design patterns and his definition of *the quality without a name*. In addition, this research differs from other studies of student ratings or handwritten comments in that it does not simply analyze written comments in order to produce a listing of individual variables that may affect the ratings. Instead, this research

goes beyond analysis to try to synthesize the findings into a more holistic system of design patterns that show how to apply knowledge of the individual variables to the design of instruction in higher education settings.

The six patterns in this study lay the initial groundwork for further research and development of a comprehensive pattern language that can assist higher education faculty in designing appealing instruction that embodies *the quality without a name*. In the end, the best that can be expected for the results of this research is that the six design patterns may serve as a catalyst for further explorations of and contributions to an emerging design language of instruction. To that end, this document has been placed in the public domain so that all teachers and instructional designers can freely use these patterns, modify them to increase their usefulness, and share their new patterns without having to worry about dealing with any constraints that might arise due to current copyright laws. It is my wish that researchers and practitioners will feel free to adopt the main goal set forth by Christopher Alexander—to infuse the things we design with *the quality without a name*—and to evolve this pattern language over time into a more powerful tool for increasing the appeal of instruction.

# EPILOGUE

*Two excerpts from "To the Lighthouse" by Virginia Woolf (1927)*

What was the problem then? She must try to get hold of something that evaded her. It evaded her when she thought of Mrs. Ramsay; it evaded her now when she thought of her picture. Phrases came. Visions came. Beautiful pictures. Beautiful phrases. But what she wished to get hold of was that very jar on the nerves, the thing itself before it has been made anything. Get that and start afresh; get that and start afresh; she said desperately, pitching herself firmly again before her easel. It was a miserable machine, an inefficient machine, she thought, the human apparatus for painting or for feeling; it always broke down at the critical moment; heroically, one must force it on. (p. 287)

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Quickly, as if she were recalled by something over there, she turned to her canvas. There it was—her picture. Yes, with all its greens and blues, its lines running up and across, its attempt at something. It would be hung in the attics, she thought; it would be destroyed. But what did that matter? she asked herself, taking up her brush again. She looked at the steps; they were empty; she looked at her canvas; it was blurred. With a sudden intensity, as if she saw it clear for a second, she drew a line there, in the centre. It was done; it was finished. Yes, she thought, laying down her brush in extreme fatigue, I have had my vision. (pp. 309-310)

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# APPENDICES

# Appendix A

## USU Teacher/Course Evaluation Form

Sample

Utah State University

TEACHER/COURSE EVALUATION

**INSTRUCTOR:**_____ **COURSE:**_____ **SECTION:** _____

**Student evaluations are an important part of the assessment of teaching effectiveness. Please respond as honestly and candidly as possible. Disregard questions which do not seem to be applicable. The completed forms and the computer data will not be available to the instructor until after class grades are awarded.**

**Please use black or blue pen or no. 2 pencil only.**

## I. GENERAL EVALUATION

| | EXCELLENT | VERY GOOD | GOOD | FAIR | POOR | VERY POOR | NOT APPLICABLE |
|---|---|---|---|---|---|---|---|
| 1. The overall quality of this course was: | ○ | ○ | ○ | ○ | ○ | ○ | |
| 2. The instructor's effectiveness in teaching the subject matter was: | ○ | ○ | ○ | ○ | ○ | ○ | |

## II. INFORMATION ABOUT THE COURSE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. The extent to which course objectives were clear was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 2. Relevance of assignments to course content was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 3. Relevance of material presented in class to course goal(s) was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 4. Appropriateness of workload to course goal(s) was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 5. Relevance of exams to course goal(s) was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 6. Fairness of course grading procedures was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 7. The extent to which course responsibilities of students were clarified was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 8. Helpfulness of assigned text/readings to achieving course goal(s) was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## III. INFORMATION ABOUT THE INSTRUCTION

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. The extent to which course organization helped learning was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 2. The helpfulness of explanations by the instructor, if/when needed, was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 3. Instructor's use of examples, if/when appropriate, was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 4. Instructor's use of class time to help students learn the subject matter was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 5. Instructor's enthusiasm for subject of course was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 6. Instructor's helpfulness in resolving student's questions was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 7. The extent to which the instructor was prepared for class was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 8. Opportunity to ask questions was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 9. Opportunity for students to make comments and express opinions was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 10. Availability of extra help, if/when needed, was: | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

## IV. INFORMATION ABOUT STUDENTS

1. At the beginning of the semester, my interest in the subject matter of the course was: ○ High ○ Medium ○ Low
2. My current GPA at USU is in the range of: ○ 4.0-3.5 ○ 3.4-3.0 ○ 2.9-2.5 ○ 2.4-2.0 ○ 1.9-1.0
3. This course is being used for: ○ my major ○ my minor ○ a liberal Arts & Sciences major, minor or certificate ○ general education ○ an elective ○ other
4. I am a: ○ freshman ○ sophmore ○ junior ○ senior ○ graduate ○ other
5. Grade I expect to receive is: ○ A ○ B ○ C ○ D ○ F ○ Pass

**Please answer the two questions on the back.**

1. What aspects of the teaching or content of this course do you feel were especially good?

2. What changes could be made to improve the teaching or the content of this course?

# Appendix B

## Number of Courses by Class Level

Table B-1

*Number of Courses by Class Level*

| | Class level | | | | | |
|---|---|---|---|---|---|---|
| USU departments for spring 2002 | Fresh | Soph | Jun | Sen | Grad | Total |
| College of Agriculture | | | | | | |
| Agricultural Systems Technology & Educ. | | 1 | 1 | | 1 | 3 |
| Animal, Dairy, & Veterinary Sciences | 1 | 1 | | | 1 | 3 |
| Plants, Soils, & Biometereorology | | 1 | 1 | 1 | | 3 |
| College of Business | | | | | | |
| Business Administration | | | 1 | 1 | 1 | 3 |
| Business Info. Systems & Education | 1 | 1 | | | 1 | 3 |
| Management & Human Resources | | 1 | 1 | | 1 | 3 |
| School of Accountancy | 1 | | | 1 | 1 | 3 |
| College of Education | | | | | | |
| Communicative Disorders & Deaf Educ. | | 1 | 1 | 1 | | 3 |
| Elementary Education | 1 | | 1 | | 1 | 3 |
| Health, Physical Education & Recreation | 1 | | 1 | 1 | | 3 |
| Instructional Technology | 1 | | | 1 | 1 | 3 |
| Psychology | 1 | | | 1 | 1 | 3 |
| Secondary Education | | | 1 | 1 | 1 | 3 |
| Special Education & Rehabilitation | 1 | | | 1 | 1 | 3 |
| College of Engineering | | | | | | |
| Biological & Irrigation Engineering | | | 1 | | 2 | 3 |
| Civil & Environmental Engineering | | 1 | 1 | | 1 | 3 |
| Electrical & Computer Engineering | | 1 | 1 | | 1 | 3 |
| Industrial Technology & Education | 1 | 1 | 1 | | | 3 |
| Mechanical & Aerospace Engineering | 1 | 1 | | 1 | | 3 |

(*table continues*)

| | Class level | | | | | |
|---|---|---|---|---|---|---|
| USU departments for spring 2002 | Fresh | Soph | Jun | Sen | Grad | Total |
| College of Family Life | | | | | | |
| Family & Human Development | | 1 | | 1 | 1 | 3 |
| Human Environments | 1 | 1 | | 1 | | 3 |
| College of Humanities, Arts, and Social Sciences | | | | | | |
| Aerospace Studies | 1 | 1 | 1 | | | 3 |
| Art | 1 | 1 | | 1 | | 3 |
| English | 1 | | | 1 | 1 | 3 |
| History | 1 | | 1 | 1 | | 3 |
| Intensive English Language Institute | 1 | 2 | | | | 3 |
| Journalism & Communication | 1 | 1 | 1 | | | 3 |
| Landscape Architecture & Env. Planning | | | 1 | 1 | 1 | 3 |
| Languages & Philosophy | | 1 | 1 | | 1 | 3 |
| Military Science | 2 | | 1 | | | 3 |
| Music | 1 | 1 | | 1 | | 3 |
| Political Science | 1 | | | 1 | 1 | 3 |
| Sociology, Social Work & Anthropology | 1 | | 1 | 1 | | 3 |
| Theatre Arts | 1 | | | 1 | 1 | 3 |
| Jointly Administered Programs | | | | | | |
| Economics | | 1 | 1 | | 1 | 3 |
| Nutrition & Food Sciences | 1 | | | 1 | 1 | 3 |
| College of Natural Resources | | | | | | |
| Fisheries & Wildlife | | 1 | 1 | 1 | | 3 |
| Forest Resources | | | | 1 | 2 | 3 |
| Geography & Earth Resources | | 1 | 1 | | 1 | 3 |
| Rangeland Resources | | | | 1 | 2 | 3 |

(*table continues*)

| | Class level | | | | | |
|---|---|---|---|---|---|---|
| USU departments for spring 2002 | Fresh | Soph | Jun | Sen | Grad | Total |
| College of Science | | | | | | |
| Biology | 1 | 1 | 1 | | | 3 |
| Chemistry & Biochemistry | | 1 | 1 | | 1 | 3 |
| Computer Science | | 1 | 1 | 1 | | 3 |
| Geology | 1 | | 1 | | 1 | 3 |
| Mathematics & Statistics | 1 | 1 | | 1 | | 3 |
| Physics | 1 | 1 | 1 | | | 3 |
| Honors | | | | | | |
| Honors | 2 | | 1 | | | 3 |
| Continuing Education and Extension | | | | | | |
| Brigham | | 1 | | | | 1 |
| Class Division | | 1 | | | | 1 |
| Distance Education | | | 1 | 2 | | 3 |
| South East Utah | | | 1 | | | 1 |
| Tooele/Wasatch | | | | 1 | | 1 |
| Uintah Basin | | 1 | | 1 | | 2 |
| Total Number of Courses by Class Level | 30 | 30 | 30 | 30 | 30 | 150 |

# Appendix C

## Number of Courses by Class Size

Table C-1

*Number of Courses by Class Size*

| | Class size | | | |
|---|---|---|---|---|
| USU departments for spring 2002 | Small | Medium | Large | Total |
| College of Agriculture | | | | |
| Agricultural Systems Technology & Education | 2 | 1 | | 3 |
| Animal, Dairy, & Veterinary Sciences | 2 | 1 | | 3 |
| Plants, Soils, & Biometereorology | 1 | 1 | 1 | 3 |
| College of Business | | | | |
| Business Administration | 1 | 1 | 1 | 3 |
| Business Information Systems & Education | 1 | 1 | 1 | 3 |
| Management & Human Resources | 1 | 1 | 1 | 3 |
| School of Accountancy | 1 | 1 | 1 | 3 |
| College of Education | | | | |
| Communicative Disorders & Deaf Education | 1 | 2 | | 3 |
| Elementary Education | 1 | 1 | 1 | 3 |
| Health, Physical Education & Recreation | 1 | 1 | 1 | 3 |
| Instructional Technology | 1 | 2 | | 3 |
| Psychology | 1 | 1 | 1 | 3 |
| Secondary Education | 1 | 2 | | 3 |
| Special Education & Rehabilitation | 1 | 1 | 1 | 3 |
| College of Engineering | | | | |
| Biological & Irrigation Engineering | 3 | | | 3 |
| Civil & Environmental Engineering | 1 | 1 | 1 | 3 |
| Electrical & Computer Engineering | 1 | 1 | 1 | 3 |
| Industrial Technology & Education | 2 | 1 | | 3 |
| Mechanical & Aerospace Engineering | 1 | 2 | | 3 |
| College of Family Life | | | | |
| Family & Human Development | 1 | 1 | 1 | 3 |
| Human Environments | 1 | 1 | 1 | 3 |

(*table continues*)

| USU departments for spring 2002 | Class size | | | |
|---|---|---|---|---|
| | Small | Medium | Large | Total |
| College of Humanities, Arts and Social Sciences | | | | |
| Aerospace Studies | 3 | | | 3 |
| Art | 1 | 2 | | 3 |
| English | 1 | 1 | 1 | 3 |
| History | 1 | 1 | 1 | 3 |
| Intensive English Language Institute | 3 | | | 3 |
| Journalism & Communication | 1 | 1 | 1 | 3 |
| Landscape Architecture & Env. Planning | 1 | 2 | | 3 |
| Languages & Philosophy | 1 | 1 | 1 | 3 |
| Military Science | 3 | | | 3 |
| Music | 1 | 1 | 1 | 3 |
| Political Science | 1 | 1 | 1 | 3 |
| Sociology, Social Work & Anthropology | 1 | 1 | 1 | 3 |
| Theatre Arts | 1 | 1 | 1 | 3 |
| Jointly Administered Programs | | | | |
| Economics | 1 | 1 | 1 | 3 |
| Nutrition & Food Sciences | 1 | 1 | 1 | 3 |
| College of Natural Resources | | | | |
| Fisheries & Wildlife | 1 | 1 | 1 | 3 |
| Forest Resources | 2 | 1 | | 3 |
| Geography & Earth Resources | 1 | 2 | | 3 |
| Rangeland Resources | 3 | | | 3 |
| College of Science | | | | |
| Biology | 1 | 1 | 1 | 3 |
| Chemistry & Biochemistry | 1 | 1 | 1 | 3 |
| Computer Science | 2 | 1 | | 3 |
| Geology | 1 | | 2 | 3 |
| Mathematics & Statistics | 1 | 1 | 1 | 3 |
| Physics | 1 | 1 | 1 | 3 |

(*table continues*)

| | Class size | | | |
|---|---|---|---|---|
| USU departments for spring 2002 | Small | Medium | Large | Total |
| Honors | | | | |
| Honors | 2 | 1 | | 3 |
| Continuing Education and Extension | | | | |
| Brigham | | 1 | | 1 |
| Class Division | | 1 | | 1 |
| Distance Education | 1 | 1 | 1 | 3 |
| South East Utah | | 1 | | 1 |
| Tooele/Wasatch | 1 | | | 1 |
| Uintah Basin | 2 | | | 2 |
| Total Number of Courses by Class Size | 67 | 52 | 31 | 150 |

# VITA

## DAREN OLSON

*Education*

Ph.D. in Instructional Technology, Utah State University (2008).

M.Ed. in Curriculum and Instruction, Idaho State University (1998).

B.A. in Secondary Education, Idaho State University (1990).

*Professional Experience*

Instructional Designer, Cerner Corporation, 2007-2008.

Instructional Designer, Utah Department of Public Safety, 2004-2006.

Instructional Designer, USU Office of Instructional Support, 2001-2005.

Technology Coordinator, USU Center for Persons with Disabilities, 1999-2001.

Graduate Teaching/Research Assistant, ISU & USU, 1997-1999.

Language Arts Teacher, Grades 7-12, Idaho School District 25, 1991-1997.

*Projects*

Co-designed Acropolis--an online learning environment (acropolis.usu.edu).

Designed TeachOnline database (stealth.usu.edu/uec/teachonline).

*Publications*

Olson, D. (2006) *Instructor Development: Delivery Skills Course*. Unpublished manuscript, Salt Lake City, Utah Department of Public Safety.

Recker, M. & the USU Advanced Learning Group (2000). *Communities of Practice: A Thinking Practices Framework for Instructional Technology*. Presented at the April, 2000 AERA conference.