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TEACHER'S EXPERIENCING AND REFLECTING ON CURRICULUM INTEGRATION AS AN APPROACH TO TEACHER CHANGE

DISSERTATION

Presented in Partial Fulfillment of the Requirement for the Degree Doctor of Philosophy in the Graduate School of the Ohio State University

By

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The Ohio State University

1995

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To the Lord

who shows me

the joy of learning and the beauty of knowledge
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VITA

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PUBLICATION


FIELD OF STUDY

Major Field: Education
Studies in Curriculum, Instruction and Professional Development; Organization Theory; Qualitative Research; Educational Change
# Table of Contents

DEDICATION .......................................................................................................... ii  
ACKNOWLEDGMENTS ....................................................................................... iii  
VITA ......................................................................................................................... iv  
LIST OF TABLES .................................................................................................... ix  
LIST OF FIGURES .................................................................................................. x  

## Chapter

### I. Introduction

- Rationale and Background of the Study ............................................................. 1  
  - Problems in Education: Missing Connections .............................................. 1  
  - Curriculum Integration and Teachers ............................................................ 3  
  - Teacher Change and Curriculum Change ..................................................... 5  
- Focus of the Study ...................................................................................................... 8  
- Research Questions ................................................................................................. 9  
- Definition of Key Terms ....................................................................................... 9  
- Methodology ........................................................................................................ 12  
- Site Selection ........................................................................................................ 14  
- Significance of the Study ..................................................................................... 17  
- Delimitations of the Study .................................................................................. 18  
- Overview of Chapters One Through Five .......................................................... 19  

### II. Relevant Literature

- Part 1 Curriculum Integration: A Hope to Improve Education ...................... 23  
  - Introduction ........................................................................................................ 23  
  - A Historical Look at the Origin and Meaning of Integration as an Educational Concept ... 24  
  - The Meaning of Curriculum ........................................................................... 27  
  - The Meaning of Curriculum Integration ......................................................... 29  
  - Models of Integrated Curriculum ..................................................................... 32  
  - Rationale for Curriculum Integration ............................................................... 36  
  - The Old vs. New Paradigm ............................................................................... 39  
  - Curriculum Integration as a Mode of Thinking With an Emphasis on Making Connections ........ 42  
- Part 2 Changing Schools From Loosely Coupled Elements to Perceptionally Integrated Systems .......... 44
## Table of Contents

**Introduction** ..................................................................................... 44

**Why Organizations Change** .................................................................. 44

**Schools and Curriculum Change: Organizational Perspectives** ................. 49

**The Concept of Change** ........................................................................ 53

**An Emphasis on Ownership and Enactment** .............................................. 55

**Facilitate Teacher's Ownership and Enactment of Curriculum Integration in Loosely Coupled Systems** .......................................................... 57

**Redefine Organizational Structure** ............................................................ 58

**Change/Innovation Process** ................................................................. 61

**Leadership** ............................................................................................ 62

**Echo** ...................................................................................................... 67

**Part 3 Reflection and Belief: How and What Teachers Change** ....................... 69

**Introduction** ..................................................................................... 69

**Modes of Reflection** .................................................................................. 69

**Reflection as Retrospection** ....................................................................... 70

**Reflection as Deliberation: Dewey** ............................................................. 71

**Reflection as Emancipation: Van Manen** ................................................... 74

**Reflection in Action: Schön** ................................................................. 78

**Reflection With Conscious Awareness: Vygotsky** ...................................... 83

**What to Change** .................................................................................... 89

**Reflect on Curriculum Integration to Change Beliefs Showing a Closed-System Worldview** ............................................................ 93

**A Synthesis: Connections Between Part 1, 2 and 3** ....................................... 96

**III. METHODOLOGY** ............................................................................ 102

**Qualitative Evaluation Research** .............................................................. 103

**Research Objectives** .............................................................................. 103

**Roles in the Research** ............................................................................ 104

**Data Collection** .................................................................................... 105

**Observations** ....................................................................................... 108

**Interviews** ................................................................................................ 111

**Fieldnotes** ................................................................................................ 115

**Documents** ................................................................................................ 115

**Data Analysis** ....................................................................................... 118

**Codes** ..................................................................................................... 118

**Causal Networks** .................................................................................. 120

**Trustworthiness Establishment** ................................................................ 125

**Validity** ................................................................................................... 125

**Reliability** ................................................................................................ 127

**Triangulation** .......................................................................................... 128

**Generalization** ...................................................................................... 129

**Effects of the Researcher** ......................................................................... 129

**Research Timeline** ................................................................................ 131

**Summary** ................................................................................................. 136
IV. FINDINGS

<table>
<thead>
<tr>
<th>The Settings of Teacher Change</th>
<th>141</th>
</tr>
</thead>
<tbody>
<tr>
<td>Season High School</td>
<td>141</td>
</tr>
<tr>
<td>Project TRI</td>
<td>144</td>
</tr>
<tr>
<td>The Three Classrooms</td>
<td>147</td>
</tr>
<tr>
<td>The Integrated Curriculum Unit on Vietnam</td>
<td>149</td>
</tr>
<tr>
<td>The Pilot Program: Inclusion</td>
<td>150</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expectations and Perceptions Towards SHS Teachers</th>
<th>152</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission</td>
<td>152</td>
</tr>
<tr>
<td>Principal</td>
<td>153</td>
</tr>
<tr>
<td>Teacher Coordinator</td>
<td>155</td>
</tr>
<tr>
<td>Students</td>
<td>157</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Rachel's Story</th>
<th>158</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher as Learner and Caring Person</td>
<td>158</td>
</tr>
<tr>
<td>Experience and Reflect on Curriculum Integration</td>
<td>160</td>
</tr>
<tr>
<td>Interpretation of Curriculum Integration</td>
<td>163</td>
</tr>
<tr>
<td>Make Connections With Anita</td>
<td>164</td>
</tr>
<tr>
<td>Make Connections With and Between Life Experiences and Students</td>
<td>165</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Changes in Beliefs</th>
<th>167</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teamwork Facilitates Learning</td>
<td>167</td>
</tr>
<tr>
<td>Curriculum Comes Alive; It's a Network of Good Ideas</td>
<td>167</td>
</tr>
<tr>
<td>Choices Provide Ownership</td>
<td>168</td>
</tr>
<tr>
<td>Flexibility and Sympathy Are as Important</td>
<td>169</td>
</tr>
<tr>
<td>as Creativity</td>
<td>-----</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Changes in Classroom Practices</th>
<th>170</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gina's Story</td>
<td>175</td>
</tr>
<tr>
<td>Teacher as Guide to the Real World</td>
<td>177</td>
</tr>
<tr>
<td>Experience and Reflect on Curriculum Integration</td>
<td>178</td>
</tr>
<tr>
<td>Interpretation of Curriculum Integration</td>
<td>179</td>
</tr>
<tr>
<td>Make Connections to the 3Rs</td>
<td>181</td>
</tr>
<tr>
<td>Changes in Beliefs</td>
<td>182</td>
</tr>
<tr>
<td>Search for the Meaning of Teaching</td>
<td>182</td>
</tr>
<tr>
<td>Reflect More Before Change and Leave Room</td>
<td>182</td>
</tr>
<tr>
<td>for Chance</td>
<td>-----</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Changes in Classroom Practices</th>
<th>184</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anita's Story</td>
<td>190</td>
</tr>
<tr>
<td>Teacher as Soldier and Strategist</td>
<td>192</td>
</tr>
<tr>
<td>Interpretation of Curriculum Integration</td>
<td>195</td>
</tr>
<tr>
<td>Experience and Reflect on Curriculum Integration</td>
<td>196</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Reflect on the Effectiveness of the Whole Process</td>
<td>196</td>
</tr>
<tr>
<td>Reflect to Discover the Importance of Integration</td>
<td>197</td>
</tr>
<tr>
<td>Reflect on Journaling With Conscious Awareness</td>
<td>198</td>
</tr>
<tr>
<td>A Change in Classroom Practices</td>
<td>200</td>
</tr>
<tr>
<td>Dilemma</td>
<td>207</td>
</tr>
<tr>
<td>Summary</td>
<td>209</td>
</tr>
<tr>
<td>V. CONCLUSIONS</td>
<td>211</td>
</tr>
<tr>
<td>Summary of the Study</td>
<td>211</td>
</tr>
<tr>
<td>Research Conclusions and Discussion</td>
<td>212</td>
</tr>
<tr>
<td>Translation, Transformation and Transition of Beliefs</td>
<td>213</td>
</tr>
<tr>
<td>Connect With Students: From the Changed Classroom</td>
<td>214</td>
</tr>
<tr>
<td>Practice Perspective</td>
<td>214</td>
</tr>
<tr>
<td>Change Through Experience and Reflection</td>
<td>216</td>
</tr>
<tr>
<td>Be Consciously Aware of Change</td>
<td>219</td>
</tr>
<tr>
<td>Curriculum as the Self, Differences Between Teachers, Knowledge</td>
<td>221</td>
</tr>
<tr>
<td>From Autonomy, Opportunity, Time to Change</td>
<td>222</td>
</tr>
<tr>
<td>Recommendations</td>
<td>227</td>
</tr>
<tr>
<td>A Hope</td>
<td>231</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>233</td>
</tr>
<tr>
<td>A. Self-Introduction and Invitation</td>
<td>233</td>
</tr>
<tr>
<td>B. Example of Fieldnote</td>
<td>235</td>
</tr>
<tr>
<td>C. Example of Official Document</td>
<td>238</td>
</tr>
<tr>
<td>D. Questions for Reflection From Course 727.49</td>
<td>240</td>
</tr>
<tr>
<td>E. Survey Questions</td>
<td>242</td>
</tr>
<tr>
<td>F. Letter of Reflected Resources From the Researcher</td>
<td>245</td>
</tr>
<tr>
<td>G. Letter of Recommendation for the Research</td>
<td>248</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>250</td>
</tr>
</tbody>
</table>
LIST OF TABLES

TABLES............................................................................................................PAGE

4.1 Season High School Student Population.................................141
4.2 Season High School State Proficiency Test Results..............142
4.3 Season High School Staff.................................................................143
4.4 Outline of Season High School Schedule..............................146
5.1 Major Themes Between the Three Teacher Change Stories...225
LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURES</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Nexus of Chance, Time, Teacher Experience and Reflection, Curriculum Integration, Teacher Change and Organizational Change</td>
<td>100</td>
</tr>
<tr>
<td>3. Initial Conceptual Map of Interrelationships Between Teacher Change Themes</td>
<td>122</td>
</tr>
<tr>
<td>4. Interactions Between the Three Teachers</td>
<td>226</td>
</tr>
</tbody>
</table>
"To my mind there must be, at the bottom of it all, not an equation, but an utterly simple idea. And to me that idea, when we finally discover it, will be so compelling, so inevitable, that we will say to one another, 'Oh, how beautiful. How could it have been otherwise?'"

— John Archibald Wheeler

"In life, the issue is not control, but dynamic connectedness."

— Erich Jantsch

In the context where three public high school teachers develop and implement an integrated curriculum unit, this study aims to examine the potential and effectiveness of experiencing and reflecting on curriculum integration as an approach to facilitating teacher change.

Rationale and Background of the Study

Problems in Education: Missing Connections

In schools, knowledge is often taught with isolated professional languages, and "in prevailing curriculum development practices, it is tacitly
assumed that all learning must be compartmentalized into specialized macro units, or 'disciplines'...." (Relan and Kimpston, 1991, p. 1). This is a phenomenon of "subject-centered" curriculum, a product of seeking specialization after the industrial revolution. Such an approach to curriculum development has made public education lack relevance to issues in the real world; consequently, students become unmotivated to learn or what they memorize is meaningless (Jacobs, 1989; Fogarty, 1991; Drake, 1993). As Alice Conkright (1982) cautions, "Knowledge is power when it leads to an informed connection with physical, emotional, and social reality; knowledge increases unreality when it has tenuous or limited ties to that reality" (p. 1). School curriculum usually fails to recognize the fact that the norm of the world is change and that knowledge, while it never stops growing, derives from the same tree. An outmoded, unrealistic, and fragmented curriculum faces the difficulty of keeping pace with rapid changes in society.

As a means of preventing problems resulting from missing connections, curriculum integration, with an inclusive, holistic nature, offers hope. The North Carolina State Department (1987) enumerates reasons for integrated curriculum as follows: (1) The real world is integrated; (2) students do best when learning is connected; (3) students become the focus of learning, not the teacher; (4) integrated programs are useful in tackling other areas of concern; (5) it is difficult to teach subjects and skills in isolation during a five-and-half-hour instructional day (pp. 3-4). It is believed that curriculum integration helps students gain access to life-long learning. Life-long learners recognize the changing, holistic, and interrelated nature of the world, make connections
in and with the curriculum derived from the self, people, objects and their interactive phenomena in the universe, and keep working on what they want to learn throughout their life. In fact, curriculum integration has been regarded as an essential target in educational improvement (Tyler, 1949; Goodlad, 1984; Boyer, 1986; Cummings, 1989; Gaff, 1989).

**Curriculum Integration and Teachers**

What is meant by curriculum integration? Although literature on integrated curriculum or curriculum integration has generated various models, definitions, and alternative terminologies related to it, they all share the common nature of curriculum integration—making connections and renewal. A traditional definition characterizes curriculum integration as the combination or application of different subjects in a lesson plan. A traditional approach to designing an integrated curriculum is to intermingle or combine several subjects, which may be characterized as a "multidisciplinary," "interdisciplinary," or "pluridisciplinary" curriculum. Current approaches to curriculum integration aim to develop across the domain skills such as "thinking, reasoning and problem-solving capabilities, the teaching of learning strategies, and the addition of topics and subjects in the curriculum...." (Relan and Kimpston, 1991. p. 3). Another example, the North Carolina State Department of Public Instruction (1987) proposes qualitatively different integration strategies for "integrated learning:" (1) content within a subject or skill area; (2) skills with subjects; (3) subjects with subjects; (4) skills with skills, and (5) skills/subjects with skills/subjects (pp. 1-2). In addition, Fogarty (1990) presents a ten-model continuum of curriculum integration, which begins with an exploration within single
disciplines, continues with models that integrate across several disciplines and then ends with models that operate within learners themselves and across networks of learners.

Regardless of which form an integrated curriculum takes, the North Carolina State Department (1987) claims that teachers, time, resources, and facilities are four factors necessary for a successful integrated curriculum, and that the state, district, school, and classroom levels are all responsible for its success. Among these factors and levels of responsibility, however, teachers hold the very key to its success. For although educational scholars regard curriculum integration as having clear advantages, it is teachers who present it to students according to the immediacy of classroom events, informality of their teaching style, perception of their own professional autonomy, and individuality of their interest in some students (Jackson, 1990). It is teachers who establish the justification for important questions related to curriculum integration. Among those questions: "Given the structure of disciplines, when is it feasible to integrate disciplines?" "To what depth must disciplines be integrated?" "Are some disciplines better than others for integration?" How do I deal with conflicts between the outcome of "keeping the integrity, the indigenous logic and structure of a discipline," and the outcome of "integrating' disciplines so that the boundaries among subjects no longer exist?" "What are the benefits of planned integration versus spontaneous integrative practices...?" (Relan and Kimpston, 1991, pp. 6-7).

It is teachers who give meaning and life to an integrated curriculum. It is teachers willing to integrate knowledge, reality and learning who search
for alternatives and then solve those paradoxes generated in the process of development and implementation of curriculum integration. It is teachers concerned about students' and their own growth who try to change a subject-centered curriculum. As Walker (1990) states, the curriculum will have a real change only with "the willing cooperation of the single most powerful figure in the classroom--that is, the teacher" (p. 246).

Teacher Change and Curriculum Change

Generally speaking, teachers are used to thinking about or planning what to teach discipline by discipline, especially those who teach their own professional subject on the middle or high school level. Obviously, the structure and philosophy of integrated curriculum are different from those of subject-centered curriculum. Relan and Kimpston (1991) point out that the most important element in curriculum integration is "the academic and psychological preparation of teachers" (p. 8). Academically, the content of curriculum integration and the degree of connections between disciplines are "determined by teachers' knowledge, attitude and expertise in various subjects and the application of the principle" (Cadenhead, 1970, quoted in Relan and Kimpston, 1991, p. 8). Psychologically, developing and implementing curriculum integration in the classroom requires changes in the teachers in teaching strategies, levels of consciousness, and role perceptions (Romey, 1975, quoted in Relan and Kimpston, 1991, p. 8), for they are challenging themselves with the unfamiliar and the new problems generated in integrated curriculum.

Thus, when curriculum integration is the attempted change, this statement may apply especially to teachers on the secondary education level,
who teach only their own professional subject or discipline. It was expected
in this study that the teachers must hold different reasons for deciding to
participate in that course on curriculum integration. They might be teachers
who had just become tired of the conventional way of teaching and wanted to
see something new; those who intended to get course credits; those who
recognized problems resulting from a subject-centered curriculum; those who
perceived themselves as change agents; those who realized the changing,
holistic, interrelated nature of knowledge, reality, and the world; or those
who wanted to share their own visions with others in a team.

The graduate-level course conducted at a high school demonstrated the
cooperation between the university and the local school. It was facilitated by
a university professor in the field of curriculum and qualitative research, and
designed to help teachers develop themselves professionally through the
process of planning an integrated curriculum with other teachers in a team.
To have the teacher play the role of curriculum developer-enactor rather than
the one who just passes over the curriculum packaged by outside experts is
regarded as "one of the most frequently used strategies for facilitating
classroom curriculum change" (Walker, 1990, p. 406). In addition, in this
case the problems of "resource," "expertise," and "authority," considered the
three main obstacles to teachers embarking on curriculum change efforts in
their own classroom (Walker, 1990), had been overcome. With the
collaboration of colleagues in other disciplines, professional help from the
curriculum specialist, and support from the high school principal and teacher
coordinator, teachers were provided with a supportive network, which should
facilitate their change.
Obviously, no matter what reason they had for participating in the course on curriculum integration, those teachers had created for themselves an opportunity to experience the development and implementation of integrated curriculum. What is meant by experience? According to Dewey (1916), experience integrates an active element--trying--and a passive element--undergoing:

Experience as trying involves change but change is meaningless transition unless it is consciously connected with the return wave of consequences which flow from it. When an activity is continued into the undergoing of consequences, when the change made by action is reflected back into a change made in us, the mere flux is loaded with significance. We learn something. (p. 139)

Then, Dewey characterizes learning as "a process of transforming the organism and the environment," for "the human organism is a dynamic goal-seeking entity capable of responding creatively to his environment" (Alberty and Alberty, 1962, pp. 96-97). In this case, Dewey's argument implies: teachers change themselves and the curriculum when they learn something in the process of developing and implementing an integrated curriculum with other teachers. However, teacher change with or without meaning depends on how they experience curriculum integration: Was the teacher consciously aware of what he/she had learned in the process of developing and implementing an integrated curriculum unit with other partners? Did the teacher reflect upon what he/she was experiencing or has experienced in that process?
Focus of the Study

To supplement literature on teacher thinking and facilitate teacher change, the focus of this research is to probe the relationship between curriculum integration and teacher thinking from a change perspective.

On the one hand, curriculum integration provides an optimal opportunity to solve the educational problems resulting from fragmentation or missing connections with respect to teaching and curriculum. On the other hand, teachers play an important and direct role in solving those educational problems. That is, teachers should see the importance of curriculum integration, have a comprehensive understanding of the nature of integration--both aspects of integration: to make connections, make whole and to renew--and act out their understanding in their daily life, especially when teaching students or developing curriculum.

But, studies on teacher thinking are usually associated with curriculum planning of a particular discipline; few are done in the context of developing and implementing curriculum integration. This research can supplement the shortage of understanding about the relationship between teacher change and curriculum integration. It was conducted in the context of three high school teachers developing an integrated curriculum through a graduate-level course, and continuing interaction with the researcher for the other six weeks in the following trimester (one week out of which they implemented the designed integrated curriculum). Three areas were focused on in this study: (1) teacher reflection on curriculum integration; (2) the role of curriculum integration and its potential contributions as a method for guiding teacher change; (3) the teacher's ability to interpret their change and
to develop their own meaning and framework of curriculum integration.

Research Questions

This study aims to examine the accomplishment and effectiveness of teacher's experiencing and reflecting on curriculum integration as an approach to facilitating teacher change. Research questions are as follows:

1. Did teachers change in the context and process where they as a team developed and implemented an integrated curriculum?

2. If so, how did teachers' experiencing and reflecting upon curriculum integration relate to their changes in beliefs and classroom practices?

3. How did they interpret their changes and develop their own meaning of curriculum integration?

Definition of Key Terms

In order to clarify how some specific words and clusters of words are used in this study, the list below briefly delineates their meanings. In most cases these definitions are elaborated upon in Chapter II.

Change and Teacher Change. The term "change" in this study means to become different or make (new) connections. "Change" is not restricted to some idea of linear progress (see Chapter II); it includes "exchanging stability for chaos or oblivion, replacing one level of complexity with another level that is either more simple or more complex, exchanging energy for preserving the current level of complexity via slow, steady changes over time" (Puglielli, 1994, p. 17). Teacher change in this research refers to change reflected in the aspects of behavior--how and what he/she teaches students, and beliefs--how and what he/she thinks about him/herself, curriculum, teaching, learning and curriculum integration (see Chapter II).
Conscious. The term "conscious," from the Latin root *conscius*, referring to perceiving, apprehending, or noticing with a degree of controlled thought or observation. Constituted by intellect and affect, it means acting with critical awareness, and it is personally felt (Merriam-Webster, 1993).

Curriculum. In contrast to "instruction," which refers to how to teach, "curriculum" is about "what students have opportunities to learn under the auspices of schools" (McCutcheon, 1995). Eisner (1985) recognizes there are at least three kinds of curriculum available at schools: the explicit, implicit and null curriculum (see Chapter II).

Discipline, Form of Knowledge and Subject. By "discipline" is meant "something like a well-established, relatively-discrete area of study with a recognizable conceptual scheme, a particular pattern of enquiry and an accepted name" (Chambers, 1989). History, literature, botany, psychology, philosophy, law, sociology as studied in colleges and universities are disciplines. As to "form of knowledge," although Hirst (1974) claims that all human knowledge and understanding can be sorted into seven fundamental forms: pure mathematics, science, knowledge of minds, moral knowledge, artistic knowledge, religion, and philosophy, I agree with Albert Einstein that they are branches of the same tree. Many disciplines will fall within a form of knowledge, for example, algebra and geometry within mathematics, physics and chemistry within science, literature within the arts, but some will be inter-formed such as geography and history. "Subject" in this research refers to the subdivision of a discipline. For example, American civilization, medieval history, history of contemporary China, women's history, history of Florida, history of biology, etc. are subdivisions of history.
**Effectiveness.** The term "effectiveness" means producing or being capable of producing a result, or suggests an acting or potential for action or use in such a way as to avoid loss or waste of energy in effecting, producing, or functioning (Merriam-Webster, 1993). In this study, effectiveness means producing or being capable of producing a result with meaning to the actor (see Chapter II).

**Integrate.** The term "integrate," from the Latin root integrare, means to make whole and to renew (Webster, 1960). The noun "integration" in this study means the continuing process of making connections and simultaneously reconnecting with and in the whole (see Chapter II).

**Meaning and Search for Meaning.** The term "meaning" in this study can refer to felt meaning, which begins as "an unarticulated general sense of relationship and culminates in the 'aha' experience that accompanies insight," or deep meaning, indicating the intrinsic motivation that "drives us and governs our sense of purpose" (Caine and Caine, 1991). The term "search for meaning" is essentially a search for self (see Chapter II); the term meaning in this phrase refers to deep meaning, which constitutes, in many respects, "the substance of the self" (Jersild, 1955).

**Reflection.** The term "reflection" comes from the Latin root reflectere, indicating an act of bending back. It also means an effect produced by an influence, a thought formed or a remark made as a result of meditation, consideration of some idea or purpose (Merriam-Webster, 1993; see Chapter II). Generally speaking, reflection means retrospection; it means scientific problem solving to Dewey; Van Manen focuses on emancipation; Schön discusses reflection-in-action; and Vygotsky's emphasis is on reflection with
conscious awareness (see Chapter II).

**Methodology**

The case study strategy is appropriate for investigating all the "how" and "what" questions proposed in this study. Those questions are being asked about a contemporary phenomenon within its real-life context--teacher change and reflection on curriculum integration, over which the researcher has little control (Yin, 1989). That is, although the researcher tried to propose questions to and share learning with teachers, the decision of whether or not they changed or made efforts to reflect on curriculum integration was left to themselves. In addition, the relations between teacher change and its context--curriculum integration--were not clearly evident. Therefore, it was necessary to have multiple sources of evidence to probe research questions (Yin, 1989, p. 23).

Although "case studies can include, and even be limited to, quantitative evidence" (Yin, 1989, p. 24), this case study about the relation between teacher change and curriculum integration was qualitative research for it exhibited the following characteristics (Bogdan and Biklen, 1992, pp. 29-33).

1. The researcher was the key instrument for analyzing data, which were collected directly from teachers at a high school and from the understanding gained by being there.

2. The data collected were in the form of written words and pictures, including observation fieldnotes, interview transcripts, teachers' journals, reflection memos, questionnaires, lesson plans for the integrated curriculum unit developed by teachers, the graduate course's syllabus and handouts.
(3) The research focused on processes of why and how a contemporary phenomenon emerged and how participants and the researcher learned from each other in interactions, rather than simply on research outcomes.

(4) The researcher analyzed data inductively, attempting to avoid prior commitment to any theoretical model. Theories were grounded from many disparate pieces of evidence under the same category.

(5) The researcher was concerned with participants' perspectives and how to accurately capture their own way of interpreting significance, trying to build intersubjectivity and trustworthiness with each other.

This study is also qualitative evaluation research. It has a dual objective in (1) trying to evaluate the accomplishment and effectiveness of teachers' experiencing and reflecting on curriculum integration as an approach to facilitating teacher change, while (2) using such an evaluation process to improve the effectiveness of this approach. This research took place at Season High School—a school that had operated with a trimester system for four years. The major research participants were three teachers—Rachel, Gina and Anita, who, working as a team, developed an integrated curriculum together through a graduate-level course and then implemented it in their own classroom. In order to better know the school context where the three teachers were situated, the teacher coordinator and the principal were also chosen as research participants. Data were collected throughout four phases of the year of 1994: (1) From January to March in the graduate-level course where the three teachers designed an integrated curriculum on the Vietnam War; (2) from April to June in their own classroom where they implemented the unit of integrated curriculum on the Vietnam War; (3) from
July to September follow-up contacts; and (4) from October to December member checks. A detailed research timetable is included in Chapter III.

Data included: (1) open-ended surveys; (2) reflective journals; (3) observation fieldnotes; (4) public and private documents; (5) interview transcripts; and (6) classroom instruction transcripts. Those data were analyzed through coding and causal-networking during/after the data collection process; data analysis was an on going process. Analyzed data were transformed into one description about how the principal, teacher coordinator and students perceived teachers at their school, and three stories about the three teacher participants in terms of (1) their changes in beliefs and classroom practices, (2) their interpretations of curriculum integration and (3) their interpretations or awareness of their changes in beliefs and classroom practices. The three stories were written respectively from the first, second and third person points of view.

Site Selection

Teachers at Season High School in the city of Montevallo (pseudonyms) heard and talked about various ideas on curriculum and instruction, one of which was "curriculum integration." They had heard of many terms similar to integrated curriculum such as "interdisciplinary curriculum," "multidisciplinary curriculum" and "thematic approach." They were somewhat confused by the meanings and relevant models in the literature of those terms; although they wanted to try integrated curriculum in the classroom, they faced technical problems: "How do I do it?" or "How do I start it?" The teacher coordinator at the school, whose job was to participate in educational meetings as a school representative, and who wrote proposals for
various grants for teachers and the school, was concerned about teachers' interests and difficulties in developing and implementing an integrated curriculum. After obtaining support from teachers and the school principal, she wrote a proposal to the Ohio State University for professional help. A graduate-level course on curriculum integration was approved and then offered in that very high school. The original purpose in the coordinator's and teacher's minds was to learn more about integrated curriculum, the differences between the similar terms related to it, and how to design such a curriculum. With support from the principal, the teacher coordinator encouraged teachers to implement the developed integrated curriculum in the following trimester.

The research took place at Season High School (SHS), where three teachers as a team, the teacher coordinator, and the principal were chosen as the research participants for a study on the relation between teacher change and curriculum integration. The reasons for choosing this particular school and team were as follows:

1. The uniqueness of the time structure: Season High School, a high school advocating innovation, had employed the trimester schedule for four years. This schedule allowed teachers to interact with students in a two-hour block, which, unlike the forty-five-minute period at most high schools, which segments a school day into more than six parts, provided teachers with much more flexibility in planning and implementing integrated curriculum.

2. The leadership involving in obtaining professional help for innovation: The idea of requesting a graduate-level course on curriculum integration was initiated by the principal and teacher coordinator of Season
High School, who wanted to help teachers clarify concepts related to curriculum integration so that they might have more and better ideas for planning a curriculum making the best use of every two-hour block. It was important to probe their beliefs underlying such an effort.

3. The implementation of the developed integrated curriculum: While teachers from other middle and high schools were not required by their principal to implement what they developed throughout the graduate-level course on curriculum integration, teachers from Season High School were asked to do so in the following trimester. Therefore, teachers from SHS looked for team partners whose teaching schedules best matched theirs at the beginning of the course so that they could help each other when implementing the integrated curriculum in the next trimester. To develop the curriculum which was going to be implemented required teachers to think more about the needs of their students and potential limitations in the real-life context.

4. The opportunity to co-teach the integrated curriculum: Even though they were developing an integrated curriculum together, teachers did not necessarily choose to participate in the Inclusion program to teach together in the same block and classroom. In the Inclusion program, the team of the three SHS teachers who were chosen for this study consisted of two special education teachers and one regular classroom teacher; one of the special education teachers and the regular classroom teacher would teach together in a world history class. This program was about mainstreaming students in special education into the regular classroom by having them take one or two courses in the regular classroom, where their special education teacher
cooperated with the regular classroom teacher.

5. The interest in responding to survey questions: At five different times, a concern survey was distributed to all teachers who participated in the graduate-level course, but not as a course requirement. I, as the researcher, invited all of them to join the research with me after introducing myself and my research interests (see Appendix A). Only the team of the three SHS teachers responded to all five surveys; no other teams did so. The team of the three SHS teachers demonstrated a willingness to volunteer, and more importantly, an interest in thinking about questions related to change, curriculum integration and the school as an organization. This research needed the kind of participants who were most likely making efforts to reflect on the experience of developing and implementing an integrated curriculum.

Significance of the Study

This study can make contributions in the following areas:

1. Little literature on teacher thinking has been associated with curriculum integration. By supplementing the literature on teacher thinking, my research provides people with findings on how high school teachers experience and reflect on curriculum integration.

2. Keeping reflective journals and responding to survey questions in this research provides teachers opportunities to think about, articulate, and keep aware of what they are learning in the process of developing and implementing integrated curriculum. Conversational interviews between the researcher and teachers provide opportunities to share professional and personal experiences on curriculum integration and change with each other. In addition, through the case study in which teachers and the researcher
inquire and explore questions and grow together, teachers should become much more familiar with qualitative research approaches, which in turn should help them feel more comfortable about participating in other qualitative research later or about conducting such research by themselves.

3. Teachers usually are more familiar with the curriculum and their own students in their classroom than anyone else, and teachers are in the best position to change the classroom curriculum. Consequently, all others who want to bring about change in the classroom curriculum must find ways to help teachers to make meaningful changes. It is important for educational leaders, policy makers or teacher coordinators to know how teachers change. This research provides stories of what aspects of themselves teachers change and how they change and teachers' meanings of curriculum integration. In addition, this research should also facilitate teacher change. Although its generalization is not automatic, the case study will help to identify other relevant cases.

**Delimitations of the Study**

In a description of any inquiry, it is important to describe what the study was not. This case study did not answer the following questions: How did the students integrate the curriculum when the three teachers implemented the integrated curriculum unit on Vietnam? How long did it take teachers to change? Were changes long-lasting? What components underlying the graduate level course on curriculum integration contributed to their changes? Did teachers' awareness of their own changes influence the kinds of changes they were willing or able to make in their own classrooms? This study neither accounted for macro political, economic, historical and
social forces which shaped the lives of the research participants nor did it directly attend to the interactions between the three teacher participants and their other colleagues or people they met outside the school.

Instead, this research was confined to a qualitative evaluative case study of the relationship between teacher change and curriculum integration. In other words, only reflections (written in survey questions, journals and letters, or expressed in conversations and when teaching) and classroom practices revealed during the process of developing and implementing an curriculum integration would be taken into considered in the evaluation of the accomplishment and effectiveness of teacher change. This study focused on the verbal behavior, oral as well as written communications and reflections; nonverbal behaviors were not focused on.

Overview of Chapters One Through Five

In Chapter I, I describe the background of the study, state the focus of the study and identify research questions within the context of high school teachers' experiencing the development and implementation of an integrated curriculum. The chapter also includes definitions of key terms, reasons why I selected the particular research site, methodology and the significance and limitations of the study.

In Chapter II, I analyze the literature on curriculum integration, teacher reflection, and the nature of individuals and organizations from a change perspective. Important concepts, such as curriculum, integration, curriculum integration, reflection, change and search for meaning, are discussed in detail.
In Chapter III, I discuss the research methodology—its nature as well as the design, successive phases in the research process and trustworthiness of this study.

In Chapter IV, I portrait the settings of teacher change and present my analysis of and reflection on data in the form of three stories about the teacher participants. The three stories were written from the first, second and third person point of view.

In Chapter V, I summarize and conclude the research, discuss the research findings and then raise suggestions and questions for future research.
CHAPTER II

RELEVANT LITERATURE

In this chapter the theoretical and philosophical framework for the study are presented. The central focus is on how teachers’ experiencing and reflecting upon curriculum integration relate to their change. This is not an exhaustive review of all of the relevant literature in the fields of professional development, curriculum and change theory. Instead, illustrative examples from the literature are presented to connect my understanding of the nexus of curriculum integration, teacher belief and reflection, individual, curriculum and organizational change to the present study.

My review of and reflection on the literature consists of three parts, interrelated by two themes throughout the whole chapter: One theme is change in terms of why, how, what, where and when occurring in the micro and macro systems (e.g., students and teachers; schools and the world). The other theme is the nature of curriculum integration and its application to improve education, by which I mean to facilitate students', teachers' and organizations' (schools') integration and development. With the two themes in mind, in Part One, I mainly review and reflect on the literature about curriculum integration, discussing its various meanings and models, and the hope it gives to improve education. In Part Two, I review and reflect on the
literature regarding to variations in organization structure, change process and leadership which increase the effectiveness of organizational change, and discuss the idea of changing schools through facilitating curriculum integration and the search for its meaning. Finally, in Part Three I review and reflect on the literature about teacher belief and teacher reflection, and discuss the four sets of beliefs teachers should consider changing and various modes of teacher reflection.
Part One

Curriculum Integration: A Hope to Improve Education

Introduction

The purpose of Part One is to attract people's, especially teachers', attention to the idea that curriculum integration gives an optimal opportunity to improve education. By "improve education" I mean to facilitate students', teachers' and organizations' integration and development in the evolutionary world. The curriculum integration process is seen as a whole. In the process we educators, while trying to be role models, help students recognize our interdependence with each other, search the nature of relations or interconnections, and understand paradoxes constructed by the self through reflection or interaction. Led by a mode of thinking with an emphasis on making connections, such a process should contribute to the harmony, unity, and wholeness of one's soul through helping one integrate within him/herself (perceived paradoxes, changes, and intellectual and affective self) and with the world, (which is full of connections and reconstructing from time to time).

Part One begins with a history of the meaning of integration to know what has been said about it. It is also important to take a look at the meaning of curriculum, for one's interpretation of curriculum affects one's interpretation of curriculum integration. The meaning of curriculum integration can be defined in different contexts. In addition, I categorize four basic models of integrated curriculum from many similar designs with
different names, and then examine the type of connection and curriculum in the four models of integrated curriculum. Following those models is the rationale of curriculum integration approached from different contexts. Finally, in order to explain why integrating the self with the awareness of connections, perceived paradoxes, and with shifted attention, is important for educational improvement, I discuss the worldviews based on the old and new paradigms. It is hoped that people will start reflecting on and observing the world and education with a curriculum-integration mind—a mode of thinking which has an emphasis on making connections.

A Historical Look at the Origin and Meaning of Integration as an Educational Concept

Curriculum integration is a phrase broad enough to contain images or interpretations claimed from different perspectives. It is necessary to have a historical look at the origin and meaning of integration as an educational concept before discussing the meaning and various models of curriculum integration. For history provides us with "a sense of movement over time" and perspectives which "enable us to gain a vision of prospect" (Tanner and Tanner, 1990, p. xiii). Such a history of a conceptual issue is based on the review of literature on curriculum integration, which are presented chronologically. It is a history based on my interpretation (or reconstruction) of the past.

The concept of integration might be discovered as early as Plato's harmony of the soul; later, in some aspects, it can be found in Herbart's (1776-1841) unity of self-consciousness (Ward, Suttle and Otto, 1960). Herbert Spencer, in his book published in 1870, theorized integration as a
process of accumulating and synthesizing matter, where chaos is primary and events compound together in the evolution of society. Another view, supported by organismic and gestalt psychology, assumed that the whole is primary, and implied that "the problem of integration is not one of the creations of an integrated individual but rather the continuing integration of one which was integrated from the beginning" (Ward, Suttle and Otto, 1960, p. 37).

It has been claimed that, the integration movement in this country should date back to the Herbartians (Tanner and Tanner, 1975; Ward, Suttle and Otto, 1960). In the National Herbart Society, established in 1892 and declining in 1905, members such as Charles DeGarmo, Francis Parker, and John Dewey were concerned about the concept of integration from different perspectives. DeGarmo emphasized the integrity of a given discipline; Parker, while arguing that the most striking truth was the essential relation of all subjects to one another, unlike DeGarmo, insisted that children's needs should be the organizing principle of curriculum synthesis, which reflects the unity of man and nature (Tanner and Tanner, 1975). For Dewey, his laboratory school was organized as a form of community life in miniature--"an organic whole instead of a composite of isolated parts" (Dewey, 1915). What Dewey wanted to integrate were the curriculum and life experience so that children would be capable of learning directly from life (Dewey, 1916), and through relating the school to life, all studies are of necessity correlated (Dewey, 1915). Thus, three complementary aims of curriculum integration were seen in this early work: (1) integration within a discipline; (2) integration among disciplines; and (3) integration between in-school and out-
of-school experiences.

In order to find out what meanings of integration educators held, Ayer conducted a survey in 1934, which revealed that meanings of integration emphasized the unity of human experiences, but in the literature he discovered different interpretations such as: integration of subject matters; integrated personality; integration of behavior; integration of experience; and integration of learning (Ward, Suttle and Otto, 1960). Only three years later, a committee was appointed by the Department of Superintendence to eliminate the confusion surrounding the meaning of integration. Thomas Hopkins, head of the committee, edited a book in 1937, *Integration: Its Meaning and Application* to interpreting the meaning of integration from different perspectives. Some educators like Dix in 1936 and Knudsen in 1937 regarded the concept of integration as related to the basic tenets of mental hygiene, gestalt and organismic psychology, all of which contributed to the integration movement in the history of education (Ward, Suttle and Otto, 1960).

The issue of integration has continued to be discussed since then; about twenty years later, the National Society for the Study of Education in 1958 identified a functional concept of integration in its fifty-seventh yearbook as the following:

Our concern with integration...must be with the integrative process in which man engages as he strives to organize in meaningful fashion knowledge and experience which at first seem largely unrelated. Specifically, we want an educational program which turns out individuals desirous and capable of such continuing integration.
Obviously, the meaning of the term "integration," although interpreted differently by scholars, has a common nature among those various voices—to connect, relate, link, and make whole, and to renew. It is the question of what on earth one connects together that makes the interpretation different. Thus, in order to discuss the meaning of "curriculum integration," an understanding on the meaning of curriculum is important.

The Meaning of Curriculum

McCutcheon (1995) states that curriculum is "what students have opportunities to learn under the auspices of schools," which concerns what should be taught. Such a definition differs from the meaning defined from a positivistic and closed-system point of view that curriculum is a course to be run—a sequence of content units arranged in such a way that the learning of each unit may be accomplished as a single act (Gagne, 1967) or a plan containing statements of aims, objectives, and a program of evaluation of outcomes (Taba, 1962). Eisner (1985) and McCutcheon (1995) recognizes there are at least three kinds of curriculum available at schools:

1. The explicit curriculum is the "publicly advertised fare of schooling" (McCutcheon, 1995), which usually lists the documents and policies like graded courses of study, curriculum guides, scope and sequence charts, and standards of the proficiency tests.

2. The implicit curriculum is what students intentionally or unintentionally learn at school, which may influence the character and direction of their life because of the nature of schooling. For example, students learn to keep quiet when the principal passes by their classroom, or
to talk in the ways their teachers talk.

3. The null curriculum consists of "what students do not have opportunities to learn" (McCutcheon, 1995), which may influence students' reasoning process to consider and reflect alternative perspectives and realities. It is important to "consider what we do not teach in schools as well as what we do" (McCutcheon, 1995).

While McCutcheon depicts curriculum as a phenomenon occurring in the educational system, Prawat (1992) and Doll (1989) describe curriculum as multifaceted matrix to be explored from an open-system perspective, where perturbation or anomaly is viewed as an important stimulant for growth. "In this matrix," states Doll (1989), "places where one begins and ends are far less important than how well one explores the myriad connections, logical and personal, inherent in the matrix" (p. 251). That is, curriculum is to be organized around big ideas, and teachers need to be mindful not only the ideas, but of the important connections between those ideas.

In addition to the above statements about the meaning of curriculum, it may also be claimed that only what has been undertaken to be learned should be called as one's curriculum from the learner's perspective, for such a content has meaning to that person. The implicit and null curriculum have the opportunity to become "explicit" if one does always reflect on what he/she sees, hears, and feels, and search for meaning. The reason schools exist should primarily be that those who love human beings want to provide various opportunities for youth to learn how to learn, and to search for the wisdom of living harmoniously with the universe. Education provided by the school should help students be aware of the facts that curriculum beyond
schools is as important as school curriculum, and that as long as we are alive, we are learning. Synthesizing my belief on curriculum with McCutcheon’s definition of curriculum from a phenomenological perspective and Prawat's and Doll's from an open-system perspective, we may regard curriculum as a network of important ideas which one has opportunities in his/her daily life to determine to learn, and regard the world, with its physical and spiritual systems intertwined, as his/her school.

The Meaning of Curriculum Integration

Considering the confusions derived from the various meanings of curriculum integration, Ward, Suttle and Otto (1960) remind us to identify the context in which the term is used. While Lindeman (1937) lists only the psychological, pedagogical, and sociological contexts in which the concept of integration has been used in education, the term "integration" has also been defined in the epistemological and philosophical contexts. However, it is important to remind ourselves that there are still connections between those contexts. That is, the distinctions between contexts are made based on my understanding about and interpretation of the terms "discipline," "curriculum," "psychology," "pedagogy," "sociology" and "epistemology." These contexts are relatively rather than absolutely distinct.

1. In the psychological context, integration indicates the "formulation, development and union of the child's activities into one whole growth and personality" (Gwynn and Chase, 1969, p. 218). According to Watson (1937), "The human organism is so interconnected, interdependent, and integrated, that whatever happens to one part of it usually brings about correlative changes in other parts of the organism" and the meaning of experience "grows
out of an integration of the whole setting in time and space and out of our own state of organization about certain ends" (p. 124-5). That is, integration is seen as a process that takes place within the individual, and through which the person correlates parts, establishes relationships, generalizes, and synthesizes. Curriculum here indicates all that one has been making sense of since he/she was born, including the explicit and implicit curriculum defined previously. Learning itself is, in a sense, a kind of integration; integration, in this context, refers to any meaningful learning.

2. In the pedagogical context, integration means a teaching procedure and curriculum planning in which various subjects are connected into units of study or problem solving situations (Lindeman, 1937). Barrow (1976) states that "teaching different subjects as totally distinct entities may militate against developing a comprehensive and multidimensional perspective in children" (p. 28). Faunce and Bossing (1958), Taba (1962), and Vars (1969) state that the curriculum needs to develop common perceptions by dealing with ideas and concepts which cut across subjects. Integration also means to blur the boundaries between the subjects by subordinating insulated subjects to some relational idea or "supra-content concept" (Bernstein, 1971, p. 60), and, therefore, the degree of integration may depend on the number of teachers involved. What are integrated in this context are subject matters, which usually appear as the academic explicit curriculum to the learner.

3. In the sociological context, integration is used to describe desired interactions between the individual and others, between the individual and the organized institutions, and between one organized institution and other institutions (Lindeman, 1937). Hopkins (1937) states, "Every human
organism must develop in a culture which antedates its birth. It must not only continue to maintain integration within itself but also to integrate progressively with the existing culture in order to grow normally" (p. 183). That is, each individual experiences receiving and giving affection, and develops means of living harmoniously with "physical," "esthetic," and "social" authority (Hopkins, 1937, p. 184-7). The individual and the society are expected to be integrated—one develops a sense of accommodation. This feeling can be called as a kind of implicit curriculum for we are usually unaware of their development or existence. It also can be seen as a kind of explicit curriculum though, if curriculum developers design activities/content to manifest such a feeling.

4. In the epistemological context, the meaning of integration deals with the nature of knowledge. Levit (1971) claims that all knowledge is interdependent and occurs in interactions with related objects (e.g., the interaction of the knower and known) but he also states that "not everything is related to everything else in every possible way" (p. 176-7). Taking the term "knowledge" as "justified true belief," being connected with objectivity, truth, and rationality, Hirst (1974) claims that all knowledge, when acquired, occurs within a structure and is traceable to its place within one of the forms, including pure mathematics, science, knowledge of minds, moral knowledge, artistic knowledge, religion, and philosophy (Hirst, 1974). Accordingly, Chambers (1989), who takes a lot of Hirst's perspectives into account, states that integration reflect a kind of "knowledge of minds and science," where well-established fields of knowledge such as history and geography are a "meaningful psychological whole unified around the methodological concepts
of time and space, of happenings through time on the one hand, and of organization across space on the other" (1989, p. 94). Curriculum defined in this context indicates the kind of knowledge with the common language and methodology structures, and a unique consciousness or attention to things related to that well-established field of knowledge. Such a curriculum is both explicit and implicit.

5. In the philosophical context, integration indicates a kind of belief or value. Pickens Harris (1937) describes integration as "a mode of participation and growth," and "a point of orientation in educational thinking" (p. 51). That is, integration becomes "one's way of viewing the educative process as a whole"; it represents "an emphasis, not a performance"; it suggests the necessity of bringing social and personal events, movements, and conditions of life together "in fresh levels of creative synthesis" (Harris, 1937, p. 51). Therefore, integration as a belief or value helps one to live so that his/her existence will evidence that "life is regular, concrete, whole, harmonious, cooperative, bound together by a fundamental affinity, and 'integer'" (Brooks, 1942, p. 120). Such integration of one's physical and spiritual world throughout his/her life is usually a null curriculum for most educators seldom teach it to students so students have few opportunities to feel or to make sense of it in a school system where fragmentation and specialization are dominant values.

**Models of Integrated Curriculum**

Educators design various models of integrated curriculum with different emphases on the meaning of curriculum integration. The literature abounds with various terminologies related to integrated curriculum.
Although given different names, some of the models are created with the same or similar structure or purpose. Those various models are categorized into four basic patterns of curriculum integration. As mentioned earlier, there are still connections between those models.

1. Pluridisciplinary curriculum is the "juxtaposition of disciplines assumed to be more or less related" (Piaget, 1972 quoted in Jacobs, 1989, p. 8). Subjects like physics, chemistry, biology are interrelated and occur within the form or structure of knowledge of science around the "methodological concepts of time and space" (Chambers, 1989, p. 94). However, those studies are usually taught in different fields as if they were independent disciplines. Teachers should not only make explicit connections among subjects belonging to the same form of knowledge or among topics and concepts within one of those subjects, but also connect one's daily work or even one semester's idea to the next. Pluridisciplinary curriculum emphasizes the kind of integration defined in the epistemological context, where the connection indicates the common logic of the language used and methodology applied in the subjects that are integrated.

2. Multidisciplinary curriculum displays the kind of integration defined in the pedagogical context. It is described as the "juxtaposition of several disciplines focused on one problem with no direct attempt to integrate" (Piaget, 1972 quoted in Jacobs, 1989, p. 8). Fogarty (1991) calls this type of curriculum integration a "webbed model" (p. 59). For example, the mathematics teacher and the social studies teacher can develop their curriculum on a court case. On one hand, students may use mathematics to compute the cost of lawsuit, including the time, and necessary statistical
evidence, or to measure something, etc. On the other hand, the social studies teacher may have them search and collect case-related evidence, analyze data, role play the trial as in the court, etc. In this model, different subjects cooperate together to solve a real life problem aiming to have students recognize the importance of collaboration of specialties and its application. The nature of connection is functional--functions of the subject are links among what are integrated in this model.

3. Interdisciplinary curriculum, according to Jacobs (1989), is "a knowledge view and curriculum approach that consciously applies methodology and language from more than one discipline to examine a central theme, issue, problem, topic, or experience" (p. 8). Interdisciplinary curriculum tries to find the overlapping skills, concepts, and attitudes--what Bernstein (1971) calls "supra-content concepts"--from disciplines which are intended to be integrated. It is also one type of integration defined in the pedagogical context. For example, teachers who want to integrate subjects like language arts and schisms may have students study the processes of social construction and deconstruction examined through the concepts of linguistic and hegemonic codes. Early in the 1940s, Harold Alberty (1947, 1962 with Elsie Alberty) had identified this type of curriculum as a "Type-Three Core" program, which, later elaborated and advocated by Faunce and Bossing (1958), and Vars (1969), has become a movement aimed to reform the secondary curriculum. In this model, the nature of connection is metafunctional for some influences one discipline displays may not be recognized explicitly.
4. Holistic curriculum can be seen as the type of curriculum combining meanings of integration defined in all the contexts mentioned above (the epistemological, pedagogical, psychological, sociological, and philosophical contexts). John P. Miller (1988) describes it in detail as the following:

The focus of holistic education is on relationships--the relationship between linear thinking and intuition, the relationship between mind and body, the relationships between various domains of knowledge, the relationship between the individual and community and the relationship between self and Self. In the holistic curriculum the student examines these relationships so that he/she gains both an awareness of them and the skills necessary to transform the relationships where it is appropriate. (p. 3, quoted in Miller, Cassie and Drake, 1990, p. 2)

This model of integrated curriculum gives much more freedom for teachers to imagine various relations, not particularly limited within only disciplines or individuals; it focuses on the big picture emerging from implicit and explicit meanings in the world, life, knowledge, and being a human being, and aims at helping the individual be a life-long learner. The sense of ownership, interdependence, and appreciation is demonstrated and emphasized in this model.

The characteristics of relation identified in the above models only describe a small number of types of relations. Looking at and thinking about the existent and nonexistent, the physical and spiritual around us, we will be amazed by the omnipresence and complexity of connections.
Rationale for Curriculum Integration

The context where a meaning of integration is defined provides the rationale to support curriculum integration.

In the epistemological context, the rationale focuses on the usefulness and meaning of knowledge. Knowledge never stops growing or increasing the degree of specialization due to research and practice, which results in a conflict in what should be taught and what should be eliminated (Jacobs, 1989, p. 3). Growth of knowledge is a blessing, but some also call it as a burden. The technological explosion and rapid acquisition of data renders large amounts of information learned at school obsolescent, fragmented, and unrelated. Hirst (1974), Chambers (1989) and Levit (1971) believe that knowledge occurs within one of the structures or forms of knowledge with distinct characteristics. Curriculum integration permits the more flexible organization of knowledge needed to cope with the rapid expansion of information available. It can be accomplished by grouping subjects in common clusters, like science, instead of physics, chemistry, biology, etc.

In the pedagogical context, the rationale focuses on students' and teachers' needs. The North Carolina State Department of Public Instruction (1987) reports, "It is difficult to teach subjects and skills in isolation during a five-and-half-hour instructional day" (p. 4). Teachers may not like to add new initiatives to their current program because the workload is getting heavier; they also complain about the fragmented schedule of the school day, which makes them unable to see their students for a prolonged period of time; they are expected to plan lessons to fit the forty-minute period rather than the needs of students (Miller, Cassie and Drake, 1991; Jacobs, 1989). It is a fact
that real life demands an integrated response. However, often students do not see the linkage between disciplines if there is no help from teachers. Curriculum integration provides an efficient means of dealing with the problem of curriculum overload, and of fragmentation of curriculum and school schedule. It reduces duplication of both skills and content allowing instructors to teach more and in depth; it gives a new perspective on what constitute basic skills; it facilitates the transfer of knowledge and skills across disciplines (Drake, 1993; Miller, Cassie and Drake, 1991; Jacob, 1989).

The psychological context explores the rationale for integration in how one learns. Watson (1937) describes the human being as an interconnected, interdependent, and integrative organism. In addition, Caine and Caine (1991) synthesize the brain-based principles on learning: (1) Learning is a physiological experience that involves the entire organism; (2) the search for meaning is basic to the human brain; (3) the brain has memory systems for processing rote learning and for instant recall or spatial memory; (4) the brain performs many functions simultaneously; (5) each brain is unique. Their research concludes that the brain searches for patterns and interconnections as its way of making meanings. Thus, it only makes sense to teach through connections (Drake, 1993). Clearly, integrated curriculum is a meaningful psychological organization of curriculum, for its inclusive, holistic nature coordinates the principle of learning and the nature of the human organism.

Rationale in the sociological context emphasizes how one lives in society. It is easy to be understood when we think about the fact that even though there are various specialists dedicated to their own profession, they
are dealing with one common world. From another point of view, Jacobs (1989) says, "we cannot train people in specialization and expect them to cope with the multifaceted nature of their work" (p. 6). Thus, in order to better serve his/her own profession or life, the individual needs to be aware of connection within and between his/her specialties, other fields of knowledge, and the society. Curriculum integration helps students look at concepts, problems, or the content per se in connected ways, and thus helps one interact with his/her environment.

In the philosophical context, the rationale focuses on the harmony, unity, or wholeness of the soul. Every day one needs to make value generalizations regarding policy and action. But, before or when doing so, he/she needs to harmonize claims from different mindsets or cultures in order that his/her ongoing experiences may sustain integrity in a world of continual interruptions, conflicts, tensions, and cross-purposes (Harris, 1937). Thus, to live in the world means to keep integrating one's soul, which helps the self as a whole to move towards higher levels of morality. Integration is a mode of thinking, and an important nature of human beings. It is obvious that curriculum integration provides an appropriate context for students to develop higher-order thinking skills, experience integration, and manifest the philosophical aspect of integration in their nature.

It is claimed that the meaning of curriculum integration reviewed in the philosophical context is the foundation for all other interpretations. It is this mode of thinking that makes models of integrated curriculum meaningful. Such a mode of thinking, which dwells in one's belief and axiology, is usually absent in the school curriculum. To bring it into our
consciousness we may first need to examine our mindset or worldview: Does it tend to be machine-logic-like, or quantum-reality-like? The two paradigms, machine logic and quantum reality, are discussed as follows.

**The Old vs. New Paradigm**

Influenced by the industrial revolution, the launch of the Russian Sputnik satellite, and the rise of technological age, curriculists and curriculum policy makers are forced to look to science and scientific method to attain control and efficiency. Eisner (1985) states that the reliance upon scientifically based technology in educational practice, similar to techniques in agriculture, engineering, and medicine was established by John Dewey and Edward L. Thorndike. They both regard science as "the most reliable means for guiding educational practice" (Eisner, 1985, p. 8). Franklin Bobbitt (1918, 1924), Ralph Tyler (1949) and other curriculum authorities such as W. W. Charters, Henry Harap, Robert Anderson, Benjamin Bloom, Lee Cronbach, John Goodlad, Ole Sand, Hilda Taba, etc. also follow such a belief, setting the prototype for means-end oriented, rational, linear approach to curriculum planning (Eisner, 1985, p. 12).

It is obvious that such a model mentioned above characterizes a worldview of determinism, which "reflects the human need for certainty in an uncertain world" (Pagels, 1982, p. 67). That is, we want to accurately determine, predict, and measure our future, or in terms of education, the student's future. Such a determinism worldview is the law of Newton's classical physics, where "chance played no part" and "all the pieces came together like cogs in a cosmic machine" (Prigogine and Stengers, 1984, p. xiii). While the profession of education still strongly believes in science, what most
educators have not known is that the "Age of the Machine" is going to be over (Prigogine and Stengers, 1984). The second law of the thermodynamics states that there is an inescapable loss of energy in the universe. That is, the world runs one moment no longer exactly like the last, as it is with Newtonian thought (Prigogine and Stengers, 1984). It is clear that to determine or predict everything in the world is impossible.

We may need to take a look at quantum reality, which emerges as a new language of science. According to Pagels (1982), quantum reality is not visible and it is based upon randomness—indeterminism, probability, guesswork. Its theory derives from the discovery that atoms will not behave according to what scientists plan in the laboratory. They are no longer able to verify experimental outcomes according to the methods used in classical physics. We can realize more about the characteristics of quantum irreversibility, randomness and indeterminism through Prigogine's theory of dissipative structures: All living systems are open systems, which we can imagine as a spinning mass of energy surrounded by helical or braided bands that hold it together and then continuously exchange energy with the environment. All open systems are dissipative structures, of which forms are maintained by the continuous dissipation or consumption of energy.

Such a surrounding of the mass energy is connected at many points, which signify its level of strength and complexity. The more interwoven the braids, the more complex the system is. The more complex it becomes, the more vulnerable it is to fluctuation or change. That is to say, while the system increases its coherence, it at the same time increases instability. Tensions brought up from instability ferment the possibility to
transformation or change. The fluctuations occur in a critical size; they perturb the system (Prigogine and Stengers, 1984). It can be understood that the number of variations in the system increases, which enables elements of the old pattern to contact with each other in new ways and then to make new connections.

Fact-retrieval tests, formula-like pupil performance objectives, politics/economy-influenced accountability, and the pervasively embedded worldview in determinism, where so many reform movements have been constructed, should no longer dominate education as its very direction or purpose. We cannot ignore the changing nature or, in Morgan's term (1986), flux of the world, in which we live no matter whether we know it or not. All human beings are open systems with the dissipative structure. Curriculum integration, if bringing up a paradigm shift through reflecting on its nature and possibility, will provide as many opportunities as possible to present, and have students experience, various types of connections such as those analyzed previously—to evoke their consciousness of the world full with revelances, the omnipresence of connections.

As we know and appreciate more and more about the nature of connections, we integrate or connect ourselves to the world. But, as in the example given previously, the more or the better we realize relations and connect ourselves with the world, the more likely we confront instability or fluctuations, for many relations contains contradictions—conflicts, or paradoxes. Paradoxes are constructed by the self through reflection or interaction. According to Ford and Backoff (1988), paradoxes may be: antinomies, if "stemming from difference in logical types"; semantic, if arising
from "hidden inconsistencies in levels of thought structure, that is, language"; or pragmatic, if deriving from the condition "where injunctions that must be obeyed are given within the context of a strong complementary interpersonal relationship and where the injunction must be disobeyed to be obeyed" (p. 90).

A critical size of tensions coming from conflicts or paradoxes will make the individual change--to make new connections or interactions among the elements of the old pattern. According to McCutcheon (1995), conflicts are important to "enable oneself to weigh differences of opinion...and thereby judge the alternatives" (p. 10). Examining Park and Simmel's arguments for conflicts, she states that conflicts unify or integrate people (1995). It is believed that paradoxes will provide the individual opportunities to develop his/her own way to deal with the contradictory relation, which will eventually need him/her to connect the self much better or more with the world, using a more complex but also more thorough or holistic and appreciative lens to look at the dilemma. Likewise, shifted attention also provides opportunities to change, where an open system with the dissipative structure is attracted by some variation around it. Simply speaking, integration is an ongoing process, in which coherence and fluctuation, with different degrees of manifestation, interplay simultaneously, providing the individual opportunities to explore and experience a higher order of holism--if he/she does take the best advantage of those opportunities.

Curriculum Integration as a Mode of Thinking
With an Emphasis on Making Connections

Perhaps what the discussion in Part One can remind us of is that, when developing curriculum, we should not only think about how to better
progress the process but also to reflect upon and take a double-look at our reflection on the meaning of our action and the purpose of education. It is argued that human development is an indispensable, very important target that all educators strive for to improve education. The teacher must understand that various models of integrated curriculum discussed previously should be regarded as resources in their repertoire and used as references. They are not fixed and should not become limitations to teachers' willingness of creating their own integrated curricula--teachers should not take those models as standards when developing or implementing integrated curricula. While helping students acknowledge the world full of connections, he/she needs to not only experience his own growth through liberation from only implementing what experts design, but also create his/her own way to integrating curriculum. The development of curriculum integration is important, where we take integration as a mode of thinking with an emphasis on making connections, curriculum as a network of important ideas which we have opportunities to choose to learn in our daily life, and take the world, with its physical and spiritual systems intertwined, as our school, corresponding with the nature and development of the micro and macro systems. The development of curriculum integration provides the optimal opportunity to improve education--to facilitate students', teachers' and organizations' integration and development.
Part Two
Changing Schools From Loosely Coupled Elements
to Perceptionally Integrated Systems

Introduction
The purpose of this section is to discuss how our understanding of the question of why organizations change, the organizational characteristics of schools, the concept of change, the organization structure, process, and leadership can help us change schools through curriculum integration effectively. Schools are generally believed the loosely coupled systems. Although such a system has its unique competence to cope successfully with a serious change in its environment (Weick, 1982), we want school change to be meaningful rather than just for change's sake. To develop or evolve into a perceptionally integrated system from loosely coupled system provides the meaning for school change. We may need a more holistic paradigm or bring up a paradigm shift connecting and reconstructing our original way of thinking. The innovation--curriculum integration--provides the opportunity.

Why Organizations Change
In discussing the issue of effectiveness, it is necessary to know what we mean by effectiveness. Effectiveness in the literature on organization change has been defined as the performance of efficiently achieving objects, utilizing resources, maintaining the internal system, and adapting to future circumstances (Carnall, 1990; Argyris, 1962). Such a definition shows an interest in determinism, where the organization intends to get control of costs
in money, time and uncertainty through well-planned strategies. An organization which performs the above four criteria may be considered as an effective one. However, the quality of its effectiveness is not described in these criteria. In discussing the issue of effectiveness, it is necessary for people in the organization to know, or at least try to find, the meaning of their action.

The quality of organizational effectiveness is associated with the quality of the member's action. Only when an action or experience has meaning to the individual can such effectiveness be regarded as of high quality. But, to equip action with meaning, we need to ask ourselves the "why" questions: Why do I and the organization need to change? Why is the proposed innovation important to me and the organization? Or, why do I need to, at least, have a try at it even though for some reason I do not "like" this proposal for change very much? Lawrence (1989) states, "Only by digging into the why question can we make progress on the how and what" (p. 48). Posing the why questions, we then need to reflect on or take a careful look at the underlying assumption of what we are doing or what we have taken for granted. In short, we need to be aware of the connection between ourselves and the innovation or change from a holistic perspective. Only those who are conscious of or motivated by sincerely good intentions can add to the energy of an organization.

However, change professionals emphasize and conduct research on how and what to change much more than on why to change. Although Lawrence (1989) and Carnall (1990) call our attention to the why question when facing the situation where the organization is to be changed, they do
not probe into the deep structure of our mindset to search for the inner reason for change. Lawrence's (1989) approach to asking the why question is to use a four-ring diagnostic framework. He reminds us that technology, ownership turmoil, new laws and legal rulings, and global competition are the four most powerful movers and shakers for organizational change.

Carnall (1990) considers the reason for change is that we need to adapt to the changing world, which if we do well, will provide us with the resources, the time and the confidence to face and adapt to another change. Both of them and Mohrman and Mohrman (1989) regard the environment as the change agent. However, this viewpoint is only a partial reality of change. The emergent paradigm for organizational change is values, not economics.

Morgan's metaphor of organization as flux and transformation implies (1) that the failure of organizational change efforts can be attributed to the overemphasis on "the external," and (2) that inner values, like inner reform, precede outward change. This can be contrasted with the metaphor of organization as brain, where the organization has the information-processing capacity for responding to changes and challenges from the environment.

However, the logic of autopoisis in the metaphor of flux argues, the brain does not process information from an environment, and does not represent the environment in memory. Rather, it establishes and assigns patterns of variation and points of reference as expressions of its own mode of organization. The system thus organizes its environment as part of itself. (Morgan, 1986, pp. 237-238)

In other words, the organization is autonomous, circular, and self-referential and its relations with any environment are internally determined--an
organization's transaction with an environment are really transactions with itself (Morgan, 1986, p. 238). The issue of organizational change depends on changing the way the organization determines its relations with the environment, and the way it thinks of variations that influence its current mode of operation. Here, we see the importance of asking "why" questions and taking a double-look at the operating norm; these actions increase variations in the circulation of the organization and thus increase opportunities for change. Therefore, situated in the world, what an organization and its constitutive individuals need to take into consideration most are its/their own changing values and expectations. Figure 1 illustrates the interrelationship among time, chance, value and meaning, consciousness in the process of reflection and interaction, the organization as a loop constituted by loops moving like the flux. The concepts of loops/processes and flux are discussed later.
A critical level of support just in time, and chance  

Changing values, expectations, and conscious emphases  

Time as the river carrying holofluxes  

Organization changes; each loop's connections within itself and with the context are randomly & internally de- and re-constructed loops/processes  

A critical level of support just in time, and chance  

Individuals search for meaning, interact with the context & reflect upon the randomly & internally determined connections  

loops/processes  

Figure 1: Changing Process of Organization as Open System with Dissipative Structure
The above discussion shows how organizations (including not only physical institutions but also micro and macro organizations, such as human beings and the world) change generally. Since teacher or curriculum change has more opportunities to occur in the context of a school than other contexts, thus, it is important to know what "kind" of organization a school is, and also to examine the relationship between schools and change from organizational perspectives. The discussion about both issues is as follows.

**Schools and Curriculum Change: Organizational Perspectives**

Larry Cuban (1992) analyzes the organization characteristic of schools when trying to answer questions on the relationship between schools and curriculum change. He examines the public and nonpublic characteristics of schools, and claims that while public schools have aspects similar to the nonpublic organization, it is their differences that help us to figure out: (1) Why school curricula are so vulnerable to externally driven change; (2) why the curriculum in the classroom seems insulated from fundamental change.

Here, school means both the district and the individual site. The district organization includes a school board, superintendent, district office staff, and the varied constituencies inside and outside the district—several individual schools with their own principal, teachers, students, and parents.

Schools are supported by taxes and inspected by lay people, which is what makes them different from nonpublic organizations. Schools try to satisfy what their constituencies believe is proper for schools so schools are usually managed with public expectations in mind. They also legitimate policies on the teacher's certificate, graded course of studies, textbook adoption, proficiency test, etc. in order to signal to an external group that
schools are responsive to their concerns for their confidence in schools is correlated with the political support and funding. It is this organizational characteristic of "the tax-supported public bureaucracy governed by lay policy-makers, merged with its strong desire to retain the loyalty of the system’s constituencies" that explains its vulnerability to pressures for change from external groups (Cuban, 1992, p. 240). Cuban (1992) points out that schools have been facing multiple and conflicting goals. For example, the conception of curriculum and curriculum planning have been oriented differently towards developing curriculum as cognitive processes, technology, self-actualization or consummatory experience, academic rationalism, or social reconstruction-relevance (Eisner and Vallance, 1974). Thus, schools are proposed to adopt innovations so as to be viewed as worthy of continued endorsement.

Without a national curriculum, districts are supposedly able to adopt any innovation, especially when teachers see the need or there are external pressures. However, a school system is also responsible for maintaining order, producing students who can read, write, compute, and not to risk their credibility by being different from other schools. The district policy-makers, who "face outward" to the public, and school administrators, who "face inward," try to coordinate to control what occurs in the classroom and to make sure both the teacher and student meet the state and local criteria (Cuban, 1992, p. 240). This signifies the characteristic of tight coupling between external requirements and district rules; district operations are tightly coupled to meet the legal requirements for purchases, avoiding conflicts of interests, and spending state and federal funds (Cuban, 1992, p. 240).
240). In other words, even though schools are vulnerable to various external pressures for change, any innovation is under the control of school arrangements and district criteria.

Now, if we think about the one-teacher-per-classroom phenomenon, the tight coupling loosens. Segmented curriculum and graded school structure make the self-contained classroom a world of its own, where teachers are under only very general control and direction of the principal. Although supervision and tests are the usual bureaucratic tools to control the classroom life, supervision, while functioning more like a ritual, is seldom necessary for teachers who have taught in the school for many years; the principal is usually charged with the academic performance and the result of proficiency tests. Therefore, the daily instruction is decoupled from administration and policy making, which helps develop teachers' autonomy and meanwhile isolation from colleagues. As Sarason (1966) characterizes, teaching is a lonely profession from a psychological perspective; furthermore, Jackson (1968) describes the teacher's life in classrooms as filled with immediacy, informality, and autonomy, which illustrates the urgency, excitement, improvisation, and the teacher's own superiority in the classroom (p. 119-129).

With different experiences, backgrounds, beliefs, and cognitive complexities, teachers influence students by their own practical theories consciously or subconsciously (Ross, Cornett and McCutcheon, 1992). When teachers introduce a proposed curriculum innovation to the classroom, they may add something to its content or change its sequence in order to meet their own beliefs and the needs of their students, or they may use such
innovation as a reference to create with the student their own curriculum. Such phenomena are characterized as loosely coupling, which means that although the classrooms and the activities they carry out are related to one another, each preserves its own identity and individuality (Bidwell, 1965; Weick, 1976; Owens, 1991). James D. Thompson (1967) uses "pooled coupling" to describe this kind of organization, in which members share common resources but work independently. Loosely coupling addresses the question of why classrooms are insulated from fundamental change. However, this does not mean that teachers can teach or treat the proposed curriculum innovation with one-hundred-percent freedom. Cuban (1992) states that "choice is situationally constructed" (p. 241), depending on how much support the teacher obtains from the management team and indirectly from the constituencies of the school. Meyer and Rowan (1983), and Donmoyer and Wagstaff (1990), for example, have reported that the principal will cast a good or bad impact on students' opportunities to learn, where he/she controls scheduling, hiring personal, norms or rules, coordinating pupil services, assignment of students, grouping, resources or budget, and staff development activities.

From the analysis of the relationship between schools and curriculum changes from organizational perspectives, we may regard schools as dual systems—a system constructed by links or connections, loose or tight, for while the noninstructional activities are often tightly coupled, the central core of the system's work is loosely coupled.
The Concept of Change

When asking the question of why organizations change, we need to pay attention to the nature of the innovation--any idea, practice, or material artifact perceived to be new--and the concept of change, which all innovations intend to bring up. Since the innovation in this study, curriculum integration, has been discussed in Part One, the following discussion focuses on the concept of change, in terms of its characteristics, sources, and the ways we change.

It has been argued previously our conceptualization of teaching, learning and curriculum, and the value of education should be reconstructed with a quantum worldview; quantum reality is a new language of science and a worldview of chance, randomness, and indeterminism. In addition, Prigogine's theory of dissipative structures is presented to describe how the individual, with the dissipative structure, interacts with the environment, randomly and internally selects information, and integrates the self with it. That is, it is the individual who is changing the input, restructuring, and creating coherence. His/her worldview, thus, keeps pluralizing, broadening through the circulation of consuming, breaking, and reconstructing. The individual experiences such a paradigm shift by being aware of his/her own uneasiness, confusion, fear, excitement, and creation. Piaget (1963), although probably not knowing quantum theory, states that individuals going through the change process are in a stage of disequilibrium--a state of uncertainty and searching for the meaning of the new. The organization, a living system, changes itself through the same circulation with tensions. Ford and Backoff (1988) and Morgan (1986) state that the creation of paradoxical tensions
serves as the basis for change in the self and environment. Whether or not such change is a progress demands the organization's worldview and morality to judge.

Our points of view, or frames, influence the way we change when getting new and paradoxical information (Ford and Backoff, 1988). With the frame of formal logic—"the determination of what or who, something is or is not" (Ford and Backoff, 1988, p. 93), we engage in translation, where we throw away one belief for another. Such a change fails to integrate what was right with the old or fails to discriminate the value of the new form from its overstatements. With the frame of dialectics, we engage in transformation, where we allow contradictory opposites not only to coexist and interact but to synthesize a new unity. While dialectics assume that conflict is the generator of change, the frame of trialectics views contradictory opposites as man-made which do not exist in nature (Ford and Backoff, 1988). Rather, it regards everything in the universe as a dynamic foci of many processes but with an appearance of an identifiable and relatively constant pattern, which is called as MMP—material manifestation point (Ford and Backoff, 1988). A dynamically balanced circulation of energy exists between and within MMPs. Such a system is a dissipative structure. Thus, in trialectics, we engage in transition, where all changes "occur in sudden jumps, as in a change in quantum states," which result from a disruption in the balanced circulation of energy and the shifted attention to alternative, pre-established MMPs (Ford and Backoff, 1988, p. 104).

The analysis on the concept of change in the aspects of its sources, characteristics, and phenomena implies that if we are conscious of our own
consciousness—pay attention to the flow of attention itself, we should experience change. This awareness of awareness is a higher dimension and a higher dimension is a more inclusive dimension. We, then, realize that our previous views are only part of the picture and that what we know is only part of what we will know later. This is, in fact, the spirit of curriculum integration as discussed in Part One. Curriculum integration contains various frameworks or models of classroom activities, which are endowed with meanings if created and experienced by the teacher and students together. It is more than frameworks; it should be understood as a mode of thinking with an emphasis on making connections. Such an awareness reminds us of being conscious of the process of transformation through self-organizing, and bring us with opportunities to enjoy the transcendent moments of integration—renewal.

An Emphasis on Ownership and Enactment

Our strategies for facilitating a curriculum innovation should not emphasize on the aspects of adoption and implementation from a manager's perspective but ownership and curriculum enactment of teachers who "live" in the classroom with students. Recalling the section where I explore the quality of effectiveness of organizational change, to equip meanings to actions for change is important for achieving the high-quality effectiveness of any organizational change. The discussion on the relationship between schools and curriculum change from organizational perspectives tells us schools are vulnerable to external pressures for change while classrooms are usually insulated. The fact that the central core of the system's work is loosely coupled makes the research on the nature of curriculum "implementation"
problematic.

The earliest approach of curriculum "implementation" from a fidelity perspective, assuming that innovations are like technology, involves "the degree to which a particular innovation is implemented" and "the factors which facilitate or hinder implementation as planned" (Snyder et al., 1992, p. 404). In other words, teachers are expected to reproduce an identifiable curriculum such as the one designed by external experts. The mutual adaptation approach allows "a certain amount of negotiation and flexibility on the part of both designers and practitioners" (Snyder et al., 1992, p. 404); it regards change as a process, not an event (Fullan, 1991). Curriculum knowledge still primarily resides in the outside expert who develops the curriculum rather than in the teacher who can make limited adjustments for the local context. There is a thin line, then, between mutual adaptation and curriculum enactment.

Bird's (1986) term "mutual accomplishment" in the process of mutual adaptation describes how a research design itself becomes part of the process of curriculum enactment. In the curriculum enactment approach, teachers can take the externally created curricular materials and programmed instructional strategies as tools or references to construct their own curriculum and experience this process with their students (Snyder et al., 1992, p. 418). Curriculum knowledge is a personal construct and it is individualized. Snyder et al. (1992) describe, "The mind is seen as a fire to be kindled rather than as a vessel to be filled by the knowledge of external experts" (p. 418). Considering the teacher's autonomy and his/her own practical theories of action, McCutcheon (1992) regards the term
"implementation" as "a misnomer," and states, "In practical reality,...it is more appropriate to think of teachers as curriculum developers than to consider them as mere implementors" (p. 78-79).

In addition, enactment is "intimately bound up with ecological change" from an quantum-world perspective; it indicates a process where organization members play an active role in creating environments (Weick, 1979, p. 130). Thus, the approach of curriculum enactment, by giving teachers a scheme for expression and interpretation and allowing them to create outputs of organizing, provides us a more meaningful, promising direction toward organizational change.

As to adoption, according to Zaltman et al. (1973), it is a level of commitment by the individual with continual usage; it is also a value state with "cognitive, affective, and behavioral components" (p. 99). The depth of commitment is related to the degree of coherence among cognitive, affective, and behavioral components. While a teacher can apparently be in favor of a particular curriculum innovation, he/she may not know what he/she is doing in the sense of both understanding it and being good at it. He/she, if truly adopting the innovation, internalizes the rationale and acts for the change—he/she acknowledges it and he/she owns it. That is, ownership indicates a higher level of commitment with a more coherent and central value state and this should be another emphasis for us when facilitating curriculum change.

Facilitate Teachers' Ownership and Enactment of Curriculum Integration in Loosely Coupled Systems

Curriculum integration, the innovation discussed here, is a mode of thinking with an emphasis on making connections; it is perceived from a
quantum-world perspective. We might need to recall its characteristics and applications discussed in Part One: Curriculum integration emphasizes the awareness of making connections, the development of human beings in the universe as whole and united, the nature of self-organizing, and the autonomy of integration. Curriculum integration, as a mode of thinking with an emphasis on making connections, provides the maximum freedom for teachers, students, and principals to create their own content and activities of integration, and to experience the new way of learning and transforming. Curriculum integration helps evoke our consciousness on the self and implicit order of the world; it should not be "one curriculum" serving only for those who need to go to school or who are still referred to as "students"; it is a paradigm shift for those who have not significantly or meaningfully experienced it. Then, considering previous discussions, it is obvious that in thinking about organizational change we need to think about individuals who constitute or associate with the organization. Curriculum integration is especially important and needed when the organization primarily appears to be loosely coupled, which primarily results from the kind of profession and service it provides. To facilitate teachers' ownership and enactment of curriculum integration is to facilitate organizational and curriculum change, and vice versa. It is important to understand more about organizational structure, innovation process, and leadership—the three essential themes in the literature of organizational change.

**Redefine Organizational Structure**

Do schools need to change the organizational structure in order to facilitate ownership and enactment of curriculum integration? Before a
decision is made, it is necessary to carefully examine the term "organizational structure." Vickers (1967) describes organizations as "structures of mutual expectation, attached to roles which define what each of its members shall expect from others and from himself" (pp. 109-110). In addition, Zaltman et al. (1973) regard the organization "as a social system created for attaining some specific goals through the collective efforts of its members. Its most salient characteristic is its structure that specifies its operation" (p. 106). In a sense, to organize means to structure, an important operation for the existence of the organization. Carnall (1990) synthesizes functions of organization structure: (1) Allowing us to organize and develop resources; (2) allowing us to define job activities, responsibilities, and accountabilities; (3) providing for decision-making and information flows; (4) helping establish the power structure for the organization; (5) influencing the identity and corporate image of the organization; and (6) partially establishing people's attitudes. The term "structure" is generally defined in the paradigm of determinism. Rationality and control reside in the structure itself, which is measured by the central or top team in terms of mechanical dimensions: "hierarchy of authority, degree of impersonality in decision making, degree of participation in decision making, degree in specific rules and procedures, and degree of division of labor" (Zaltman et al., 1973, p. 132). This implies that only through rational arrangements under control will the organization achieve specific goals.

In contrast, if we see organizations as open systems, then the term "structure" stresses "the complexity and variability of the individual component parts--both individual participants and subgroups--as well as the
looseness of connections among them" (Scott, 1981 quoted in Weick, 1982, p. 376). This implies that structures are ties within and between individual actors and subgroups in the organization, of which boundaries are determined by these organization components.

Organizational theorists have proposed many different patterns or models of the organization structure such as: entrepreneurial; functional; product; divisional; matrix; federal structure, etc. (Carnall, 1990). While the contingency approach is well known, which indicates that there is no best way to structuring organization, some criticisms have been made about its ignorance of the difficulty of forming an improved organization culture along with the changed structure. Such an approach seems unrealistic if applied to schools. In reviewing the previous section discussing about schools and curriculum change, it is clear that the design of schools is subject to political and ideological factors when different interest groups come into conflict. In addition, the environment may be problematic and thus cannot be taken as a given determinant of the school structure.

The approach used by classical organizational theorists, that organization change demands a change of its structure as defined in the determinism paradigm, has been claimed as naive, abstract, and poorly anchored in empirical data. It is limited to replacing one static situation by another static situation. Furthermore, Cohen, March and Olsen (1972) have reported the difficulty of applying classical organizational concepts to schools: (1) The goals of schools change frequently and are not specific; (2) the educational technology is not clear or well understood; (3) participation in schools is fluid.
The claim that schools are dual systems is looked upon from a perspective in which organizational structure is defined in the open system paradigm. Tightly and loosely coupled elements, or MMPs in Ford and Backoff's (1988) term, are intertwined; there are no boundary between the two phenomena or processes. The terms "tightly" and "loosely" are relatively, not absolutely, defined. These concepts also blur the distinction between organizational structure and process. Applying Bougan and Komocar's (1988) concept, that organizations are loops or processes composed of loops (e.g., individuals), and Ford and Backoff's (1988) and Weick's (1982) viewpoints about organization, we may describe the school structure as a dynamic foci of loops of MMPs connected by links with different degrees of tension. To help the school change effectively, our understanding about organizational structure should shift to a perspective based on open systems. Thus, while school structure as defined in a rationalism paradigm is not easy to change, we can change school structure defined from an open-system perspective through, for example, Bougan and Komocar's (1988) approach of deviation amplifying loops to facilitate teacher's ownership and enactment of curriculum integration.

**Change/Innovation Process**

Zaltman et al. (1973) describe the innovation process as sequential substages beginning with knowledge awareness, formation of attitudes toward the innovation, decision, initial implementation, and ending up with the contained-sustained implementation substage. Such a description provides possible phenomena appearing in the change process. However, innovation process is non-linear; "it experiences stops and starts and is often
characterized by 'accident' (e.g. penicillin)" (Richard, 1985 quoted in Carnall, 1990, p. 66). In the case of curriculum integration as the innovation, we hope to bring up a paradigm shift (a shift to a broader, more inclusive and holistic dimension), not replacement. It is also believed that such a mode of thinking is part of the human nature for dynamically unifying the soul. Usually, people are not aware of such a nature until they start reflecting on their own experiences, beliefs, assumptions, awareness, connections with contexts, and paradoxes and looking for meanings.

We should simultaneously work on several targets--not goals in the rationalism paradigm but properties of loosely coupled system--instead of expecting a linear process with sequential substages. Morgan (1993) describes the innovation process as having many starting points, detours, and false turns, depending on a lot of chance encounters, and changing directions along the way.

Leadership

Weick's (1982) five targets for change in loosely coupled systems are applied in the case for the leader or strategic group to facilitate the ownership and enactment of curriculum integration. The five targets are found supported by other literature on change in general organizations.

Target 1. Presumptions of logic that tie loose events together (doubt produces change). Teachers' visions and what Senge (1990) calls "mental models"--beliefs, values, and ingrained assumptions or generalizations--reflect how they understand the world and take action. Teachers' deliberately theorizing those presumptions of logic can help them unearth their internal pictures of themselves. In most cases, teachers' presumptions
of logic are in favor of the dominant machine metaphor of the world or organization, which is characterized by control, determinism, rationality, efficiency, fragmentation and specialization, in which they pay little attention to the implicit order of the world. The implicit order is about logics of change, namely, the logic of self-producing systems, mutual causality, and dialectical change (Morgan, 1986). Argyris' (1982) double-loop learning, where the operating norm and meaning taken for granted are questioned, is one way of pulling their attention to the metaphor of "holoflux," where "everything" (in fact, every process) is enfolded in "everything" (every process) else. By shifting attention to this metaphor, they alter the descriptive elements of relations. Through such a process, paradoxes might be constructed depending on how well one meaningfully understands him/herself and the world.

Target 2. Socialization processes where common premises for dispersed decision making are implanted (resocialization produces change). Weick (1982) states, "A mixture of formality and informality leads to tighter coupling than does either component when pursued by itself," which has "dispositions to create loosely coupled system between headquarters and the field" (p. 397). In schools, which encourage either relatively pure formal or relatively pure informal socialization, shared visions or pictures of the future are either too idealistic or subjective. If to facilitate a paradigm shift with an emphasis on enactment and ownership, the leader or strategic group needs first to allow teachers to make the choice on their own—a choice of whether or not they are willing to pay attention to the nature of innovation, in this study, curriculum integration. Then, strategies should be emphasized which create
opportunities to balance and enrich the original methods of socialization, for
the more chances teachers encounter to talk and hear about curriculum
integration, the more likely teachers are to reflect upon such a vision, to
evoke their own inner nature of self-organizing and integration, and to see its
value. Balanced resocialization helps establish intersubjectivity throughout
the whole institution.

**Target 3.** Differential participation rates that accelerate processes of
loosening (equalization produces change). If the organization does not pay
attention to the participation rates of formal socialization, teachers obtain
different amounts of information about every dimension of the school's
operation. Then, dialogues or decision making has difficulty progressing. As
for the importance of information pervasion, Weick (1982) says that
"participants who show up repeatedly at meetings produce an environment of
sophisticated analyses that requires more participation from them, which
makes them even more informed to deal with the issues that are presented"
(p. 39). This indicates the empowerizablity of information and also implies
that information has responsibility. Thus, in the formal socialization process,
the attendance of each member is very important. Meeting schedules,
attendance patterns, or the way to share agendas or vision may need to be
adjusted to provide everyone with the most convenience. Approaches need to
be developed to attract teachers to participate in the formal socialization
process.

**Target 4.** Constant variables that disconnect parts of systems
(distraction produces change). Each individual in the organization is seen as
a variable. To a school leader, if he/she absorbs all kinds of information,
including what are regarded as secrets, but does not pass this along or invoke it to rationalize and justify action, he/she then becomes what Weick (1982) calls as a "constant variable," which disconnects the educational system bound together by his/her voice. The leader, as an important tie, should be trusted and understood, and play an active role sharing with teachers information beyond the classroom. Likewise, a teacher becomes a constant variable if he/she creates or enacts few curriculum with students and regards teaching as a set of routines and fixed agenda. Weick (1982) reminds the leader not to be a constant variable, and suggests that he/she restore variation to teachers who have become unresponsive by using conflict strategies, in the hope that relief from pressure will restore variation.

**Target 5.** Corruptions of feedback that obstruct contingent action (dependability produces change). Feedback for classroom activities is usually unavailable, meaningless, or discredited in schools, for classrooms are isolated and teachers claim they are those, who really know what is going in their own classroom. Thus, when feedback is offered from a change agent, teachers wonder why they should believe it and how they should use it. Consequently, they are often insulated from environmental change. Weick (1982) argues that schools seldom benefit from trial-and-error learning because all they generate are trials, and that professional norms among teachers often discourage offering assistance or feedback to colleagues unless it is asked for. "As feedback becomes less credible and less frequent, actions become less tightly coupled to consequences and more difficult to coordinate" (Weick, 1982, p. 403). Thus, Weick (1982) states that the leader or an expert source needs to skillfully present convincing and insightful feedback with
"explicitness, immediacy, accuracy, and relevance," which makes it harder to discredit and dismiss feedback (p.404). The leader should also encourage teachers to invite colleagues to form learning teams. Team learning, suggested by Senge (1990), is one discipline to promote a culture of giving feedback in an organization, where team members not only learn how to recognize which patterns of interaction in teams undermine learning, but also creatively bring defensiveness in the surface through dialogues.

As a link between tightly and loosely coupled elements in the educational system, the principal is central in the promotion or inhibition of change in a school. To facilitate change, Fullan (1991) suggests that the principal start small, think big, and not overplan or overmanage. In addition to keeping the above five targets in mind, the principal may need to have a thorough understanding of curriculum integration in terms of its characteristics and emphases. The value of human development residing in curriculum integration should also be his/her own value. The process for the principal to make sense of and experience curriculum integration will give him/her a better idea about how to facilitate others to start noticing the worldview beyond determinism.

One way to get into the teachers' world is to know more about what reality is from their points of view and to establish rapport with them. It makes teachers feel more comfortable and professional if the principal plays the role of a learner who is trying to find out more about curriculum integration with their help and collaboration. That is, the principal needs to be both a learner and learning facilitator in the school. As for teachers who seem hard to be influenced, the principal should be patient, not afraid of
failure, and give them time. In addition, he/she also needs to communicate, although it is not easy, the nature of curriculum integration with the central office and other principals at any appropriate opportunity. Pressures and failures come to the principal in the change process, which give him/her opportunities for learning. The value of education is human development; so is the value of leadership—to help teachers is to help the leader him/herself grow. This is a dynamic way of living.

**Echo**

As a result of the above discussion, it is clear that effective organizational change asks for individual change, and that the individual is likely to change the organization by changing him/herself. Individuals are very important variables in organizational change. An organization must not plan to change for change's sake. This implies that the issue or innovations emerging or proposed for organizational change must bear values and promising opportunities significant and meaningful to individuals—individuals need to *own* the change. Senge (1990) states that it is a learning organization that is more likely to succeed, which supports the point that human, rather than economic, development with continuing integration and learning should be the priority for effective organizational change.

Curriculum integration, one of curriculum innovations, brings with it the hope to facilitate students', teachers' and organizations' integration and development. Thus, for an *effective* organizational change, we need to carefully reflect on organizational structure, change/innovation process and leadership from an open-system perspective. Our emphasis on individuals as the change agent and being conscious of links constituting the organization
resonate with the spirit of curriculum integration.

In order for schools to become an "tightly" integrated system, in which elements may stay "loosely coupled," we need a paradigm to perceptionally connect each isolated element. If regarded as a mode of thinking with an emphasis on making connections—the nature of micro and macro systems, curriculum integration will be the optimal opportunity for us to approach that goal.
Part Three
Reflection and Belief: How and What Teachers Change

**Introduction**

The term "teacher change" in this study indicates any kind of change in the aspects of teacher behavior--how and what he/she teaches students in the classroom, and beliefs--how and what he/she thinks about him/herself, curriculum, teaching, learning, etc. Behavioral change is usually observable, however, any meaningful change in behavior involves change in one's conceptual field. I have discussed why an individual changes and the ways one changes with a focus on conceptual change in Part One and Part Two. The purpose of Part Three is to discuss different modes of reflection, a process that helps teachers change, and what beliefs teachers should consider to change.

**Modes of Reflection**

The relevant literature on reflection reveals different modes or definitions of reflection. In the following, I present five major theoretical versions of reflection in the literature: reflection as retrospection (a commonsense notion), reflection as deliberation (based on the work of Dewey), reflection as emancipation (based on the work of Van Manen), reflection-in-action (based on the work of Schön), and reflection as conscious awareness (based on the work of Vygotsky). Empirical studies on teacher reflection are also reviewed so as to provide examples characterizing each mode of reflection.
Reflection as Retrospection

This definition is a commonsense idea, which takes reflection as bending thought backwards to reconsider prior experiences in order for one to learn from them. Among empirical studies on teacher reflection identified in this mode of reflection, Cruickshank's "reflective teaching" approach is developed from a retrospective form of reflection; he, quoting Valverde (1982), defines reflection as "an individual's needs assessment and continued self-monitoring of satisfaction with effectiveness..." and regards it as a formative evaluation (1987, p.4).

Bainer (1989) conducted a study, for which preservice teachers handed in a one-page paper the day after the reflective teaching experience, telling what they learn from it. This study finds fourteen inductive categories in the responses, the most prominent of which were (a) effectiveness of the strategies they had learned; (b) individual differences among learners; (c) characteristics of effective delivery, planning, and preparedness; and (d) personal qualities of teachers.

Bolin (1990) conducted 2 case studies with Lou. Compared to the first study where Lou was in the first semester of student teaching, the follow-up study found Lou to be even less reflective in the second semester of student teaching and the first year of teaching where few conflicting, ambiguous issues caused him to struggle.

In Richert's (1990) study, she structured 4 directions to promote reflection: (a) student teachers reflected in a journal on any subject of student teacher interest; (b) student teachers developed portfolios and wrote a reflective essay on any part of their teaching they found compelling; (c)
partners observed student teachers individually and then met with them to reflect together; and (d) a combination of (b) and (c). In addition, Richert found that (a) a structured opportunity to reflect; (b) time; and (c) safety are important factors that encouraged teachers to reflect. Richert (1990) describes her focus of the study and defines the term "reflection" as follows:

For the purpose of this study reflection was defined as the time in the teaching process when teachers stop for a moment (or longer) to think about what has occurred to make sense of it in order to learn from their experiences in the classroom. (p. 526)

In this mode of reflection, one consciously or unconsciously attends to his/her experiences occurring in the past. He/She consciously or unconsciously intends to evaluate them in terms of effectiveness by his/her present criteria for judgment.

**Reflection as Deliberation: Dewey**

In his book, *How We Think: A Restatement of the Relation of Reflective Thinking to the Educatve Process*, Dewey (1933) distinguishes between routine action, which is guided by impulse, tradition and authority, and reflective action, which involves reflective thinking "active, persistent, and careful consideration of any belief in light of the grounds that support it and the further conclusions to which it tends" (p. 9). To him, open-mindedness, responsibility and wholeheartedness are three attitudes required for reflective action. Open-mindedness indicates one's willingness to listen to more than just one side, to search for or create and consider alternative possibilities, and to be open to the possibility that anything we believe may be false. Responsibility refers to our careful attention to and consideration of
the consequence to which an action may lead. Thus, extended concern, in addition to immediate reaction, is important. It also means going beyond dependence on a formal description of the situation to investigate its actuality. Wholeheartedness describes a way of living where the attitudes of open-mindedness and responsibility are part of his/her life not just applied only in special cases.

In addition to proposing the three attitudes prerequisite for reflection, Dewey claims that the specific process of reflective thinking has five parts with a pre-reflective level state and a post-reflective period after:

1. Pre-reflection "sets the problem to be solved; out of it grows the question that reflection has to answer" (p. 107):
   
   (a) Direct action temporarily inhibited, so that thinking may take place. Suggestions of what to do occur if more than one option exists, inquiry proceeds.

   (b) Felt uneasiness transformed though identification and articulation into an intellectual problem to be solved.

   (c) Working hypothesis developed to guide data collection.

   (d) Proposed solution elaborated and connected with other things through a reasoning process.

   (e) Attempt made to verify the hypothesis through empirical testing. Further refinement of the hypothesis and further testing can occur if the initial test does not verify the hypothesis.

2. Post-reflection "results a direct experience of mastery, satisfaction, enjoyment" (p. 107).
We should notice that Dewey's influence is felt in many ways in most of the work on reflection. However, many of the articles cite him in connection with their use of the term "reflection" or in other general ways without invoking his specific understanding presented above or that the reflective steps do not necessarily occur linearly. Dewey's concept of reflection in his book *How We Think* published in 1933 reflects an emphasis on deliberation, which he had discussed in his previous book *Human Nature and Conduct*:

[Deliberation is] an experiment in finding out what the various lines of possible action are really like. It is an experiment in making various combinations of selected elements of habits and impulses, to see what the resultant action would be like if it were entered upon. But the trial is in imagination, not in overt fact. The experiment is carried on by tentative rehearsals in thought which do no affect physical facts outside the body. Thought runs ahead and foresees outcomes, and thereby avoids having to await the instruction of actual failure and disaster. An act overtly tried out is irrevocable, its consequences cannot be blotted out. An act tried out in imagination is not final or fatal. It is retrievable. (p. 190)

McCutcheon (1995), like Dewey, regards deliberation as a process of reasoning about practical problems; she especially points out that such a process is optimal-solution-oriented rather than satisficing, "where people search for a course of action that is good enough to meet a minimal set of requirements..." (p. 7). In her book *Developing Curriculum: Solo and Group Deliberation*, McCutcheon (1995) explores the nature of deliberation and its role in curriculum decision making in detail. Eight characteristics of
deliberation are identified through her case studies conducted in different contexts (p. 8-16):

   Deliberation is a process where
   (1) one weighs alternative possible solutions and actions;
   (2) one envisions potential actions and outcomes of each;
   (3) one considers equally means and ends, facts and values;
   (4) one acts within a zone of time;
   (5) one acts with his/her morality and value;
   (6) one employs what they have learned in social interactions, and takes other people and society into consideration;
   (7) many things are simultaneously going through one's mind and vie for his/her attention in his/her thinking and in conversations; and
   (8) one's interests and conflicts are present and intertwined.

   It is found that in this mode of reflection, one consciously or unconsciously attends to the practical problem that have been formed and the alternative possible solutions or actions one is imaging and weighing. He/She consciously or unconsciously intends to make an optimal decision, choose the best solution or, at least, to avoid failure and mistake. According to the above discussion, deliberation emphasizes more on the aspects of (1) efficiency and effectiveness, and (2) mutual understandings, namely, intersubjectivity. The aspect of questioning or reconstructing the originally formed practical problem or issue is seldom emphasized in deliberation.

Reflection as Emancipation: Van Manen

   Van Manen's 1976 article, Linking the Ways of Knowing with the Ways of Being Practical, is also cited in many works on reflection. In this article
Van Manen argues that there are three ways of knowing, three associated ways of being practical and three associated ways of reflection. The first kind of science (a system that produces knowledge) is empirical-analytic. This form of science produces principles of production and control, in answer to empirical problems, and is useful to deal with technical and instrumental problems. Central to this level of reflection are economy, efficiency and effectiveness. The second kind of science is the interpretive, assumed that every educational choice is based on a value commitment to some interpretive framework. It asks questions about individual and cultural experiences, meanings, perceptions, assumptions, prejudices, and presuppositions. Reflection associated with it focuses on establishing communication and common understandings.

Van Manen regards emancipation as the highest level of reflection, associating to the science of the critical, asking questions of domination, of institution, and of repressive forms of authority. "Universal consensus, free from delusions or distortions is the ideal of a deliberative rationality that pursues worthwhile educational ends in self-determination community, and on the basis of justice, equality, and freedom," says Van Manen (1976, p. 226-227).

Ferguson (1989) conducted a case study where students involve in a preservice course intended to promote reflection. The standard for reflection is Van Manen's (1976) three levels of reflectivity: technical, practical, and ethical/moral. Ferguson analyzed student reflections as displayed in their writings, interviews, and activities, concluding that all the students worked at the technical level, many reached the practical level, but few achieved the
Hursh (1988) studies preservice elementary teachers in a program specifically designed to develop reflection. Such teacher education program builds on a theoretical framework derived from Dewey (1933) and Van Manen (1976). Unlike Ferguson, however, Hursh is critical of Van Manen's attempt to turn the three forms of reflection into a hierarchy with the higher levels deemed more important and worthy. He redefines reflection as nonhierarchical, having the three dimensions of practical, ethical and critical. Practical knowledge could be seen as technical, but Hursh prefers to see it as phronesis, which is practice informed by ethical and critical knowledge. Hursh notes that there are several versions of what ethics means, including caring (Noddings, 1984), contractual or utilitarian, and critical (emphasizes the communal nature). He describes the critical nature as requiring "that teachers realize that the nature of society is problematical, that knowledge is constructed and is related to the interests and views of specific social groups, and that...all of society is political, consisting of conflicts and contradictions" (p. 6). He also believes that the concept of phronesis requires that teachers develop all three dimensions at the same time.

In addition, Noffke and Brennan (1988) provide a critique of several parts of Van Manen's paper, although they agree with his general intent. They are concerned that the majority of teachers' thoughts are relegated by his hierarchy to the lowest level and therefore are not as important as critical reflection. In addition, they believe that he does not adequately address the content of the reflection or ways to improve reflection. They are also concerned about connections and interrelationships between levels of
reflection, which, however, are obscured in Van Manen's paper, thus making the development of better reflection more difficult. Noffke and Brennan (1988) also argue against Van Manen's thought that teachers are uncritical in all their daily work. Even when teachers appear to be unreflective, they say, it may be because of how the institution of schooling and other aspects of society effect their working conditions. Noffke and Brennan offer four specific points of concern:

1. We must consider what the world of work is like for teachers. "The real conditions of teachers' work form not just the constraints, but also the substance of their reflections" (p. 8). Even technical deliberation takes time and energy, and must be done.

2. Much teacher reflection is concrete. But does this mean it is only technical and monolithic? Noffke and Brennan provide contrary evidence from feminist studies.

3. Is critical theory the highest truth? Is caring (Noddings, 1984) a teacher's stance instead of Van Manen's justice and equality?

4. Technical skills are important in practice, and their neglect will not produce better experience for children.

In the above discussion, Hursh (1988) argues that we should not regard empirical analysis, intersubjectivity, and emancipation as three hierarchical levels of reflection. Rather, they represent three intellectual dimensions or emphases. Noffke and Brennan (1988) attend to what is missing in Van Manen's discussion on reflection--the practical issue of how to improve reflection, and the interconnections between "three levels" of reflection. Caring, as concerned in their statement, represents an affective
emphasis in reflection. Accordingly, we should regard Van Manen's emancipation as one mode of reflection, where one consciously or unconsciously attends to the conflicts and authorities explicitly or implicitly existing in a context, and consciously or unconsciously intends to search for justice, freedom and equality.

Reflection in Action: Schön

Schön and Argyris define reflection as the ability to integrate experience with theory and research through reframing to solve new and unique problems occurring in practice. In his 1983 book *The Reflective Practitioner*, Schön proposes that we can better describe and promote professional performance by moving away from this instrumentality and its metaphysical basis to a view of knowledge-in-action and reflection-in-action. Knowledge-in-action is the position that we show our knowledge by our everyday performance, for which we may not be able to fully describe or give criteria. Riding a bike shows knowledge in performance, even if we cannot describe the balance of forces that keep us upright and moving forward. This kind of knowing has the following properties:

There are actions, recognitions, and judgments which we know how to carry out spontaneously; we do no have to think about them prior to or during their performance.

We are often unaware of having learned to do these things; we simply find ourselves doing them.

In some cases, we were once aware of the understandings which were subsequently internalized in our feelings for the stuff of action. In other cases, we may never have been aware of them. In both cases,
however, we are usually unable to describe the knowing which our action reveals. (p. 54)

But we also often think about what we do, even as we do it. Schön gives us examples baseball pitchers "finding the groove" and jazz musician getting "the feel" of the music as they improve. But this thinking, this reflecting, does not use the medium of words.

Often this reflection, as for Dewey, is cued by surprise, or a kind of "aha," "felt meaning" (Caine and Caine, 1991). "When intuitive, spontaneous performance yields nothing more than the results expected for it, then we tend not to think of it. But when intuitive performance leads to surprises, pleasing and promising or unwanted, we may respond by reflection-in-action" (p. 56).

Schön states that there is reflection-on-action even under the reign of technical rationality, a looking back on action and contemplating it. But he suggests that professionals, as they meet unique cases in their practice, must also reflect-in-action. This sounds contrary to the commonly held belief that thought inhibits action, but this belief is incorrect. There are indeed activities in which cognition inhibits action, as in fielding a ball. Even in these cases there may be something we call reflection-in-action that is "unconscious." But over the course of the "action-present," which is the space of time an activity of a professional occurs, there may be time for a reflection-in-action that is conscious. The action-present could be just seconds for a baseball pitcher, or months, even years, for a lawyer engaged in a major anti-trust suit.
Schön describes the structure of reflection-in-action as follows:

1. The practice situation is disorderly and not well understood, so one cannot just apply a standard theory. In fact, what the problem is itself must be set or framed, or rather reframed from the initial failed attempt at understanding.

2. The practitioner conducts an experiment to see what happens when the new frame is imposed on the situation, looking for implications and consequences. This process can be quite complex, and is not "objective"; the practitioner tries to fit the situation to the frame. "This he does through a web of moves, discovered consequences, implications, appreciations, and further moves" (p. 131).

3. "Within the larger web, individual moves yield phenomena to be understood, problems to be solved, or opportunities to be exploited" (p. 131). In fact, this process can be conceptualized as a "conversation" with the situation.

4. "But the practitioner's moves also produce unintended changes which give the situations new meanings. The situation talks back, the practitioner listens, and as he appreciates what he hears, he reframes the situation once again" (pp. 131-132).

5. Each new understanding calls for more reflection, and produces a spiral pattern of work from appreciation to action to reappreciation. "The unique and uncertain situation comes to be understood through the attempts to change it, and changed through the attempts to understand it" (p. 132).

Schön takes up some of the epistemological questions that this description produces: How to evaluate problem setting; how we use past
experience in a unique present; how to have rigor in an on-the-spot experiment; and the stance toward inquiry that is present in reflection-in-action. From his point of view, a good problem setting keeps the reflective conversation going and produces valued effects and coherent understandings. If the reflective conversation dies off or its fruits seem meager, then the problem needs to be reframed (reconceptualized in a different way).

Past experiences are brought into play as a "repertoire of examples, images, understandings, and actions" (p. 138) that the practitioner can use. "When a practitioner makes sense of a situation, he sees it as something already present in his repertoire. To see this site as that one is not to subsume it under a familiar category or rule. It is, rather, to see the unfamiliar, unique situation as both similar to and different from the familiar one, without first being able to say similar or different with respect to what" (p. 138).

The rigor proposed for reflection-in-action is not that of natural science, such as Popper. Three kinds of experiments are used in reflection-in-action: Exploratory, moving-testing, and hypothesis testing. All three occur in practice, but even the hypothesis testing, which looks much like natural science research, is different because it is in the service of change; it is a logic of affirmation and not of confirmation (as is Popper's). Reflection-in-action requires that we act to change the situation while remaining open to learning from what happens in the situation.

It is found that reflection-in-action is a valid and useful concept in much literature on reflection although there are some studies provide different interpretations.
On one hand, Gilliss (1988) faults Schöns ideas as being irrelevant for teachers. She states that perhaps all professions run into problems not because of technical rationality, but because many of the necessary factors lie outside their control. She stresses that teachers are not overconcerned with theory, so their problem can't be technical rationality. Furthermore, if teachers cannot control the factors that impinge on them, then how will reflection-in-action help? She also asks why a reflection-in-action should have to always develop from scratching a solution that an expert may have on the tip of his or her tongue? Her conclusion is that teachers need to be taught skills, not a design process as Schöns suggests. She says that teachers are not in a position to think very much--the exigencies of their classroom do not often permit reflection. What is most needed, she concludes, is a firm knowledge base to be given prospective teachers, not more reflection.

On the other hand, Russell et al. (1988) conducted a study based on the work of Schöns. This study intended to examine the development and use of teachers' metaphors, both of beginning and experienced teachers. It used a theoretical framework derived from Schöns (1983). Russell et al. hypothesized that if reflection-in-action involves reframing, which is essentially linguistic, then teachers' language use should change over time as a result. Their study ended up looking most especially at teacher metaphors-in-use. They found that some teachers, both beginning and experienced, seemed unable to reframe their practices and problems to reflect on them; others, also both beginning and experienced, were able to do so.

In addition, MacKinnon (1987) in a study designed to look at how preservice students make sense of early teaching experiences, looked for
evidence of Schön's reflection-in-action occurring in transcripts of five elementary students teaching science lessons and transcripts of supervisory conferences about these lessons. Specifically, he established criteria to look for three phases of reflection-in-action: Initial problem setting, reframing, and resolution. He found evidence that reflection-in-action was happening, and concluded that preservice students can reflect if conditions support it.

In this mode of reflection, one consciously or unconsciously attends to and frame the problem in a context with which he/she is unfamiliar, and consciously or unconsciously intends to understand and reframe it by testing one's current understanding in his/her interactions with the context.

**Reflection With Conscious Awareness: Vygotsky**

Vygotsky was a Soviet psychologist (1896-1934), whose genius reveals in his numerous, breathtaking speeches and publications written in Russian. The discussion here about Vygotsky and his works is based on Wertsch's book *Vygotsky and the Social Formation of Mind* (1985). The major object in Vygotsky's research is consciousness. His decision to focus on consciousness as a fundamental topic of investigation is motivated by his intention to avoid the force of fragmentation. Vygotsky has a hierarchy in mind where the components at one level of description become subcomponents of more inclusive components at the next higher level. Consciousness is the component at the highest level of his hierarchy; it is comprised of two basic subcomponents: intellect and affect. From his point of view, consciousness is the objectively observable organization of behavior that is imposed on humans through participation in sociocultural practices. We should notice that Vygotsky's idea on the organization properties of the "functional unity"
of consciousness are with dynamic or dialectical, rather than static, organization, where interfunctional connections continually change. It is interesting to see such an image of organization is the same as systems theorist Erich Jantsch's (1980) description of the nature of a dissipative self-organizing system. Obviously, their arguments are based on an open-system perspective. We may regard a human being as a dissipative system (or process), where consciousness system is one of the loops of MMP's.

Although Vygotsky did not especially articulate the notion of reflection, he used this term to help define and interpret the notion of consciousness—-at the end of his life, he understood consciousness broadly as the *subjective reflection of material reality by animate matter*. This understanding is evident in the following statements from the beginning and ending pages of *Thinking and Speech* (1934):

> When it is said that there is a dialectical leap not only from non-comprehending matter [inanimate matter] to sensation but also from sensation to thinking, it is meant that thinking reflects reality in consciousness in a qualitatively different way than direct, non-mediated sensation....

> We have attempted to study experimentally the dialectical transition from sensation to thinking and to show that reality is reflected differently in thinking than in sensation....If consciousness in the form of sensation and consciousness in the form of thinking are governed by different modes of reflecting reality, they represent different types of consciousness. (quoted from Wertsch, 1985, p. 187)
Wertsch (1985) states that Vygotsky's use of the term "reflection" may be misinterpreted particular in two ways:

1. Reflection should not be understood as the passive reception of sense data. Vygotsky views humans as constantly constructing their environment and their representations of this environment by engaging in various forms of activity. Thus, the process of reflection is as much concerned with the organism's active transformation of reality and representation of reality as with the reception of information. In another word, reflection to Vygotsky has a positive aspect of searching for meaning.

2. The use of the term "reflection" in the definition of consciousness should not be taken to mean that self-reflection, self-consciousness, or conscious awareness is necessarily involved, which are only part of possible modes of reflection. Obviously, reflection is a term with a much broader dimension (or with more different indications) than consciousness from Vygotsky's point of view.

Among different modes of reflection, however, Vygotsky devoted himself to focus on the research on consciousness awareness. He argues that conscious awareness (or conscious realization) is a special form of consciousness; it is a form that exists when consciousness itself becomes the object of consciousness. That is, when people are aware of their own consciousness, they start being aware of the nature characterized by Vygotsky that they are constantly constructing themselves and their environment, they start facing themselves—a human being that unifies the intellectual and affective side of the self, and they start searching for meaning.
One empirical study on teachers' conscious awareness was reported by Jersild (1955) in his book *When Teachers Face Themselves*. Although in this book Jersild did not use Vygotsky's term, conscious awareness, he has the same focus in the study—to help teachers understand themselves through exploring and inquiring their own meaning of being a teacher and human being. The search for meaning—a distinctly personal search—is the major concern in his study, where a teacher raises intimate personal questions:

What really counts, for me? What values am I seeking? What, in my existence as a person, in my relations with others, in my work as a teacher, is of real concern to me, perhaps of ultimate concern to me? In my teaching I seek to transmit the meanings others have found in their search for truth, and that is good as far as it goes. But as I try to help young people to discover meaning, have I perhaps evaded the question of what life might mean to me? How can I, in my study and my teaching and in the countless topics that engage my thought, find a home within myself? (p. 4)

To Jersild, the question of meaning arises when a teacher looks inward upon himself/herself and also when he or she looks outward upon the world about him/her. One becomes conscious of the timeless question: "Who and what and why am I?" (p. 5)—one becomes conscious of him or her own consciousness. In Jersild's study, the issues in lives which participants would like to understand more fully are sorted into nine categories as one of the results of the study: (1) loneliness; (2) meaningfulness; (3) attitudes toward authority; (4) conflict relating to sex; (5) hostility; (6) discrepancy between real and ideal; (7) lack of freedom to feel; (8) hopelessness; and (9)
Several thousands of participants, including colleagues and teachers who engaged in part-time or full-time graduate work in courses taught by Jersild, contribute to the discussions in the book through their written statements, opinion polls, lengthy personal conferences, and the sharing of clinical experiences. The study involved four procedures: (1) a survey of reactions to the idea of self-understanding as a basic aim in education; (2) a series of personal conferences; (3) a survey of personal problems as revealed by written responses to an inventory; and (4) ratings and evaluations of lectures and discussions dealing with various aspects of self-understanding. He especially makes clear his position and belief throughout all the courses he taught and research procedures:

An essential function of good education is to help the growing child to know himself and to grow in healthy attitudes of self-acceptance.

A teacher cannot make much headway in understanding others or in helping others to understand themselves unless he is endeavoring to understand himself. If he is not engaged in this endeavor, he will continue to see those whom he teaches through the bias and distortions of his own unrecognized needs, fears, desires, anxieties, hostile impulses, and so on.

The process of gaining knowledge of self and the struggle for self-fulfillment and self-acceptance is not something an instructor teaches others. It is not something he does to or for them. It is something in which he himself must be involved. (p. 13-14)
Jersild's belief corresponds what is discussed previously in Part One and Two: (1) Individuals are important variables or actors to improve education; (2) the emphasis on self-understanding is kind of making connections with the perceived self; and (3) the "struggle" for self-fulfillment and self-acceptance is a kind of making connections with the perceived interests and paradoxes or conflicts, and a process of harmonizing with appreciation. Thus, in this mode of reflection, one consciously attends to his/her own present consciousness and also what has been knowing tacitly. He/She consciously intends to search for meaning and understand more about him/herself in terms of the intellectual and affective side of his/her consciousness in order to integrate (make connections within, and renew) him/herself for a harmonious, united, and holistic soul.

The above discussion help us notice that there are different emphases of reflection and that we should be as holistic as we can when we reflect. It also shows that reflection is a process that teachers change their concepts--existing prejudgments, assumptions and beliefs of teaching, learning and curriculum, all of which influence many aspects of their classroom practice or behavior.

Recent research on the conceptual change process indicates that several criteria must be met: (1) One is dissatisfied with the existing beliefs; (2) the alternatives are intelligible and useful; and (3) one figures out the connections between the new and earlier conceptions (Posner et al., 1982). Accordingly, it is helpful for teachers to know what is problematic about existing beliefs--what they should consider to change in the process where they have opportunities to reflect upon the alternative. The following is the
discussion about this issue.

What to Change

As stated in Part One, perturbation or anomaly is regarded as an important stimulant for growth and dynamic connectedness as the way to change in open or dissipative systems. With an open-system perspective, constructivist Richard Prawat (1992) identifies four sets of beliefs about teaching, learning and curriculum, which he regards as questionable and as what teachers should change. The four sets of beliefs as follows are related to each other; a teacher might not change one without changing another.

First, the content and learner are usually seen as relatively separate and fixed entities, which explains why teachers spend so much time and attention to the delivery of content. This belief may result from (1) teachers' overemphasizing on the importance of individual differences and (2) their understanding knowledge about content from a closed-system perspective. According to Monk and Simpson (1989), the former is noninteractive for it assumes that students have "essentially fixed approaches to things, and teachers must accept this" (p. 5), which has led to a de-emphasis on issues of content selection and understanding. As to the latter, while it is important that teachers know the discipline they are teaching (knowledge of content) very well, knowledge about content may have equal or greater importance. That is, teachers should inquire how knowledge derives, how it is established and changes in the disciplinary domain. Understanding the epistemological assumption from a closed-system perspective, teachers feel uncomfortable to exercise their own judgment about content or depart from the standard, expert-designed curriculum as if knowledge was fixed, the content was a
finished content, or there was one best way to fit the elements together.

The second set of beliefs is "naive constructivism," which equate activity with learning. Prawat (1992) states, "Many educators, in attempting to implement [Dewey's] theory, downplayed the importance of the educational value of experience, emphasizing instead its enjoyment value" (p. 370). They misinterpret Dewey's idea about experience; activities as opposed to ideas are the basic units and starting point when they plan lessons. Therefore, connections between ideas or connections between child's experience and those ideas are not manifested or sufficient.

Thirdly, teachers tend to separate learning and application, understanding and problem solving. Prawat (1992) criticizes the literature on transfer, which Bloom expects to use to validate his taxonomy theory: (1) "It is unclear how much real transfer occurs as a result of current educational practice"; and (2) "prevailing views of transfer are based on faulty assumptions about knowledge and learning" (p. 371). Seeing learning from a hierarchical perspective, "vertical transfer" indicates a differential sequence from lower-level activities to higher-level ones. On the other hand, "horizontal transfer," or "lateral transfer," is based on a generalization principle or common elements theory (Thorndike and Woodworth, 1901) and involves separation or decontextualization. However, as mentioned in Part One, current research suggests that learning is best done by building connections between disciplines, between knowledge and context, and between knowledge and the learner rather than through a process of disconnection or differentiation.
The fourth set of beliefs, Prawat (1992) regards as problematic, is seeing curriculum as a fixed agenda, or defined as a course of study or a course to be run. He states that both subject-centered and child-centered views of curriculum are flawed. Curriculum development models usually take either perspective: (1) "Objectives model," where decisions about content, methods of instruction, and forms of evaluation can be made once the ends are fixed; or (2) "interaction model," where the developer can start at any point and move in any direction among the four curriculum elements—objectives, content, learning experiences, evaluation (p. 383). However, regardless of the starting point, teachers usually assume themselves as the manager or orchestrator whose primary task is "to keep things moving, to ensure that lessons unfold as planned" (Prawat, 1992, p. 384)—they are "the external regulator," giving adjustments from outside the system of action (Doll, 1986). Both views, where curriculum is linear, well-defined, predetermined, and controlled, reflect the metaphor of closed-systems, which is based on an outdated, Newtonian model of the universe (Doll, 1989; Sawada and Caley, 1985) as discussed in Part One.

In contrast, curriculum is built around "big ideas" and seen as a "network of important ideas to be explored" (p. 386), which is based on three important assumptions: (1) internality; (2) spontaneity; and (3) indefiniteness in an open system. The first assumption suggests that the student, a living micro-system, is autopoietic or self-organizing—he/she is able to structure his/her own experience. The second indicates that self-organizing is a non-incremental process—the period of equilibrium precede sudden disequilibrium. The third states that there is no clear distinction
between ends and means since every object or phenomenon is seen as an ongoing process in an open system. Instead, to explore the myriad connections, logical and personal in open systems is most important.

Those assumptions suggest teachers not to view students as passive receivers of knowledge. Instead, while reflecting on their own actions and experiences, teachers should ask students to "reflect on their actions, to explain why they did what they did, and to present their methodologies to open scrutiny..." (Doll, 1986, p. 15). Teachers should see the importance of connectedness in learning, search with students the relationship or connections between units of knowledge and between self and knowledge. More importantly, they should be aware of their own conceptual change all the time while they attend to their students' in the process of interaction. Although it seems that we need to make more efforts or take risks with the constructive approach, the effort or risk is worthy the payoff in facilitating integration of teaching, learning and curriculum. Curriculum change in the classroom from an fixed, separate entity to a multifaceted network of important big ideas to be explored requires teachers to do a lot of trials, provide various opportunities to students.

From Prawat's and other constructivists' perspective, beliefs reflecting an closed-system worldview are what teachers should change. For example, with a closed-system perspective, the role of teacher and that of the student are distinguished and different; with an open-system perspective, both roles are integrated, understood by each other and appreciated. Teaching and learning should be considered as two sides of one phenomenon. Prawat' and other constructivists' arguments imply that the teacher, while identifying and
changing the four sets of beliefs, starts considering an alternative paradigm—an open-system or quantum worldview, and that such a paradigm becomes his/her own axiological emphasis and a kind of attitude toward life. Then, with an open-system mindset, they change their behaviors or classroom practices to correspond the constructive nature of the micro and macro systems, by themselves and with meanings in such a changing process.

Reflect on Curriculum Integration
to Change Beliefs Showing a Closed-System Worldview

From the above discussion, it is clear that even though different modes of reflection have different emphases, they all show the common nature of reflection—to make connections, make whole and renew. Reflection as retrospection sees the purpose and practice of reflection as turning one's thoughts or analyses back on prior experience to make new sense of it and to learn from it. In this mode of reflection, one makes connections between his/her present evaluative criteria and the experience in the past. Dewey's approach sees reflection as a logical problem-solving activity through which teachers can move from where they are at a given point to somewhere better. Such an approach helps one connect a situation or activity he/she has taken for granted with its various alternatives. Van Manen sees reflection as the constant critique of society and its institutions to move towards justice. This mode of reflection helps one make connections between his/her own socioeconomic and political position with the issue of justice, equality and freedom. Schön sees reflection-in-action as the way that professionals make sense of and then work competently in situations that are not well understood, where they make connections between their actions to change the
situation and changes occurring in the situation. In Vygotsky's work, reflection is the process where one processes received information and meanwhile actively transforms and represents reality. Central in Vygotsky's work is conscious awareness, a mode of subjective reflection, where one reflects upon his/her own consciousness--one is making connections between the activity of his/her mind and his or her own consciousness, which is constituted by the elements of intellect and affect.

Reflection has a nature of making connections; thus, if one keeps reflecting, he/she keeps making connections and renewing. But, how can one become aware of such a nature of his or hers and the paradigm that argues for it? What should a teacher reflect upon so as to help him/herself, broadly speaking, to have a paradigm shift--to "discover" that what they are doing (namely, reflection) is a process of self-transformation, and that the "utterly simple idea" of living (or to teachers, the utterly simple idea of teaching, learning and developing curriculum) is to making connections dynamically? What should a teacher reflect upon so as to help him/her, specifically speaking, to change, for example, what Prawat identifies as problematic--four sets of existing teacher beliefs deriving from a closed system: (1) the learner and the content viewed as separate and fixed entities; (2) the tendency to equate activity with learning; (3) the separation of learning and application, understanding, and problem solving; and (4) curriculum viewed as a fixed agenda, a daily course to be run that consists of preset means and predetermined ends?

It is claimed that curriculum integration is what the teacher should reflect upon. Curriculum integration, a concept with various meanings and
yet all of the interpretations reflect its common nature of making connections, corresponds to the major characteristic of both reflection and open systems (dissipative and self-organizing systems). To most teachers, the term "curriculum integration" is no doubt much more familiar than "an open system," or "a dissipative, self-organizing system." Therefore, we may say that teachers who have the opportunity to reflect upon the meaning and nature of curriculum integration are meanwhile getting the opportunity to discover an open-system paradigm and thus it is more possible to have a paradigm shift or change their beliefs that are based on a closed-system mindset.
A Synthesis:
Connections Between Part One, Two and Three

In this chapter, literature relevant to the study is constructed by three parts. The focus of Part One (Curriculum Integration: A Hope to Improve Education) is to examine the nature of curriculum integration and quantum paradigm. The nature of curriculum integration is explored in terms of its origin from a historical perspective, its meanings, models and its rationale. Meanings of the term "curriculum" are also discussed from different perspectives. Then, the old paradigm--Newton's machine logic, and the new one--quantum reality, are discussed in terms of their fundamentals, influences on education, and applications to improve education. Through analyses, it is claimed that there is a need, if we want to improve education, to have our mindset shift its focus on the machine, or closed-system worldview to the quantum, open-system worldview. In addition, we found that the nature of curriculum integration--making connections--corresponds to the nature of the new paradigm. Thus, curriculum integration, as a mode of thinking with an emphasis on making connections, is regarded as providing an optimal opportunity to improve education—to facilitate students', teachers' and organizations' integration and development.

In Part Two (Changing Schools From Loosely Coupled Elements to Perceptionally Integrated Systems), emphases are the issues of why, where and when individuals and the organization change, and what a leader should reflect upon before or when facilitating organizational change. It is believed
that a leader, especially educational leader, should take another look at the concepts which frequently appear in the literature on organizational change, such as "effectiveness," "change," "implementation," "adoption," and "organizational structure." In this study, those concepts are argued as follows:

(1) Effective change involves meanings searched by the individual in the organization—he/she must have a meaning for what he/she is doing or orienting with the organization; effectiveness is not just about the issues of saving more time, money and resources.

(2) Change—self-organizing, making connections, making whole, or self-renewal—is the nature of any system, micro and macro, living and nonliving. Everything in the universe is a dynamic foci of many de- and re-constructing processes with an appearance of an identifiable and relatively constant pattern, the so-called MMP. It is conceptualized that there are at least three ways by which one changes his/her points of view—translation, transformation, and transition.

(3) Implementation of curriculum has three kinds of emphases—implementation with a fidelity, mutual adaptation, or enactment perspective. It is the emphasis on enactment when we "implement" curriculum that makes curriculum change meaningful to teachers and consistent to the nature of the profession of teaching.

(4) Adoption involves a belief and a sense of ownership, not only acceptance and usage. One internalizes the rationale and acts for the change.

(5) Organizational structure indicates the complexity and variability of the individual component parts as well as the looseness of connections among
them.

After analyzing the school structure and its relation to curriculum change, and discussing the above concepts and the nature of organizational change, it is claimed that curriculum integration, as a mode of thinking with an emphasis on making connections, is the innovation that provides schools an optimal opportunity to change--changing from loosely coupled elements to perceptionally integrated systems.

In Part Three (Reflection and Belief: How and What Teachers Change), the emphasis is placed on exploring the nature of reflection and what constructivists regard as important for teachers to change beliefs. Five modes of reflection--retrospection, deliberation, emancipation, reflection in action and reflection with conscious awareness--represent five different emphases. One can consciously or unconsciously reflects upon something. However, although he/she may be conscious of what he/she is reflecting upon, most of the time, one reflects without "knowing" that he/she is reflecting--one is seldom conscious of why or how he/she reflects.

The issue of what teachers should consider to change is an important issue on teacher change. Constructivists point out four sets of flawed beliefs derived from a closed-system worldview, which teachers should consider to change: (1) The content and learner are separate and fixed entities; (2) doing activity is equal to learning; (3) learning and application, understanding and problem solving are separated; (4) curriculum is a fixed agenda, a course of study, or a course to be run.

I believe that teachers are more likely to change their beliefs derived from a closed-system perspective through reflecting on curriculum
integration for both of reflection and curriculum integration have a common nature of making connections—the nature of systems or organizations interpreted from an open, dissipative, quantum perspective.

Specifically speaking, four main issues are discussed in Part One, Two and Three so as to provide a conceptual framework for this study: (1) teacher reflection; (2) curriculum integration; (3) teacher change; and (4) school change. They are related to each other in the context where the norm is change, characterizing by randomness, indeterminism and chance. From such an open-system perspective or quantum worldview, change occurs, or interaction between those issues becomes significantly active, when a critical level of support is acquired just in time. Figure 2 presents the interrelationships among the four main issues and their context.
Developing & implementing an integrated curriculum with team members as the experienced process; curriculum integration as the reflected concept (Change approach)

School change: From loosely coupled elements to a perceptionally integrated system (Context for teacher & curriculum change)

(For new school members)

Chance and a critical level of support obtained from reflection and interaction just in time (When to change)

Experience as opportunity to reflect; reflection as opportunity to make various connections via ways of retrospection, deliberation, emancipation, reflection in action, reflection w/ conscious awareness, etc. (Change opportunity)

Teacher change: Broadly, shift the paradigm into a mode of thinking with an emphasis on making connections; specifically, change (ex: 4 sets of) beliefs and classroom practices reflecting a closed-system worldview (What to change)

Figure 2: Nexus of Chance, Time, Teacher Experience and Reflection, Curriculum Integration, Teacher Change and Organizational Change
Broadly speaking, emerging from the context constructed by the four main issues are two themes that are expected to connect all the discussions throughout the whole chapter:

(1) One interpretation why organizations or systems (micro, e.g., individuals, or macro, the universe) change is that they all have the nature of self-organizing or making connections, which, from an open-system perspective or quantum worldview, is a dynamic way of change. When there is a chance where the support reaches to the critical level, organizations change--de- and re-construct--their connections with the context and within themselves, through changing their values, expectations, and conscious emphases through conscious or unconscious reflection and interaction.

(2) Curriculum integration also reflects the nature of change. It is regarded as a mode of thinking with an emphasis on making connections. Such a nature corresponds to the nature of the quantum paradigm and provides an optimal opportunity to improve education--to facilitate students', teachers', and educational systems' integration and development.

It is hoped that the approach of experiencing and reflecting on curriculum integration can help teachers see themselves, students, the school, the educational system, society and the world from an open-system, quantum worldview and help them start making connections in the daily life.
CHAPTER III

METHODOLOGY

This chapter describes the methodology used to investigate the possibility and effectiveness of teachers' experiencing and reflecting on curriculum integration as an approach to facilitating teacher change. In order to explore the potential of such an approach to teacher change in depth and detail, a qualitative methodology was chosen. This methodology provided opportunities to hear the inner voices of the teachers as they share their concerns, attitudes and beliefs related to curriculum integration and classroom practices; it permitted the researcher to see the actuality of their school lives. Lightfoot (1983) discusses Eisner's (1981) viewpoint about the importance of context: "We have little understanding of how to interpret a behavior, an attitude, a value unless we see it embedded in the context and have some idea of the history and evolution of the ideals and norms of that setting" (p. 23). It was anticipated that a "rich description" (Erickson, 1986) would emerge from the qualitative data to aid in understanding factors that affected the possibility and effectiveness of this approach.

Chapter III follows the development of the study. It begins with the research design, and follows with the procedures of gathering and analyzing data and establishing trustworthiness of this study.
Qualitative Evaluation Research

Patton (1990) states that the first step in a research process is getting clear about purpose for it is the controlling force in research from which decisions about design, measurement, analysis, and reporting flow. It is seen as a research emphasis or orientation. In the context where three public high school teachers as a team developed and implemented an integrated curriculum, the purpose of the research was to examine the potential and effectiveness of teachers' experiencing and reflecting on curriculum integration as an approach to guide teacher change:

1. Did teachers change in the context and process where they as a team developed and implemented an integrated curriculum?
2. If so, how did teachers' experiencing and reflecting on curriculum integration relate to their changes in beliefs and classroom practices?
3. How did teachers interpret their changes and develop their own meaning of curriculum integration?

Research Objectives

This is evaluation research using qualitative methods. The term "evaluation" indicates "any effort to increase human effectiveness through systematic data-based inquiry" (Patton, 1990, p. 11). Broadly speaking, "evaluation research studies the processes and outcomes aimed at attempted solutions" (Patton, 1990) such as policies, programs, personnel, organizations, products and approaches. Specifically, this research has a dual objective in (1) trying to evaluate the accomplishment and effectiveness of teachers' experiencing and reflecting on curriculum integration as an approach to facilitating teacher change while (2) using such an evaluation process to
improve the effectiveness of this approach. In a sense, such evaluation research can be called a kind of action learning, which "seeks to combine action and learning to create a situation whereby everyone involved in the research learns while doing" (Morgan, 1993, p. 296). Thus, evaluation in this study is both summative and formative. As to the first research question, evaluation is summative-oriented. Summative evaluation renders an overall judgment about the effectiveness of such an intervention. The purpose is to decide if that intervention is effective within its limited context and under what conditions it is likely to be effective in other situations or places. As to the second and third research questions, evaluation emphasizes formative. Formative evaluation serves the purpose of forming and improving effectiveness of the intervention within that setting (Patton, 1990, p. 151-152).

Roles in the Research

Accordingly, in this research, the researcher was both an evaluator and learner, acting in the research site and interacting with the research participants through a role of learning evaluator and evaluative learner. That is, like a learner, the researcher posed questions to research participants for their "instruction." Meanwhile, like an evaluator, the researcher, from their responses or "instruction," examined the possibility and effectiveness of experiencing and reflecting on curriculum integration as an approach to facilitating their change. Learning and evaluation were not in the relationship of being two opposite points on a line continuum. They were seen as in equilibrium; significance or emphasis reflecting from either one shifting from time to time according to chances that were available and a
critical level of support obtained at the optimal time. In contrast, research participants in this research played a role more like a teacher to the researcher as learner; they taught the researcher how their classroom practices went on, what and why in certain ways they planned for a lesson. In addition, they were also self-evaluators, reflecting on their lives in the classroom, the meaning or nature of curriculum integration and their own experiences in developing and implementing an integrated curriculum with team members.

**Data Collection**

Data were collected through the following process: I observed the graduate level course on curriculum integration, which took place at Season High School, the research site. Participants of this course included Season High School teachers as well as administrators, and teachers from other high schools, all of whom were grouped into several teams according to their own teaching schedules in order to make curriculum implementation feasible. The course consisted of two and half hours class time conducted once a week from January to March, 1994. Data collected in the curriculum development process were: (1) fieldnotes of my observation in class; (2) notes on conversations with teachers and the teacher coordinator; (3) teacher developed integrated curriculum; (4) teachers' reflective journals; (5) concerns surveys or open-ended questionnaires; (6) course handouts provided by the course instructor; and (7) one videocassette of teams' presentations about their developed curriculum.

At the end of the graduate course, I asked the three teachers who were willing to participate in the research to keep a reflective journal for the next
four months; they, as a team, would teach their own regular lessons and implemented the integrated curriculum they had developed in the graduate course for one week. Later, when the new trimester started, I went to their classrooms and observed their instruction for the next three months. During that time, I talked with the teachers about their instruction and curriculum planning; shared each other's experiences of teaching; encouraged and appreciated their effort in education; discussed each other's meanings and frameworks of curriculum integration; and introduced quantum reality—the new language of science—by providing them the relevant literature. Data collected from the three teachers during this period of time were: (1) fieldnotes on teachers' daily classroom practice and implementation of an integrated curriculum in the classroom; (2) notes and transcripts of conversations and interviews with teachers, the teacher coordinator, and the principal; (3) public documents about the high school; (4) teachers' reflective journals; and (5) concerns surveys or open-ended questionnaires.

Those sources of data were roughly categorized into three classes in the manner that Morgan (1993) uses to classify data.

Class 1 data represented objective facts, including: school history and organizational structure; block schedules for curriculum and instruction; special events; numbers of students; arrangement and decoration of the activity site; interactions between the teacher and students in the classroom. Such data were collected through observation and by taking fieldnotes in the classroom and school, or by asking administrators or teachers for related documents. In collecting Class 1 data I acted as a participant observer or like a student teacher, who gave a hand when teachers asked for help.
Class 2 data represented all social constructions of reality other than the first class. These were data collected through conversations and the sharing of experiences. The journal was also a way to have conversations between the participant and the researcher, where I kept reflecting and giving feedback to their reflections on the various meanings of the term "curriculum" and "integration," and their own meanings of curriculum integration. In both face-to-face interviews and journal-talk conversations, my role was to be both a learner and evaluator. Conversation, in Gadamer's (1975) view, is an art of testing, which is also the art of questioning (p. 330), where both the researcher and participant consciously seek to deepen and broaden their understanding of the topic of the conversation through seriously taking multifaceted aspects of the "reality" into consideration, and question the way that they speak about the topic. In addition, I also searched for appropriate opportunities to bring issues of the nature of relations, dissipative structure, quantum theory, paradox, learning and change into conversations with teachers.

Class 3 data represented the researcher's social constructions of reality. Bogdan and Biklen (1982) maintain that "one can never eliminate all of one's own effects on subjects or obtain a perfect correspondence between what one wishes to study--the 'natural setting'--and what one actually studies--'a setting with a researcher present'" (p. 43). As the basis of his/her reading of a situation, the researcher's selective attention, filtering and other enactment processes shape the key themes and interpretations that emerge from the research (Morgan, 1993, p. 303) as well as his/her worldview, axiology and ability of communication. Thus, my continuing understanding
of the self through interacting with the research site, and my questioning of the way I interpret a phenomenon became part of the data. As an action learner in the research, I wore "two distinct hats at once, one serving the research agenda and the other oriented toward creating an appropriate learning environment for those involved" (Morgan, 1993, p. 304). I tried to keep accurate and rich descriptions about when and where an idea emerged in my mind or an evaluation or reaction was taken so I could trace my influence throughout the course of the whole intervention. In addition, while intending to help teachers get a broader view of curriculum integration, I also listened to their meanings of curriculum integration very carefully and meanwhile I attempted to understand their interpretations—what was said explicitly and implicitly; why they interpreted it in certain way; how I came to understand their interpretations.

Data collected through observation, interviewing, notetaking and documenting were the major and essential resources for this qualitative research. Thus, in the following I discuss these data collection strategies and some relevant methodological concerns in more detail.

**Observations**

"The purpose of observational data is to describe the setting that was observed, the activities that took place in that setting, the people who participated in those activities, and the meanings of what was observed from the perspective of those observed" (Patton, 1990, p.202). In this study the settings were the public high school staff meeting room where the graduate level course on curriculum integration was offered, and the three classrooms where the three teacher participants interacted with their students. The
people observed were the three high school teachers as a team or as individuals in their own classroom.

Observational strategies from which a researcher may choose vary from complete participation in the setting to being a spectator (Bogdan and Biklen, 1982; Patton, 1990). The choice is to "adopt that degree of participation that will yield the most meaningful data about the program" (Patton, 1990, p. 209) for the study. In addition, the choice of observational strategies may change as the study progresses. Since this study focused on teacher change, the majority of the observations were direct. However, because of the experiences that I brought from another culture and my role as a learner and willingness to help, at times that I became a participant observer, playing the role of the teacher's resource person or assistant. I would, with the permission of the teacher, lend a helping hand when needed. I had to be continually aware of the challenge to integrate and balance the multiroles of researcher, learner (hoping that questions posed to and conversations with teachers would facilitate their change), evaluator, observer and participant.

Lincoln and Guba (1985) maintain that an advantage of observation is its "...here-and-now experience in depth" (p. 273). Guba and Lincoln (1981) describe the observation experience as follows:

1. Observation maximizes the inquirer's ability to grasp motives, beliefs, concerns, interests, unconscious behavior, customs, and the like.

2. Observation allows the inquirer to see the world as his subjects see it, to live in their time frames, to capture the phenomenon in and on its
own terms, and to grasp the culture in its own natural, ongoing environment.

3. The researcher has the opportunity to see things that may routinely escape conscious awareness among the participants.

4. Observation helps the researcher learn about things participants may be unwilling to talk about in an interview.

5. The researcher may move beyond the selective perspectives of others.

6. Observation permits the researcher to access personal knowledge and direct experience as resources to aid in understanding and interpreting the program. (pp. 203-205)

While researchers are observing and collecting data, they must also begin to analyze their data in the field. This is necessary in order to look for preliminary categories which can be "expanded, and related during subsequent observations. It may also be useful to check these emerging data with some respondents for credibility" (Lincoln and Guba, 1985, p. 276).

The observation in this study, taking place in the graduate level course and teachers' classrooms, allowed the researcher to see the development and implementation of an integrated curriculum. As with the interviews conducted, the observations changed at different stages of the study. Initially, observations took place in the graduate level course offered at Season High School from January to March, 1994. As the inquiry evolved, the focus of the observations narrowed to three teachers as a team developing and implementing a unit of integrated curriculum on the Vietnam War. Later, from April to June, 1994 observations took place in their own
classroom.

**Interviews**

For this study interviews were conducted in conjunction with observation in order to understand the meanings of given situations. Hutchinson (1988) states, "Observing by itself is never enough because it begs misinterpretation. Interviews permit researchers to verify, clarify, or alter what they thought happened to achieve a full understanding of an incident and to take into account the 'lived' experience of participants" (p. 125).

At the heart of interviewing research is an interest in other individuals' stories because they are of worth. Hutchinson (1988) also reminds us that interviews help the researcher see situations through the eyes of the participants...such diverse slices of data insure density and provide different perspectives for understanding social phenomena. The human touch, the capacity to empathize with others, is essential to successful interviewing. (pp. 130-131)

Interviews glean descriptive data in the informant's own words in order to interpret a piece of their world (Bogdan and Biklen, 1982). Lincoln and Guba's "guiding principles" are considered as different emphases when one conducts interviews:

1. obtaining here-and-now constructions of persons, events, activities, organizations, feelings, motivations, claims, concerns, and other entities;
2. reconstructions of such entities as experienced in the past;
3. projections of such entities as they are expected to be experienced in
the future;
(4) verification, emendation, and extension of information
(constructions, reconstructions, or projections) obtained from other
sources, human and nonhuman (triangulation); and
(5) verification, emendation, and extension of constructions developed
by the inquirer (member checking). (Lincoln and Guba, 1985, p. 268).

The directions of the interviews in the study changed as they built and
expanded on participants' past interviews and observations, and
consequently each of the types of interviews were applied as the study
evolved. However, the overall purpose for all interviews was to learn when
the researcher evaluated teachers' experiencing and reflecting on curriculum
integration as an approach to facilitating their change, and meanwhile to
evaluate such an intervention when research participants taught their
experiences to or shared their beliefs and concerns with the researcher.

The degree in the structure of the interview is another decision the
researcher must take. Interviews may vary in an equilibrium from
emphasizing completely unstructured or open-ended to highly structured
with specific questions. In an unstructured interview "the problem of interest
is expected to arise from the respondent's reaction to the broad issue raised
by the inquirer...and is concerned with the unique, the idiosyncratic, and the
wholly individual viewpoint" (Guba and Lincoln, 1981, pp. 155-156).

Questions are general and there is significant latitude for the participants to
pursue their interests. From a slightly different stance, Patton (1990)
discusses the "informal conversational interview" (p. 281). This approach is
used with observation to permit the observer to give the observation
meaning. This description of an informal interview supports Dexter's definition of an interview in which he suggested that an interview is a conversation with a purpose (cited by Lincoln and Guba, 1985).

Emphasis on a structured interview is different from emphasis on an open-ended interview. In the structured interview "the questions have been formulated ahead of time, and the respondent is expected to answer in terms of the interview's framework and definition of the problem " (Guba and Lincoln, 1981, pp. 155-156).

In addition, the way in which the researcher phrases questions is important in interviews. Patton (1990) suggests that questions for qualitative research be "open-ended, neutral, singular, and clear" (p. 295). Probes and follow-up questions may be used to increase the data or deepen the response being given by the participant.

The participant should feel that there is a conversation going on, where he/she teaches and also hear of some different perspectives from the learner—the researcher, rather than an interrogation. This can occur by listening and responding intently. To show interest and willingness to learn, I nodded my head and used appropriate facial expressions. Evaluation of teachers' experiencing and reflecting on curriculum integration went on implicitly in my mind. Sometimes I was conscious of my hidden mind action of evaluating such an intervention in conversational interviews, but sometimes not— I was attracted by something else instead of paying attention to my own consciousness.

As this study evolved, interviews were conducted for different purposes and therefore had varying structures. Initially in the graduate level course,
unstructured open-ended interviews were used, which helped me obtain here-and-now constructions and reconstructions of activities relating to their beliefs and curricula. These exploratory interviews were conducted to obtain a "general understanding of a range of perspective on a topic" (Bogdan and Biklen, 1982, p. 136). As my data collection expanded to observation in their own classrooms, my interviews were used in combination with the observations to clarify and verify what I observed. These were, in Patton's (1990) terms, informal conversational interviews conducted during the teacher's preparation time, lunch time or after school. Other interviews were conducted to extend or verify information obtained from documents or "constructions developed by the inquirer" (Lincoln and Guba, 1985, p. 268).

Instead of evaluation, interviews with the principal and the teacher coordinator were primarily aimed at learning about their leadership of the innovative school, visions toward education and perceptions of SHS teachers.

In an effort to facilitate the interview process, the interviews were tape-recorded. Patton (1990) advocates the use of a tape recorder as the most efficient means of recording data. A tape recorder was used in structured, scheduled interviews. The structured interviews were thirty to ninety minutes in length. I listened to these tapes two to three times and took notes about my reflections upon the conversations before I transcribed them. In this way, I could selectively transcribe some interactions in the interview that had meanings to me and skipped some parts with noises (e.g., students' talking), interruptions (e.g., principal's announcement), etc. During the unstructured, or conversational interviews, brief fieldnotes were taken if it was convenient and/or unobtrusive. Many times this was not the case; thus,
it became imperative that these interviews were taped while interviewing.

Fieldnotes

Fieldnotes are an essential part of data collection. Bogdan and Biklen (1982) define fieldnotes as a "written account of what the researcher hears, sees, experiences, and thinks in the course of collecting and reflecting on the data in a qualitative study" (p. 74). Patton (1990) reminds us that while there are many choices to make about the mechanics of fieldnotes, "What is not optional is the taking of field notes" (original emphasis, p. 239). Similarly Lofland asserts that fieldnotes are "the most important determinant of later bringing off a qualitative analysis" (cited in Patton, 1990, p. 239).

With these directives in mind, notetaking was a primary method during observations and tape recorded interviews. Fieldnotes were continued immediately after a visit to the setting to fill in blanks and make clarifications. Tape recordings of interviews were transcribed and observers' comments on nonverbal behaviors of the interviewee were added (an example of my typed fieldnotes is included in Appendix B). Keeping current with fieldnotes helped in two ways: (1) They allowed for the recognition of emerging categories in which to focus the study; (2) they permitted continued awareness of the researcher's attitudes and values that were evident in the observer's comments.

Documents

The final piece of data collection employed was documents. These materials can be a "basic source of information about program decisions and background, or activities and processes" and give observers "ideas about important questions to pursue through more direct observations and
interviewing" (Patton, 1990, p. 233). Hutchinson (1988) agrees and adds that documents are "extremely valuable in interpreting data gathered from interviewees and constitute an excellent check on the other data" (p. 131).

Documents collected in this research provided important sources of rich descriptions of how the people who produced the materials thought about themselves, their work and world. Obtained from the principal and the teacher coordinator, official documents in this research included school mission statements, policies and schedules of classes (an example of the official document is included in Appendix C). Internally, this kind of data provided clues about leadership style and potential insights about what organizational members valued. Externally, they are useful in understanding official perspectives on programs, the organizational structure and other aspects of the school system.

While official documents helped me know more about the context where teachers were situated, personal documents provided me accesses to the inner world of teachers. Used broadly to refer to "any first-person narrative that describes an individual's actions, experiences, and beliefs" (Bogdan and Biklen, 1990, p. 132), personal documents in this research included teachers' journals, survey responses and lesson plans. In the graduate level course on curriculum integration, the instructor asked all class participants to keep a reflective journal on a weekly basis. In addition, each week one or two open-ended questions (see Appendix C) were given at the beginning of the class in order to help teachers to reflect on their teamwork in developing an integrated curriculum. During the whole research process, ten surveys in total were respectively given to teachers (five during the graduate
level course from January to March, and five during the classroom observation from April to June), which contained open-ended questions aimed to facilitate teachers to reflect on the nature of curriculum integration, the school, vision toward education, meaning of their teaching, and learning from the graduate course (see Appendix E). The three teachers who were chosen to participate in this research continued keeping their journal in the notebook that I provided with a letter where I explained the meaning of a qualitative research and providing what I called reflected resources (see Appendix F). But, even though I provided teachers with some broad directions and ideas that I hoped they would reflect on, the decisions of whether or not they reflected on those ideas and how much effort they would make in reflection were made by themselves.

Lesson plans were done collaboratively or individually. Some of them, including the unit of an integrated curriculum, were collected in the graduate level course; others were sketched in their own journal. In short, responding to survey questions, keeping journals and developing curricula provided teacher participants with opportunities to write down (so that they could "see") their thoughts and reflected on themselves, the context and something they had taken for granted. Writing was considered as a way to reflection and reflection would provide opportunities for one to change. Surveys, journals and lesson plans were all verbal data not the measurement or record of behavior. But, they had provided important information about what teachers reflected on and how in the process where they experienced the development and implementation of curriculum integration. They become the major data for the evaluation on teacher change.
Data Analysis

"Data collection and data analysis are tightly interwoven process," state Strauss and Corbin (1990), "and must occur alternatively because the analysis directs the sampling of data" (p. 59). When one goes into the research site, early data analysis is very important, for it gives the researcher feedback and reality to collect new data to fill in the gaps of his/her routine assumption and biases, and tests new hypotheses that emerge during analysis.

Analysis in this study was an ongoing process in order to be open to ideas to research, identify other questions, and finally evaluate the accomplishment and effectiveness of experiencing and reflecting on curriculum integration as an approach to teacher change. This was accomplished by thoroughly reading the fieldnotes and writing up comments immediately following a visit to the setting. Following this reflection on the day, decisions were made for the next observation or interview. As the study became increasingly focused, time was spent on searching for the data for evidence to substantiate or contradict evaluations or assumptions that had been made. Even though a piece of data seemed unrelated initially, it could not be entirely discounted. It may be a piece of evidence needed at a later time. In general, the ongoing analysis process gave the research focus and direction for future observations and interviews.

Specifically, the strategies of coding and causal networking were applied in the ongoing analysis process to analyze data. Both strategies are discussed as follows in terms of their importance and procedures.
Codes

The first step in analyzing data when the researcher begins to collect them is to code data; coding is an essential task for it makes data manageable, not gigantic or overwhelming, to the researcher. Miles and Huberman (1994) use the term data management to describe such a task; Wolcott (1994) suggests data processing as another. Here coding constitutes the process of conceptualizing data and then breaking them down into parts with themes significant to the researcher. That is, the researcher labels phenomena, develops and names categories in terms of their properties and dimensions. In this research, the fieldnotes and written documents were reread in order to develop an initial coding system. In the beginning of data management, Bogdan and Biklen's (1982) "process codes" were used as references. "Process codes refer to coding words and phrases that facilitate categorizing sequences of events, changes over time, passages from one type or kind of status to another" (p. 159). They were helpful, since the study considered the process of teacher change over a period of almost one year.

Coding is important and necessary task in any data analysis process; however, it alone is insufficient to represent the whole process of data analysis of the qualitative evaluation research. The purpose and strategy of analyzing data must correspond to the purpose of the research or help the researcher approach research objectives. Thus, in addition to coding, I supplemented it with another data analysis strategy so my analyses would address questions of why the approach of teachers' experiencing and reflecting on curriculum integration did or did not facilitate teacher change and how this approach might be improved to work better. The strategy that I
used to analyze data that had been coded was causal networking.

Causal Networks

Codes emerging from data analysis can be displayed in many ways. The researcher must carefully examine the nature and purpose of the research in order to choose appropriate approaches to display the themes significant to the researcher. For the research on curriculum integration and teacher change, my interest was to examine the potential and effectiveness of teachers' experiencing and reflecting on curriculum integration as an approach to facilitating their change. I found the "causal network," in Miles and Huberman's (1994) term, was helpful for me to make sense of and make connections between codes and evaluate such an intervention summatively and formatively. The causal network is a display of the most important themes in a field study and of the directional relationships among them (Miles and Huberman, 1994, p. 153). When two themes are related, it is often hard to call one a "cause" and the other "effect." They control or influence each other in a loop; the researcher starts the analytic sequence with a cause that triggers subsequent events, but they come back and modify the original "cause" that had been identified--that "cause" is now an "effect." That is, in a causal network, causation is not unilateral (Miles and Huberman, 1994, p. 152).

Built by both inductive and deductive approaches, the map of the causal network keeps changing along the way to the "end" of the research. That is, in a deductive approach, the researcher starts with a preliminary causal network, where he/she has some orienting constructs and propositions to test or observe in the field. In contrast, in an inductive approach, the
researcher discovers recurrent phenomena in the stream of local experience and finds recurrent relations among them (Miles and Huberman, 1994). Wolcott (1992) calls the two approaches "theory-first" and "theory-later," in either of which the initial map is amended as it is tested against events and characteristics presented in the research site.

To give an example, presented as follows (Figure 3) is the first causal network I developed through one of my doctoral courses on organizational theory in November, 1993. The map was followed by brief definitions for each theme and descriptions of the symbols in the map. The map, where I considered myself one of the themes, was developed deductively based on the relevant literature, my own knowledge and prior information about the potential research site. Since this study aimed to evaluate the approach of teachers' experiencing and reflecting on curriculum integration not only summatively but also formatively, in the beginning of the research these themes in my mind somewhat became auxiliary strategies (to me) or chances (to teachers) to facilitate the effectiveness of such an approach or intervention. As the study evolved, more and more data were collected in the course on curriculum integration and Season High School, which were used to inductively continually revise the conceptual framework, including adding, deleting or redefining themes or connections; adding, deleting or changing the direction of an arrow; rereading the "whole" picture full of themes and giving a new meaning or interpretation.
Figure 3: Initial Conceptual Map of Interrelationships Between Teacher Change Themes
Figure 3: A Brief Definition of Themes

1. Understanding meanings of curriculum integration: Teachers are aware of meanings of curriculum integration defined in different contexts, and recognize the importance of curriculum integration in education.

2. Teachers' interacting with the researcher: Teachers are willing to reflect upon their conversations, and share teaching experiences with the researcher who plays the role of both the learner and learning facilitator.

3. Teachers' double-loop learning: Teachers take a double look at the situation by questioning the relevance of operating norms and ask themselves whether or not there is another way of thinking and acting. For example, they question the meaning of curriculum integration which has been taken for granted.

4. Imagination: Teachers mobilize their own potentials for understanding and transformation, and apply various images in seeing themselves, the world, and curriculum.

5. Understanding metaphors of flux and dissipative structure: Teachers make sense of the implicit nature of the world and realize why the world is as flux, and, why the organization and individuals are open systems with the dissipative structure.

6. Teacher personal theorizing: Teachers understand themselves and their role as a classroom teacher. They examine or reflect on their own actions, personal visions, and tacit assumptions.

7. Team learning: Teachers in a team suspend their own assumptions entering into a genuine "think together." They learn not only from colleagues, coordinators, the principal, or the teacher educator, but also from
the context students and the where they are situated. A course, a classroom or a school can be regarded as a team.

8. Sharing visions: Teachers share with each other their own visions, concerns, values, beliefs, and approaches for education. They establish intersubjectivity through interactions or conversations.

9. Constructing paradoxes: Teachers construct and perceive paradoxes through self-reflection or interaction with others.

10. Shifting paradigm: Teachers are attracted by or start noticing the quantum worldview. Curriculum integration becomes a mode of thinking; they are aware of their own consciousness.

11. Autopoiesis: Teachers search for meanings in the circular system of relations; they are autonomous, self-referential, and self-productive in the aspects of beliefs and classroom practices.

12. Old paradigm and organizational bureaucracy: The old paradigm views the world as a machine, where determinism is the dominant mode of thinking. The machine image may make the organization bureaucratic in the top-down decision making process, information flow, communication and resource distribution.

**Figure 3: The Meaning of Symbols**

1. A --> B: If A and B are connected with a solid line, it means that the more influence cast from A, the more likely B occurs, or that A brings B into being or makes B larger or smaller. If with a dotted line, it means that the more influence cast from A, the less likely B occurs, or that the larger A, the smaller B.
2. A <-> B: A and B are connected with a solid line, which means that there exists a mutually positive influence between A and B.

**Trustworthiness Establishment**

Establishing trustworthiness is essential in any research for it deals with the question that readers will sooner or later ask the researcher: How can an inquirer persuade his or her audiences (including self) that the findings of an inquiry are worth paying attention to, worth taking account of? What arguments can be mounted, what criteria invoked, what questions asked, that would be persuasive on this issue? (Lincoln and Guba, 1985, p. 290)

In the following, I discuss the trustworthiness established for this study from the aspects of validity, reliability, triangulation, generalization and effects of the researcher.

**Validity**

Lincoln and Guba (1985) use the term credibility for internal validity. They suggest three activities to increase the probability that credible findings will be produced. The three activities are prolonged engagement (spending sufficient time in a setting to achieve the purpose of the study); persistent observation (identifying and focusing on characteristics in the setting that are most relevant to the study); and triangulation (validating the study by confirming the data by two or more sources of data).

The research collected data through four phases: (1) Phase One was in the eleven-week graduate level course where they developed a unit of integrated curriculum; (2) Phase Two was a whole trimester, twelve weeks in total, in their own classroom where they taught and implemented the unit of
integrated curriculum in one of the twelve weeks; (3) Phase Three was the three months of the school summer vacation when I kept in touch with all participants as a friend and mailed them surveys with open-ended questions asking for more of their perspectives; and (4) Phase Four was the next three months when I mailed the analyzed data to each research participant for their checking to see if there was a need to correct the analysis. For this research, the time (one year) spent with the three teachers as a team was sufficiently long to build trust and check for misinformation and distortions in the data (Lincoln and Guba, 1985). This prolonged engagement allowed me to earn the participants' trust by demonstrating my authentic interest in learning as individuals and my initial pledge of confidentiality.

Lincoln and Guba's (1985) "persistent observation" (p. 304) criterion for adding depth to the data was addressed by continuing to focus on emerging issues and pursuing them in detail. However, Gold cautioned qualitative writers about the risk of "going native" (cited in Bogdan and Biklen, 1982, p. 128) in relation to "prolonged engagement" (Lincoln and Guba, 1985, p. 305) or "over-participation" (Bogdan and Biklen, 1982, p. 128). On the other hand, one may lose sight of the study's original intentions if one focuses too soon (Bogdan and Biklen, 1982; Lincoln and Guba, 1985).

Triangulation is the third activity to produce validity in the data. It is a process by which data is "confirmed by two or more measurement processes" (Lincoln and Guba, 1985, p. 306) and was addressed in this study by collecting data through multiple methods. Data were secured from interviews, observation, documents, surveys and journals.

Instead of the term transferability, which is usually based on a
generalization principle or common elements theory and involves separation or decontextualization, the term connection-making is used to indicate external validity. It is the responsibility of the qualitative researcher to provide a description of the study as full and rich as possible--this study attempts to submit a rich interpretative description about teachers' experiencing and reflecting on curriculum integration from an evaluative perspective. The responsibility of the reader is to make various connections between him/herself and the text and reconstruct the connections within the text, or him/herself if possible.

Reliability

The traditional concept of reliability is not appropriate for most qualitative studies because of the complexity between the themes involved. According to Bogdan and Biklen (1982), two different researchers in the same setting may produce different data and findings. This is because in their own study they are the research instrument, who possesses a different cultural and educational background, different professional knowledge and experience, a different axiology, worldview and degree of self-understanding. The uniqueness of a researcher makes the ways he/she gathers, analyzes and interprets data different and unique from others.

Rather, in qualitative research, the concept of reliability indicates the correlation and consistency between researchers' recorded data and what actually occurs in interviews and observations (Bogdan and Biklen, 1990). Reliability in this study was increased by employing a comprehensive category and coding system. Assumptions were cross-checked and, if necessary, reclassified to ensure accuracy within categories.
To conclude, in qualitative research the validity and reliability of the data depend on the "methodological skills, sensitivity, and integrity of the researcher (Patton, 1990, p. 11). Because a qualitative researcher is the actual instrument of his research "as he becomes more aware, more valid, so he must of necessity become more reliable...as his validity becomes better, so his reliability, which is an extension of his validity becomes better" (Cusick, 1973, p. 232).

**Triangulation**

Triangulation is the process of increasing the validity and reliability of research data "by using a variety of sources and resources" (Patton, 1990, p. 245). In this multimethod approach to fieldwork, the observer can "build on the strength of each type of data collection, while minimizing the weakness of any single approach" (Patton, 1990, p. 245). Denzin (1970) discusses four modes of triangulation: methods, sources, investigators, and theories. The triangulation process in this study concentrated on methods. Data were obtained from interviews, observation, documents, surveys and journals. The information from these methods was cross-checked in order to support or discredit statements that emerged from the data.

**Generalization**

When qualitative researchers refer to generalizability "they are more interested in deriving universal statements of general social processes rather than statements of commonality between similar settings such as classrooms" (Bogdan and Biklen, 1982, p. 41). From another point of view, Eisner (1981) upheld that "generalization is possible because of the belief that general resides in the particular and because what one learns from a particular one
applies to other situations subsequently encountered" (p. 7).

These researchers are interested in the development of a grounded theory. A grounded theory is one where the theory is generated and supported by the data collected in a study. The interpretive thick analysis of a qualitative study should "uncover compelling organizational themes worthy of further disciplined study" (Lightfoot, 1983, p. 25). Supporting this description of generalizability, Guba (1978) proposes that "in the spirit of naturalistic inquiry he [the researcher] should regard each possible generalization only as a working hypothesis, to be tested again in the next encounter and again in the encounter after that" (p. 70).

The generalizations from the description of this study adds to the studies on teacher change and curriculum integration and raises questions for future research in the area of implementing educational innovations.

Effects of the Researcher

Patton (1990) theorizes that "the process of observing affects what is observed" (p. 269). Patton quotes Bruyn to support his theory:

The effects are reciprocal for observer and observed. The participant observer seeks, on the one hand, to take advantage of the changes due to this presence in the group by recording these changes as part of his study, and on the other hand, to reduce the changes to a minimum by the manner in which he enters into the life of the group. (p. 272)

Bogdan and Biklen (1982) further maintain that "one can never eliminate all of one's own effects on subjects or obtain an perfect correspondence between what one wishes to study--the "natural setting"--and what one actually studies--"a setting with a researcher present" (p. 43). Taken together, these
theories recognize the interdependence of the observer and the observed.

In this study I had to be continually aware of this "observer effect" (Bogdan and Biklen, 1982, p. 43) when interacting with participants directly in interview and observation. My role as the researcher in this study expanded at times to one of learner, evaluator and motivator. In interviews, like co-inquirers, or the researcher as learner and the interviewee as teacher from a third person point of view, both the interviewee and I share concerns, experiences and beliefs and probe some educational issues together. But, I also consciously intended to motivate and encourage the interviewees or facilitate them to see things in different perspectives when appropriate chances had come. That is, I summatively and formatively evaluated teachers' experiencing and reflecting on curriculum integration as an approach to facilitating their change. In observation, I took the role of ethnographer consciously trying not to interrupt or intervene the interaction process in the classroom and the classroom culture. My evaluation and some feelings or comments about the evaluation were expressed only in my fieldnotes at the end of a day of observing and interviewing. The issue, according to Patton (1990) "is not whether or not such effects occur; rather, the issue is how to monitor those effects and take them into consideration when interpreting data" (p. 270).

**Research Timeline**

The timeline presented as follows is an abstract of the whole research process. While preparing the self to be open and flexible for any emergent research design, a researcher needs to have a general schedule in mind so research can be pursued in a timely manner. Notice that the listed
"procedures" were not necessarily sequential; most of them occurred simultaneously throughout the research process. Minor adjustments, accented by some flexibility, will allow this timeline to adequately serve others interested in further development of this topic.

**Phase One: From January to March, 1994**

1. Introduced myself and my research interest to all participants in the graduate level course conducted at Season High School; started observation.

2. Collected official school documents like policy releases, mission statements, class schedules and the graduate course syllabus and handouts.

3. The graduate course instructor asked all participants to keep a journal at least one entry per week and respond to one or two questions given in each class session.

4. Took fieldnotes about the interaction between the instructor, teams, and individual teachers; took fieldnotes whenever I had opportunities conversing with others.

5. Read the fieldnote and wrote down comments or reflections after each observation.

6. Sent the research proposal to the Division of Student Services, Montevallo Public Schools, and later received the division's approval and letter of recommendation for the research (see Appendix G).

7. Gave surveys to all participants (they were free to choose not to respond to the survey or give it back); assured them my confidentiality of their identities and verbal information.

8. Read and reflected on collected teachers' journals and written responses to the questions given by the instructor and surveys that I
Potential teacher participants were examined according to my own observation, their survey responses and the suggestion from an informant. The team chosen consisted of three teachers from Season High School.

10. Built rapport with potential teacher participants (joined in their team as a learner but provided ideas when they asked for or when it seemed appropriate to me; shared with them about my teaching experiences; and developed a caring relationship with them as teachers and individuals).

11. The three teacher participants, willing to participate in my research, as a team, signed the research consent form.

12. Collected the design of the integrated curriculum developed by each team.

13. Started processing or coding available data.

14. Asked the three teacher participants to keep a journal on a weekly basis for the next three months after the course was over.

15. Scheduled the date and time for classroom observation in the next trimester.

Phase Two: From April to June, 1994

1. The school principal and the teacher coordinator, invited to participate in my research, signed the research consent form.

2. Observed the three teachers' classroom instruction, lesson planning process and their interaction with students and colleagues in and outside of the classroom.

3. Observed the unofficial meetings where (one, two or all of) the three
teachers were invited to talk with visiting teachers or administrators coming from other schools; observed and joined in the lunch conversations of the three teachers with their colleagues.

4. Shared my cultural experiences and personal stories with students and helped them do history, geography and science assignments whenever the teacher asked me to give a hand.

5. Established rapport with the three teachers' students and some of their colleagues.

6. Interviewed the principal, the teacher coordinator and the three teacher participants, where I played a role of learner, listening to their perspectives very carefully, and posing questions for more responses and for them to reflect upon. With their permission, each interview was recorded.

7. Took fieldnotes during and after an observation, interview or emergent conversation with the research participants.

8. Collected teachers' teaching handouts and students' work.

9. Repeatedly listened to taped interviews and wrote down comments or reflections; read over my fieldnotes and teachers' survey responses. All data were processed from an analytical or evaluative perspective to answer the research questions about teacher change and curriculum integration.

10. Finished collecting observation, interview and official document data at Season High School; the three teachers gave me their own journal at the end of the trimester.

Phase Three: From July to September, 1994

1. As a friend, kept in touch with research participants by calling or mailing cards to them.
2. Mailed them surveys with open-ended questions and the return postage for their responses.

3. Transcribed recorded interviews and classroom instruction; typed the transcriptions, fieldnotes, survey responses and journal entries into the research database established in the computer; continued processing data that were available.

4. Finished data collection.

5. Wrote up Chapter I and II to establish the scaffold and conceptual framework of the dissertation research.

Phase Four: From October to December, 1994

1. Finished the establishment of the research database.

2. Finished analyzing the data that had been processed or coded; interpreted the constructed causal networks.

3. Presented findings that could answer the specific research questions and also those emerging from the research process that were beyond the research questions.

4. Wrote Chapters III, IV and V to present the methodology, findings and conclusions of the dissertation.

5. Mailed the presentation of analyzed data (Chapter IV) to each research participant for their checking to see if correction was necessary and to increase the trustworthiness of this research; revised the draft partially according to their responses.

6. Kept dialoging with my dissertation committee about the progress of my research; met with two other Ph.D. candidates from the same department once a week to share with each other reflections on and strategies applied in
our own dissertation research.

7. Clarified and justified my own research through dialoging and writing. While establishing trustworthiness and integrity is regarded as essential to all research, it is also important for a researcher to know how to clarify and justify each statement and decision that he/she has made.
Summary

Chapter III describes the methodological design used to collect and analyze data and establish trustworthiness; it also presents the timeline of the whole research process.

This research aimed to examine the potential and effectiveness of teachers' experiencing and reflecting on curriculum integration as an approach to facilitating their change summatively and formatively. A qualitative evaluation methodology was selected for this study to enable the researcher to explore the potential and effectiveness of such an intervention in depth and detail; it provided opportunities for the researcher to listen to the inner voices of the three high school teachers as they shared their concerns, attitudes, beliefs. Interviewing, observing, fieldnote-taking, documenting, coding and causal networking were chosen as the four primary methodological strategies employed for this study. Additionally, in order to gain background knowledge of the school organizational structure, culture and leadership, and to substantiate the data collected in the field, interviews with the school principal and teacher coordinator and public documents were studied. Other methodological concerns for this study included examining my own roles and the conceptual frameworks, and continually checking data for validity and reliability through triangulation.

The following chapter presents the evaluative stories based on the result of my data analysis through coding and causal-networking. Research participants' voices are heard through direct quotes.
To conclude, Carini (1975) suggests, "The function of observing in phenomenological inquiry is to constitute the multiple meanings of the phenomenon, while the function of recording the phenomenon is to reflect those meanings for the contemplation of the observer" (pp. 11-12).
CHAPTER IV

FINDINGS

The purpose of this study was to investigate the possibility and effectiveness of experiencing and reflecting on curriculum integration as an approach to facilitating teacher change. To present the findings, this chapter is divided into five parts: (1) the settings of teacher change; (2) expectations and perceptions towards SHS teachers; (3) Rachel's story; (4) Gina's story; and (5) Anita's story. Except the school mission statement, the first part contains the quotations excerpted from the interview and fieldnote transcripts. The first part gives a conceptual context about how three students, Mindy, Michael and Tony, look at their own teacher, and how the official document (the mission statement), principal Fred and teacher coordinator Nancy perceive their teachers, public education and educational change. Those quotations are selected and/or reconstructed and yet are believed to best represent each "speaker's" characteristic and perspective towards teachers.

The third, fourth and fifth parts are the stories about the three teacher participants--Rachel, Gina and Anita (all names appearing in this chapter are pseudonyms). The outline of each story is constructed as follows: (1) The characteristic of the teacher; (2) teachers' experiencing and reflecting on
curriculum integration; (3) their interpretation of curriculum integration; (4) their making connections; (5) their changes in beliefs; and (6) their changes in classroom practices. Although the outline of each story is similar, the writing style is different. The first story is written from the third person point of view, where Rachel is the main role in the tale and I am the storyteller. The second story is presented as a recent letter that I write to Gina, where I recall my observation and all the conversations, experiences and learning we have been sharing together. The third story is mini-autobiography-like, where I position myself as Anita speaking of her language in terms of educational beliefs, reflections and experiences. The three teachers' teaming experiences and interpersonal relationships with each other were reflected in all the three stories.

The idea of using three different voices to present what I found in the research came from my intuition. Originally, I wanted to write the three stories by using the same writing style--telling stories from a third person point of view. I, however, somewhat resisted regarding it as a final decision for my writing research findings. It was my hope to make qualitative stories interesting to the reader that kept me searching for ways to vividly tell the research findings. It was my intuition that gave me the idea of speaking of a different voice in each story. When such an idea came to me I had written up Rachel's story. Since Rachel had be written from the third person point of view, the next decision became a decision about whose story is going to be written from the second person point of view and the other story the first person point of view. The "I" voice, to me, has a more straightforward, present, and subjective sense and thus was most appropriate for writing the
story of Anita, an assertive, outspoken person. Both Rachel and Gina became my closed friends in the research process. Such relationship made it most appropriate for me to write Gina's story from a second person point of view in the form of a letter.

Notice that the term "kids" was used in the stories; it was what the principal and the three teachers called their students in the school. "LD" means learning disability. The symbol of ":-)" represents a smiling face and ":-(" a regretful face, which I used in Gina's story to express my sympathy about certain issues. In the classroom instruction transcripts including in all the three teacher's stories, "(inaudible)" indicates the response of the teacher or student which I could not figure out after repeatedly listening to the tape.

Now, it is hoped that through the stories presented in the following, the hearts of all the players, including the researcher, in this research can be understood and resonate with the heart of the reader.
The Settings of Teacher Change

Season High School

Season High School (SHS), one of the seventeen high schools in the Montevallo Public School System, is an urban high school in "transformation," as one of five designated site-based, shared decision-making high schools. SHS is located in a residential area of Southeast Montevallo, and presently delivers the varied programs and services of a traditional comprehensive high school. The most current information about SHS student population, state proficiency test results and staff as follows.

Table 4.1: Season High School Student Population

<table>
<thead>
<tr>
<th>1991-92</th>
<th>Student enrollment</th>
<th>950+/-</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minority enrollment</td>
<td>58%</td>
</tr>
<tr>
<td></td>
<td>Students bussed for racial balance</td>
<td>54%</td>
</tr>
<tr>
<td></td>
<td>Daily attendance</td>
<td>87%</td>
</tr>
<tr>
<td></td>
<td>Post secondary education</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td>Honor roll (1990-91)</td>
<td>17%</td>
</tr>
</tbody>
</table>
Table 4.2: Season High School State Proficiency Test Results

<table>
<thead>
<tr>
<th>9th graders passing all four parts:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>November 1990</td>
<td>17%</td>
</tr>
<tr>
<td>March 1991</td>
<td>35%</td>
</tr>
<tr>
<td>November 1991</td>
<td>25%</td>
</tr>
</tbody>
</table>
Table 4.3: Season High School Staff

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional staff</td>
<td>69%</td>
</tr>
<tr>
<td>Twenty/+ years of experience</td>
<td>45%</td>
</tr>
<tr>
<td>Master's degree or above</td>
<td>45%</td>
</tr>
<tr>
<td>Age 40 or above</td>
<td>68%</td>
</tr>
<tr>
<td>Male</td>
<td>43%</td>
</tr>
<tr>
<td>Female</td>
<td>57%</td>
</tr>
<tr>
<td>Minority</td>
<td>25%</td>
</tr>
<tr>
<td>Support staff</td>
<td>26%</td>
</tr>
</tbody>
</table>
Project TRI

Long before Season High School became involved with the concept of site-based, shared-decision making, the staff was coming to grips with the fact that student achievement was below average, student drop out and failure rates were rising, student discipline referrals, absenteeism, and truancy were increasingly a daily problem. They came to realize that these circumstances existed throughout their school system as well as across the nation. They applied to become a Scout School with extremely high expectations. Upon receiving Scout School designation, they proceeded with great enthusiasm to propose, develop, and implement programs that addressed several areas that were determined to be critical to the success of their students. However, it soon became apparent that these were add-on programs, and though somewhat successful, did not address the fact that school as they "know it" and "do it," is not meeting the needs of their students. They also came to realize that in the present structure and under the existing circumstances of up to six classes/180 students per day, staff could do little in the way of developing creative solutions to the myriad of problems faced on a daily basis. For most of the staff, daily survival in the face of student apathy, absenteeism and truancy left little or no energy for becoming involved in creative solutions.

Later, the staff and school's Shared Decision-Making Cabinet were engaged in long range planning that would address the aforementioned concerns. They believed that as a first step, it was necessary to redesign the school day to provide a structure that would "enable" learners and educators to focus on achieving a successful educational experience for all students.
Season High School, with the approval of the Superintendent, the Reform Panel and the support of the Montevallo Board of Education, developed "Project TRI," a plan which involved restructuring the school day and dividing the school year into three trimesters. Implementation began on September 1, 1990. The research on teacher change and curriculum integration was conducted at SHS during its fourth year with Project TRI.

The Project TRI (Trimester Restructuring Innovation) restructured the school year into three 60-day trimesters and organized the school day into three 2-hour instructional blocks.
<table>
<thead>
<tr>
<th></th>
<th>TRI I/60 days</th>
<th>TRI II/60 days</th>
<th>TRI III/60 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start at 7:25 a.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block A/2 hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block B/2 hours</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 hour</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch</td>
</tr>
<tr>
<td>End at 2:30 p.m.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block C/2 hours</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Currently employed at SHS, the Project TRI involves the scheduling of academic classes to meet two hours/day for 12 weeks for a total of 120 hours or 1.0 credit which meets the Ohio Department of Education Minimum Standards. Under this plan, an academic teacher usually teaches two blocks per day. This reduces a typical academic teacher's class load from six classes per day to two classes per day and from 180 students per day to 60 students per day. The teacher still conduct six classes per year for up to 180 students per year.

A typical student's schedule includes two major subjects and one elective each trimester. The scheduling of classes such as unified arts, vocational and career programs, music, newspaper, yearbook, physical education and health, are scheduled one hour/day for 12 weeks.

The Three Classrooms

In Anita's classroom, the seats are arranged in rows. Anita's own desk is in front of those seats, which allows Anita to know what students are doing and whether they pay attention to her lecture. She has twenty-five freshmen who enroll this world geography course; there usually are one, two or three students absent per schoolday. The student population is constituted by fourteen boys and eleven girls. Among them, five are Hispanic, ten Black, nine White and one Asia. Anita teaches a lesson through reading and meanwhile explaining the text. She is used to asking students questions about the text in the review session, and only when asked to answer questions will students be allowed to speak. Other than answering questions, Anita regards students' talking to each other in class as interruption of her instruction. In her classroom, students seldom ask questions; they are
reminded of following the text Anita keeps reading and explaining page by page. To Anita, it is very important to keep good classroom discipline.

Rachel has eight special education (learning disability) students in her U.S. history class—two girls and six boys (four of them are White, the others Black). She usually has five to seven students attending this class. The seats are also arranged in rows; but, Rachel leaves enough space between two rows, which allows her to walk to the student who needs help sooner and work with them more comfortably. Rachel is not used to sitting behind her own desk as Anita is. She stands closely to her students when teaching and she gives compliments whenever students respond to her questions. In class, there are usually conversations between Rachel and her students where they share their own personal stories.

Like Rachel, Gina has eight special education (learning disability) students in her classroom, two girls and six boys (four of them are White, the others Black). Out of the eight students, Gina and Rachel share the same seven students. Four of the seven students (one White girl, two White boys and one Black boy) are chosen to go to the Inclusion program in Anita's classroom. Again, like Rachel, Gina usually has five to seven students attending her English class. The seats in Gina's classroom are arranged as a circle, where Gina sits in one of the seats, which allows her to have the eye contact with her students when teaching. Gina has a student who does not respect (or like) Gina as teacher at all (he is the only one out of Gina's eight students who is not in Rachel's class). This student's rebellious behavior and verbal expression influence other classmates and then the classroom discipline. Students do not ask Gina questions autonomously; sometimes,
they stay quiet even though they are asked for responses.

The Integrated Curriculum Unit on Vietnam

Five weeks before the graduate course on curriculum integration was over, Rachel, Gina and Anita as a team decided to develop an integrated curriculum unit on Vietnam as their final project. They developed this unit by taking advantage of the once-a-week, two-hour class time given by the course instructor and their daily one-hour preparation time. Anita acted like team leader naturally since in their conversations she was more straightforward and had more ideas about what and how to teach. Rachel and Gina played more the roles of supporter and evaluator of Anita's proposed ideas. They discussed with Anita her certain idea's or activity's feasibility and appropriateness, and whether their special education students are capable to learn or do it. They developed the Vietnam unit through various formal (planned) and informal (unplanned) conversations. They wrote down what they decided to teach in this unit, teaching techniques and what they considered the alternatives.

The Vietnam unit was originally developed as a seven-day plan. But, later, when implementing it in their classrooms, they changed the length of the seven-day unit to a five-day unit (From Monday to Friday). In their one-hour preparation time, they discussed the changes that might need to be made in the original unit. But, this time they did not formally write down what they discussed as they did for the original unit in the graduate course on curriculum integration. In those discussions about revision, Anita still played the role of team leader and Rachel and Gina, both supporter and evaluator.
They implemented the integrated curriculum unit on Vietnam in their classrooms during the seventh week of Trimester III (twelve weeks per trimester).

The goals of the seven-day Vietnam unit are quoted from Rachel, Gina and Anita's final project handout as follows.

1. Where is Southeast Asia. Be able to identify Southeast Asia and the individual countries involved in the conflict.
2. Identify major physical geographical features of Southeast Asia and their relationships.
3. Explain the economic base of agriculture in this area as it related to physical geography.
4. Give the historical background of Vietnam. Explain the events that had led to the Vietnam War. Issues of government after release of French control.
5. Understand cultural differences and relationships between U.S. and Asian countries through guest speakers, movies and food experiences in class.
6. Strengthen students' abilities of reading, writing and computing through the activities and authentic assessments.

**The Pilot Program: Inclusion**

This research, focusing on the relationship between curriculum integration and teacher change, happened to be conducted when Rachel, Gina and Anita tried the Inclusion program the first time in their own classroom during the third trimester. Inclusion is an approach expected to help special education students be mainstreamed--be able to learn, react and do the
assignment as other students in the regular classroom. The special education teacher needs to select his/her students who they feel can function okay in a mainstream classroom with the regular teacher there and a special education teacher--for learning disability, developmentally handicapped or orthopedically handicapped students.

Those students then will go to one or two regular classes. For example, in this research Rachel and Gina are learning disability special education teachers. Rachel teaches mathematics and U.S. history; Gina teaches English and science. In the third trimester, they shared five students, and out of the five students, four went to Anita's geography class. Rachel was the special education teacher who co-taught geography with Anita for one block (two hours) in Anita's classroom. Gina did not teach with Anita although the four Inclusion students were also Gina's students. The students who go to regular classes did not be revealed as special education students to their classmates, which was expected to help establish self-esteem. Rachel and Gina stated that the students who were in the Inclusion program behaved better in the regular than special education classroom.
Expectations and Perceptions Toward SHS Teachers

Mission

"We, the Season High School Community, believe all students can learn and schools do make a difference. We shall strive to create and maintain an atmosphere of high expectation and a nurturing and caring environment. All students will have an equal opportunity to develop socially and academically. We will work to instill a strong sense of citizenship and an awareness as well as an appreciation of cultural diversity. The success of our students is dependent on the ability of the school's community to give direction, provide leadership, and address the needs of individual students. We accept the challenge to achieve the highest possible level of academic and social excellence."

———Mission Statement of Season High School

(Approved December 12, 1990)
Principal

"I believe that you've more risks if you don't change or do anything. I might have the vision that we would do something different to be better but I didn't have the detail on how.... I think principal should be the catalyst, throwing out the vision, pushing the vision, then empowering people in the school and the community to carry out, you know, to find a way to get the vision done and mission be accomplished.... I was attracted by the idea of curriculum integration because I wanna be able to integrate the curriculum. I don't think it makes any sense for kids to go to a social studies class, then to go to a math class, then go to a foreign language class. I think all classes are interrelated somehow to one another and the real life situations.... I don't have a clear understanding what integrated curriculum is. I've got a notion of it but I don't have a clear understanding. So, I want teachers to get a clear understanding and help me learn more about it.... Teachers are those who should have an idea about how the school operates and organizes; teachers should know they have the power to make the decisions, have the power to design the kind of school they want to have. Now, they have to be politically smart; they have to use good timing;
they have to know where to get the available resources;

and they have to go out and get those resources....

my whole goal is to get people to not only do what they are doing

but to think about what they're doing:

Can we do it differently to be better or

are we satisfied with the status quo?"

———Fred DeSoto, Principal of Season High School
Teacher Coordinator

"I don't know that there's many other people around here that share the vision because almost everybody else is too into what they're doing, they're teaching or whatever. They don't have a chance to look up and see all the good things that are happening in the whole school. They see good things happening in their own classes or within their department because those are the people they talk with.... They don't really need to look at the past. What they need to look at is Where are the students right now? How many students are passing? How many students are absent? How many students are on the honor roll? How many students are going on to college?... Teachers have got to question themselves. I can't be there to put words and thoughts in their heads.... It's got to happen spontaneously. It can't be 'Nancy's ideas' any more. That's the way I operate. That's my personal style.... I have to provide the climate and the conditions for that to all happen. Whether it's organizing the meetings; whether it's planting a couple of seeds
in some of the key people who are on these committees. They have to think of it themselves for them to really take ownership in it.

But, the whole idea of this process is that you look at where you are.

Now we know where we were.

That's why we got started on project Tri because things were so bad.

Now where are we after two years? Looking at where we are and where we want to be....

You don't have many teachers that want to sit around here and philosophize about the urban mission of Season High school....

Yi-Ying, you got to understand that's you and I on the level of our education, where we are.

These teachers are still down in the trenches.

They don't want to philosophize.

They want help in what they're doing every single day.

They don't have time to sit around and think and theorize.

That's why they're where they are and we are where we are and I've only begun to realize that."

———Nancy Porter, Teacher Coordinator of Season High School
Students

"Ms. Goodman is kind.... She's kind."

——Mindy Finn, Rachel's Special Education Student

"Tell her [Gina], Yi-Ying, teachers in your country are smarter than she is!"

——Michael Hampel, Gina's Special Education Student

"I just do whatever Ms. Williams wants us to do, you know, assignments; she's tough."

——Tony Curtis, Anita's Freshman
Rachel's Story

Teacher as Learner and Caring Person

Here is a special education teacher, Rachel Goodman, teaching history, mathematics and health to the kids with learning disabilities. She is fifty-seven, a mother of two daughters and one son and becoming a grandmother this year. Rachel arrived at Season High School four years ago. Soon after moving here, she grew to love this school for she made a lot of good friends from colleagues and this school is supportive of almost anything innovative teachers want to practice in their own classroom. She, in turn, supports the school’s innovative scheduling—the trimester system. Before coming to Season High, she had taught in public schools’ resource rooms and special education classrooms in Wisconsin for twenty years. "I must help them feel good about themselves," Rachel says to herself. This is her goal of being a special education teacher and has never changed since the first day she entered the moral enterprise. To Rachel, academic achievement is not her first priority for the students; she believes a teacher should care first about students as individuals and then all else will follow naturally. Her students are not just a part of her classroom life but, indeed, an important part of her personal and professional life. Therefore, she tries to have her kids feel that her classroom is a safe, joyful and caring place, especially at an urban public school like Season High.

"Urban public school kids have so many problems out of the classroom that influence their learning in the classroom," says Rachel, regretfully, when
having lunch with Gina, another special education teacher and one of her very good friends. "Yesterday, Joey came to my classroom; he couldn't concentrate--all he did was to tap his knee. I said, what's the matter? why can't you get started? Well, he said his girlfriend who is pregnant didn't answer the phone and she's there all alone, so he was worried. Here is a 16-year-old kid and it's a whole different world. I had to say to him, it's a beautiful day. I'm sure she went out for a walk and no news is good news. Then, Joey kind of smiled and he was able to get to his work. If I wasn't able to work him through that situation then I would have lost him and probably he would have been disruptive and so the whole lesson could have been lost.... What a day! I am glad it worked this time, especially since it's getting hotter and they're anxious to get out and they are uncomfortable. I understand that; I'm uncomfortable too." With sympathy, Gina looks at her friend, Rachel; comprehensively, Rachel laughs saying, "Again, you want to say I'm a mother-teacher right?" Although living far away from each other, Rachel and Gina know each other very well. This is not only because they both came to Season High in the same year but also because they both are special education teachers, sharing personal feelings or emotions about their own students whenever they have chances to talk to each other at school.

Not every teacher understands Rachel's love of students as Gina does. Rachel was told once by Anita, the teacher whom she cooperated with in the school pilot project, Inclusion, that she took students' feelings too seriously--students' joy is Rachel's joy; students' sorrow is Rachel's sorrow. Anita even complains that Rachel treats the high school freshmen like little kids--gives a lot of compliments and provides help almost whenever they ask for. When co-
teaching for Inclusion in Anita's classroom, Rachel feels that Anita's criticism of her ways of teaching is in fact asking her to teach in the same way Anita does. She tries very hard to keep a peaceful relationship with Anita but she is not really sure where she stands with Inclusion. Rachel does not share with Gina her hard time in Anita's classroom too much for she regards it as too personal and indeed a lesson that she should take time thinking through and working on her own.

She recalls recent interactions with Anita: "I try to do things the way Anita would like. After all, it's her classroom and I need to do things the way she wants. But I can't ever seem to get it right. For a long time, Anita didn't think I was assertive enough. It's hard to do things the way other people want you to.... Hey, now after comments were made on Friday, I think Anita thinks I'm too assertive. It's so hard never being able to get it right. I was really hurt on Friday. But, thank God, I feel now I'm just kind of depressed. After all, I should also practice learning from and figuring out conflicts, like I ask my kids to do. It is a dilemma between keeping my own teaching style and keeping a good relationship with Anita. I think I would rather choose to have a good relationship with my partner and pay attention to what and how Anita teaches her students. Even though my love of and care upon students is not understood or appreciated in her classroom, that doesn't mean she's right and I am wrong. At least I learn patience--I am more patient than I was."

**Experience and Reflect on Curriculum Integration**

"Indeed I did learn something from Anita during the last few months in the course on integrated curriculum," Rachel reflects. It was in the team
for developing an integrated curriculum that Rachel had the opportunity to
know more about Anita, a colleague teaching regular classes whose name
Rachel had known for four years. It was amazing for Rachel to listen to
Anita's various ideas about teaching, such as giving students questions to
answer before presenting the video, and authentic assessment, having
students to demonstrate or show what they have learned specifically instead
of paper-and-pencil tests.

Rachel was glad to learn more teaching techniques from other teachers
for she would have a rich repertoire of teaching techniques for her to present
the content. In retrospection, her reflection on the unit of curriculum
integration in the developing and implementing process was more evaluation-
oriented--she evaluated each teaching technique in terms of its effectiveness
to attract students' attention and to have students enjoy working on their
projects. If she failed, then she would try to look at it and say why this did
not work; why this lesson failed today; or why this one worked. Rachel
understood that she just had to analyze it. It's interesting for her to ponder
what works for one group won't work for another. Rachel has tried things
that she thought were so fantastic and later flopped. But, this does not mean
that she will not try it again.

Rachel believes her students learned a great deal from the unit on the
Vietnam War (she can tell by looking at their faces and listening to their
responses), especially from the presentation of a Vietnam veteran. "Bill's
father gave an excellent presentation--informative and emotional," thinks
Rachel. "What if all my students could have listened to this presentation?"
Rachel feels regretful and unsatisfied because the attendance of her U.S.
history class was so sporadic. Sometimes, there were only three or four (out of the eleven students in total) attending the class.

"Yes, the team experience with Gina and Anita for developing an integrated curriculum together was wonderful--they are willing to share ideas and offer suggestions and they have never made me feel inadequate if I questioned something. However, the team experience with Anita for implementing the integrated curriculum in her Inclusion classroom was not really a good one," thinks Rachel. Originally, Rachel, Gina and Anita, thought the relationship between the mainstream and special education classes would not be of concern in teaching the unit of integrated curriculum on the Vietnam War. Rachel recalls that Anita was able to teach and accomplish each day what she planned to do and what was in her lesson plan was completed each day. But, Rachel's students were not able to make up work on their own if they were absent on a particular day, different from Anita's students, who were much more responsible for and capable of accomplishing any make up work while they were absent. "Special education teachers just need to be much more flexible and patient," Rachel reminds herself. She feels it is discouraging at times for the lesson plans have to be changed or postponed daily in her U.S. history class, which makes the cooperation with a regular classroom, that is, the idea of curriculum integration in the pilot program Inclusion, much more difficult. The curriculum progressed, yet teacher expectations and student capabilities and self-expectations in Anita, Gina and Rachel's own classroom were obviously different. "Next time," Rachel says to herself, "I will do integrated curriculum with another special education class!"
Interpretation of Curriculum Integration

Rachel looks at disciplines as really not being separated but rather all have some knowledge and skills which "spill over" to one another. As to curriculum integration, Rachel means teaching the same idea, subject, skill, content, but each classroom chooses a different mode to broaden the students' knowledge and experiences. That is, curriculum integration is in fact the integration of an individual teacher's (or a team of teachers') life experiences, content knowledge, teaching techniques and ideas, which will enrich the lesson plans designed for a theme or problem solving situation. Those teachers may teach different disciplines.

As a mathematics and U.S. history teacher, Rachel wanted to help students obtain a meaningful understanding about the history of the war in her mathematics and history classes. In addition to giving a lecture on the Vietnam War, inviting Bill's father to give a vivid presentation, Rachel showed students the movie, Born on the Fourth of July, and asked them to go to the school library or public library to collect news or articles about the Vietnam War. In the mathematics class of the integrated curriculum, Rachel and students worked on the collected papers by doing graphing, proportions and comparisons, for an oral presentation, which would be evaluated and count towards their final grades.

Rachel knows students like the way she teaches the unit on the Vietnam War, and she likes it too. She appreciates the opportunity to experience and reflect on curriculum integration and develop her own meaning of curriculum integration. In such a process, Rachel finds herself tending to make connections with her Inclusion partner, Anita, and with and
between her life experiences and her students.

Make Connections With Anita

Rachel recalls the interaction and cooperation experience with Anita and tries to give a different interpretation about (or, reconstruct or make more connections with) her struggle and feelings that have been hurt by Anita's comments:

"I want to establish a good relationship with my partners. The chemistry has to be just right between us. That is, we have to get along well together. In addition, we have to be willing to accept where we are coming from and the kinds of person we are. I am more successful with somebody with whom I have good chemistry--it is much easier for me to accept such a person's constructive suggestions. In contrast, it is harder to be criticized by somebody that I do not get along with.

I heard a real story from Gina; it happened right in our district: Two teachers at Westbrook High School did Inclusion at the beginning of the year and were best friends. However, they have not spoken to each other since they did Inclusion. Even though they're best friends, they cannot work well in the same classroom together. Not to mention Anita and me--we never talked together like good friends or share anything personal. When we planned lessons together, I was more like a listener taking notes about how she wanted lessons to be done. However, if I were Anita, I guess I probably would not like another teacher, even though my good friend, to do things differently in my classroom. In addition, if we have had an argument, we would have affected the classroom climate and the kids. I think I will make a point with Anita--it's her classroom and she makes the decisions at least
Rachel's connection or relationship with Anita was supported by her love of students and her understanding of and sympathy with Anita's reaction—possessing, protecting and controlling her own territory—the classroom.

**Make Connections With and Between Life Experiences and Students**

Students are an important part of Rachel's life, professional or personal. Rachel is always concerned about her students' needs, feelings and self-esteem. She was excited (as if she were also one of the students) that her class would have a veteran speaker talking to her kids about the Vietnam War. One night she went out for dinner and she noticed a Vietnamese restaurant in the shopping mall. She was really anxious to go back to that restaurant. Later, she spoke with them about her unit on the Vietnam War and borrowed a menu. I will order a few take-out food when teaching the unit so my kids can sample some Vietnamese food, thought Rachel. There was a time when Robert gave an answer and Anita's students (so called, regular students) misunderstood him. She found herself defending him while the rest of the class laughed at him. Rachel told Gina, "I thought it hurt me more than it did him." One day in the history class, Rachel mentioned that she was from Chicago. A girl sat up when Rachel mentioned the city. Rachel talked privately with the girl later; it turned out that they lived quite close to each other. Rachel felt as if they had bonded—they have something in common that connected them together. "Such a feeling made a difference with my teaching," said Rachel.
In the Spring Break, Rachel spent her vacation in South Carolina. Even though she could not wait to get away from the school life, students were never far away from her mind. She saw some old Southern plantations. They were restored after they were burned during the Civil War. She thought of her kids again and the things she had learned on the trip. She wanted to share with them when she was back to school. Rachel also sent each of her students a postcard about the Civil War when she passed by Virginia.

In addition to her understanding students' feelings and letting them feel that someone cared about them, Rachel was also appropriately open herself to her students. In the process where she experienced and reflected on curriculum integration, Rachel once shared her discovery with Gina:

"When I relate my real life experiences to my students I feel that I am integrating the curriculum in a very special way. I think the kids need to hear about your background, where you are from and how you feel about things. When I bring in myself and real life experiences I am also making myself more vulnerable to my students. I feel sometimes talking to them about my feelings and personal life is taking a chance--a risk. But, I think it's worth this risk. I need to be very careful when walking on the fine line between telling too much about myself and saying nothing about my personal life at all. I believe that there must be a level of trust and respect between the teacher and the student. It then becomes less difficult to take those risks."

In many ways, consciously or unconsciously, Rachel has shortened the distance or tightened the relationship between herself, her students and the
curriculum. Such a relationship is in fact a kind of implicit curriculum in Rachel's classroom, and often a null curriculum in many other classrooms with teachers who are not willing to share with students their own life experiences or personal beliefs.

Changes in Beliefs

Rachel is a teacher, who cares about her students very much—their self-esteem, problems outside the school, learning progress and the maturity of their personalities—and she is humble, willing to learn, to reflect. Through the process where she developed and implemented a unit of integrated curriculum, Rachel's perceptions about teaming, curriculum, the importance of the learner's sense of ownership and the perception about Anita as a teacher have changed.

Teamwork Facilitates Learning

Rachel found working in a team was much more informative than she had thought and the experience of team learning was as precious as the product they were developing, the unit of integrated curriculum on the Vietnam War. She also found herself working automatically and harder when in a team working on the same project, that is, when her lesson planning was no longer alone. It became much easier for her to go to the public library to search for more information about the Vietnam War. Rachel told Gina after her trip to the library, "I really enjoyed discovering new technology and exploring new knowledge."

Curriculum Comes Alive: It's a Network of Good Ideas

Before experiencing and reflecting on curriculum integration, Rachel regarded curriculum as the course of study developed and implemented by
the state board of education or district education system. Later, when she started developing the unit of integrated curriculum with her Gina and Anita, Rachel kept the big idea of the Vietnam War in mind and then connected other resources to it from time to time in her daily life. The discovery of a Vietnamese restaurant was an example of change. She reflected on this experience: "It's amazing how this unit is grown! Wouldn't it be great if all teaching could be like this?" In the third trimester when she would teach the Civil War after the Spring Break (notice that this unit was not developed with teammembers or through a graduate level course on integrated curriculum), Rachel realized something during the trip: "It's really fun to teach about something I know so much about from firsthand experiences. Now, isn't that integrated curriculum--bringing firsthand experiences into the classroom?"

And, in the process where she learned a lot of teaching techniques from Gina and Anita, and where her creativity, stimulated by her teammembers, on the content and method of teaching was discovered, Rachel generated an idea: "Wouldn't it be great if teachers could prepare individual units complete with lesson plans to show with other teachers? There could be some type of central filing system on a computer."

Now, to Rachel, curriculum comes alive; it is a network of good ideas about teaching and learning. Curriculum is not just the course of study or a fixed agenda. Rather, curriculum is also constructable.

**Choices Provide Ownership**

With many ideas about authentic assessment, Rachel gave her students the right to choose one way by which they could demonstrate what
they had learned from a unit. She saw her kids were very pleased about the choices they had and worked harder on their own project. Rachel realized then that it was ownership that motivated them.

**Flexibility and Sympathy Are as Important as Creativity**

Rachel had Anita as her partner in two stages: The first was in Trimester II when they participated in the graduate course on curriculum integration, group as a team (including another special education teacher, Gina) and developed the unit of integrated curriculum together; the second was in Trimester III when they both agreed to do Inclusion together in Anita's classroom. During the first stage, Rachel thought Anita was a wonderful teacher with creative ideas about teaching and assessment. It was so interesting for Rachel to see how Anita varied her lesson plan in a 2-hour block. At that time, Rachel also liked the way Anita put time (approximately how much time each activity would take) into her lesson plans. "I'm learning so many new things, ideas, techniques from Anita. I feel very fortunate to be working with her. She's very specific with her students and 9th graders need lots of structures," thought Rachel.

However, during the second stage when Rachel really experienced the interaction between Anita and students (including regular students and six of Rachel's special education students) and her demanding ways of teaching and of dealing with students' feelings, Rachel was extremely disappointed. On the last day of the first grading period, four days from the Spring Break, Rachel felt she was overloaded when the schoolday was over and she could not ever remember needing a vacation more than she did at that moment. She thought: "While the rest of the class laughed at my kid because they
misunderstood his answer, I defended him—he must be hurt. But, Anita did nothing. This situation has happened a couple of times. It never seems quite so bad when it happens in my own classroom. Of course, I don't allow that to happen at all. The part of Inclusion that I have discovered that is most difficult so far—teachers not only have to get along, but their teaching styles need to be quite similar. I've considered myself to be traditional as well as structured. However, Anita is much stricter than I am! I have to overlook more than she does or all my kids would be in the principal's office. I really hope these few days go quickly."

Rachel did not think Anita was sympathetic enough to students. Rachel also considered Anita as a very traditional teacher for she was not flexible. She understood that all teachers need to have some control over their own classroom. But, when a teacher has special education kids in her classroom, she has to realize that they are coming from a different place. "One day they know 5 times 6. The next day it's like they never heard it in their whole life," reflected Rachel. Now, she realizes that creativity, flexibility and sympathy are equally important for being a good teacher, and that Anita needs flexibility and sympathy as much as her creativity.

A Change in Classroom Practices:

Help Students Search for the Meaning of Learning

Rachel's changes in classroom practices reflected her changes in beliefs. Rachel used to teach as much hands-on activities as possible for she believed students would learn something in activities. In the process where she experienced and reflected on curriculum integration, Rachel did not think activity alone would guarantee learning. Instead, she thought students will
learn when they own what she teaches or when they find the meanings for what they are learning. Rachel then tried to relate what she taught to students, for example, through asking her kids to explain what they had learned in their own words and examples. Rachel started presenting her teaching methods or curriculum planning to her students for open scrutiny—she used the vocabulary that her special education kids might understand to explain and discuss the purpose of integrated curriculum. When it was near the end of Trimester III, Rachel started asking students the question of why they did what they did to help her kids search for the meaning of learning. It is the afternoon of June 1st when Rachel is teaching mathematics in her classroom with four students, two girls and two boys (the other four students are absent).

Rita: An inch is smaller than a centimeter?
Student: No, it's bigger.
Rita: Our inch is about like that and a centimeter is the width of your finger Anthony. So really a centimeter is less than half of an inch. What is the width of your finger? So about 2 and a half centimeters equals an inch so your waist...your 34-inch waist would be what?
Student: We had to do drawings with things (inaudible).
Rita: Great. Your group did? Why do you think you did that? Why did you want to do?
Student: So we can...like...they help see what you know.
Rita: See what you know. And what about what you don't know?
Student: So what you don't know you can go back over and find out why you...do it over again and work with it.

Rita: What's the purpose of knowing in the first place? Why did you need to know in the first place?

Student: For the fun of it.

Rita: For the fun of (inaudible). Okay. And then are you done with it, Travis? Think you (inaudible)?

Student: We only (inaudible) fun of it. You are going to need (inaudible). When you get out in the world.

Rita: When you get out in the world you're going to need it? Is that what you need? Do I need to know that kind of stuff? The (inaudible) I'm teaching you. I was teaching it. Would I need to know that?

Student: Like you was going out somewhere you wouldn't know (inaudible). You'd be familiar.

Rita: So it would help me with travel? Anything else?

Student: Yeah. If you wanted to know...or if you was somewhere when something happened and you wanted to know where it was you would know.

Rita: See, I think that's excellent. To me when people are talking about things that I never heard of it then I feel really kind of dumb and out of it and then I can't get in the conversation at all, right? When they're talking about things I don't know about. And so, I kind of either have to hope I look invisible or that they don't ask me a question. But then if you're knowledgeable about
things, then you feel good about yourself don't you? What was your group doing today?

Student: We all got in our groups and we had (inaudible).

Rita: Did you all have the same things?

Student: It was (inaudible).

Rita: Was it about all of the United States or just a section of it?

Student: (inaudible)

Rita: The southern part of the United States maybe?

Student: No. It was (inaudible).

Rita: You had to know like capitals -

Students: Capitals, oceans, rivers.

Rita: And you've seen my little game for capitals haven't you? The little game I have there. And that's excellent. I wish everybody knew what we knew. That when you become an adult that you will use these things. Lots of kids think that the teacher is giving it to you just to do what? Make your life miserable? Do you think we like to make your life miserable?

Student: And then I ask anybody (inaudible) much better -

Rita: Make you feel better in here too. That was great, especially for this time of year. This is usually when the problems start with people falling down. It's wonderful way of starting out. You know we don't really get satisfaction out of making you do things just to be doing them. That's called busy work. Hopefully you're doing it for a reason. And some day when they turn to metric in the United States you guys will not be panicked because at least
you will have some knowledge of metric. Right? Everybody ready? We've got to finish up. I want to continue... What Mike?

Mike: We're all finished.

Rita: Good, let's turn to page 274.
Gina's Story

July 5, 1994
Dear Yi-Ying:

I have enjoyed knowing you. Thank you for working hard with us on the integrated curriculum project. Your presence in my life has helped me keep aware of what I am doing in my classroom with "integrated curriculum" as well as made me think more about what I am doing in my teaching and why. I think my students gain a lot more with the integrated curriculum approach. The repetition in hearing the same subject covered in different ways and by different teachers is helpful especially to LD students. I enjoyed working with Anita and Rachel on the Vietnam unit and hope to do more integrated curriculum in the near future. Thanks again, Yi-Ying. Good luck in your future!

Gina

December 17, 1994
Dear Gina:

How are you doing? It's near the end of the year. I bet you must be busy thinking about how many and what presents you need to buy and for whom, and going back and forth between shopping centers, your home and the school. (am I :-) exaggerating?) It's a happy season, isn't it,...although I'm afraid that we're going to have a not-white-enough or not-white-at-all
Christmas--since we haven't had snow so far....

Mentioning your new school, I notice that you and Rachel transferred to Ocean High School three months ago (the beginning of the 1994 school year). Reading the letter recently received from Rachel, I know that she and you are facing :-(( a lot of differences between the new school and Season High. But, I am glad :-) to know that you feel comfortable in dealing with those differences. I guess you will agree if I say your experiencing and reflecting on integrated curriculum has at least contributed somewhat to your enjoying the new school life at Ocean High.

Remember the letter you wrote me on July 5th, one month after the third trimester was over? You said my presence had helped you keep aware of what you were doing in your classroom with "integrated curriculum" as well as made you think more about what you were doing in your teaching and why. But, from my point of view, as I mentioned a while ago, it was you who were attracted by the idea of curriculum integration, decided to take that opportunity to experience it and were also willing to reflect on it that helped yourself start searching for and become aware of the meaning of your teaching. With such an awareness, I believe, you'll be able to reinterpret and deal with the difficulties in any new context. But, what you said in the letter was too nice to me, indeed--all I had "done" was nothing but asking some questions and sharing with you my experiences and learning. I would have said it's very true if you had said I had been always wanting to learn from you and understand you. To me, the research experience of working with you, Rachel and Anita was so rich and wonderful that I will never forget about it....
Teacher as Guide to the Real World

I have known you for eleven months plus fourteen days (if I count today). It's not a short period of time especially since there were six months when I could see you or talked to you almost every other day. You are going to be fifty (and sound not very excited about it); you think your husband works too hard at his company; you have only two sons--one just happily graduated from the Ohio State University in June with a bachelor's degree in business and the other studies at medical school in Mexico; you are worried about Chocolate, your beloved dog, who has been ill for several weeks.... In addition to your family, I know you, as a special education teacher, concerned very much about LD students' skills and maturity for getting and keeping a job and socialization to survive in today's world. You always want to help your kids--students who have not only learning disability but also behavioral and self-centered problems--appreciate others' strengths and perspectives. You think one's feeling good about him/herself should not become a kind of over-individualism or -freedom. You were surprised by and also worried about your kids at Season High who chose themselves as the only person they could admire when they did the writing assignment, "Someone I admire." I usually saw your kids were reluctant to cooperate with either you or their classmates even though they could not accomplish the assignments alone. "They should be able to see both themselves and others," you said several times.

While you can always tolerate students' rudeness for you know most of them have a difficult situation at home, you don't think the real world can or will. The real world expects one to be self-controlled, respectful and
responsible. You were worried about those students who hadn't learned about it not only because they would always be in trouble but also because they were going to be a problem in or bring problems into society. I think your concern about LD students and perception about your role as their guide to the real world had motivated you to try integrated curriculum approach, by which you hoped your kids would learn better so that they would be more capable to survive in society.

Experience and Reflect on Curriculum Integration

And you did feel the trial was worthy. With that opportunity to experience and reflect on curriculum integration, you enjoyed having time to talk with Rachel, who is your good friend and has been sharing with you a lot about the classroom life, and Anita, who was going to do Inclusion with Rachel in the following trimester. You found that they have distinctly different personalities and different educational beliefs, which, I believe, had helped you reflect upon yours. You also found the relation between ideas and time--you said, "The ideas flow easily and richly when I have the time! I felt we have planned adequately for our Vietnam unit."

Yes, to have time sufficient enough for or only for planning usually produces fine goods. But, I believe what did matter to your adequately developed unit on the Vietnam War was your attention to the idea of searching for ideas (resources and instructional approaches) about Vietnam and your deliberative mind--you started paying more attention to ideas that you regarded as good enough to be integrated into the Vietnam unit, such as the idea of taking good advantages of the articles you found in "Scholastic Scope" at one Sunday night about Vietnam's getting its independence from
France in the 1950's. You thought that article could provide your students more historical information about Vietnam; you could teach vocabulary and phrases in the article; you would give it to Rachel so that she could use it to compare Vietnam's with America's independence, and so on.

Sorry :-((, I can't remember all of your ideas you shared in our conversations during the two trimesters. But, have you noticed that? Your ideas flowed not only during the common planning time with Rachel and Anita in the course 727.49, but from your everyday life (personal and school life), in which you think that you don't have time or enough time for planning. Discipline problems and unexpected situations in the classroom usually have teachers' full attention. But, as you just experienced, as soon as you paid a little bit of attention to ideas...uhmm...would you agree if I claim that attention discovers ideas and ideas create (help us notice or pay attention to the flow of) time?

**Interpretation of Curriculum Integration**

Thank you for deciding to enroll in Course 727.49 and later join in the research with me. I am glad that you feel your LD students at Season High learned a lot about Vietnam in the integrated curriculum you developed and implemented with Rachel and Anita. If you three had not wanted to do or participate in anything, how could I know you and learn so many things from you? I am always interested in your description of curriculum integration: an approach of reinforcement or repetition, by which students are situated in a process where they can hear the same subject or theme covered in different ways and by different teachers. Your interpretation is similar to Rachel's; both of you mention the uniqueness of individual teachers. But, to Rachel,
her job of integrating was making connections not only within the curriculum but also between the curriculum, teacher and students -- the job of integrating she thought should be primarily done by the teacher. In the classroom, she presented to LD students or helped them see the connections she had made (connections that were planned or thought over before presentation) or was making (connections that were improvisatorily made) between her own life experiences, content knowledge, teaching techniques and ideas. It was by this way of teaching (she made the connections visible and accessible to students) that she made connections with her students. So, Rachel's students, seeing the construction she made and presented, should be able to start reconstructing it by themselves in the meantime.

In contrast, it seems to me that your job of integrating was focused on making connections within the curriculum and that the job of making connections between the curriculum, teacher and learner would be left to students themselves. That is, teachers in an integrated curriculum team are responsible for giving many pieces of information related to (and also reflecting part of the picture of) the theme and their own interpretations of it. When LD students have a lot more opportunities to hear from the different subjects the different voices or multidimensions of a theme such as the Vietnam War, they should be able to and therefore should memorize and make sense of what has been heard -- to make connections by themselves between those pieces of information and various interpretations. In such a learning context, I guess, it may be not until students first make connections between (or make sense of) what has been heard (that is, students are able to see the more thorough picture) that they are more comfortable and then able
to reconstruct (or reinterpret) it.

**Make Connections to the 3Rs**

In the integrated curriculum unit where you focused on making connections within the curriculum, all information and interpretations presented were obviously connected to the theme "the Vietnam War." But, soon we noticed that almost all the activities you planned were also connected to the 3Rs (reading, writing and arithmetic), which were practiced throughout Rachel's mathematics and U.S. history classes, Anita's geography class and your language arts class.

I understand your concern about LD students' future. You said they need to be capable of reading, writing and computing so as to better adjust themselves to the world full of symbols and numbers--interact with others by using symbols and numbers, process information constructed by symbols and numbers and get a job to earn a living. For an LD student, to be good at those skills is as important as to have a mature personality. I heard you asked Rachel and Anita to remind students of learning vocabulary and phrases in the articles about Vietnam, discussing the outline designs and writing summaries of those articles. In your English class, you asked students to compute, according to the information in the articles, and draw charts to show the loss of the Vietnam War. The ideas you proposed to Rachel and Anita for developing the Vietnam unit reflected your hope that LD students will learn how to read, write and compute in any classroom or subject. This integrated curriculum approach, like you said, had helped you created much more opportunities for your students to practice the three skills.
Changes in Beliefs

Search for the Meaning of Teaching

In the research journey we spent together, I found you started searching for the meaning of your teaching through reading your journal and survey responses, our conversations and my observation in your classroom. You started talking about the importance of one's knowing the meaning of his/her own teaching after you made clear in reflection your hopes and instructional emphases when teaching the LD students (such as the necessity of the 3Rs and creating a lot more opportunities in other subjects for LD students to practice the 3Rs), and the value of being a teacher--"I want to help others live better in society," you mentioned during our conversation in the third trimester. You reminded yourself of the original ideal of being a teacher when you decided to change your undergraduate major from library science to education.

I would like to say that your searching for the meaning of teaching is a change in beliefs--from being not aware of to believing in the importance of searching for the meaning of teaching. And as I have said in the beginning of the letter, it was you who brought yourself into the awareness of reflecting on your own teaching and its meaning, and it was you who changed your belief in searching for the meaning of teaching.

Reflect More Before Change and Leave Room for Chance

In the meantime, I think, your searching for the meaning of teaching changed or modified your belief that a teacher should try any new idea in education. Your belief in trying new ideas was developed under and has been supported by the leadership, innovative organizational structure and change
process of Season High School. You said in your journal, "With all the changes at Season High with the trimester plan, I have been introduced to many journal articles, speakers and workshops with the latest educational innovations. This has made me believe and like to try new ideas." Later when reflecting on the meaning of teaching, you indicated, "Most of the time, I worked at the new idea or change before it made a difference. But, I think too many changes were made in education, or my classroom, just for the sake of change without giving enough thought about their meaning."

In addition to regarding it as imperative to reflect more upon the meaning of change before working on the change, you said you also found the difference between what you imagined about the process of developing and implementing an integrated curriculum and the real process. You said, "I thought it would be fairly easy to have an integrated curriculum. I did not realize how much time would be involved for an effective program. It is necessary to have teachers who can work well together." In Course 727.49, you thought the seven-day lesson plan Rachel, Anita and you had developed was rich and realistic since you had spent so much time designing many ways to present various resources and also considering different factors that might influence the effectiveness of this unit. Thus, you thought it should be easy to implement this unit as developed. However, after bringing the unit into your classroom, you said, "I have found it takes much more time to implement the integrated curriculum than planned and it takes teachers who can work together and be flexible in both developing and implementing processes."

Experiencing the obstacles emerging in the developing and implementing process (such as dealing with opinion conflicts between you and other
partners and deciding to delay the unit progress because of students' absence and thus not having enough time to present all that had been planned for the unit), you think that you should allow chance—something unpredictable and uncontrollable—to play a part in your plan for change and consciously prepare yourself to deal with it.

Changes in Classroom Practices

Attract Students' Attention to Integrated Curriculum

When you started teaching the integrated curriculum, you found that students seemed not to understand the design of the Vietnam unit. In your classroom I heard Jeremy and Jennifer saying, "Why is everyone doing the same thing on Vietnam? Is this to make it easier for the teacher?" "Why are we doing this? This is English. That's for history!" To attract students' attention to integrated curriculum became your new challenge in teaching. You replied to students' questions giving your reason for the curriculum design, "That can be a part of English also because if you're reading books about it, reading articles and newspapers, and reading vocabulary and phrases, writing about it...that's still a part of English. I think you can learn a lot more appearing in different classes than just in my class." Later you reflected on your reply in your journal, "I didn't explain those things to them...I had not thought it would do any good. But today I saw students become more interested in the unit after I told them why the unit was taught this way and why I thought it's good for them. I think it's a good idea that can be used also in other classes with different curriculum designs."

In addition to giving the reason for the curriculum design, you replaced the resources which your team decided to use in the Vietnam unit but later
you found your LD students could not read or understand.

**Evaluate Students With Authentic Assessment Approach**

Bringing the Vietnam unit to your students, you felt the traditional ways to evaluate what students had learned—the paper and pencil tests—could hardly help your students make sense of or be interested in integrated curriculum. Instead of grading students through quizzes that tested only students' memory about the text, you did authentic assessments that you learned from your partners when developing the Vietnam unit. It is a way to evaluate students by asking them individually or cooperatively to do something about what they have learned and present it. With the respect to your changing the way of evaluation, you mentioned your appreciation of the supportive organizational culture that Season High School provided. Yes, it is great to have a working environment that encourages and implements innovations like Season High; I bet that probably was an important reason that you made you reluctant to transfer to another school.

**Integrate Subjects Through Imagination or Reflection**

Remember your other change in classroom practices? In the afternoon of May 26th—near the end of the third trimester, you told me after class about the idea that popped into your mind in class, that imagination can be one way to help students integrate knowledge from different subjects. I like this idea a lot. Now, would you like to see (that might help you specifically recall) the partial transcript of the language arts class where that idea emerged?

Gina: Yesterday we finished for those of you who were not here, who were still recovering from the Cedar Point trip and (inaudible). Jeremy, can you tell me what the ending of that story was?
About Geraldine?

Jeremy: Her father got killed in the Vietnam War.

Gina: What was his name?

Jeremy: Win.

Gina: Arthur Win Brandon, Jr. What area of the armed forces was he in? Jay?

Jay: In the - not the Army.

Gina: Not the Army.

Jay: But the Navy.

Gina: No, not the Navy. Jeremy, what was it called?

Jeremy: (inaudible). I can't remember.

Gina: Remember - he was in the Marines. He was in the Marines.

Jennifer, why did he enlist in the marines? He was not drafted - this was when you were here. Maybe it wasn't. You missed that day. Who remembers? KT, why did he enlist? What happened in school?

KT: I don't know. I wasn't here.

Gina: Think. Yes you were.

KT: No I wasn't.

Gina: We started on Monday on this.

Student: Got kicked off the basketball team.

Gina: He was not a very good student. He hated school.

Student: He fought a lot.

Gina: Right. He had been fighting in the parking lot. Got expelled a couple of times and then he got kicked off the basketball team
because he had failed two subjects so he knew he was not going
to be able to graduate. So then he went and enlisted in the
marines. Then the rest of the book was writing all these letters
home. What were some of the things that were happening in
this country because of the Vietnam War? Derick.

Derick: (inaudible).

Gina: Did people like being in Vietnam?

Student: Nope.

Gina: Okay. How did they react? Especially the young people how did
they act? The college people.

Student: By (inaudible).

Gina: There were a lot of demonstrations. During the war people in
this country were demonstrating that they wanted peace.

Student: Pull out.

Gina: Why?

Student: They wanted (inaudible).

Gina: Jennifer, were they resentful toward the US flag? What did they
do?

Student: They rolled themselves up in it.

Gina: Okay. One would roll up in it. Some people even burned it.
There were a lot of demonstrations. Geraldine's father didn't
like that because he had been in World War II and he didn't
know why people objected so much to going to fight in Vietnam.
He thought it was their duty. So the end of the story was that
Win was killed and the marine officers came to tell his family.
Geraldine was so upset that she started blaming everybody else and then she finally decided she would blame Sam and Sam had been Win's best friend and she had seen him at the mall demonstrating for peace and so she decided that maybe he was a traitor. So she decided it was his fault. Then she went to Washington to find Sam and he was there for a peace march and they were chanting for peace and the end of the story is that she says peace came too late. Now I want you to think for your writing now if Geraldine ten years later decides to talk to her son, she's married and has a son now, about her brother Win who would be the little boy's uncle. What would she tell her son about Win? Would she say that he was brave? He was courageous. He fought for his country.

Student: We already did that -

Gina: You started on it but some people weren't here yesterday...

That's why I'm going over it.

Student: I did it.

Gina: Or would she say that he was crazy. He was a fool. That he could have graduated from high school and instead he went and got killed for nothing. So I want you to think what Geraldine would say to her son about his uncle and write about a half page. If you're finished Jay you can read it to the others. You're saying that Geraldine called her son little Win? That would be a nice tribute then. "Little Win, since you are old enough I think I should tell you about your big uncle Win. He was in the
Vietnam War. He was killed by the enemy. So if you're thinking about going to the marines don't think about your uncle Win."

**Student:** Hey, that was good.

**Gina:** It was good. Now what would you tell her to tell little Win? Would you say -

**Student:** That (inaudible).

**Gina:** I'll be anxious to see what else you write. I like that the way you call him little Win. That's probably what Geraldine would have done as a way to remember her brother.

**Student:** I don't know what to write.

**Gina:** KT, just think about it. Now what would you think if you were Geraldine and this was your brother who had been killed.

Would you think that it was worthwhile? Would he be a hero because he fought for America? Or was he crazy. He should have stayed in school; he should have graduated. Had a job and he'd still be alive. Just think of one or the other and write that down. This is Geraldine talking to her son now. So you're saying your uncle Win or my brother -

**Student:** You're talking to Geraldine?

**Gina:** No. You are Geraldine talking so you're going to say my brother Win or your uncle Win. She's talking to her child.

There you helped students imagine what Geraldine, a mother whose brother died in the Vietnam War, would say to her son about his uncle Win. I noticed that before this class there were times when Jeremy, Jennifer and
Jay still liked to argue with you about why you talked about the Vietnam War in an English class. But, like you said, their imagination placed themselves in a plot where they needed to pay attention and then solve problems as if they had been one of the characters with knowledge that has no distinct divisions. They became not aware of the man-made boundaries between disciplines.

I saw you, since then, gave students opportunities to imagine a situation and solve its problems, and then show their responses or solutions with the 3Rs skills. And I have not heard any complaint about the curriculum design of the Vietnam War since then.

A Blessing to Each Other

Oh, :-) this letter is getting kind of long. I guess I just can not help thinking about the memories, conversations, experiences and discoveries that we have shared together during the past eleven months. From your interpretation of curriculum integration, your interaction with students and partners, your classroom practices and beliefs, I have learned a lot--I make new connections with the meaning of curriculum integration and with some concepts and realities that I was not aware of, and that helps me reconstruct and reinterpret them. And, each time when I reflect upon my previous and current interpretation of what I experienced with Rachel, Anita and you in the research process, and why there is or isn't a difference between the interpretations, I always can figure out something--understand more about myself as a foreigner, a Ph.D. candidate, a researcher, a friend of yours and a new-born Christian, and find out much more connections, paradoxes and balancing points within me. I have been hoping that I am not the only one
who benefits from such a wonderful experience. Talking to you, Rachel and Anita, I am glad to know that I am not alone. May we each other keep reflecting on curriculum integration and searching the meaning of being an educator in the changing world; may we learn more and better day by day!

I should stop writing now (you probably feel thirsty or somewhat tired after reading such a letter). But, I know that our conversation about curriculum integration, the development and implementation process and our learning and change in the process will never end.

Thank you for your Angel-shaped Christmas card and your concern about my writing progress for the dissertation. To be honest with you, it gets stuck all the time (perhaps, I leave too much room for chance ;-) ?!) You know, I have been searching a way to best tell our stories at Season High and.....Oh, no, I should stop here!

Let me...say the last word (I promise) of this letter:

May you have a merry, merry...

(Chinese characters of the term "Christmas")

Yi-Ying
Anita's Story

I am Anita Williams, a twenty-nine-year-old public high school teacher. Yes, I chose to be a teacher. I am the eldest child in my family and my only brother is ten years younger. While I was little, my grandmother was the only one at home who played with me. She was not only a caring person but also a creative teacher—telling me stories and legends, teaching me reading, writing and arithmetic, and making lots of "instructional" toys that could help me learn what she was going to teach me. I was ready for elementary education when I was four. I really appreciated and enjoyed having such a great teacher like my grandmother in my life. I guess it was because of my grandmother that I wanted to be a teacher and selected social studies education as my undergraduate major.

I have been a teacher for seven years and this is my fifth year at Season High School. In the beginning of this year, 1994, I took a graduate course on curriculum integration offered at Season High, where Rachel, Gina and I were a team. We developed an integrated curriculum unit on the Vietnam War and later implemented this seven-day unit in our classrooms during the third trimester. Of course, such a simple statement is not enough to reveal the story about my learning and knowing through the whole process....

Teacher as Soldier and Strategist

I always wanted to be a great teacher like my grandmother. However, the current educational context and students are so different from the past
that a great teacher may not need to be kind to students but must be creative in instructional approaches. I believe that a great teacher needs to know students very well--their personalities, behavioral problems, family background, strengths and weaknesses--in order to develop appropriate strategies to fight with many things outside the classroom that attract students' attention. Teachers in today's classrooms should be smart enough to survive there. Here is my journal entry written on the first Friday of the third trimester, which describes the "war" between my students and me in the classroom:

It is March 18, 1994. I am really tired. It takes a lot of energy to get organized to start all over. There are so many clerical tasks, names, book assignments, seating charts, accurate attendance taking, new rosters for grade books. (I am glad the classes were shorter that day because of the student/faculty basketball game.)

In the geography class I have already had to deal with personality conflicts. Kay Gross from day one has already decided she does not want to be in my geography class and she refuses to do any work. I sent Kay Gross out of class and she came back a different person. Let's hope whatever the administrator said will work. Luke Herndon--we had our first confrontation and I have already decided I am going to win that battle. He needs to be mainstreamed so he can learn appropriate behavior and have higher expectations of himself. I am not going to give an inch. I am going to be on him every second of the two hours he is in geography room #214. Kim Ford is also a character I have to figure out. He knows all the right things to do but
all his assignments have been very incomplete. I also have a few talkers. Chris Walters, Peter Sizemore and Daniel Howze. I am going to have to break up their clique. The hardest part will be acclimating them to my system of doing things. I don't want to overload them with expectations and assignments but I want them to know right off this is all about business. They are to be diligent workers. I have to remember to vary the type and level of difficulty of the assignments. I don't want to lose any of them yet.

In the afternoon, the world history class, the class appears to be quite sluggish and I have a few complainers about the type and amount of work. I already had to write Thomas Wells up on a 190 and sent him to Mr. Crock. I have to nip his attention-getting behavior in the bud or he will drive me and the rest of the class crazy. Dean Spencer is also a delightful attention-hungry person. I also had to send him out of class the first week to prove I meant business. Dean wants to be lazy and babied. He is an only child, spoiled but delightful. The two of them (Thomas/Dean) can keep me busy two hours. I have to remember they want attention and not to fall into their behavior. World history had its first test and to guarantee a certain level of success I let them use their notes. After the test I gave them another skills assignment. I calculated the amount of time I would have them before the basketball game. I expected 40 minutes and ended up with an hour and ten minutes. I let the class relax and digress a bit by having an open discussion on the basic economic problems of America—deficit spending. However, I am going to have to learn to organize
every minute so that the curriculum will not be behind.

Again, I want to emphasize a fact that being a teacher in today's society is no by means an easy job--the war with students in the classroom costs me a lot of energy, attention and time from my personal life.

**Interpretation of Curriculum Integration**

My thinking about the classroom as a battlefield and teachers as soldier and strategist should be easily understood by other fellows (but, in fact, I found Rachel and Gina had very different perspectives from mine). A teacher should have good strategies to win students' attention, respect towards the teacher and the control over the classroom. From my point of view, curriculum integration is a **good strategy that can maximize teaching time, help students recall what they learn, and make meaningful connections between skills and contents of different subject matters from one chapter to another (that is, blur the man-made distinctions in knowledge)**.

In the real world, information does not come to us in separated subject matters. It comes integrative and ready for application. My experience with integrated curriculum is quite different from a professional viewpoint. As a student in the early 80s in many of the pilot programs that were to test out theories and new trends in education, I attended a high school that had two basic blocks. The humanities and social sciences were taught together as a basic subject matter and then the science and math were taught as a block. My English, social studies, art appreciation, music theory, instrumental band, chorus was taught by the same teacher. I along with a group of sixty students for two years were clustered together and we rotated between three teachers. The subject matter made more sense when it was connected within
itself and with other subjects. Many things I learned in high school were easily recalled in college and in my teaching experience of seven years because the interaction was presented in such a way that it was made a part of me, not just placed in my short-term memory to be quickly forgotten.

Experience and Reflect on Curriculum Integration

When I worked with Rachel and Gina in Course 727.49, all I wanted was to design an integrated curriculum unit as effectively as possible (by being effective I mean to achieve the objective, in this case, to produce an integrated curriculum unit with the least time, effort and cost). In fact, I believe that I provided more ideas and instructional techniques than they did--the ideas and instructional techniques in my repertoire that I have been using in my lesson plans.

Reflect on the Effectiveness of the Whole Process

I guess the only significant difference between my everyday lesson plan and the unit on the Vietnam War is that this integrated curriculum unit was developed with two other partners. This does not mean that we contributed ideas and instructional techniques equally (as I mentioned before) but that I must consider other partners' beliefs and sometimes sell my rationale for some ideas I wanted to apply in the classroom. In the third trimester, I needed to meet the needs of my "special" students as well as the needs of my regular freshmen students while giving Rachel an opportunity to help teach the class. But, I also needed to remind Rachel of being more assertive, being an equal partner and not too kind or too helpful to students. Students, especially special education students, will not learn independence or make any progress with too much protection and assistance. I think it takes more
time and effort to work with other teachers even though I may learn being patient and how to compromise with others from the team.

**Reflect to Discover the Importance of Integration**

There are two things that I learned in the process of developing and implementing the Vietnam unit. I learned the importance of trying to keep pieces of information together, trying to find different ways to integrate everything and trying to keep integrating things such as math and music and language arts. I found out that everything I have been doing in my classroom is integration of math, science, English, language arts and history.

As for the Vietnam unit, in geography I wanted the students to use many components from their other classes. I wanted them to use basic math skills to figure out graphs, charts and maps. I wanted them to practice higher thinking skills of analyzing and reasoning by induction and deduction. In science I wanted them to understand basic concepts about the earth and its information, the atmosphere, the hydrosphere, the biosphere. I wanted them to be able to explain scientifically how they are all interrelated and depended on each. I wanted them to visually be able to display in numbers, statistics and graphs, the losses economically, socially and population-wise. I wanted them to grasp the main concepts or conflicts that led to the Vietnam War and the domino effect in Southeast Asia. I wanted the students to understand that the repercussion of that war is still being felt today in the United States as well as the countries of Southeast Asia. I wanted them to learn to make value judgments and moral decisions about life, saving and preserving the environment as well as culture based on knowledge gained through the integrated curriculum. In many ways the Vietnam unit is not
different from the lessons that I planned before.

I feel that I have discovered the overall strategy for my instruction and curriculum planning, and I come to know that I have been doing integrated curriculum for a long time. It seemed that suddenly the term "curriculum integration" became friendly and more meaningful to me.

**Reflect on Journaling With Conscious Awareness**

The other thing I learned is the importance of journaling and that there are different types of journaling. There are personally reflective and academic journaling. For academic journaling, I wrote down activities for the class and what students would like to do, namely, not only how I felt about something but about the class, how students felt about it, what objectives might be and whether I meet my objectives. For personally reflective journaling, I wrote down my own feelings, learning, vision and also ask myself several questions that I had not thought before:

April 12, 1994. The first day back after spring break was hard. The time difference from California to Montevallo, Ohio is three hours and three hours makes a difference. Half of day at school I had a workshop at Eastman H. S. It was the constructary workshop conducted by Nancy Porter. The topic of discussion was conflict management and personal development. We talked about improvement of communication skills in conflict management by using "I" statements instead of "you"--accusatory statements and paraphrasing of statements for clarity of conflict. I was a process observer in role-playing of a conflict situation of workers for a trucking company. Personal professional development means to me improvement of
myself through education and experience in my contact area of social studies and professionally as an educator. Professional development can be in the form of college courses, seminars, workshops, retreats, correspondence courses, observations and visitations of other classes and other school systems. As a professional I feel it is important to try and upgrade myself by finding out the current thinking and research in the field of education. The current thinking is pushing toward outcomes-based education, integrated curriculum, team teaching, flexible scheduling, block scheduling, grading-in-pencil, student as worker in the classroom. I have found a desire to finally go back to school. After 4 years of college for a B.A. I never wanted to see the inside of a college classroom or a library study carrel again. I am finding that job security, pay increases and professional development demand more time in the classroom where I teach. I did not make a very good student 10 years ago. I wonder what type of student I would be now. It also makes me seriously consider if I really want to stay in teaching or want out of the classroom. I really like working with young people but I feel I can be effective outside the class. I would seriously like to go into drug and alcohol, substance abuse counseling. So many problems present in the classroom are related to present substance abuse on behalf of the student and past substance abuse of parents. I have some major decision to make about career goals in and outside the classroom. Professional development also means knowing when to move to another career.
Through journaling in the process of developing and implementing the Vietnam unit—a real interactive experience, I come to search for understanding more about myself and then integrating myself in the meantime. And, such understanding and integration has changed my original dream of being a high school teacher forever and helped me start exploring other career alternatives.... It is worth keeping a reflective journal, but I do not know if there is an assessment process of journal-keeping—How do I know what the good stuff is? How do I know my journal is good?

**A Change in Classroom Practices:**

**Teach a Null Curriculum**

While coming to know something that I had not been aware of, I still have things that I could not see by myself. Having joined my team with Rachel and Gina through the second and third trimester, my friend, Yi-Ying told me that according to her observation my instruction frequently reflected a phenomenon of "null curriculum" when the third trimester was going to be over. Even though I was not aware of it, I agree with her about calling such a phenomenon a change in my classroom practices for I don't remember that I had asked students questions such as "We have listed some things on the board. Why do you think some of those things were left out of the textbook?" and "What else do you think that the textbook should have added?" She gave me the transcript of classroom instruction, a part of which is as follows:

Anita: Okay. From the 19th century the United States was being a rapid industrialized nation. That area centered around the Great Lakes and the Ohio valley. Now the early development of inland waterways and railroads helped this industry to expand
quickly. Somebody else? The United States was the first nation to develop mass production. Henry Ford brought automobile production (inaudible). Automobile production is the (inaudible) American innovation. American industry also employs (inaudible) for (inaudible) and development of such products as plastics, nylon, computers. Today the service industry (inaudible) in terms of education, food service, health services, retail sales, communication are the most rapidly growing areas of the United States economy. In fact service employs almost 70% of American workers while manufacturing employs less than 30%. So looking at the world's economy 70% of the jobs that are available are service jobs. Restaurant, health care, retail and communication. Most of you, your very first job out that you will get will be some kind of service job. Some of you if you go onto college and you become professionals you will still remain in service but you will be higher level services. Doctor, lawyer - those people are considered service people. Only 30% of Americans work now as in factories. Most of the people now are moving out of the factories. Why are most of the people moving out of the factories? Why are a lot of people leaving (inaudible)?

Student: Injury.
Anita: What do you mean by injury?
Student: Getting cut up.
Anita: Getting cut up on the job. Why?
Student: They got more (inaudible).
Anita: There are more (inaudible) such as robots. Many of the jobs that used to be done by hand are now being done by computers and robots. A lot of those jobs that people can get are now being done quickly and efficiently by another system. Maintaining prosperity. I need somebody for maintaining prosperity. Nobody - Keith -

Keith: (reading).

Anita: Excuse me Keith. Okay. So the United States is a wealthy nation. It (inaudible) challenges. I need somebody who will be a recorder and somebody who will be willing to write on the board. Need to write around the white paper. We could have two people. I'll tell you what to write once you get up there. (inaudible). You need to be a recorder. So if somebody says something you don't get the (inaudible). It says that the United States is facing some serious challenges and some problems. What are some of the problems that you think the United States is facing?

Student: Unemployment.

Anita: Unemployment. What is another problem that the United States is facing?

Student: Write some of them?

Anita: You don't have to write (inaudible).

Student: Lots of violence.

Anita: Lots of violence. (inaudible). What else?

Student: Drugs.
Anita: Drugs. Chrystal.
Chrystal: Money.
Anita: Money problems. What else?
Student: Lack of education.
Anita: He said lack of education. He said lack of education. Write down what he said. What else? (inaudible).
Student: (inaudible).
Anita: You go on ahead!
Student: (inaudible).
Anita: You probably need to leave for the rest of the school year because you threatened me! You just go on home. Go on home! (inaudible) run out of gas. What else? Money problems.
Student: Welfare.
(Students were talking among themselves).
Anita: What else?
Student: (inaudible).
Student: Not enough food.
Anita: Not enough food. Homelessness.
Student: Jobs -
Anita: Not enough jobs. Got unemployment. Anything else? What about corruption in the justice system?
Student: What about (inaudible)?
Anita: That's not a U.S. problem. Those are personal problems.
Anita: Let's say an abortion is not really a problem. Okay. So let's -
unemployment, money problems, disease, poverty, lack of food.
Homelessness, lots of violence, drugs. Loss of education,
welfare.

Anita: Pollution. Let's see what your textbook has said are the
problems of the United States. Energy-dependent (inaudible)
concerned. The nation is (inaudible) natural gas deposits off
shore. However, there are potential oil spills. Nuclear power
reduces the needs for oil. It creates (inaudible). Regardless of
it's problems the United States is an agricultural and industrial
giant. With only 3% of the people farm the nation feeds itself
and is a major food exporter. Much of the world depends on the
United States exported soy beans and wheat. Like other leading
industrial nations in the world the United States is becoming
increasingly dependent upon other nations to supply raw
materials for its industry. Competition in places as (inaudible)
and western European nations have had (inaudible) US
industry. The United States is a democratic nation envied by
much of the world's population. The few (inaudible) solve the
problems created by a changing world economy. It also faces the
lesser challenges such as poverty and (inaudible) minority
group, urban decay and environmental pollution. We listed
some things on the board. Why don't you think some of those
things maybe from the textbook?

Student: No room.

Student: Damage.

Anita: The damage due to what? What are main issues (inaudible)?

Student: I think the reason they (inaudible).

Anita: The what?

Student: What the oil was (inaudible).

Anita: Okay. This one says that the United States is facing serious problems with energy. It talks about energy. They talked about food production. The (inaudible) with poverty, especially among our minority groups, urban decay and environmental pollution. Those are the ones that they felt were important. You think that they should have added something else. What else do you think that the textbook should have added -

Student: Racism.

Anita: You think they should have added racism. Okay. What else? That was one thing that you guys did not say before was racism and discrimination or - (inaudible). Okay. That's it for the end of this chapter. You will be doing an activity where it says maintaining (inaudible). You will have to add an additional paragraph to the textbook. You yourself are going to say - (inaudible) those problems and you're going to add - (interruption). One of the things that they probably should have added was violence and drug abuse. A lot of people when they look at these items and say that we are a very violent nation.
Ray -

Ray: When was this copyrighted?


Ray: Not as much as it is now.

(Several students were talking at the same time).

Anita: So violence and drug abuse a lot of people said they (inaudible). They said the United States is a very violent nation, Jay. Why would somebody from outside the United States consider the United States to be violent? Let's say that we were sitting somewhere in Europe. Why would they consider us to be violent toward them?

Jay: People there they don't (inaudible).

Anita: Okay, crimes. People come over to the United States. They are tourists and maybe there is a car jacking. (inaudible). Car jacking usually a person ends up dead. There were some people that were here from Germany and they were in California. They got killed. In Florida they were (inaudible) to visit. It's not a safe place to visit. So car jacking. People hear about car jacking and that's very unusual in their country. What would be another reason a lot of people might think that we're a very violent country?

Student: People are getting (inaudible) all the time.

Anita: People are getting (inaudible) all the time or they hear about drugs. They hear about the drug problems in the United States. Drug dealers.
Student: There are drugs everywhere.

Anita: There are some countries in the world where there are no drugs.

Student: A lot of people (inaudible).

Anita: Okay. Singapore - who don't they have drug problems?

(Several students were talking at the same time).

Student: They kill people (inaudible). Or they cut your hands off.

Anita: Some of the countries of the world where they have a (inaudible) way of life they deal with those things very seriously.

**Dilemma**

Now the story as well as the year of 1994 are going to be over but I still do not have an answer to the questions that I have asked myself since the beginning of the third trimester: Shall I remain teaching to be a smart, creative and respected teacher that I had been dreaming of since I was little? Or, shall I just go ahead and change my current career to one with which can give me more spare time for my personal life? Shall I quit teaching so that I do not need to compete with students for their attention and enthusiasm while there are so many things today that can hold the interest of a student? And, do I really love teaching?

I recall my greatest teacher--my dear grandmother--and the joyful learning in the old days.... I want to say something about the current education to other teachers as if I were still a teacher who loved teaching and would never change her career: Today as we are embarking on the 21st century, we are in the age of science and reason. A basic high school education is not preparing our young people to meet that technological age and be able to compete.
Yes, I want to say something so much: I have heard that statement, "It is better to have an education and not need it, than to need an education and not have it." Today everyone must have an education. One has to be able to process large amounts of information rapidly. One has to be able to work in groups cooperative to get tasks done. One has to be self-motivated and able to take the initiative and risks. The traditional education of reading, writing and arithmetic is not enough anymore. We are failing our students with the philosophy we need to return to the basics. The basics will not be enough in the 21st century.

Yes, say something...for the love of my grandmother and my goals for high school education....

But I can't.

What more is there to say, really?
Summary

The findings of this study have been presented in the form of two context stories and three teacher change stories. The first context story portraits the settings of teacher change, including Season High School, the trimester system, the integrated curriculum unit on Vietnam and the pilot program, Inclusion. The second context story is constructed by the excerpted voices of the principal, teacher coordinator and three students.

As for the three participants' stories, the first story, written from the third person point of view, is about Rachel's experiencing and reflecting on curriculum integration, changes in beliefs and classroom practices and her belief in teacher as learner and caring person. Curriculum integration to her was the integration of an individual teacher's (or a team of teachers') life experiences, content knowledge, teaching techniques and ideas, which enrich the lesson plans designed for a theme or problem-solving situation.

The second story is about Gina's experiencing and reflecting on curriculum integration, changes in beliefs and classroom practices and her belief in teacher as guide to the real world. She regarded curriculum integration as an approach of reinforcement or repetition, by which students are situated in a process where they can hear the same subject or theme covered in different ways and by different teachers. This story is written from the second person point of view in the form of a letter.

The third story, written from the first person point of view, is about Anita's experiencing and reflecting on curriculum integration, her changes in
beliefs and classroom practices and belief in teacher as soldier and strategist. From her perspective, curriculum integration is a good strategy that can maximize teaching time, help students recall what they learn, and make meaningful connections between skills and contents of different subject matters from one chapter to another (that is, blur the man-made distinctions in knowledge).

Each of the three stories is integrated with a partial transcript on classroom instruction in order to present the in-class conversation between the teacher and students.
CHAPTER V

CONCLUSIONS

Summary of the Study

Current education reflects a closed-system worldview: Knowledge lacks informed connections with physical, emotional and social reality; the content and learner, learning and application, and understanding and problem solving are seen as separate entities; doing activities is equal to learning; curriculum is regarded as a fixed agenda. Those closed-system phenomena and beliefs are not consistent with the connected nature of the micro and macro, living and nonliving organization (e.g., human beings and the educational system), which makes educational development much more difficult. To improve the quality of education, the noninteractive instructional approaches and curriculum designs need to be changed—to be developed and implemented from an open-system perspective, namely, with an emphasis on making connections. Among educators, classroom teachers are those who can influence students most directly and deeply. Classroom teachers play an important role in bringing such an educational change into their own classroom. However, any significant change in classroom practices must be accompanied with a meaningful change in teachers themselves. Therefore, the quality of education can be improved if teachers change--start
perceiving curriculum, instruction, the self, students, schools, society and the world from the open-system perspective. The need for a study of the relationship between teacher change and curriculum integration was proposed in Chapter I.

Chapter II established the conceptual framework of the study, suggesting that reflecting on something that one has experienced or is experiencing is seen as a process that facilitates self-transformation (Dewey, 1916; Wertsch, 1985). In addition, it is found that curriculum integration and the open-system paradigm have a common nature of making connections and renewing.

Chapter III provided a description of the research design chosen for the study. This research was designed and carried out from the qualitative evaluation perspective. The design was emergent and the goal was to examine the accomplishment and effectiveness of experiencing and reflecting on curriculum integration as an approach to facilitating teacher change, and meanwhile use such an evaluation process to improve this approach.

Chapter IV presented the emergent themes that resulted from the data analysis in the form of two context stories and three teacher change stories. The findings revealed that teachers did change in their beliefs and classroom practices with different reflection emphases, that they were aware of their own changes and that they interpreted curriculum integration from different perspectives.

**Research Conclusions and Discussion**

The purpose of this research was to examine the accomplishment and effectiveness of teachers' experiencing and reflecting on curriculum
integration as an approach to teacher change. Conclusions and discussion of the three qualitative stories with respect to each research question were as follows.

The first research question dealt with the issue of what teachers changed, regarding to the accomplishment of teacher change and their changes in beliefs and classroom practices:

1. Did teachers change in the context and process where they as a team developed and implemented an integrated curriculum?

   As defined in Chapter I, the term "change" means to become different or make connections. "Change" is not restricted to some idea of linear progress; it includes "exchanging stability for chaos or oblivion, replacing one level of complexity with another level that is either more simple or more complex, exchanging energy for preserving the current level of complexity via slow, steady changes over time" (Puglielli, 1994, p. 17). Teacher change in this research refers to change reflected in the aspects of behavior--how and what he/she teaches students, and beliefs--how and what he/she thinks about him/herself, curriculum, teaching and learning. According to the meaning of "change" indicated in the above as a benchmark for examination, the three teacher participants did change during the process of developing and implementing an integrated curriculum.

Translation, Transformation and Transition of Beliefs

   Discussed in Part Two of Chapter II, one changes his/her beliefs or points of view in three ways. Rachel's coming to believe that teaming can motivate her to learn reflected a kind of translation, where she threw away the old belief (that it is not necessary to develop lesson plans with other
teachers) for this new one. She did not integrate what might be right with the old or discriminate the value of the new belief from its possible overstatements.

Rachel's seeing curriculum as a constructable network of good ideas and Gina's believing that a teacher should reflect more before change and leave room for chance revealed a kind of transformation. They allowed contradictory opposites (curriculum as a fixed agenda and as a living network; change and chance) not only to coexist and interact but to synthesize a new unity, that was meaningful to themselves.

The beliefs that reflected a kind of transition included Rachel's finding that choices provide ownership and that flexibility and sympathy are as important as creativity; Gina's searching for the meaning of teaching; and Anita's discovering the importance of integration and journaling and that she has been doing integrated curriculum in her classroom for a long time, and later starting exploring other career alternatives. The above changes occurred in sudden jumps, which resulted from (1) a disruption in the balanced circulation of energy and (2) the shifted attention to alternative, pre-established MMPs (material manifestation points). Ownership, sympathy and flexibility, the meaning of teaching, value of integration and journaling, one's unconsciously doing integration, and careers except teaching are the MMPs in those transitions.

**Connect With Students: From the Changed Classroom Practices Perspective**

With respect to changes in classroom practices, Rachel started helping students search for the meaning of learning. Such a change made Rachel and her students tightly coupled. Rachel brought herself to her students—shared
with them her background, feelings, experiences and happiness and was sympathetic to their difficulties in learning or personal problems. In other words, although she was a teacher, Rachel viewed students as friends or her own children from a second person point of view.

As to Gina, she tried to attract students' attention to integrated curriculum, evaluated students with authentic assessment approaches and integrated subjects through reflection or imagination. Anita started teaching "null curriculum," a curriculum that teachers seldom teach--thus, students have few opportunities to learn--in the classroom. She discussed what issues were missing in the textbook and why. Both Gina's and Anita's changes in classroom practices revealed their viewing students from a third person point of view; namely, Gina and Anita were still detached from or not very tightly coupled with their students when they changed. They seldom brought themselves to their students although they taught the students with integrated lessons or approaches.

Notice that changes in beliefs and classroom practices presented in this research were the changes that were most significant to the researcher. It is believed that there were still other changes both the researcher and teacher participants were not aware of.

The second research question was about how teachers changed--the way teachers changed their beliefs and classroom practices and the effectiveness of their changes revealed in the process of developing and implementing an integrated curriculum:

2. How did teachers' experiencing and reflecting upon curriculum integration relate to their changes in beliefs and classroom practices?
Change Through Experience and Reflection

This naturalistic research took place in the context where three public high school teachers as a team experienced the development and implementation of an integrated curriculum unit and reflected on the concept of curriculum integration. On the one hand, according to Dewey (1916), experience as trying involves change and it is only with reflection that such an experience or change has meaning to the actor. It can be said that experience provides opportunities for reflection.

On the other hand, reflection has a nature of making connections; if one keeps reflecting, he/she may keep making connections and renewing. Reflection provides opportunities to make various connections via different reflection emphases such as retrospection, deliberation, reflection as emancipation, reflection in action and reflection with conscious awareness.

Rachel. Rachel enrolled the graduate level course on curriculum integration (Course 727.49) for she wanted to know more about curriculum integration and learn more teaching techniques from other teachers. Later, in the process of experiencing developing and implementing an integrated curriculum, Rachel reflected upon not only the concept of curriculum integration but also her way of teaching--making connections with and between life experiences and students--and the relationship with her partner, Anita. Rachel’s reflection was more like retrospection--turning her thoughts back on prior life, teaching and teaming experiences to make new sense of them and to learn from them. Namely, she was changing--making connections between her present evaluative criteria and the experiences in the past. That she kept reflecting in the journal and surveys, and conversing
with the researcher during the research process, helped her create her own meaning of curriculum integration, which became her new evaluative criteria.

**Gina.** Gina participated in Course 727.49 for she wanted to try a new approach in her classroom. She thought that curriculum integration might help her special education students learn better the 3Rs (reading, writing and arithmetic) and hear different interpretations of the same issue from different teachers. Her reflection was more like reflection with conscious awareness. In the journal and surveys, and the letters to and conversations with the researcher, she reflected upon her own consciousness—she was making connections between her consciousness and her attention to or emphases on teaching, curriculum planning and LD students' abilities to survive in society. That is, Gina started consciously searching for the meaning of being an LD teacher and she also recognized the importance of such an self-understanding.

**Anita.** Anita took the graduate level course 727.49 for she wanted to know the differences between what she had known about curriculum integration and what she would know about it through the course. Revealed in the journal, surveys and conversations with the researcher, Anita's reflection had more emphases: reflection-in-action; retrospection; and reflection with conscious awareness. Her positioning herself as soldier and strategist (one who is energetic, brave, smart and ready for the war) helped her make sense of and then work competently with today's students who could not be well understood. Reflecting in action, she made connections between her efforts and strategies to improve the classroom discipline and
efficiency of students' learning and the actual changes occurring in the classroom. In retrospection, Anita turned her thoughts back on her experience of the process of developing and implementing an integrated curriculum to evaluate the effectiveness of the whole process. In such reflection, she made connections with her present evaluative criteria, and discovered the importance of curriculum integration, which she had been doing for a long time. In addition, with conscious awareness, Anita paid attention to her reflecting on journaling, through which she started searching for the meaning of being a teacher, other career alternatives and the question of how to evaluate her own reflective journal.

Reflection as emancipation is a mode of reflection where one makes connections between his/her own socioeconomic and political position with the issues of justice, equality and freedom. Such reflection was not significant in the study. That is, teachers seldom paid attention to or mentioned the issues of justice, equality and freedom in the conversations among themselves or with the researcher. In contrast, teachers' deliberation, a process of reasoning about practical problems (McCutcheon, 1995), was significant in this study whenever the three teachers co-planned and co-taught the integrated curriculum unit on the Vietnam War. In this mode of reflection they took another look at some teaching techniques they had taken for granted for teaching certain skills or content and searched for other alternatives.

The third research question was about the three teachers' awareness of their own changes and meaning of curriculum integration:
3. How did they interpret their change and develop their own meaning of curriculum integration?

This was a question probing the issue of change awareness—whether or not the three teachers knew that their beliefs and classroom practices had changed during the whole process. The findings revealed that the teachers were aware of their own changes. They talked about and reflected on their learning and making new connections although they seldom articulated those changes, or used the term "change" to describe their changes in beliefs and classroom practices occurring during the process of developing and implementing integrated curriculum. Most of the time, they expressed their changes by saying, "I found out..."; "I realized..."; "I learned..."; "I discovered..."; "I became..."; "it's amazing to see..."; "I think the difference is..."; and the like.

**Be Consciously Aware of Change**

Teachers usually appear to most observers more here-and-now-oriented, more concerned with the immediacies of their present routines, present scheduling problems, present details of course studies. They are apt to perceive change as a break in their routine. It may be claimed that not every change is good, but every changes is a possibility. Here may be where a teacher needs help. If, in fact, change is part of the implicit order of every system (micro, macro, living and nonliving) and if, in fact, a teacher is likewise a part of the implicit order, then these two parts just should connect together, and work together as members of a team.

According to Ovid's observation, all things are in a state of flux, and everything is brought into being with a changing nature. Change is part of
the nature of human beings and is a kind of responsibility especially to teachers. How can teachers accept the responsibility of shaping the minds of the young if they do not see their own relationship to the changing order, the place of knowledge in this order, and the evolving nature of the order?

Thus, it is important for teachers to be consciously aware of change, at least their own changes. To most of them, their unconscious knowledge about the world that all the pieces come together like cogs in a cosmic machine has often the character of unconscious expectation that everything in the classroom will go on as usual. But, they may become conscious of having had an expectation of this kind when it turns out to have been mistaken. It is not until they become consciously aware of the uncertainty following their expectations and of the changing nature of every system that they are ready for and to change. At least, they will not unconsciously resist every change or afraid of facing their own changes. With such an awareness about their own consciousness, teachers may feel more comfortable to take further steps searching for more holistic interpretations or ways to deal with their felt resistance or uncertainty. If one wants to help teachers become consciously aware of their own change, he/she may need to remind teachers of paying attention to their own attention, searching for and then reflecting on both their explicit and tacit awareness of an experience.

The importance of being consciously aware of one's own changes is especially significant in Rachel's and Gina's cases, where they transferred to another high school and faced a lot of differences between the new school and Season High. However, they were doing well and able to reinterpret and deal with the difficulties or differences emerging from the new context.
Curriculum as the Teacher Self, Differences Between Teachers, Knowledge

Rachel, Gina and Anita revealed their own meaning of curriculum integration in the journal, surveys, letters and conversations with the researcher. Curriculum integration to Rachel was the integration of an individual teacher's (or a team of teachers') life experiences, content knowledge, teaching techniques and ideas, which enrich the lesson plans designed for a theme or problem-solving situation. Rachel's interpretation emphasized the integration of the teacher self— one's intellect and affect, personal and professional life. Gina regarded curriculum integration as an approach of reinforcement or repetition, by which students are situated in a process where they can hear the same subject or theme covered in different ways and by different teachers. Gina's interpretation focused on the integration of differences between teachers. However, the job of integrating or making connections between those differences were left to the students themselves. From Anita's perspective, curriculum integration is a good strategy that can maximize teaching time, help students recall what they learn, and make meaningful connections between skills and content of different subjects from one chapter to another. Anita's interpretation, blurring the man-made distinctions, emphasized the integration of knowledge.

Obviously, the curricula in Rachel's, Gina's and Anita's own classroom were not limited in the form of subjects although they said that "curriculum" is "the course of study such as English, mathematics and history" when asked to give a definition. In fact, the three teachers had their own belief about what students should learn in an integrated curriculum. Rachel viewed
curriculum integration from a first person point of view, where her own life and professional experiences were indeed the curriculum that she gave her students the opportunity to learn. Gina and Anita viewed curriculum integration from a more detached, third person point of view. To Gina, the differences between teachers, and to Anita, the whole of knowledge itself and skills were the curriculum.

From Autonomy, Opportunity, Time to Change

The team of three teacher participants changed their beliefs and classroom practices in the context where they together developed and implemented an integrated curriculum. The issues of what teachers changed in themselves and how they changed are discussed previously. This section intends to provide interpretations of why teachers changed.

On the one hand, one may interpret that it was because of the contextual variables that the three teachers changed. The "context" was delimited by the outsiders except the three teachers. Thus, the contextual variables might include the opportunity of being offered a graduate level course on curriculum integration at Season High School; the course instructor's teaching approaches and course design; the Inclusion program for special education students; interactions between teammembers; the trimester system; the two-hour block scheduling; the leadership and district that supported innovations; and the opportunity of being inviting in a qualitative research. Here, teachers are seen as a brainlike information processing system, importing information from the context and initiating appropriate responses or changes.
On the other hand, autopoiesis theorists argue that the brain (which is referred to the teacher, a micro system or organization) does not necessarily have a capacity to see and understand its world from a point of reference outside itself. Any system (which is referred to the teacher) can be viewed as having "contexts," but connections with any context are internally determined: 

While there may be countless chains of interaction within and between systems,...Changes in A do not cause changes in B, C, D, or E, since the whole chain of relations is part of the same self-determining pattern....The system's pattern has to be understood as a whole, and as possessing a logic of its own....This is ultimately why it makes no sense to say that a system interacts with an external environment. For a system's transactions with an environment are really transactions within itself. (Morgan, 1986, p. 238) 

It was found that the concept of and approaches to curriculum integration, teaming experiences in developing and implementing an integrated curriculum, and interactions with students were the themes which the three teachers reflected upon and talked about most frequently in their own journal and conversations. This finding revealed that the "context" which the three teachers internally determined during the research process was constituted by their integrated curriculum, the team and three classrooms. Thus, it is implied that teachers changed (with a critical level of support acquired just in time) because of their own autonomy to experience and reflect on curriculum integration in the team and classroom.
In conclusion, it may be claimed that there are at least three fundamental themes of teacher change: teacher autonomy; the opportunity provided to experience (develop and implement) and reflect on curriculum integration; and a critical level of support acquired just in time (its entry point and moment are always unknown and indeterminable).

Now, before going into the section of recommendation, it is necessary to keep in mind an overall picture about the research results. Thus, in the following, I present a table of the major themes between the three teacher change stories and a figure of interactions between the three teachers.
Table 5.1: Major Themes Between The Three Teacher Change Stories

<table>
<thead>
<tr>
<th>Themes/Teachers</th>
<th>Rachel</th>
<th>Gina</th>
<th>Anita</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-images as Teacher</td>
<td>Learner; Caring Person</td>
<td>Guide to the Real World</td>
<td>Soldier; Strategist</td>
</tr>
<tr>
<td>Changes in Beliefs</td>
<td>Teaming; Curriculum; Choice and Ownership; Creativity, Flexibility and Sympathy</td>
<td>Reflection, Change and Chance; Search for the Meaning of Teaching</td>
<td>Journaling; Discovering more About the Self; Career Alternatives</td>
</tr>
<tr>
<td>Reflection Emphases</td>
<td>Retrospection; Deliberation</td>
<td>Conscious Awareness; Deliberation</td>
<td>Retrospection; Reflection in Action; Conscious Awareness; Deliberation</td>
</tr>
<tr>
<td>Changes in Classroom Practices</td>
<td>Help Students Search for the Meaning of Learning</td>
<td>Attract Students' Interest; Use Authentic Assessments; Integrate Subjects Through Imagination</td>
<td>Teach a Null Curriculum</td>
</tr>
<tr>
<td>Relationship with Students</td>
<td>As Friend</td>
<td>As Detached Observer</td>
<td>As Detached Observer</td>
</tr>
<tr>
<td>Curriculum to be integrated</td>
<td>Teacher Self</td>
<td>Differences Between Teachers</td>
<td>Knowledge and Skills</td>
</tr>
<tr>
<td>Self-Change Awareness</td>
<td>Revealed in the Journal, letter and conversation</td>
<td>Revealed in the journal, letter and conversation</td>
<td>Revealed in the Open-ended Survey</td>
</tr>
</tbody>
</table>
Anita was a teacher who was hard to be influenced by her partners or students; instead, she wanted to influence the others. Gina might not be able to influence Anita but she could share personal and classroom stories with Rachel. She was not easy to be influenced by her students, either. As to Rachel, she made tight (affective) connections with her students and the other two partners. Rachel might influence Gina in some aspects and in turn be influenced by Gina; however, it was difficult for Rachel to influence Anita.
Recommendations

The following recommendations are presented for further research in this area:

1. This study took place in a public high school. People who are interested in the study of experiencing and reflecting on curriculum integration as an approach to teacher change may consider conducting the research in the following sites.

   (a) An elementary school, where elementary teachers will be participants: Different from secondary teachers, elementary teachers are responsible for teaching all the subjects.

   (b) A teacher education program, where student teachers will be the participants: Difference from inservice teachers, student teachers have not really taken charge of a classroom and their "practical" experiences as an instructor at school are either few or indeed unpractical.

   (c) Graduate school, where all college teachers will be the participants: Different from instructors on other levels of education, those teachers usually position themselves and are seen by the public as professionals and it is more common for them to direct change projects than to change their own beliefs and classroom practices.

2. This study took place in a graduate level course, and a school with a trimester system and two-hour block scheduling. This school characterizes itself and is regarded by other schools around as an "innovative school." According to the three teacher participants, they enjoyed this trimester system, two-hour block scheduling and support from the principal and teacher coordinator, all of which helped them plan lessons more flexibly and
be willing to try new ideas in their classrooms. Other researchers may want to further explore the relationships between the approach of experiencing and reflecting on curriculum integration and the interactions in Course 727.49 (the graduate level course on curriculum integration), the school structure, organizational change process and leadership.

3. Teacher change is imperative to any significant curriculum change. Although this study focuses on teacher change, it is worth probing questions on curriculum change so as to provide more holistic interpretation to each other. For example: Did the classroom curriculum change during the process where teachers experienced and reflected on the development and implementation of curriculum integration? If so, what kind of changes in the curriculum occurred and how, why, where and when did the change occur? What did teachers mean by "curriculum" and "change"? How did they develop their own meaning of curriculum change?

4. This research has a dual objective in trying to evaluate the accomplishment and effectiveness of experiencing and reflecting on curriculum integration as an approach to teacher change while using such an evaluation process to improve the effectiveness of this approach. That is, the research itself can be seen as a change approach. People who want to conduct similar research may consider collaborating with the instructor of a graduate level course on curriculum integration in the beginning of the research.

They can co-develop or co-teach the course curriculum, where they may want to emphasize the connection-making nature of curriculum integration or mention the open-system paradigm and the kind of beliefs that have reflected a closed-system worldview. Doing so may improve the effectiveness
of teacher change because the teachers will be provided with more resources for reflection that may attract their attention. Then, the teachers will have more opportunities to reflect upon the meaning of curriculum integration from an open-system perspective.

5. The research itself can be seen as a change approach; thus, the researcher is the facilitator of teacher change. It is suggested that he/she play three roles in the research process.

(a) Playing the role of self, the researcher needs to keep reflecting on his/her own explicit and tacit awareness of the research experience—making connections within him/herself.

(b) Playing the role of friend, the researcher should bring him/herself to the teacher participants—share with them his/her background, feelings, experiences and happiness, is sympathetic to their personal and classroom problems and willing to give them a hand if they need. In addition, he/she reminds those teachers of paying attention to and reflecting on their own attention. That is, the researcher makes connections between him/herself and the teachers.

(c) The third role is an observer to a group of teachers, who detaches his/her mind from being too closed to his/her teacher friends. The researcher playing this role needs to analyze the group's MMP—a dynamic foci with an appearance of an identifiable and relatively constant pattern. Namely, he/she makes connections within the group. Although it may sound difficult, the researcher as change facilitator may consider playing the three roles at the same time throughout the research process.
Meanwhile, the change facilitator should provide as many opportunities as possible for teachers to experience and reflect on curriculum integration. Opportunities may include providing an inservice workshop or course on curriculum integration, introducing and discussing the open- and closed-system perspectives, conversing with the change facilitator, participating in a team teaching project, sharing visions with team members, keeping a reflective journal, being reminded of paying attention to the explicit and tacit awareness of an experience.

6. Developing and implementing integrated curriculum with other colleagues as a team is one way of integration--integration of professionals. It provides the teacher more opportunities to make connections between their visions towards education, the meaning of curriculum integration, change awareness, personal feelings, beliefs, ideas and personal teaching theories, and thus help the teacher discover or recognize the importance of curriculum integration.

Teaming experience played an important role in the whole process. Interpersonal relationship with and learning from other partners were two of the primary themes for reflection. But, in this study it might be because of the different emphases between the mainstream classroom and the learning disability classroom, or because of the differences of ages and personalities that the sharing between the mainstream teacher and the other two special education teachers seemed not enough. Thus, even though it seems that teachers spend almost all of their time and energy in their own classroom and that they always have other personal chores to do in or out of the school--they say they are very busy, people who want to replicate this research should look
for ways to improve the communication or sharing between the teacher participants.

7. Higher education should provide students with a sense of holistic reflection. The student should realize that to choose or specialize in a field of knowledge is necessary. But, his/her choices and specialties are all temporary and for the sake of convenience, of which purpose is to contribute to the academy. Eventually, his/her knowledge and research in certain field of study must be embedded into the whole of knowledge and culture. Higher education should no longer provide each student only opportunities to explore a certain field of study. It should help students understand the possibility, limitation and interdependence of all fields of knowledge, and the connections between fields of study. Specialization and holism are complement to each other; they should not be regarded as providing a dilemma. Higher education should be the integration of specialization (depth of each element) and holism (complexity of connections).

8. Teacher educators develop and teach the curriculum with a mode of thinking that emphasizes making connections. Meanwhile, the teacher educator and preservice teachers co-inquire or explore the art of questioning and ways of interacting with students, which can facilitate students to imagine, reflect on and appreciate the omnipresence of connections and search for connections with the self, real life issues, other fields of knowledge, other entities, society and the world.

A Hope

Any significant change in the educational system, school, classroom, curriculum designs or instructional approaches should be accompanied with a
significant or meaningful change in classroom teachers themselves. The approach of providing teachers opportunities to experience and reflect upon curriculum integration was found to be able to facilitate effective--meaningful--teacher change. It is sincerely hoped that there will be more researchers, with a deep interest in this topic, who will further this study and explore more approaches to encouraging or helping teachers to change--to make dynamic connections between and within curriculum, teaching, learning, the self, students, colleagues, the school, the educational system, society and the world.
Appendix A
Self-Introduction and Invitation
January 3, 1994
Dear Teacher:

I am Yi-Ying Huang. I was born in Taichung, Taiwan (the Republic of China). I graduated from National Chia Yi Teachers College in July, 1990 and then taught in Cheng Yi Public Elementary School as a certified elementary teacher from August, 1990 to July, 1991. In September, 1991, I began my graduate study at Ashland University in Ohio, where I was especially interested in the study of curriculum and finished a thesis about mathematics textbooks used in America and Taiwan.

I got my M.Ed. degree in 1992 and started my doctoral study at the Ohio State University in the 1992 fall quarter. I entered the program of Curriculum, Instruction, and Professional Development in the Department of Educational Policy and Leadership. I was also interested in research methods and organizational theory, which became my minor areas of study.

I appreciate the opportunity provided by Dr. McCutcheon, my advisor, to participate in the class with you. I want to thank you for your help in the dissertation research and trust in me. Although called a "researcher" I indeed have a lot to learn from you. I am used to asking myself a question, "What can I learn from what I see, hear, or what I do?" The course on integrated curriculum gathering you and other professionals in one room provides me a rich and vivid context for learning and thinking. The best thing in such a context is that we can learn mutually and develop ourselves simultaneously.

I would like to invite you to participate in my research on teacher change and curriculum integration. On the one hand, you are responsible for teaching me what you have learned/attained in the process of developing and implementing integrated curriculum, and how you change when you change the classroom curriculum. On the other hand, I am responsible for (1) proposing questions (in surveys and conversational interviews directed by both of us) which facilitate your clarifying and articulating what you are doing and thinking, (2) analyzing what I have learned from you, and (3) presenting my interpretation about it, which, of course, will be reviewed by you for its accuracy and fullness. In addition, I will mask your and the school's identities in order to protect your anonymity. Please do not hesitate to ask me if you have any question about the research. I am glad to answer, or find the reference for, your question.

Sincerely yours,

Yi-Ying Huang

Campus Address:
109 West Lane Avenue, Columbus, Ohio 43201
Telephone:
614-268-0487
Appendix B
Example of Fieldnote
Class Session 1/January 3/Course 727.49
Place: SHS Staff Meeting Room

The time we (Dr. McCutcheon and I) arrived at Season High School (SHS) was just about 2:30. We went into the building trying to find Nancy, who is a Ph.D. student in the same program (CIPD) at OSU as I am and a teacher coordinator at SHS. A teacher in the administration office led us to the meeting room where Nancy was. After she knew that the person she was talking to was the instructor for the course (Dr. McCutcheon introduced herself, "I'm the instructor"), she said that although she taught biology she bought several books on English and curriculum to read. She said that because she had to do something (tutoring?) later she would not be available to take the course and that she felt regretful.

OC: It seemed to me that this teacher was busy with something at that moment; she talked while walking quickly. I felt glad for her because I thought teachers who want to know more about curriculum integration care about their personal and students' growth.

We met Nancy in the meeting room; two persons (teachers?) left when we came in. She said that she had been sick for several day. Nancy and I hugged together; she said "it's been a long time I haven't seen you...." I brought several Chinese tea eggs and put them on the "food desk" where there were coffee, hot water, snacks, apples, etc.

OC: Nancy looked tired; her face seemed pale. We have known each other since last fall (we took a Ph.D. colloquium together). She is a nice person, by which I mean she always smiles to me and does not let me feel that I am a foreigner, and we converse and ask about each other for a while each time we meet by chance.

(Map of the structure of the meeting room)

By 3:05 there had been 16 teachers in the room, some of them talked with each other. I did not pay attention to what they were talking; I was talking with a white male teacher. He saw me and ask my name praising me for my spoken English, which made me feel confident. He asked me which year Hong Kong would be returned to Mainland China. I said, "1997" and told him the phenomenon that most of residents in Hong Kong have been immigrating to Canada. I asked him which subject he teaches; he answered that he teaches physics and coaches [volleyball]. There was a white female teacher gave me praise on the Chinese tea eggs when I went back to my seat, which, judging that if I had stayed at the original position I would not have been able to see how teachers acted, I changed from the side facing Dr. McCutcheon to the side facing almost all teachers/administrators in the room.
1/10/94
Room 208

Coffee & Snack

Middle school

Mixed

SHS

Blackboard

Course 727.49 Instructor
Appendix C

Example of Official Document
<table>
<thead>
<tr>
<th>T B1 Time</th>
<th>Days</th>
<th>Description</th>
<th>Room</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 A1</td>
<td>7:30 - 9:25</td>
<td>MARCHING BAND</td>
<td>0106</td>
<td>ORR</td>
</tr>
<tr>
<td>1 A2</td>
<td>9:25 - 9:35</td>
<td>STUDENT BREAK</td>
<td>0106</td>
<td>ORR</td>
</tr>
<tr>
<td>1 B1</td>
<td>9:35 - 10:30</td>
<td>VOCATIONAL</td>
<td></td>
<td>ERLV</td>
</tr>
<tr>
<td>1 B2</td>
<td>10:30 - 11:30</td>
<td>PHYSICS LAB</td>
<td>0228</td>
<td>SHAUCK</td>
</tr>
<tr>
<td></td>
<td>11:30 - 12:30</td>
<td>LUNCH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 B1</td>
<td>9:35 - 11:30</td>
<td>ADV PL CALCULUS (AB)</td>
<td>0221</td>
<td>LYBERGER</td>
</tr>
<tr>
<td>2 B2</td>
<td>11:30 - 12:30</td>
<td>LUNCH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 C1</td>
<td>12:35 - 2:30</td>
<td>DEMOCRATIC CITIZENSHIP C12</td>
<td>0210</td>
<td>WAINER</td>
</tr>
<tr>
<td>2 C2</td>
<td></td>
<td>DEMOCRATIC CITIZENSHIP C12</td>
<td>0210</td>
<td>WAINER</td>
</tr>
</tbody>
</table>

To the parents of:
Appendix D

Questions for Reflection From Course 727.49
Please write 2 notes to me:

(1) An individual note saying why you're taking the course and your expectations. Be honest!

(2) A team note about what's your focus and progress to date, a list of who's in the team.

(3) Keep a reflective journal (at least one entry per week).

(4) Continue to document and reflect upon your progress, major decision your group makes.

(5) Major understanding the group develops ad how it does so.

(6) During the week, please reflect deeply about what you've learned through doing your project: a. about yourself; b. about working with others; c. about your discipline; d. about curriculum development and organization.
Appendix E

Survey Questions
(1) What are your interests in taking the course on curriculum integration? Or, what situations make you take the course?

(2) How do you think about or look at "disciplines" or "subjects," the curriculum organization which is currently adopted in most educational systems? Why?

(3) What, if anything, do you want to attain from the course on curriculum integration? Why?

(4) What do you mean by "curriculum"? Can you give me an example or examples of curriculum? What might be the relationship between you and curriculum?

(5) Use metaphors to describe your classroom as a micro-organization? Why?

(6) Use metaphors to describe your school as an organization? Why?

(7) Use metaphors to describe yourself as a high school teacher? Why?

(8) What do you mean by "curriculum integration"? Can you give me an example or examples of integrated curriculum? What might be the relationship between you and integrated curriculum?

(9) Why do we need education? Or, what is your belief in the purpose of education?

(10) What have you learned thus far that is meaningful or valuable to you?

(11) What do you want to know more about? Why?

(12) Do you feel good about your work in the school/classroom? Why?

(13) How is your designed curriculum different from the original curriculum in your classroom?

(14) What do you really want to integrate or try to integrate in your designed curriculum?

(15) What have you learned thus far (from this course, your team members, life in your school, etc.) that is meaningful or valuable to you?

(16) Does such a learning experience mentioned above somewhat change your beliefs or classroom practices (e.g., your beliefs in education, attitudes toward teamwork or curriculum integration, instructional approaches, lesson
planning, etc.)? How, and why?

(17) It's near the end of Course 727.49....What has been changed in your understanding about integrated curriculum after you really developed one through this course with your partners? What was not provided in this course which you want to know more about?

(18) What do you see as the next step in your classroom/school to extend what you have attained/learned in the process of developing integrated curriculum?

(19) Do you regard curriculum integration as a hope for improving the education in your school? Why or why not? What difficulties might need to be overcome (or, what support so you need) in your school if you want to change the original curriculum into integrated curriculum?

(20) What do you think now is the purpose of curriculum integration after implementing an integrated curriculum? Does the implementing process change your original perception about curriculum integration?

(21) Do you think that your students should be aware of your reasons for designing an integrated curriculum? Why or why not?

(22) Recall the memory: a. What really happened in the classroom when you and your two partners implemented the integrated curriculum on the Vietnam War? b. How do you feel about the whole process of the integrated curriculum on the Vietnam War?

(23) What were the paradoxes generated between the process where you and your two partners developed this curriculum in Course 727.49 and the process where you really implemented it in the classroom?

(24) What aspect during the implementing process do you think needs to be improved? How and why?
Appendix F

Letter of Reflected Resources From the Researcher
Dear Anita (Rachel, Gina):

Thank you for agreeing to participate in my research project. The purposes of qualitative research are to rethink some concept we have taken for granted, to learn from each other, and to develop and know more about ourselves by reflecting the process which we will experience together. You have so many wonderful...Ok, let's be realistic, and not-so-wonderful experiences in the school/classroom, which I'm excited that you are going to teach me. What I am sharing with you is my finding from the literature about some definitions of "curriculum" and "integration."

After you read through (1) those interpretations, I hope you will begin to examine and reflect on the meaning of curriculum integration in your journal (what you believe the meaning, purpose, or vision of curriculum integration should be; what and why you agree or disagree with some meanings provided). Meanwhile, please also keep in mind recalling/retrieving (2) your experience of developing an integrated curriculum in Course 727.49, (3) the daily teaching experience of implementing the original curriculum or integrated curriculum, and (4) the perception/feeling about people and events in the organization. Then, see how those experiences contribute to your constructing the meaning of curriculum integration.

You may find it interesting to compare the original curriculum with the integrated curriculum you have developed with Rita and Gleena or the one constructed in terms of your own interest or belief. Please feel free in your reflective journal to change or update the definition or meaning of curriculum integration you previously constructed as long as you want to.

Notice that there is no "correct answer" to the meaning of curriculum integration. Here are some definitions of "curriculum" and "integration."

Curriculum is what students have opportunities to learn under the auspices of schools—the content that schools offer. It concerns what should be taught. There are three kinds of curriculum available in schools:

1. The explicit curriculum: It is the publicly advertised fare of schooling, which usually lists the documents and policies like graded courses of study, curriculum guides, scope and sequence charts, standards of the proficiency tests, etc.

2. The implicit curriculum: It is what students intentionally or unintentionally learn at school, which may influence the character and direction of their life. For example, students learn to keep quiet when the principal passes by their classroom, to talk in the ways their teachers talk.

3. The null curriculum consists of what students do not have opportunities to learn, which may influence students' reasoning process to consider and reflect alternative perspectives and realities. It is important to consider what we do not teach in schools as well as what we do.

The term "integration" has been defined in different contexts as the following:
1. Psychologically, integration indicates the formulation, development and union of the child's activities into one whole growth and personality. The human organism is so interconnected, interdependent, and integrated, that whatever happens to one part of it usually brings about correlative changes in other parts of the organism. That is, integration is seen as a process that takes place within the individual, and through which the person correlates parts, establishes relationships, generalizes, and synthesizes. It is also said that any learning situation in which knowledge is acquired is conducive to integration.

2. Pedagogically, integration means a teaching procedure and curriculum planning in which various subjects are connected into units of study or problem solving situations. Teaching different subjects as totally distinct entities may militate against developing a comprehensive and multidimensional perspective in children. Curriculum needs to develop common perceptions by dealing with ideas and concepts which cut across subjects. Integration also means to blur the boundaries between the subjects by subordinating insulated subjects to some relational idea. The degree of integration may depend on the number of teachers involved.

3. Sociologically, integration is used to describe desired interactions between the individual and others, between the individual and the organized institutions, and between one organized institution and other institutions. Every human organism must develop in a culture which antedates its birth. It must not only continue to maintain integration within itself but also to integrate progressively with the existing culture in order to grow normally. That is, each individual experiences receiving and giving affection, and develops means of living harmoniously with physical, esthetic, and social authority.

4. Epistemologically, the meaning of integration deals with the nature of knowledge. All knowledge is interdependent and occurs in interactions with related objects (e.g., the interaction of the knower and known); but, not everything is related to everything else in every possible way. All knowledge, when acquired, occurs within a structure and is traceable to its place within one of the forms, including pure mathematics, science, knowledge of minds, moral knowledge, artistic knowledge, religion, and philosophy. Integration indicates a kind of knowledge of minds and science, where fields of knowledge are a meaningful psychological whole unified around the methodological concepts of time and space, of happenings through time on the one hand, and of organization across space on the other.

5. Philosophically, integration indicates a kind of belief or value. Integration as a mode of participation and growth, and a point of orientation in educational thinking. That is, integration becomes one's way of viewing the educative process as a whole; it represents an emphasis, not a performance; it suggests the necessity of bringing social and personal events, movements, and conditions of life together in fresh levels of creative synthesis. Thus, integration as a belief helps one to live so that his/her existence will evidence that life is regular, concrete, whole, harmonious, cooperative, bound together by a fundamental affinity, and integer.
Appendix G

Letter of Recommendation for the Research
April 22, 1994

Dear Administrator:

I write this letter to introduce Yi-Yang Huang, a researcher from The Ohio State University. This research proposal has been reviewed and approved by the Research Proposal Review Committee.

Be that as it may, this letter does not obligate you or your staff to participate in the study. Rather, it serves as an introduction and official notification that Yi-Yang Huang has followed established procedures and has been granted permission to solicit subjects and/or schools to participate in this study.

If you have any questions or concerns, please call me at 365-5737.

Sincerely,

Lucretia Williams
Assistant Superintendent
Division of Student Services

LW/hlm
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