A CASE STUDY OF A PILOT ONE-TO-ONE LAPTOP INITIATIVE IN A HIGH PERFORMING CATHOLIC HIGH SCHOOL

A Dissertation By

Cameron B. Carlson

MEd, Wichita State University, 2001
BA, Wichita State University, 1994

Submitted to the College of Education and the faculty of the Graduate School of Wichita State University in partial fulfillment of the requirements for the degree of Doctor of Education

July 2007
A CASE STUDY OF A PILOT ONE-TO-ONE LAPTOP INITIATIVE IN A HIGH PERFORMING CATHOLIC HIGH SCHOOL

I have examined the final copy of this dissertation for form and content, and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education with a major in Educational Leadership

Jean A. Patterson, Committee Chair

We have read this dissertation and recommend its acceptance:

Raymond L. Calabrese, Committee Member

Mara Alagic, Committee Member

Glyn Rimmington, Committee Member

Sherry Goodvin, Committee Member

Accepted for the College of Education

Jon M. Engelhardt, Dean

Accepted for the Graduate School

Susan K. Kovar, Dean
DEDICATION

This dissertation is dedicated to my wife, Lana, and loving family of 3 sons, Andrew, Nicholas, and Christopher. They have been the wind beneath my wings and have allowed me to continue my educational endeavors. I could not ask for a more supportive family.
ACKNOWLEDGEMENTS

I would like to thank my dissertation advisor, Jean A. Patterson. She has an amazing ability to help me break free from my inter-connected thoughts and to help me see the forest among all of the trees. Through her guidance and patience, I can give a voice to the unvoiced. She taught me to suspend judgment, question assumptions, and realize much of what I thought of myself as a leader was not leadership. I am indebted to her commitment to serve. She has invigorated in me a passion to give voice to those under-represented people deserving recognition, and has helped me develop the skills I need to accomplish this goal. Because of her, I am a better person and a better leader. I would also like to thank the other members of my committee, Mara Alagic, Ray Calabrese, and Glyn Rimmington for helping me understand how to suspend my judgment and collect data. I would also like to thank another committee member, and mentor, Sherry Goodvin for her continued guidance throughout the doctoral program.

I would like to thank those who helped me collect data, Diane Gross and Randy Turk. And a special thanks to one member of my doctoral cohort, Russ Miller, who also was my peer debriefer, surrogate researcher, colleague, encourager, and friend. Thank you also other members of my Cohort: Robert Morton, Rae Niles, Martin Stessman, and David Shepherd. The two in-class years has built friendships that will last a lifetime.

Finally, I would like to thank my principal, Dennis McGuire, for picking up the pieces of my job so that I could continue my education. I would also like to thank all of the laptop teachers, students and department chairs from whom I learned so much.
ABSTRACT

Encouraged by technology advocates outside of schools, high schools throughout the country are introducing technology initiatives, such as providing students with laptops with 24-hour access to computers and the internet, without considering how the technology will affect the school personnel and the students. Little empirical research explains this phenomenon, yet schools continue to adopt these initiatives. Through the theoretical framework of Organizational Sensemaking, the researcher explored the context in which he worked to determine how participant groups in a comprehensive diocesan Catholic high school made sense of the introduction of a one-to-one laptop pilot. This embedded case study spanned three semesters from the Fall of 2005 through the Fall of 2006.

Data collection involved activities with four participant groups: “laptop insiders” consisting of the first year pilot students and their teachers, laptop “outsider/insiders” consisting of students and teachers who joined the initiative after the first year, and “laptop outsiders” consisting of the high school’s department chairs, and the researcher/leader of the pilot. Data collection activities included: focus groups, open-ended electronic surveys, the Right and Left Hand Column Case Method, a document review of emails and student reflections, and a review of the researcher’s activity and reflexive journals.

Detailed findings from the study are organized by participant group and reflect the how each group experienced their involvement with the pilot. Conclusions drawn from this study’s findings provide insights into how participants made sense, or did not make sense, of the laptop initiative that disrupted the school and challenged traditional school structures. Findings revealed four main incongruous observations of divergent sensemaking between laptop teachers and department chairs: different perceptions of teaching and learning, different understandings of the
role that technology plays, or can play, in the classroom, different understandings about who should control information in the classroom, and different understandings about the Catholic school mission. Additionally, findings and conclusions describe how participants made sense of the initiative as they constructed narratives of the future to understand the present and how pilot participants constructed identities for themselves and for others in an effort to make sense of their involvement. Findings and conclusions also explore the difficulties of conducting research in the researcher’s own context.

Implications for theory and practice include encouraging time for reflective dialogue, transitioning between years in the pilot, and leading sensemaking processes when introducing initiatives that challenge school structures. Implications also include recommendations for the school within which this study was conducted.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHAPTER 1</td>
<td>1</td>
</tr>
<tr>
<td>Introduction</td>
<td>1</td>
</tr>
<tr>
<td>Research Problem</td>
<td>2</td>
</tr>
<tr>
<td>Significance of the Study</td>
<td>3</td>
</tr>
<tr>
<td>Purpose of the Study, Objectives, and Research Questions</td>
<td>3</td>
</tr>
<tr>
<td>Overview of Research Design and Methodology</td>
<td>4</td>
</tr>
<tr>
<td>Organization of the Dissertation</td>
<td>5</td>
</tr>
<tr>
<td>CHAPTER 2</td>
<td>6</td>
</tr>
<tr>
<td>Review of Literature</td>
<td>6</td>
</tr>
<tr>
<td>Cycles of Educational Policy and Reform</td>
<td>6</td>
</tr>
<tr>
<td>Background and History of Policy Reform Cycles to Infuse Technology in Schools</td>
<td>7</td>
</tr>
<tr>
<td>The First Cycle: Policy Talk to Place Computers in Schools</td>
<td>8</td>
</tr>
<tr>
<td>Policy Action: Making Technology Available to Public and Private Schools</td>
<td>8</td>
</tr>
<tr>
<td>The Second Cycle: Policy Talk to Integrate Technology into Instruction</td>
<td>11</td>
</tr>
<tr>
<td>Policy Action to Integrate Computer Technology and Software Applications into Instruction</td>
<td>13</td>
</tr>
<tr>
<td>Policy Implementation: Technology and Curriculum Standards</td>
<td>16</td>
</tr>
<tr>
<td>Policy Implementation: Computer Technology Integration in Comprehensive High Schools</td>
<td>17</td>
</tr>
<tr>
<td>Empirical Research on One-to-one Laptop Initiatives</td>
<td>19</td>
</tr>
<tr>
<td>Unforeseen Implementation Problems</td>
<td>20</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS (continued)

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers’ Beliefs about Teaching and Learning Affect Implementation</td>
<td>21</td>
</tr>
<tr>
<td>Students’ Personal Uses and Teachers’ Classroom Management</td>
<td>23</td>
</tr>
<tr>
<td>Teachers’ Connection, Understanding, and Commitment to the Initiative</td>
<td>23</td>
</tr>
<tr>
<td>The Need for Rigorous Research</td>
<td>24</td>
</tr>
<tr>
<td>Theoretical Framework: Organizational Sensemaking</td>
<td>25</td>
</tr>
<tr>
<td>Sensemaking as an Individual Process</td>
<td>27</td>
</tr>
<tr>
<td>Sensemaking is a Community Process</td>
<td>29</td>
</tr>
<tr>
<td>CHAPTER 3</td>
<td>31</td>
</tr>
<tr>
<td>Research Design and Methodology</td>
<td>31</td>
</tr>
<tr>
<td>Research Site and Study Participants</td>
<td>32</td>
</tr>
<tr>
<td>Data Collection Strategies</td>
<td>34</td>
</tr>
<tr>
<td>Open-ended Survey</td>
<td>35</td>
</tr>
<tr>
<td>Focus Groups</td>
<td>35</td>
</tr>
<tr>
<td>The Left and Right Hand Column Case Method</td>
<td>36</td>
</tr>
<tr>
<td>Documents and Student Reflections</td>
<td>36</td>
</tr>
<tr>
<td>Reflexive Journal</td>
<td>38</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>38</td>
</tr>
<tr>
<td>Researcher as Instrument</td>
<td>39</td>
</tr>
<tr>
<td>Protection of Human Subjects</td>
<td>41</td>
</tr>
<tr>
<td>Trustworthiness</td>
<td>42</td>
</tr>
<tr>
<td>Reflexivity</td>
<td>43</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS (continued)

Chapter                                           Page

Peer Debriefing                                                                                      43
Triangulation                                                                                       43

CHAPTER 4                                                                                           45
Findings: Research Context, Laptop Pilot Students, Teachers, and Department Chairs                  45

Research Site: Kapaun-Mt. Carmel Catholic High School                                               45
Conceptualizing a Laptop Pilot at Kapaun                                                       47
Selecting Teachers and Students for the Pilot                                                      47
Announcing the Pilot                                                                              48
Laptop Pilot Resources and Infrastructure                                                          49

Section I: Laptop Teachers and Students Perceptions of the Initiative                            50

Laptop Teachers’ Approach to Instruction Changed                                             51
Laptop Teachers’ Relationships With Their Students Changed                                      54
Laptop Teachers Became Program Leaders                                                           55
Confronted by Opposition, Laptop Teachers Formed Together in Community                         58
Belief that Technology Enhanced Catholic School Mission                                        59

Laptop Students                                                                                      61
From Technology Novices to Technology Experts                                                     62
Increased Confidence                                                                               65
Submitting Homework and Exchanging Papers                                                         66
Developing Organizational Skills                                                                  66
From Traditional Learning Expectations to Interactive Learning                                 68
TABLE OF CONTENTS (continued)

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expectations for a Traditional Classroom</td>
<td>69</td>
</tr>
<tr>
<td>Discovering Learning Styles</td>
<td>71</td>
</tr>
<tr>
<td>Interactive Learning</td>
<td>73</td>
</tr>
<tr>
<td>From Individual to Community</td>
<td>76</td>
</tr>
<tr>
<td>To a Community of Learners</td>
<td>78</td>
</tr>
<tr>
<td>Cohesion in the Face of Adversity</td>
<td>79</td>
</tr>
<tr>
<td>Solidarity in Success</td>
<td>81</td>
</tr>
<tr>
<td>Becoming a Family</td>
<td>82</td>
</tr>
<tr>
<td>Section II:</td>
<td>85</td>
</tr>
<tr>
<td>Teachers and Students Joined the Initiative in Preparation for the 2006-2007 School Year</td>
<td>85</td>
</tr>
<tr>
<td>New Teachers Were Added to the Initiative</td>
<td>85</td>
</tr>
<tr>
<td>New Teachers’ Insecurities</td>
<td>87</td>
</tr>
<tr>
<td>New Teachers’ Responses to Negativity</td>
<td>88</td>
</tr>
<tr>
<td>New Students Were Added to the Initiative</td>
<td>89</td>
</tr>
<tr>
<td>Students On the Outside Looking In</td>
<td>89</td>
</tr>
<tr>
<td>Between Two Worlds: New Students Struggled to Belong</td>
<td>91</td>
</tr>
<tr>
<td>Lack of Training for New Students</td>
<td>92</td>
</tr>
<tr>
<td>Trying to Fit in and Getting Needed Help</td>
<td>93</td>
</tr>
<tr>
<td>Taking Advantage of Technology Breakdowns and Managing Off-task Behavior</td>
<td>95</td>
</tr>
<tr>
<td>The Program Did Not Meet Newcomer’s Expectations</td>
<td>97</td>
</tr>
<tr>
<td>Students Benefited Individually</td>
<td>99</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS (continued)

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Section III: Department Chairs Disenfranchisement with the Laptop Pilot</td>
<td>100</td>
</tr>
<tr>
<td>Laptop Pilot Divided the School</td>
<td>101</td>
</tr>
<tr>
<td>Technology is Valued More than People</td>
<td>103</td>
</tr>
<tr>
<td>Little Input from Department Chairs Breeds Resentment</td>
<td>104</td>
</tr>
<tr>
<td>The Laptop Pilot has Modeled Teaching with Computers</td>
<td>105</td>
</tr>
<tr>
<td>CHAPTER 5</td>
<td>107</td>
</tr>
<tr>
<td>Findings: Researcher-Leader</td>
<td>107</td>
</tr>
<tr>
<td>Roles in Conflict: Examining the Dual Roles of Program Initiator and Researcher</td>
<td>107</td>
</tr>
<tr>
<td>The Dilemma of Researching and Facilitating the Laptop Pilot</td>
<td>110</td>
</tr>
<tr>
<td>Data Collection and Preliminary Analysis</td>
<td>111</td>
</tr>
<tr>
<td>Dual Role Conundrum</td>
<td>111</td>
</tr>
<tr>
<td>From Researcher to Practitioner: Insights into Leadership</td>
<td>113</td>
</tr>
<tr>
<td>Understanding the Way I Lead</td>
<td>114</td>
</tr>
<tr>
<td>Relationship with Department Chairs</td>
<td>116</td>
</tr>
<tr>
<td>Reconciling Differences among Teachers and Department Chairs</td>
<td>118</td>
</tr>
<tr>
<td>Recognize the Need for Training and Reconciling Divisions Formed from Neglect</td>
<td>121</td>
</tr>
<tr>
<td>Abandoned by Veronica</td>
<td>122</td>
</tr>
<tr>
<td>Community</td>
<td>124</td>
</tr>
<tr>
<td>CHAPTER 6</td>
<td>126</td>
</tr>
<tr>
<td>Conclusions and Implications</td>
<td>126</td>
</tr>
<tr>
<td>Making Sense of a One-to-one Laptop Initiative</td>
<td>126</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS (continued)

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-to-one Laptop Initiative Disrupted Life at Kapaun and Prompted Sensemaking</td>
<td>127</td>
</tr>
<tr>
<td>Ambiguous Purpose for Laptop Initiative</td>
<td>129</td>
</tr>
<tr>
<td>Narratives in Transition: Participants Socially Constructed the School’s Future to Make Sense of the Present</td>
<td>130</td>
</tr>
<tr>
<td>Teachers’ Divergent Sensemaking:</td>
<td>132</td>
</tr>
<tr>
<td>Instruction, Role of Technology, and Mission of Catholic High School</td>
<td>132</td>
</tr>
<tr>
<td>Divergent Beliefs about Teaching and Learning</td>
<td>133</td>
</tr>
<tr>
<td>Divergent Views on the Role of Technology in Instruction</td>
<td>134</td>
</tr>
<tr>
<td>Differing Beliefs about Who Controlled Information</td>
<td>135</td>
</tr>
<tr>
<td>Divergent Views of the Catholic School Mission</td>
<td>137</td>
</tr>
<tr>
<td>Making Sense of an Innovative Pilot in a Traditional School Structure</td>
<td>138</td>
</tr>
<tr>
<td>Laptop Students Re-Entered a Traditional Learning Environment in the Initiative’s Second Year</td>
<td>140</td>
</tr>
<tr>
<td>Laptop Insiders Created Their Own World Inside the School</td>
<td>140</td>
</tr>
<tr>
<td>Laptop Insiders Co-Constructed Meaning</td>
<td>141</td>
</tr>
<tr>
<td>Laptop Pilot Facilitated a Small Learning Community</td>
<td>141</td>
</tr>
<tr>
<td>Laptop Insiders Constructed New Identities for Themselves and Others</td>
<td>142</td>
</tr>
<tr>
<td>Self-Fulfilling Prophecies: Making Sense of My Entanglement with Department Chairs</td>
<td>145</td>
</tr>
<tr>
<td>Lost in Transition: New Laptop Participants Struggled to Make Sense of the Pilot</td>
<td>146</td>
</tr>
<tr>
<td>Insiders/Outsiders: Between Two Worlds</td>
<td>146</td>
</tr>
<tr>
<td>Implications for Theory and Practice</td>
<td>149</td>
</tr>
</tbody>
</table>
TABLE OF CONTENTS (continued)

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Encourage Time for Reflective Dialogue</td>
<td>150</td>
</tr>
<tr>
<td>Plan for Who Receives Pilot Students</td>
<td>151</td>
</tr>
<tr>
<td>Opportunities to Shape Organizational Identities</td>
<td>151</td>
</tr>
<tr>
<td>Leaders Should Facilitate Active Sensemaking</td>
<td>153</td>
</tr>
<tr>
<td>Implications for Researcher-Leader</td>
<td>155</td>
</tr>
<tr>
<td>Recommendations for Kapaun-Mt. Carmel Catholic High School</td>
<td>156</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>158</td>
</tr>
<tr>
<td>APPENDICES</td>
<td>170</td>
</tr>
<tr>
<td>Appendix A-1</td>
<td>171</td>
</tr>
<tr>
<td>Online Survey Protocol – Department Chairs</td>
<td>171</td>
</tr>
<tr>
<td>Appendix A-2</td>
<td>172</td>
</tr>
<tr>
<td>Electronic Survey Protocol – Laptop Teachers</td>
<td>172</td>
</tr>
<tr>
<td>Appendix B</td>
<td>173</td>
</tr>
<tr>
<td>Focus Group Protocol - Students</td>
<td>173</td>
</tr>
<tr>
<td>Appendix C</td>
<td>174</td>
</tr>
<tr>
<td>Focus Group Protocol - Students</td>
<td>174</td>
</tr>
<tr>
<td>Appendix D</td>
<td>175</td>
</tr>
<tr>
<td>Left Hand Right Hand Column Case Method</td>
<td>175</td>
</tr>
<tr>
<td>Appendix E-1</td>
<td>177</td>
</tr>
<tr>
<td>Teacher Consent Forms (Open-Ended Survey)</td>
<td>177</td>
</tr>
<tr>
<td>Appendix E-2</td>
<td>179</td>
</tr>
</tbody>
</table>

xiv
# TABLE OF CONTENTS (continued)

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Consent Forms (LHRHCC)</td>
<td>179</td>
</tr>
<tr>
<td>Appendix F</td>
<td>181</td>
</tr>
<tr>
<td>Parent Consent Form</td>
<td>181</td>
</tr>
<tr>
<td>Appendix G</td>
<td>183</td>
</tr>
<tr>
<td>Student Assent Form</td>
<td>183</td>
</tr>
<tr>
<td>Appendix H</td>
<td>184</td>
</tr>
<tr>
<td>The School’s Criteria for Determining “Constructivist” Learners</td>
<td>184</td>
</tr>
</tbody>
</table>
CHAPTER 1

Introduction

During the past 25 years, the use of computer technology has been proposed as a solution for improving and enhancing public and private school education (Bebell, 2005; Cuban, 2006; Harrison, 2005; Lemke & Coughlin, 1998; Paige, Hickok, & Patrik, 2004; Trotter, 2007). According to Cuban (2001), “public officials, corporate executives, vendors, policy makers and parents” (p. 12) have come together to form a loose coalition of advocates to support the use of technology in schools. These voices have repeatedly made the argument that incorporating computer technology into schools is essential to ensuring the nation retains its status as leader of a global society (Schmidt, 2003; Trotter, 2007). As a result, federal, state, and local officials have poured funding into schools in order to increase the availability of computer hardware and software and to train teachers how to use them. Technology initiatives have evolved over the years from stationary computer labs to computers in classrooms to mobile laptop carts to one-to-one laptop initiatives (Bonifaz & Zucker, 2004). Yet, technology advocates have repeatedly been disappointed to find new technology collecting dust rather than being used as an integral component of instruction (Cuban, 2001; Trotter, 2007; U.S. Congress, 1995, Office of Technology Assessment, 1995). Regardless of these disappointing outcomes, public and private high schools are adopting “one-to-one” laptop initiatives, where students and teachers are provided with a laptop computer and have access to the Internet and learning opportunities 24 hours a day, 7 days a week (Bebell, 2005; Paige et al., 2004).

States and school districts have adopted one-to-one technology initiatives for a variety of reasons. Rationales for statewide adoption of one-to-one laptop initiatives have ranged from increasing economic competitiveness in Maine (Silvernail & Lane, 2004), tackling absences,
tardiness, and disciplinary issues in New Hampshire (Bebell, 2005), narrowing the digital divide in Virginia (Henrico County) (Zucker, 2004) to educational reform in general (Bebell, 2005). School districts that have deployed smaller scale initiatives believe they have the potential transform learning environments to include increasing students’ understanding in math and sciences by networking classrooms (Roschelle, Penuel, & Abrahamson, 2004) and increasing problem-based instruction (Lehman, Ertmer, Keck, & Steele, 2001). In the state of Kansas, a large-scale state or county-wide initiative has not occurred, but several school districts individually implement initiatives. As a result of each district’s autonomy, specific information regarding the number of schools in Kansas with one-to-one laptop initiatives is not available, but a handful of mostly rural school districts publicly announce that they are beginning a one-to-one initiative each year. Public schools and private schools throughout the state of Kansas, including the high school where this study took place have invested in one-to-one technology initiatives.

Research Problem

One-to-one laptop initiatives are cropping up in high schools all over the country (Bebell, 2005; Cuban, 2006; Milner, 2005). As these initiatives are proliferating, little consideration has been given to how teachers and students might use them or how they affect schools. This is especially true in a high school context that has proved notoriously impervious to accepting innovations that force them to question structures and cultural practices that have remained essentially unchanged for nearly 100 years (Dexter, 1999). As public and private high schools throughout the country are implementing one-to-one laptop initiatives, it is important to examine how teachers and students experience the introduction and implementation of a one-to-one laptop initiative.
Significance of the Study

The dominant form of research studying laptop initiatives is market based or government sponsored research that evaluates implementation. Few independent empirical studies show how laptop initiatives affect schools, therefore this study is significant because it contributes to a developing area of research (Zucker, 2004). It is also significant because it provides insight into how a high performing comprehensive high school responds to the introduction of a laptop initiative, as the need to change current practice is not evident. This research additionally provides insight into the change process in high schools by illuminating how teachers and students and the researcher/leader made sense of the introduction of a one-to-one laptop in their high school.

Purpose of the Study, Objectives, and Research Questions

The purpose of the study was to examine how teachers and students in a comprehensive private high school described the pilot phase of a one-to-one laptop computer initiative. Organizational sensemaking (Weick, 1995) served as the theoretical framework to explain how teachers and students involved in the pilot made sense of its implementation in the context of a comprehensive private high school. To that end, the objectives of the study were:

- To describe the implementation of a one-to-one laptop initiative within the context of a high performing high school
- To describe how a high performing high school has influenced and has been influenced by the pilot laptop program.
- To analyze how students and teachers, both participants and non-participants, make sense of the pilot one-to-one laptop initiative in the context of a high performing high school.
From the study objectives and the theoretical framework, the following research questions guided inquiry into understanding the phenomena of a pilot one-to-one laptop initiative in a high performing high school.

1. How do students and teachers piloting a one-to-one laptop initiative in a high performing high school make sense of it?
2. How do students and teachers participating in a one-to-one laptop initiative in a high performing high school envision their futures with the continual presence of technology?
3. How do students and teachers in a high performing high school who are not participating in the initiative make sense of it?

The objectives and questions elucidate what happened when a one-to-one laptop initiative was introduced into a high performing high school, and set the stage for a qualitative case study.

*Overview of Research Design and Methodology*

The research design for this study was a qualitative embedded case study (Yin, 2003) that involved 25 students and 17 teachers in a comprehensive diocesan Catholic high school as they attempted to make sense of a laptop pilot initiative that involved 25 students and 10 teachers. The methodology employed gained participants’ unique perspectives about the pilot and consisted of data collection activities that occurred over 3 semesters and included a review of documents, open-ended surveys, student focus groups (Bogdan & Biklen, 2003; Patton, 2002), the Left and Right Hand Column Case Method (Argyris, 1995), and a review of my activity journal that I kept during the pilot, and my reflexive journal (Patton, 2002) that I used during data collection and analysis.
Organization of the Dissertation

I have organized this dissertation into six chapters. After this introductory chapter, Chapter 2 reviews relevant literature and situates this study in a research context where policymakers and business leaders have advocated continually for the presence of technology in school. The literature traces the history of policy-oriented decisions that have imbued schools with waves of technology initiatives, with promises to reform them, with the most recent of these reforms being one-to-one laptop initiatives. Chapter 2 concludes with a discussion of the Organizational Sensemaking theoretical framework. Chapter 3 outlines the research design and methodology used to study how the participants made sense of the initiative in a school site in which I am also an administrator.

Chapters 4 and Chapter 5 report the findings from my data collection and analysis. Chapter 4 explores the findings from the first year student and teacher participants, second year student and teacher participants and the department chairs. Chapter 5 conveys findings of my role as a researcher-leader as I struggled to maintain objectivity during the research process and learned to listen to others’ opinions, suspending my own judgment until I heard their perspective. Chapter 6 concludes the dissertation where I draw general conclusions about the initiative. I conclude this chapter with implications for theory and practice and specific recommendations for my research site.
CHAPTER 2

Review of Literature

The first section of this chapter begins by providing an overarching framework and broad context to demonstrate how technology reforms have been implemented in schools. The second section traces how reforms have been enacted in two distinct, but overlapping technology policy cycles and concludes with a review of what empirical research that exists on the phenomena of the effects of introducing one-to-one initiatives into schools. The final section introduces and explains the Organizational Sensemaking theoretical framework utilized in this study.

Cycles of Educational Policy and Reform

In an effort to explain the cyclical nature of reform, one that moves from criticizing public education to facilitating change in schools, Tyack and Cuban (1995) proposed that education policy cycles in three distinct phases: “policy talk,” “policy action,” and “policy implementation.” “Policy talk” typically provides the impetus or the stated reasons for schools to consider reforming – i.e. struggling economy, international competitiveness, school choice, etc. For example, the No Child Left Behind Act of 2001 (NCLB) resulted from policy talk based upon the ongoing rhetoric that students in public schools were not achieving. “Policy action,” a separate phase of reform, focuses national attention toward providing the necessary support to implement the reform. To address NCLB, states are adopting their own assessments and identifying schools that have met “standards of excellence.” “Policy implementation,” the last phase of Tyack and Cuban’s framework, addresses the ways in which schools make policy decisions at the local levels in an attempt to carry out the reforms.
The recent introduction of computers into schools provides an example of an initiative that can be examined through Tyack and Cuban’s (1995) policy cycle framework. Regardless of a school’s composition, the infusion of computer technology into American public and private schools has occurred in two distinct but overlapping policy cycles. In the first cycle, which began during the 1980s and peaked in the early 1990s (Anderson & Ronnkvist, 1999), the emphasis of policy talk and policy action was on simply placing computers in schools, without much thought given to how they would be used or with the assumption that teachers already knew how to use them. Beginning in the mid-1990s, the second cycle began (and continues) as the policy talk and action shifted from merely installing computers in schools to an emphasis on using computers as instructional tools.

During this second cycle, the dominant policy talk emerged from technology advocates who aligned themselves with constructivist pedagogy and delivery models (Vannatta & Beyerbach, 2000). Constructivist pedagogy is premised on the belief that knowledge is constructed rather than transmitted from the teacher to the students (Becker & Riel, 1999). Constructivists conceptualize both teachers and students as learners who are in a process of discovery. Adherents to a constructivist pedagogy place learners’ understandings at the forefront of their discourse, suggesting that learning is or should be tied directly to students’ discovering meaning in context with their present lives. Technology advocates posited that constructivist instructional technologies allowed students to dig deeper into the content. As students “dig deeper,” teachers presumably provide more opportunities to connect what they are learning in schools to the context of an emerging “information-aged society,” in which participants are connected to each other via the Internet (Ferguson, 2001). Consequently, research and practice in
recent years has focused on using technology to significantly alter instruction in order to engage students in authentic learning (Hill & Smith, 2005) and to even change the structure and culture of schools (Riel & Becker, 2000). These two cycles of policy talk, action and implementation as they relate to computer technologies are elaborated in the following sections.

*The First Cycle: Policy Talk to Place Computers in Schools*

The first cycle of policy talk regarding computers and education occurred in 1983, with the publication of *A Nation at Risk*, which called attention to the failure of public schools. The Commission suggested that, among other things, computing was a basic skill that students needed in order to be competitive in an emerging global economy (Rogers, 2000) and that computers provided a potential solution to help reform failing schools. Technology vendors added to the firestorm, as they offered a product that would seemingly improve schools. Because few schools at the time had computers, policymakers assumed if they increased the number of computers in schools, then students would be prepared to meet the needs of the new world economy. The success of the policy was measured by calculating the number of students per computer (Anderson & Ronnkvist, 1999; Williams, 2000) rather than determining whether or not computers were actually used.

*Policy Action: Making Technology Available to Public and Private Schools*

Policy talk in this cycle moved quickly into policy action. In 1986, a formal federal reform agenda emerged as an outgrowth of the annual National Governors Association (NGA) meeting that eventually became Goals 2000 under the Clinton administration (Schwartz & Robinson, 2000). Goals 2000 legislation emphasized teaching high standards and provided the impetus for the standards-based reform movement. In order to comply with Goals 2000 requirements, states began the process of developing their own curriculum standards. Although
technology usage in schools was not a specific provision, Goals 2000 called for states to submit plans for how they intended to incorporate technology in schools.

Title III provisions of Goals 2000 gave states access to funds to be used to align professional development with standards and to make other changes needed to support Goals 2000 initiatives (Schwartz & Robinson, 2000). In order to receive Title III funds, district personnel were required to submit information about the computer technology they currently made available to students. This information was used to determine optimal computer-to-student ratios, which prompted a nationwide trend to increase the number of computers in schools (Chapman, 2000).

Private schools also received federal funding for programs that related to the development of a technology-enabled infrastructure, although the funding was not easy to obtain (Anderson & Ronnkvist, 1999; Geide, 1998; Parsad, Skinner, & Farris, 2001). Under the reauthorization of the Elementary and Secondary Education Act (ESEA) in 1994, Geide noted that private schools were allowed access to funds, although not directly. Participating public schools could extend their funding to teachers and students employed or enrolled in private schools within their jurisdiction; however, private school administrators had to request the funding and found that the process for receiving it was not easily navigated.

A 1998 National Center for Education Statistics (NCES) survey of both public and private schools reported the major difference in technology access between public and private schools was the larger number of public schools with Internet access (as was the case in 1995 when private schools were first surveyed). The difference in access was attributed to the availability of public funding for public schools (Anderson & Ronnkvist, 1999). As a result, the
federal government established additional ways to provide both public and private schools with the means to acquire technology and connections to the Internet (Parsad et al., 2001).

To place the newest technology in the hands of public and private school teachers and learners, the federal government sponsored E-Rate under the Telecommunications Act of 1996 (Parsad et al., 2001). E-Rate provided a subsidy in the form of reduced rates and equipment to schools that provided Internet access to their students and teachers. During the first year of this policy’s funding (1998), 30,000 public and private schools applied for the program (Universal Service Administration Company, 1999). Twenty-five percent of the schools that applied for E-rate were private (mostly Catholic), however, only 13% received some support (Parsad et al., 2001). This policy action is especially significant because it is the first federal policy that directly provided funds to private education providers, instead of funnelling funds awarded to private schools through public school districts.

Further policy action in the 1990s to place technology in schools came in the form of federal government funding opportunities. From 1991 to 1999, the federal government spent $19 billion to place (or replace) technology in schools (Slowinski, 2000). While most of the funds went to public schools (only 15% of private schools reported receiving funding through ESEA, the highest participation of all federal programs) (Parsad et al., 2001), private schools kept pace and provided the same number of computers per student as public schools. Because they had less access to federal funds, private schools primarily relied on private funds to purchase computer technology. Regardless of the funding mechanisms to place computers in schools, having computers available did not mean that teachers knew how to use them for instructional purposes (U.S. Congress, 1995). In the late 1990’s a new policy cycle began, overlapping with the first, as policymakers were then critical of teachers for not using technology to instruct their students.
The Second Cycle: Policy Talk to Integrate Technology into Instruction

As noted in the previous section, in the first cycle, it was assumed that teachers would already know how to teach with computers and students would already know how to learn using them (U.S. Congress, 1995). Borrowing the rhetoric of holding teachers accountable and recounting the millions of dollars expended to place technology in public schools, policymakers, economists, and computer vendors charged that teachers were not doing their jobs (Buckley, 2002; Cuban, 2001; Schmidt, 2003). Policymakers, along with business leaders, vendors, politicians, and parents, formed an “ad hoc coalition” (Cuban) and ushered in a second cycle of policy talk that indicted teachers’ inability to use computers for instructional purposes.

Other reasons, or barriers, were offered to explain why teachers were not changing their practice, which suggested that principals, central office administrators, and other school leaders were equally responsible for schools’ failure to integrate technology into instruction (Robertson, 2003; Rogers, 2000; Ruthven, Hennessy, & Brindley, 2004; Watson, 2001). Barriers cited included lack of a supportive culture favoring technology, lack of systemic support for professional development, lack of access to computers, and lack of release time for teachers to develop their technology skills (Rogers, 2000; Smerdon et al., 2000). To offer direction for all school personnel responsible for lifting barriers, policymakers developed their own goals to increase technology usage in schools (Cuban, 2001). In addition to blame they offered schools guidance in order to promote three goals for technology: to make schools more efficient and productive, to transform teaching and learning by connecting engaged learning opportunities to the lives of students, and to prepare the next generation for the workforce (Cuban).

The National Educational Technology Plan (NETP) published in 2004, has provided even more guidance as schools have moved from “A Nation at Risk” to “A Nation on the Move”
(Paige et al., 2004). In addition to offering suggestions for schools and policymakers, the authors proposed that schools have, in fact, progressed rapidly toward incorporating technology. As public and private schools have attempted to address policymakers’ three goals noted above—efficiency, relevancy, and workforce preparation—many have adopted initiatives to provide students with 24-hour access to technology, another of NETP’s recommendations to “Encourage Broadband Access” (p. 42) noting the benefits of “24-hour, 365 day” (p. 42) access to teachers and students.

In particular, one-to-one laptop initiatives that provide 24-hour technology access have become a focal point of current policy talk. This new technology phenomenon seems to satisfy the agendas of policymakers and business leaders alike. Based upon a 2003 survey, the National Center for Education Statistics (NCES) (Parsad & Jones, 2005) estimated that by the beginning of the 2004-2005 school year, 15% of all public schools would have a program in place for students to check out laptops to take home. In an increasingly competitive environment, school districts vie to be the first in the area to adopt full-scale laptop initiatives (Meehan, 2005).

Even though policymakers have set a direction to move toward a one-to-one student to computer ratio in public schools, they have yet to commit the necessary funding to accomplish placing technologies in the hands of each student. The public educational community is beginning to ask policymakers to support what they have set in motion (Pilfor, Flynn, & Gaddy, 2004). As the discussion continues to unfold in this direction, the mere presence of technology in schools does not mean that technology will be used to support educational goals. Policy talk has quickly advanced into the beginning stages of policy action.
Policy Action to Integrate Computer Technology and Software Applications into Instruction

Merely providing the means to place computer technology in schools is not enough to create instructional change, at least not in the ways in which policymakers and technology advocates envisioned. As a result, the federal government made specific provisions to support the instructional use of computer technology. In the second policy cycle, policy action for technology integration surfaced through two professional development campaigns that attempted to help teachers acquire the skills they needed to use technology effectively. One initiative to provide teachers with professional development was the Technology Literacy Challenge Fund (TLCF) established in 1996 under the Clinton administration (Kirshstein, Birman, Quinones, Levin, & Stephens, 2000). While these funds were available to both public and private schools, only 3% of private schools made use of them (Parsad et al., 2001).

TLCF funded-programs shifted the focus of educational technology from purchasing computers to teachers using them. Therefore, TLCF provided support for teachers to incorporate technology into instruction in accordance with state technology plans. Some TLCF funds did go toward purchasing and replacing technology, however most funds were used to support the use of computer technology. During its first year in 1996, for example, TLCF funding provided technology professional development for teachers, funded technology-enriched programs for at-risk youth, and supported experiential teaching and learning initiatives. TLCF was funded through 2001, but with the passage of the No Child Left Behind Act of 2001 (NCLB) elements of TLCF became part of the Enhancing Education Through Technology Program (Ed-Tech), a specific provision in NCLB designed “to encourage the effective integration of technology with teacher training and curriculum development” (NCLB, Section II D).
In 1999, a second tier of federal support for professional development emerged through the Preparing Tomorrow’s Teacher to Use Technology Act (PT3). PT3 focused on pre-service teacher education at universities and colleges (International Society for Technology in Education, 2002). Colleges and universities received federal support to train teachers to use technology, as authority for PT3 was under the auspices of the U.S. Department of Education’s Office of Postsecondary Education. Congress funded this initiative for five years, discontinuing it in 2003. Like TLCF, PT3 was folded into the Ed-Tech program when many federal educational programs were realigned under the umbrella of NCLB.

With the provisions of NCLB, the onus for providing private schools funding for technology was placed on public schools’ administration to host an annual “consultation” to show private schools how to access these funds (U. S. Department of Education, 2005). To be eligible for federal funding, public schools must consult with private school administration to determine what services are needed in their buildings. Private schools must sign that they have attended the consultation before federal monies are released to the public schools (National Catholic Educational Association, 2002; U. S. Department of Education, 2005). This process enables private schools to access previously unavailable public funds even though they are not required to adhere to all elements of NCLB (U. S. Department of Education).

At the present time, Ed Tech is the only federal source of funding available to integrate technology into instruction. Consistent with the tenets of NCLB, the Ed Tech program brings into focus the importance of student achievement in the context of technology integration and provides funding for states through Title II, Section D. Funding is available for states that can demonstrate how they will “ensure ongoing integration of technology into school curricula and
instructional strategies … so that technology will be fully integrated into the curricula and instruction of the schools by December 31, 2006” (NCLB, Title II, Part D, [Section] 2413 (13)).

Policy action for technology integration had several short-lived funding sources and federal government support for technology continues to diminish. For example, in 2002, the first year of NCLB funding, US Congress authorized $700.5 million to Ed-Tech (U.S. Department of Education, 2005). In 2005, Congress authorized less than $500 million to states for technology integration. Ed-Tech subsumed both TLCF (its final year 2001 allocation was $450 million) and PT3 (2001 allocation was $125 million) grants, and it is evident that the federal government is making fewer funds available for educational technology initiatives. Decreased funding will affect computer technology initiatives (Pitler et al., 2004), which have already proved difficult and challenging to implement (Baker & Baker, 2004-2005), especially in light of the prevailing direction of one-to-one laptop initiatives which are currently more costly than providing desktop computer labs.

Despite a federal agenda to place technology in schools and to have educators use them to help students learn, schools have continually fallen short of the “ad hoc coalition’s” expectations (Cuban, 2001) to use computers in schools. Instead, according to the National Technology Education Plan (2005), students have mastered the Internet away from school and have outpaced their teachers in terms of its potential use as an educational tool (Jaillet, 2004).

With the passage and implementation of NCLB, federal support for computers in schools has shifted from using computers for learning to using computers for assessment practice (Trotter, 2007). Educators have adopted computer technology to manage school improvement data rather than using it for instruction (Means, 2005). With federal policy action to support computer technology initiatives shifting and federal funding sources waning (Trotter), public and
private schools are now in the process of implementing policy from both cycles. The third phase of Tyack and Cuban’s policy framework, policy implementation, is discussed in the following sections and further clarifies the sentiments expressed in the National Technology Education Plan (2005).

Policy Implementation: Technology and Curriculum Standards

Policy implementation, the third phase of Tyack and Cuban’s (1995) framework, brings together the other two phases into the context of practitioners who attempt to enact the reforms. In the case of technology initiatives, public and private high school teachers and other instructional leaders face many challenges. One challenge is navigating between constructivist teaching practices and addressing measurable growth on standardized assessments, concepts that are viewed as incompatible with each other (Becker & Riel, 1999). Windschitl (2002) argued that advocates of constructivism underestimated the dilemmas teachers would face when attempting to adopt constructivist teaching practices in the context of traditional schools with bell schedules, regular passing periods, and teacher-centered delivery models. It would seem that the two schools of thought, information dissemination and assessment of standards and constructivism, are more prone to collide than to converge.

Some technology advocates, however, have found ways to join both approaches, emphasizing standards and assessments and constructivist teaching practices. These proponents of computer technology have relied and built upon the existing policy context through using computer technology to address accountability and teaching standards. The first policy cycle’s emphasis on curricular standards and assessments has become a precursor for educators and some technology providers to help teachers in the second policy cycle learn how to use technology within their curriculum (Nordkvelle & Olson, 2005). For example, some schools
have adopted professional development models (Martin, Culp, Gersick, & Nudell, 2003) in which curricular standards are the cornerstone for integrating technology into instruction. As practitioners and researchers focused on how learning is different with and without computer technology, educators needed a curricular framework in which to learn how to integrate technology into classroom instruction (Honey, Culp, & Carrigg, 2000). Learning how and when to use computers in classrooms has also begun to address NCLB’s technology provisions. Under these provisions, states and Local Education Agencies (LEAs) are now required to demonstrate how technology is meeting “challenging academic standards” (U. S. Department of Education, 2002, p. 12).

As schools attempt to implement NCLB policy, educators have to decide how they want to use computer technology and for what purpose. Do they use computer technology to dig deeper into content? Or do they use it to help meet the assessment demands of NCLB? Or do they use computer technology for both purposes? These debates are occurring in a policy climate that is asking for both increased computer use (Paige et al., 2004) and increased accountability toward students’ meeting standards as measured by standardized assessments (No Child Left Behind Act of 2001, 2002). The outcomes of these decisions are often seen as contradictory, thus resulting in increased discussion, and perhaps conflict, at the local school level as people in schools grapple with decisions to adopt specific computer technologies (Baker & Baker, 2004-2005).

Policy Implementation: Computer Technology Integration in Comprehensive High Schools

Another challenge in the policy implementation phase when attempting to integrate computer technology is how its use interacts with comprehensive high schools. Research has clearly demonstrated that change at the secondary school level is more likely to be constrained
than enabled (Fullan, 1990; Johnson, 1990; McLaughlin, 1993; Rossman, Corbett, & Firestone, 1988). Other research suggests that changes expected of organizational participants that cause them to question their practice is likely to invite defensive routines (Argyris, 1995). Given the entrenched structures of most high schools, an initiative like a one-to-one laptop program is likely to be disruptive. Organizational participants must then determine how to adjust to individual and group reactions as people individually and collectively make sense of the reform (Johnson, 2000).

A school’s innovation history provides mechanisms for how it handles the challenges of a new reform. That is, how a school historically responds to the introduction of novel ideas is likely to determine how it will respond in the future. These understandings are rooted in the school’s culture, and deviations from what seem “normal” are evaluated against the school’s history of innovation. Fragmented, unsuccessful reform attempts, “reform du jour” (Ancess, 2000), undermine teachers’ commitment to newer reforms (Fullan, 1991) or act as a “serial killer [as] its repeated actions defeat and destroy improvement rather than developing it” (Hargreaves, 2002, p. 189).

Within each school context, the response to the disruption is likely to vary in an attempt to re-stabilize the building. That is, school personnel may reject the reform; they may modify the reform to fit the needs of the school; or, they may modify the school to fit the reform. In other words, each context handles reforms differently based, in part, upon its history of either embedding or rejecting prior initiatives (Goldman & Conley, 1997). Thus, the same initiative can have distinctly different successes in different contexts (Becker & Riel, 1999; Ward, 2003), regardless of whether or not the context is a public or a private school.
For high performing private schools, external sources of change are particularly difficult to accept and simply do not make sense, particularly if what teachers have produced has been above scrutiny. When considering why high performing schools should consider adopting a computer technology initiative, teachers, administrators, parents, and students must make sense of the reform in their own terms.

Empirical Research on One-to-one Laptop Initiatives

The current technology innovation trend in education is to provide laptop computers to students, reducing the student-to-computer ratio to 1:1. The number of schools implementing one-to-one initiatives has continued to rise, however a review of the literature reveals that little empirical research on one-to-one laptop initiatives has been published in peer-reviewed journals. Although much has been written about one-to-one laptop initiatives, most of it has been either anecdotal (Rudavsky, 2003) or advocacy (Milner, 2005). Other studies have been conducted by technology vendors, which, not surprisingly, tout the benefits of ubiquitous computing (CDW-Government, 2006; Lemke & Coughlin, 2006; Rockman et al, 1997). Laptop initiatives have also been the topic of several recent doctoral dissertations (Kien, 2006; Lewis, 2004; Niles, 2006) and conference presentations (Mouza, 2006; Sexton & Gordan, 2007), which are typically the precursors of published research and demonstrate that studies of one-to-one laptop initiatives are emerging. However, at this point, relatively few rigorous, peer-reviewed studies have been published.

In the past ten years, studies of one-to-one laptop initiatives have produced four broad themes that apply to this study: schools experience unforeseen computer and network performance issues or staff training problems, teachers’ beliefs about teaching and learning influence how they implement technology in their classrooms, students use computers in ways
not intended by their teachers, and teachers do not commit to the direction because they have little input and are not aware of what might be expected.

Unforeseen Implementation Problems

As schools attempt to place into action policymaker’s goals, some studies have provided insights into several of the problems teachers and schools have encountered as they attempt to implement one-to-one initiatives. Two types of problems were evident in the literature: problems with technology access (such as networking, equipment, etc.) and problems with introducing laptops without preparing teachers and students for the transition. Technology-access related problems were noted in several studies. Findings from these studies included teachers’ and principals’ inconsistent perceptions of the quality of their wireless networking access that caused some teachers to become disgruntled about their handheld program (Penuel, Tatar, & Roschelle, 2004) and laptop battery life that cannot last throughout the day or is not fully charged when the machine is brought to school thereby creating a distraction when students cannot use their computers (Dunleavy, Dextert, & Heinecket, 2007). Trimmel and Bachman (2004) noted the physical and social discomfort of laptop users as compared with students who did not have laptops although the effects of the discomfort were not mentioned. Ertmer’s (1999) study focused on the inconsistent or lack of technical support to help teachers resolve technology user problems which result in two different types of training – how to use the computer and how to use it for instructional purposes.

Some empirical studies identified problems that teachers and other school personnel had with implementing technology initiatives. Researchers have found teachers’ difficulties with student management increased during their implementation of some schools’ laptop initiatives (Dunleavy et al., 2007); teachers’ differing orientations toward teaching and learning resulted in
their not understanding how to integrate computers into their instruction (Ertmer, 2005; Garthwait & Weller, 2005); and, teachers did not understand how the specific initiative fit with existing curriculum (Donovan, Hartley, & Strudler, 2007; Liu, 2007).

As each school struggled to define the purpose for introducing one-to-one learning environments, many relied upon the hope that introducing computers would alter instruction in the traditional classroom (Bebell, 2005); however, without accompanying professional development, the computer’s usage was relegated to teacher’s beliefs about instruction (Ertmer, 2005), which often resulted in students’ using their computers primarily for word processing and accessing the Internet (Penuel, 2006).

Teachers’ Beliefs about Teaching and Learning Affect Implementation

Teacher’s beliefs, or orientations to teaching and learning, had an enormous effect on implementation in two studies of one-to-one laptop initiatives. Liu (2007) found that teachers’ instructional beliefs did not always align with their instructional practices. Teachers who espoused agreement with learner-centered modes of delivery but who relied heavily upon teacher-driven modes experienced complications as students had access to pervasive wireless networks. Moreover, incompatible teaching styles and wireless technology had a negative reciprocal effect rather than a positive one. Garthwait and Weller’s (2005) qualitative study found that teachers initially brought to their classrooms their acquired technology proficiency and their beliefs about teaching and learning. Their strongly held, embedded beliefs affected the approach they took toward planning activities with their students. Comparing two middle school teachers, the teacher who viewed himself naturally as a facilitator had fewer problems integrating technology into his classroom than the teacher who structured here classrooms around guided
discussions and teacher-driven learning activities. The latter felt technology was an add-on to an already full teaching load.

Windshitl and Sahl (2002) conducted a case study of 3 middle school teachers within the first two years of a laptop program at a Catholic middle school. Although laptops were not found to initiate constructivist teaching practices, they did support two teachers’ approach to and development of constructivist, student-centered, and project-based learning situations. These teachers used laptops in ways consistent with their developing understanding of themselves as teachers. The third teacher in the study initially began her first year of teaching in the school by encouraging her students to use their laptops in a project. Later she preferred a more teacher-focused classroom because the project was too difficult to grade, and she felt she did not have time to prepare adequately for her classes. Toward the end of the year in this teacher’s classroom, when laptops were employed they replaced what students would normally do with a paper and pencil. Windshitl and Sahl concluded that these teachers were more inclined to create technology-enabled learning situations if they:

(a) Were congruent with their beliefs about learners and their needs, (b) were consistent with images of “what counted” as learning activities in specific subject matter areas, and/or (c) allowed control over the learning environment to be placed in the hands of the students or the teacher (depending on the instructional philosophy). (p. 198)

In addition to the teachers’ understanding of their own orientations toward their instructional role, Donovan, Hartley, and Strudler’s (2007) mixed-methods study surveyed teachers and found at the early stages of a laptop program’s initiation teachers’ concerns about implementing laptops into their instruction fell into two profiles. Most teachers were concerned about how the laptops would impact their individual planning time as they would have to learn
how to modify their current instructional approaches. Fewer teachers were concerned about the best way to collaborate so that they could be more assured of implementing meaningful activities in their classrooms. This study implied that professional development should address the teachers’ individual concerns.

*Students’ Personal Uses and Teachers’ Classroom Management*

In a multi-site international study, Jaillet (2004) found students were more knowledgeable than their teachers about technology use and its possibilities for learning. He highlighted the number of personal ways students used laptops that were not necessarily connected to instruction, such as emailing their friends (even in close proximity), electronic messaging, chatting, and searching for information. The teachers in Jaillet’s study, however, were not using technology to facilitate collaborative instruction or to help students receive individualized help or to work in groups. In a previously cited study, Dunleavy, Dextert and Heinecket’s (2007) multiple site case study found that teachers who attempted to have their students use computers for research had difficulty keeping their students on task, especially if they struggled with classroom management pre-adoption. In these studies teachers did not envision the instructional potential for students’ use of instant messaging, chatting, emailing, or searching the Internet.

*Teachers’ Connection, Understanding, and Commitment to the Initiative*

In other studies, teachers’ connections with and understanding of the laptop initiative played a large role in their ability to implement it. McGrail’s (2006) study involved 6 high school English teachers and appears to be one of the first that gives teachers a voice in their reactions to an administratively driven laptop initiative. In her study, McGrail found that because teachers were omitted from the initial decision-making and planning they did not feel connected
to the initiative and did not feel informed about it. They felt conflicted and stripped of professional and emotional competencies, and thus became ambivalent toward its implementation in their classrooms.

Teachers in McGrail’s (2006) study also felt confused about how the laptop initiative would advance the school’s direction to increase students’ performance on standardized assessments. They were also pressured to utilize technology the majority of the time, which made them feel especially awkward as it conflicted with how they thought of themselves as instructors teaching a traditional form of literacy in a personalized environment. Some teachers in the study felt the laptop made skill development in areas worse as students with laptops had developed shortcuts to avoid learning the skills they needed to develop. Students wanted to use the computers to explore pop culture, and encountered resistance from their teachers who wanted them to explore the fixed elements of the standardized English curriculum.

The Need for Rigorous Research

Despite limited peer-reviewed research, school districts have continued to plow headlong into one-to-one initiatives because they see the local benefits of doing so, “not waiting for the concept to be fully defined, but are moving ahead to provide whatever access and advantages they can using existing technologies” (Bielefeldt, 2006). A few researchers have responded to the lacking research base and have synthesized the prevailing consortium and market-based research in an attempt to shape the one-to-one research agenda. Penuel’s (2006) synthesis included the goals that supporters have had for implementing one-to-one initiatives, classroom uses of laptops, how teachers’ attitudes and beliefs shaped the implementation of one-to-one initiatives, and the roles that professional development and ongoing support have had in implementing one-to-one initiatives.
Zucker (2004) suggested the research on one-to-one laptop initiatives was not keeping up with the prevailing trend to place laptops in schools. He offered suggestions for research questions and framed the research discussion around understanding the key features of laptop initiatives, observing how they interact with schools, and understanding the immediate and ultimate outcomes of implementing laptops in schools. Zucker concluded his synthesis by suggesting that further research was needed in five areas: the effects of one-to-one initiatives on student learning, documenting costs for running one-to-one initiatives, the effects of scales and scaling up, the challenge of rapid change, and how to determine that one-to-one initiatives have measurable results.

This study addresses Zucker’s (2004) suggested research as little is known about the effects laptop initiatives have had on school participants. In this study, each participant’s perspective is unique, and it is from this awareness that the theoretical framework of Organizational Sensemaking was chosen. In the following section, I conceptualize and explain Weick’s (1995) framework and illustrate how it applies to this study.

**Theoretical Framework: Organizational Sensemaking**

To understand the influence of a one-to-one laptop initiative in a high-performing private high school, it was important to understand how the people within the school’s context made sense of the introduction of this instructional technology. For this study, Weick’s (1995) theory of organizational sensemaking served as the framework through which collected data were interpreted. Sensemaking captured how teachers and students made sense of the introduction of technology into existing practices and how these practices within a small pilot affected the high school.
According to Weick, Sutcliffe & Obstfeld (2005), organizational sensemaking “unfolds as a sequence in which people concerned with identity in the social context of other actors engage ongoing circumstances from which they extract cues and make plausible sense retrospectively while enacting more or less order into those ongoing circumstances” (p. 409). People make sense individually, allowing each to write his or her own narrative that captures the world as each sees it. These authors presume sensemaking involves organizational participants in the process of defining what meaning is made and its resulting impact upon the organization. To understand how teachers made sense of the introduction of a one-to-one laptop initiative into their school, it was necessary to understand the context from which teachers understood innovations and how their understandings interacted with and shaped the school. The remainder of this section will briefly introduce the elements of organizational sensemaking and how each element was examined in the study.

Wieck (1995) conceptualized sensemaking as seven overlapping concepts. For purposes of this study, I was specifically interested in teachers’ and students’ understandings of how the presence of a one-to-one laptop initiative influenced their identities and what effect the initiative had on the school. Therefore, this section of the theoretical framework will highlight, in my conceptualization of Weick’s terms, how sensemaking occurs as an individual process and as a community process. Throughout this section, one concept, “focused on and by extracted cues” is woven throughout both the individual and community processes. This concept suggests that the community redefines its culture as the individuals within the community react and respond to others’ interpretations of the reasons why changes occur. These cues are also reflected in the power relationships that key organizational participants influence within the organization. The process of reacting to and creating cues combines both individual and community sensemaking.
Sensemaking begins at the individual level. The three concepts of sensemaking as an individual process are that it is grounded in identity construction, is retrospective, and is driven by plausibility rather than by accuracy.

*Sensemaking as an Individual Process*

Sensemaking is first derived as an individual process in which organizational participants create their identities (Weick, 1995). Participants in organizations pick up on contextual cues that help them describe and carry out their roles. They use their identities to filter new information and tend to assign meaning and make assumptions, because they are only able to see a small part of the whole. They individually react to new stimuli in order to determine how they will respond to it (Agarwal & Prasad, 1999). Their understanding and subsequent response further defines their roles within the context (Prasad, 1993). Laptop computers were introduced into a diocesan Catholic high school, therefore students and teachers determined what its introduction meant to the way they constructed their identities as participants in a pilot one-to-one laptop initiative. In this study, it was important to understand how teachers’ and students’ identities developed and changed as a result of having 24-hour access to a laptop computer.

Meaning is always assigned after the fact, therefore sensemaking is a retrospective process that always occurs in the past tense and after cues toward temporary understandings finally connect (Weick, 1995). Availability of a laptop computer for those in the pilot meant that students had more interactions with teachers and other students than they had previously which affected the way students and teachers communicated. As students and teachers reflected back to what life was like prior to having a laptop, they made sense of what had taken place, both within the confines of the pilot program and the larger school context. As students reviewed how others saw them, they shared how or if they had changed, as enough cues were gathered that helped
them identify their identities. In light of the prevailing context, it was important to understand each person’s interpretation or construction of events that had led them to this point in time. As little “factual” information about the pilot can be presented as a uniform experience, each subject’s experience had value and was worthy of explanation.

Because people only have partial information, the different vantage points from which they view the same events may create entirely different pictures of assigned reasons for actions. When there is perceived difference in these interpretations, political unrest may ensue which may cause people to place into motion another series of actions. Thus, the introduction of a laptop pilot into a school not accustomed to having one meant different things to different people. People’s attitudes differed based upon their involvement in the pilot; therefore, they assigned different meanings to why this initiative was introduced: Was there something wrong with the current system? Were the students selected because they are smarter than others?

An individual’s understanding of the actions can set forth a self-fulfilling prophecy in which a participant may identify with the way he or she sees the events unfold and become a catalyst to carry out these events as he or she sees them. As a result, sensemaking is driven by what is plausible rather than what is accurate, which allows people to move forward in a direction without fully understanding the event. The step forward also helps sensemaking as the step acts as another cue to understand the first event. Therefore, the second step in any direction helps clarify the first step. In this study, the researcher was interested in finding out how the selected students and teachers responded, or predicted, as they anticipated the next step. To understand this, the researcher asked participants to envision what they thought the school would look like in the future. Plausibility helped shape the vision and the steps necessary to facilitate
individuals understanding of the leadership’s present direction as it led the organization toward meeting its goals.

*Sensemaking is a Community Process*

The above section described sensemaking as an individual process. As individuals in schools do not live in isolation, each person contributes to the common understanding of the school as it responds to accept or reject new initiatives. This section discusses how sensemaking is a community building process, which is comprised of three concepts: sensemaking is enactive of sensible environments, is ongoing, and is social.

As people individually and collectively make sense of their identities and roles within the organization, they also are enactive of the environment. Enactive suggests that people are a part of the futures that they create for themselves. When people enact, they are placing into existence things that were not previously there and have created an environment that constrains or offers opportunities for their participation in future events. In this study, laptop teachers and students were part of a process of influencing the environment they created for themselves, and I, as researcher, attempted to understand how the laptop teachers and students influenced the school individually and as a group.

The environment in any organization has no beginning or end. Rather the environment is a continual discourse that is consistently adapting to new people in new situations; however, to participants, consistent routines occur as people create and complete projects. Often sensemaking is triggered by interruptions to routines. Interruptions cause participants to respond emotionally. As these interruptions occur over time, they may cause delayed reactions in which meaning is made long after the first interruption. In this study, it was important to understand how
individuals responded to changes in routines that the pilot laptop initiative had created and how laptop participants responded to questions and comments about the initiative.

At the time of this study, the pilot had already interrupted many of the normal ways of conducting school business and had elicited emotional responses from both teachers and students. These responses, from those within the pilot and outside of the pilot, have reflected the emotions felt in earlier situations. How teachers responded to their own emotions or the emotions of their peers seemed to have influenced the way people feel about using technology in classrooms. It was important to understand how participants within the pilot reacted to others’ emotions outside of the initiative as reactions of participants outside the pilot served as a part of the sensemaking process.

For purposes of this study, Weick’s (1995) theory of organizational sensemaking has been organized into individual and community processes. As people within the organization understand the events as they unfold, they are also creating means for which further understandings can be achieved. As understanding involves communication and dialogue, it was important to use a methodology that allowed these meanings to surface. The next section will discuss why a case study was chosen as the research design to study this one-to-one laptop initiative.
CHAPTER 3
Research Design and Methodology

A primary purpose of this research was to understand how those participating in the pilot of the one-to-one laptop initiative made “sense of their world” (Merriam, 1998, p. 6); therefore, the research design was a qualitative case study of a high performing Catholic high school in the first year-and-a-half of a two-year pilot one-to-one laptop initiative. Case studies help researchers “gain an in-depth understanding of the situation and meaning for those involved” (Merriam, 1998, p. 19) by providing a means to develop a thick description of events surrounding the phenomenon. The case study also provides a framework to organize the data analysis process and can be a means to document the analysis (Patton, 2002; Stenhouse, 1988).

The case study design allowed for separate units of analysis, or an embedded case study design (Yin, 2003). One unit of analysis was the pilot laptop teachers; a second unit of analysis was the laptop students. Teachers and students who were not initially participating in the laptop initiative, but later were selected to participate in it, provided a third unit of analysis to compare with those participating in the laptop pilot. A fourth unit of analysis was the department chairs of the departments associated with the initiative. A fifth unit of analysis that was not originally part of the study was an examination of my own sensemaking process as I managed my dual roles as researcher and initiator of the laptop pilot.

A qualitative study allowed me to gain an in-depth understanding of participants’ thoughts and feelings and how their feelings developed into individual and group realities (Bogdan & Biklen, 2003). By asking participants to share their perceptions, I hoped to gain a picture of what study participants believed was occurring in the pilot of the one-to-one laptop initiative in a diocesan Catholic high school.
The types of qualitative methods used were naturalistic, as naturalistic inquiry emphasizes the importance of the context (Lincoln & Guba, 1985). The “subjects of such an inquiry are bound together by a complex web of unique interrelationships that results in the mutual simultaneous shaping” (Erlandson, Harris, Skipper, & Allen, 1993, p. 16) of the environment. As a result, naturalistic inquiry requires thick description of the events and the context under study (Bogdan & Biklen, 2003; Erlandson et al., 1993; Lincoln & Guba, 1985; Merriam, 1998). The thick description of events addressed the first research objective, which was to create a detailed picture of the one-to-one laptop project.

Research Site and Study Participants

Kapaun-Mt. Carmel Catholic High School (Kapaun) served as the site for the study. Kapaun is a high performing 9th-12th grade high school, steeped in tradition of offering a very rigorous, college prep curriculum. At the beginning of the 2005-2006 school year, Kapaun enrolled 880 students, most of them had attended kindergarten through 8th grade Catholic parish schools in the Diocese of Wichita. Although Kapaun primarily provides a tuition-free education to its feeder school parishioners and is considered a diocesan Catholic college prep high school, it also enrolls tuition-paying students who are not Catholic and who are seeking a private school learning opportunity. Each year several graduating seniors apply to East Coast private colleges and universities. Students are taught by 65 faculty organized into 8 academic departments. The school’s administration consists of a president, a principal, an associate principal, and an assistant principal/athletic director. I have been a building administrator at Kapaun for 6 years, the last four of which I have held the title of Associate Principal/Academic Dean. As a building administrator at Kapaun, I had access to the site. I was the administrator for the pilot program and had a vested interest in understanding how people within our school make sense of the
initiative so that I could determine what support was needed to help teachers and students to transition into computer-supported instruction. As I was in a position of power within the building, the administrative team at Kapaun took precautions to ensure that the research was ethical, and those measures will be addressed in a subsequent section.

Kapaun-Mt. Carmel Catholic High School is located in Wichita, Kansas; a state that has been listed as in the forefront in developing an infrastructure to support the NCLB legislation. Kansas is one of the top ten states on the National Assessment of Educational Progress, a test used for 30 years to compare student achievement on a standardized test across states (U. S. Department of Education, 2006). In addition to national testing, Kansas has had a state-wide testing program in place since 1991 (Kansas State Department of Education, 2005).

Kapaun-Mt. Carmel Catholic High School is a diocesan high school under the jurisdiction of the School Office of the Diocese of the Wichita. Superintendent Bob Voboril has served in his role for 14 years. All of the schools in the diocese are state accredited, due in part of a decision made by the bishops since the beginning of state accreditation in the mid 1960’s. Supt. Voboril perceives that state accreditation has benefited the Catholic school system considerably, including providing bus routes in rural areas, improving academic achievement, and keeping ties with the Kansas State High School Activities Association.

In addition to the state accreditation picture, Kapaun is surrounded by several high schools that have implemented school-based computer initiatives where students are provided with 24-hour access to a laptop computer. In Central Kansas, a handful of schools began one-to-one laptop initiatives within the past five years. Within 20 miles of Kapaun, three schools began one-to-one initiatives within the past three years. Within the next year, at least 10 area high schools will be in the development, implementation, or post-implementation stages of their one-
to-one laptop initiatives. Within a few miles of Kapaun, 2 other private schools compete for students’ enrollment.

The one-to-one laptop initiative was presented as an idea by the school’s president, who initially was concerned that Kapaun might lose enrollment to one of the other nearby private schools, if we did not move forward to adopt a one-to-one initiative. Kapaun was in the planning stages for about 3 years prior to the 2005-06 academic year, when the pilot program began. It is important to note that I was instrumental in designing the one-to-one laptop program.

Forty-three individuals associated with Kapaun Mt. Carmel participated in the study, 17 faculty members, 25 students, and the researcher/Associate Principal. To understand how students and teachers participating in a one-to-one laptop initiative made sense of the initiative, all members of the first year of the pilot, which involved 19 students and 5 teachers, were invited to participate in the study. Purposely selecting all pilot participants was necessary for me to gain a “rich detail” (Erlandson et al., 1993, p. 33) of the various ways in which identities were constructed throughout the pilot. Because the laptop pilot affected the whole school, a sample of 5 teachers and 6 students not participating in the pilot also participated in the study. Non-pilot teachers included 5 teachers who agreed to teach in the pilot during the 2006-2007 school year and the 7 department chairs who represented departments that offered a laptop pilot class. Non-pilot student participants included 6 juniors who applied to and were accepted in the next phase of the pilot. These students joined the original group of students, which brought the 2006-2007 junior year pilot to 25 participants.

Data Collection Strategies

The data collection strategies I employed in the study were chosen to collect data and to capture how participants made meaning of the laptop pilot. Data collection strategies used were
open-ended surveys, focus groups, the Left and Right Hand Column Case Method, and analysis of documents, laptop students’ reflections, and email communications. Due to my role in designing and implementing the laptop initiative, all data were collected via surrogate researchers or was handled by an intermediary who removed identifying information before giving it to me.

Open-ended Survey

Seven department chairs completed an open-ended online survey requiring a narrative response in which they were asked seven questions about the initiative (See Appendix A-1 for the survey questions). Each survey occurred electronically after I sent them a hyperlink to access it. In addition to the department chairs, ten teachers, five who participated in the pilot during the first year, and five who received the students at the beginning of the pilot’s second year were also sent a hyperlink to complete a 3 question open-ended survey about the initiative (Appendix A-2).

Focus Groups

To gain information about the students’ perspectives on the laptop pilot, three focus groups were conducted with them: two with the 19 students in the pilot initiative; and one focus group with the 6 students who applied to and were accepted to the laptop initiative for the 2006-07 school year (joining the 19 students already enrolled in the program). Focus groups are group interviews that allow participants to talk to each other and to elaborate upon how they view their worlds (Bogdan & Biklen, 2003; Patton, 2002) (See Appendix B for focus group protocol). The two focus groups with the 19 students who participated in the pilot during the 2005-2006 school year were conducted simultaneously in May 2006 and were facilitated by surrogate researchers with experience conducting focus groups.
The third focus group with the 6 students new to the initiative was conducted at the end of the pilot’s 3rd semester, also by a surrogate researcher. Questions to these students were constructed to allow the students to provide feedback about how they viewed the pilot as student outsiders and as new insiders, offering both perspectives (See Appendix C). All focus groups were audio-recorded by the facilitators and transcribed by me.

The Left and Right Hand Column Case Method

The Left and Right Hand Column Case (LRHCCM) (Argyris, 1995) method was employed with the 5 teachers participating in the pilot and the 5 teachers who were added to the pilot’s second year. The method invites the participant into an imagined dialogue with a supervisor or other person in higher position in the organization. In this case, the teachers were asked to initiate an imagined dialogue with their department chairs. The method allowed the teachers to state what he or she would say to their chair about the initiative in the right column, and in the left column encouraged the teacher to have a second conversation about what he or she would like to have said to their chair about the initiative or what feelings might be driving their public reactions. Because this method was used with the teachers, it was important that they remained anonymous. The protocols were explained to the participant by a surrogate researcher from outside the context who also removed any departmental identifiers from their responses. The participants typed their responses, which also helped ensure their anonymity. This allowed me to better understand how they made sense of the initiative (See Appendix E for the LHRHCCM protocol).

Documents and Student Reflections

Several documents were prepared to explain or to solicit information about the initiative. While most documents were developed by the researcher in consultation with building
administrators and pilot participants, these documents provided information about the pilot at various times throughout its implementation. Documents “are a stable source of information, both in the sense that they may accurately reflect situations that occurred at some time in the past and that they can be analyzed and reanalyzed without undergoing changes in the interim” (Lincoln & Guba, 1985, p. 276-277).

Selected documents included the Kapaun-Mt. Carmel Catholic High School Technology Plan, the one-to-one laptop proposal submitted to the School Council which provided some of the history of the pilot, and meeting agendas in which the pilot was introduced to the department chairs. Internal documents included email communications between the pilot teachers and students and me, and students’ applications to join the initiative after the first year.

The analysis of documents provided insight into potential moments of clarification about the initiative that helped participants make sense of their roles and functions. As the pilot was communicated differently to department chairs and to pilot participants, gaps in communication occurred. For example, department chairs received documented agendas that discussed the pilot; whereas, the pilot teachers, in many cases, did not receive formalized agenda documents. The pilot teachers had ongoing email dialogues with each other and with me. Students and I also shared several emails. All documents were unitized and coded individually.

Throughout the pilot, students were asked to email reflections about the pilot to me. Occasionally, the student reflections were shared with the teachers, removing students’ names or statements that would otherwise identify them. These reflections gave insight into the pilot at various moments throughout the year.
Reflexive Journal

As I examined the data, I recorded my thoughts regarding each data collection activity in a reflexive journal, which allowed me to become more self-aware, develop political/cultural consciousness, and to take ownership of my own perspective (Patton, 2002). To become more reflexive I wrote my initial impressions after listening to the focus groups, keeping track of questions that I had as a result of something I heard. As I coded data, I responded and reacted to the data in my journal, attempting to find connections. I reviewed my observations, looking for what reflected my own assumptions and what was substantiated in the data. This practice helped me understand when I was more subjective rather than objective. It also helped me understand the origins – “cultural, political, social, linguistic, and ideological” (Patton, 2002, p. 65) – of my assumptions and to gave myself a voice in the data collection process, but not one that overloaded the voices of the participants.

Data Analysis

While the data analysis process was notably “highly intuitive” (Merriam, 1998, p. 156), I continued to work with and against myself to ensure that the analysis process reflected findings found in all the data and not necessarily how I viewed the world. To accomplish this, I ensured that all data from interviews, and focus groups was in an electronic format that was unitized, broken into specific categorical chunks (Lincoln & Guba, 1985) and imported into FileMaker Pro, a software program that allowed me to sort and resort data into themes and further analyzed into categories. Information gleaned from documents was analyzed by examining the documents for relational cues between personal communications and by examining assumptions revealed in the official documents (Bogdan & Biklen, 2003).
Documents and artifacts were labeled and managed in FileMaker Pro with other qualitative data. The documents and artifacts were used throughout the data analysis to confirm and support other findings of participants. Throughout the data analysis, I used a constant comparative method (Lincoln & Guba, 1985) where the data was compared to initially predetermined, then evolving categories that became clearer to me as I interacted with the data. After the initial sort, the categories were then re-evaluated (Patton, 2002) to determine if other thematic groupings appear. Findings were then interpreted through Weick’s (1995) concepts of organizational sensemaking.

Researcher as Instrument

Naturalistic research uses the researcher’s five senses and intuition to “gather, analyze and construct reality from data” (Erlandson et al., 1993, p. 82). In this situation, I, as researcher, also had a leading role in developing the vision and shaping the context in which this research was conducted. As such, it would have been difficult for me to conduct data collection activities without skewing the collection. Therefore, I enlisted the help of colleagues from outside the research context to collect data. As I interpreted the data collected by others, an understanding of my subjectivity was necessary to keep the collected data in perspective.

Peshkin (1988) proposed how a researcher might think about his or her subjectivity. When conducting research, Peshkin reported that he was consciously aware of his subjectivity when his emotions were aroused. Certainly, the introduction of a one-to-one technology initiative into the school where I work has evoked my emotions. Because I was initiator of the laptop pilot, as well as the researcher, I had to carefully examine my emotional responses to determine how my reactions might influence data analysis. I took precautions not to skew an interpretation in
support of the way I viewed the school and made sense of what was happening. These realizations continued to unfold as data were collected.

Another way I remained objective was by adhering to the theoretical framework I chose for this study. As a researcher, I sought to understand how the participants made sense of the initiative. I espoused to understand how the participants viewed their identities, not to evaluate them against a preconceived notion of what they should have been experiencing (Peshkin, 2000). However, since I also collected data from myself through the use of a reflexive journal, I needed to be forthcoming about my own views of the importance of computers in the instructional process of students and teachers.

Students’ abilities to apply their knowledge and use application activities to create a context within which students acquire more knowledge as they are applying it was an initial factor in the design of the pilot. Therefore, my orientation to constructivist pedagogy and brain-based approach to learning (Caine & Cain, 1997) influenced how I presented to teachers my understanding of the role curriculum plays in the development of courses and corresponding assessments. Because I believe that technology is a factor in a student’s ability to use what he is learning, my understanding of its potential may have influenced laptop teachers and students’ understanding of the purpose of the pilot. Thus, my “personal history can be construed as both an asset and a liability in the research process” (Carpenter, 1999, p. 7) and was considered through data collection and analysis.

As my position of power potentially affected those from whom data was collected (Moller, 1998), I was extremely cognizant of the ethical dilemmas associated with misusing data beyond the scope of this study. The following section explains how the research subjects were
protected as I worked through the issues of my dual role as researcher and as building administrator.

**Protection of Human Subjects**

To ensure the protection of the subjects under study, the proposal for this study was reviewed by a committee for their recommendation and subsequent submission and approval through Wichita State’s Institutional Review Board. In addition to both reviews, the administrative team at Kapaun took precautions to identify potential ethical barriers (Coupal, 2005) and situations (Zeni, 1998). First, my position of power in the school was limited to the power granted by my principal. The principal was informed frequently about the initiative, and he reviewed the major decisions regarding the laptop initiative, including student placement, student discipline, and teacher selection. Second, the primary informants in this study were teachers for whom I do not conduct a performance evaluation and students whom I do not grade. Thus, there was not a direct supervisory relationship with those participating in the initiative. My role in relation to the teachers in the pilot was to acquire resources they felt were needed to take additional steps forward with its implementation. Third, a majority of the data was collected via surrogate researchers who conducted the focus groups, administered the Left and Right Hand Column Case Method (LRHCCM), and removed identifying information from the LRHCCM and survey responses.

Fourth, the data collected hopefully benefited the school and therefore required some shared analysis with internal and external peer-review (Moller, 1998). Member-checking, which involves “taking data and tentative interpretations back to the people from whom they were derived and asking them if the results are plausible” (Merriam, 1998, p. 204) occurred within the
scope of the study. Data, therefore, was interpreted collaboratively (Zeni, 1998) as it was collected with the laptop teachers which aided in my own sensemaking process.

Having addressed the potential power issues concerning the collection of data and its subsequent analysis, this study followed ethical guidelines for research participants. All participants were given an overview of the study and asked to sign a consent form (See Appendix E-1 and E-2) that explained the nature of their involvement in the study. Because the study involved minor participants, students’ parents gave their written consent (see Appendix F), and the student signed an assent form (see Appendix G). All consent forms will be stored for three years in accordance with Wichita State University IRB guidelines.

**Trustworthiness**

Trustworthiness was addressed in several ways throughout data collection and data analysis. First, as this study identified how subjects made sense of their world, it was important to have an accurate account of the way in which they construct their world, or “view life through the eyes of the respondent” (Erlandson et al., 1993, p. 25). To begin to address this, I used member checking techniques in order to confirm what respondents have said is accurate. Erlandson et al identified several ways in which member checking can be achieved. One way is to ask for clarification during the interview process. Focus group facilitators emphasized salient points that the student participants made.

A second way to member check is to provide a preliminary account of what I have discovered to important stakeholders to get their reactions (Erlandson et al., 1993). In meetings with teachers who taught in the pilot, I conveyed what I observed in the data and asked for their reactions. This process allowed us to dialogue about the data and allowed them a vehicle to clarify some of the students’ and their own reactions. Non-laptop participants also reviewed the
findings, namely the school principal and the technology committee that allowed us to continue to discuss how plan for future development of the initiative.

**Reflexivity**

I previously mentioned keeping a reflexive journal, “a kind of diary in which the investigator on a regular basis records information about him- or herself” (Erlandson et al., 1993, p. 143). Journaling helped me understand my own sense-making process as I was confronted with the data. By writing in the journal following each data collecting activity, I was able to review my initial understandings and how they evolve through the data and analysis process.

**Peer Debriefing**

Creswell (2003) describes the role of the peer debriefer as someone “who reviews and asks questions about the qualitative study so that the account will resonate with people other than the researcher” (p. 196). I used an external peer reviewer, a “professional[s] outside the context who [has] enough general understanding of the nature of the study to debrief the researcher and provide feedback that will refine and, frequently, redirect the inquiry process” (Erlandson et al., p. 31). The external peer debriefer served as an external source who asked questions regarding my assumptions about the data I was collecting. The peer debriefer also helped me understand whether I had enough data to support the findings.

**Triangulation**

Triangulation, confirming data with an additional piece of data and confirming within and across categories, is discussed in conjunction with the appropriate research objectives or question. For the first objective, to describe the one-to-one laptop pilot, I triangulated data from multiple sources to gain a consensual understanding of the pilot from among the teachers and students. I confirmed data from what the students in the focus groups revealed about how they
used their time in the pilot, and compared what they said consisted of their actions as with what I had written in my journal. Consistent insights were recorded as themes and different perspectives are shared. Using as much detail as possible, I wrote a thick description (Creswell, 2003) to create a picture for the reader of what occurred in the pilot.

For the second purpose, describing how the school reacted to the initiative, triangulation occurred across participant types. For example, one of the ways to view the data was to look at it from the students’ perspective. In this perspective, triangulation came from other students who viewed the incident similarly. However, triangulation also occurred across participant roles. Data was confirmed in the findings by explaining where multiple perspectives converged to create a consensual picture or by showing how others viewed the same picture differently among the laptop pilot teachers and students. Similarly, statements from the students and teachers not directly involved in the pilot were compared to develop another picture of how the pilot might be viewed from their perspectives. The data from both groups are presented in the findings.
CHAPTER 4

Findings: Research Context, Laptop Pilot Students, Teachers, and Department Chairs

Following a description of the research context, including a description of how the laptop pilot was conceptualized and implemented, the rest of this chapter reports the findings, which are organized into four sections. The first section presents findings from teachers and students who participated in the first year of the laptop pilot, during the 2005-2006 school year. Findings from this participant group offer an inside glimpse of the lived experience of the pilot within the larger school context. The second section consists of findings from teachers and students who joined the pilot for the 2006-2007 school year. Findings from this participant group are unique in that they observed the pilot during its first year and chose to join the pilot during the second year, when the first year pilot students became juniors. The third section consists of the observations of the department chairs, a group who was distanced from the pilot. They were the most senior faculty and also taught most of the honors classes. Findings from this group provide insight into how the pilot was received by staff members who were the farthest away from it.

Research Site: Kapaun-Mt. Carmel Catholic High School

Kapaun-Mt. Carmel Catholic High School (Kapaun), located in Wichita, Kansas, was the research site for this study. Kapaun is under the jurisdiction of the School Office of the Diocese of Wichita. Superintendent Bob Voboril has served in his role for 14 years. All 38 of the schools in the diocese are state accredited, due in part to a decision made in the mid 1960s by the bishops at the inception of state accreditation that diocesan schools would attain accreditation. Supt. Voboril perceives that state accreditation has benefited the Catholic school system considerably, including improving academic achievement and keeping ties with the Kansas State High School Activities Association.
Kapaun-Mt. Carmel Catholic High School opened its doors in 1971 when Chaplain Kapaun Memorial High, an all boys school, merged with Mt. Carmel Academy, an all girls school. At the beginning of the 2005-2006 school year, Kapaun enrolled 880 9th-12th grade students, most of them from the Catholic parish schools in the Wichita diocese. Kapaun’s primary mission is to provide a Catholic high school experience to its nine main feeder schools’ parishioners and to prepare its students for post-secondary education. It is a high performing high school, steeped in a tradition of offering a very rigorous, college prep curriculum. After students graduate, nearly 98% of them attend college, many of them at East Coast private colleges and universities.

Students are taught by 65 faculty organized into 8 academic departments. Students enroll in 8 classes each semester. Organized into A/B block schedule, classes are 95 minutes in length and meet every other day: on “A days” Blocks 1-4 meet and on “B days” Blocks 5-8 meet. Most teachers teach 3 classes each day and have a ninety-five minute planning time during the block they do not teach.

The school’s administration consists of a president, a principal, an associate principal, and an assistant principal/athletic director. I have been a building administrator at Kapaun for six years, the last four of which I have held the title of Associate Principal/Dean of Academics. I am the administrator for the laptop pilot program, and this study emerged from a vested interest in understanding how people within my building understood the initiative so that I could determine what support was needed to help teachers and students to transition into computer-supported instruction.

The need for Kapaun to develop computer-supported instruction was identified about 5 years ago after administrators observed trends with other high schools in the area. In particular,
Kapaun is in close proximity to several high schools that have implemented school-based computer initiatives where students are provided with 24-hour access to a laptop computer. Within the past 5 years, a handful of central Kansas schools have begun one-to-one laptop initiatives. Within 20 miles of Kapaun, three schools began one-to-one initiatives within the past three years. Within the next year, at least 10 area high schools will be in the development, implementation, or post-implementation stages of their one-to-one laptop initiatives. Because of these developments in neighboring schools and districts, discussions about a one-to-one laptop initiative at Kapaun began shortly after I was hired in the 2001-2002 school year. It took four years to develop the necessary curriculum and technology infrastructures to begin a laptop pilot program.

*Conceptualizing a Laptop Pilot at Kapaun*

At the end of fall semester 2004, the year preceding the pilot, Veronica (a pseudonym for the teacher who would become the lead laptop teacher), and I frequently discussed a shared dream of creating a learning environment where students could engage in authentic learning situations, moving away from lecture-based, teacher driven classrooms. I incorporated many of our collective ideas into the laptop pilot proposal. The proposal went through several iterations as it moved from the school’s technology committee to the administrative team (which included the school’s principal and president), to the superintendent, before it was finally endorsed at a School Council meeting in February 2005. Through these iterations, Veronica and I continued to refine the proposal and dialogued about how to bring to fruition the ideas it contained.

*Selecting Teachers and Students for the Pilot*

With the goal of creating an authentic learning environment where students and teachers could co-construct meaningful learning situations and experiences, after consulting other
building administrators, and with Veronica’s input, the four remaining pilot teachers were selected. At the beginning of February 2005, I approached the teachers individually, outlined the pilot proposal for them, and asked them to consider joining the initiative. The teachers responded to the invitation differently. One teacher criticized his lecture-based department and immediately joined. Two were first year teachers and wanted to think about it before making a commitment. The fourth teacher, a Catholic nun who taught theology, first checked with her Mother Superior; then agreed. All selected participants indicated a willingness to work collaboratively.

Also in February, I solicited from faculty students who met our conceptualized criteria of “constructivist” learners (see appendix A for selection criteria). After a rigorous selection process, 30 students who were in the 9th grade during the 2004-05 school year, and who were identified by their teachers as “constructivist” learners were invited to participate in the one-to-one laptop pilot. The laptop teachers and I selected the students based upon cross-referencing multiple teacher referrals, preferring students who were referred by several teachers, for example by a math or science teacher and by a theology, English or social sciences teacher. To make the final list, the students had to have earned an A or a B in Computer Applications during the first semester of their freshmen year. Some of the identified students were in all honors courses and had to decide whether to remain in the honors program or to enroll in the initiative. Of the 30 who were identified, 21 students committed to participate.

Announcing the Pilot

During a faculty meeting in March 2005, I announced that we would begin a laptop pilot the following year and which teachers had agreed to be a part of it. I explained how we utilized their student referrals of constructivist learners in the selection process. Most of the faculty was shocked at the announcement. While a handful of people supported the pilot, they did not do so
openly. The pilot teachers took the brunt of teachers’ dismay as those not involved in the pilot grappled with what this would mean for them. At the meeting, pilot teachers and those who supported them were publicly ridiculed by many of their peers who were caught off guard by the announcement. Biting comments to the laptop teachers continued in the faculty lounge throughout the remainder of the year. Regardless of the faculty’s negative response, the pilot began in the 2005-2006 school year once resources and infrastructure were in place.

**Laptop Pilot Resources and Infrastructure**

Kapaun operates in a wireless environment that was installed in the summer of 2005 in preparation for the one-to-one laptop pilot. The teachers received their laptops, a tablet PC, in June 2005. That same month Veronica attended a weeklong Trainer of Trainers conference in which she learned how to implement Intel’s Teach to the Future model. She then attended a training to learn how to use technology to teach critical thinking skills. With the exception of the theology teacher (a Catholic nun who had duties at her mother house where she lived with the other sisters of her order), Veronica taught the three remaining teachers in late July/early August how to implement Intel’s models in their classrooms. During the two-week training, they talked openly and planned how to begin their first year together.

During the first year of the pilot, the pilot teachers were offered an additional planning period to prepare specifically for their laptop class. Laptop teachers also had a common planning

---

1 “The goal of the Intel® Teach Essentials Course is to help classroom teachers develop student-centered learning through technology integration and project-based approaches. The training consists of 32 hours of hands-on instruction to be delivered via eight curricular modules. Through those modules, teachers develop a standards-based curricular unit that promotes 21st century skills, specifically encouraging student self-direction and higher-order thinking through problem-solving, collaboration, and the use of productivity strategies and tools. In Intel Teach Essentials Course, teachers learn to use the power of computer technology to spark student imagination and ultimately move students toward greater learning. Teachers reflect on questions about how their students can best use computers to enhance learning. Throughout the course and specifically in the showcase, teachers work to answer the Essential Question of the course: How can technology be used most effectively to support and assess student learning?” (International Society for Technology in Education, 2007)
period that was utilized for bi-weekly team meetings that also would allow them to continue their training. All but one of the teachers accepted the extra planning time, and Veronica agreed to coordinate the agendas for their team meetings.

Laptops were distributed to students 6 days before the first day of school. When students received their laptops, they also received training on some of the software used in the pilot. Students had electronic texts for most core subjects loaded on their laptops. Students’ laptops were connected to a server at Kapaun where teachers could log in to view and control student machines through a software package called Synchron-Eyes. Students had access to Blackboard, an Internet-based course management system in which they participated in asynchronous discussion board activities, found assignments and announcements, and occasionally took tests. Students were provided with their own school email accounts as well as instant messaging capabilities and wireless Internet access throughout the day.

Equipped with a laptop with preloaded software, the majority of the student “laptoppers,” hereafter referred to as laptop students, attended 5 of their 8 classes together: English 10, Theology, Biology, Geometry, and one semester of US History. The exceptions were students in US History I and Geometry, as a scheduling conflict with history and different grade levels in math resulted in a few students being assigned to non-laptop courses.

Section I: Laptop Teachers and Students Perceptions of the Initiative

Findings in this section report how Kapaun teachers and students, who were most affected by the continual presence of technology, dealt with and understood the presence of this one-to-one laptop pilot. All five laptop teachers agreed to participate in the study and represented each core department: English, Social Sciences, Theology, Math, and Science. The laptop faculty was comprised of teachers with varying levels of experience. The US History I teacher had
taught for six years, the last two at Kapaun; the Math and English teachers both were in the second year of teaching, both years at Kapaun; the theology teacher was a graduate of Kapaun, had entered the religious life and taught for over 20 years, the last 4 years at Kapaun; and the science teacher taught in the Catholic school system for over ten years, the last two at Kapaun. The pilot’s lead teacher, Veronica, was the science teacher.

Data collection for laptop teachers consisted of a review of email communications that occurred between February 2005 and June 2006, an online survey in which teachers were asked to respond to three open-ended questions, and a Left and Right Hand Case Column Method (LRHCCM) in which the laptop teachers were asked to create an imagined dialogue with their department chair. After constructing the conversation that they would likely have with the department chair, they also wrote a conversation that expressed the feelings that they would not convey. This process is discussed more completely in Chapter Three.

Analysis of the data collected from the participating teachers revealed four main findings. As the pilot unfolded, the laptop teachers changed the way in which they delivered instruction, they became program leaders, they used technology to enhance their ability to fulfill the Catholic School mission, and they became community-oriented colleagues.

Laptop Teachers’ Approach to Instruction Changed

Because of their involvement in the laptop initiative, teachers’ changed their approach to instruction as they guided the students in making the transition from passive to active learners. As a result, teachers felt they grew professionally from their experience teaching in the laptop pilot. One teacher commented, “It has been the best thing that has ever happened to me… and it has really challenged me to think about learning in different ways.” Another teacher conveyed that the laptop pilot “has given me an opportunity to reflect on what my role is as an instructor
and the students’ roles as learners. It has allowed me to expand my use of technology in the classroom even more so than I have been able to use it in the past.” A third teacher explained that using laptops allowed her students to “have more control over their learning, due to the access of information.” The teacher went on to relate:

The laptops have made it easier for me to implement more project-based learning, which has allowed the students to actually implement skills or concepts that we are learning, or implement skills such as research and analysis, to name a few, in the content area that we are studying.

Using this project-based approach, teachers found ways for students to increase their communication with each other and for them to be more involved with their students than they would have normally. One teacher set up her instant messenger account and emailed her students, “Alright everyone, if I did it correctly I have a screen name in aol that is sci121teachr. Hopefully I can be on some time tonight to check it out. If not, I will see what I did wrong :)

The teacher met students on their terms using their modes of communication and invited them to participate with her in instant messenger discussions. Through this invitation, she showed a willingness to try a new way of communicating. She also indicated that it was acceptable if they did not do things correctly the first time, and in doing so gave them permission to take risks and make mistakes. A different teacher discovered that having a screen name offered her more opportunities to connect with students that were not enrolled in the pilot. She reflected, “Now that more students are finding out my AOL screen name, a couple of students (who I have never heard even speak in class) have shared their reactions to reading online… I thought that was pretty cool!” Another teacher indicated that students’ willingness to try new things helped her prepare lessons that often could be tailored to her non-laptop students.
By adding instant messenger to their repertoires, teachers gained another tool they could use to seek feedback from their students. In an email conversation, one teacher explained how she developed the classroom environment around learning:

I am always asking them, “would it be better to do it this way or that way” and I tell them that I am asking them so that I can learn to be a better teacher with the laptops. I take what they tell me seriously and try to implement it to see if it would work

Her comment shows how she modeled the approach that she expected her students to take toward learning, that they should approach the learning process together.

Throughout the pilot, teachers used instant messenger and chat for in-class discussion activities and would encourage students to use these communications tools outside of class by assigning them group work where they could meet in electronic group “e-groups” virtually at home. To hold students accountable, teachers would ask students to copy the text of their discussions, and email it to their teachers. Teachers also used Blackboard and often would post classroom activities and homework to its pages.

Even though their approach to instruction changed from what it had been in the past, students were not always receptive to teachers’ attempts to give them more control of their learning, especially when they did not receive the grades they expected. Before semester finals in December 2005, three students emailed me in the same day to protest that the teachers were not teaching but were expecting students to learn on their own. I removed any identifiers from the students’ emails, collected them into one document and emailed it to the teachers, asking for their help to address the students’ concerns so that I could respond to them. Veronica, who often spoke on behalf of the other teachers, responded:
I take offense to the fact that they are “set-free” to learn on their own. Yes, in my class I do more often than not, become a facilitator, but that is how I teach everyone, that is why labs are seen by the students to be so hard; I want them to figure it out.

Their desire to help students figure things out influenced the ways they felt they should communicate with their students. They believed if students could view learning as a process and be less concerned about grades, they would then be willing to do more with project-based group activities, and in effect, their grades would improve. Their belief in this approach caused them to interact differently with their students.

*Laptop Teachers’ Relationships With Their Students Changed*

At the beginning of the year, one teacher administered an online learning styles inventory[^2] to her students and asked them to consider how learning with a laptop might support the way they learned. The language of learning styles began appearing in students’ reflections shortly thereafter, and teachers helped their students understand that learning was a process of discovery rather than memorizing facts. Often, teachers adopted a facilitative teaching style and made themselves more available to students who had questions about what and how they were learning.

As teachers reached out to students by sharing their instant messenger screen names, taught in facilitative and interactive ways, and helped students articulate learning in response to the learning styles inventory, relationships with their students changed. In addition to the earlier

---

[^2]: Authored by Catherine Jester, a Learning Disability Specialist at Diablo Valley College, the learning styles inventory asks students to answer questions about their learning and to respond “Often, Sometimes, or Seldom” to each of 32 questions. The website tallies the students’ responses and offers a prescription for learning based upon the student’s learning styles in one of four areas: Visual/Verbal, Visual/Nonverbal, Tactile/Kinesthetic, and Auditory/Verbal. As an introduction to the Blackboard, students were asked to complete the survey, then respond to how they thought the laptop would support the way they learned. The Learning Styles Inventory is available online at: [http://www.metamath.com/multiple/multiple_choice_questions.html](http://www.metamath.com/multiple/multiple_choice_questions.html)
comments about sharing screen names, one teacher touted the benefits of being able to connect with students and to find out more about how they think and how they respond to lessons:

The students are excited about being able to contact a teacher through the email. Some of these kids are shy, and for whatever reason may not feel comfortable talking to a teacher face to face, or speaking out in class. The computer has given them an outlet to communicate to their teacher or their peers without actually having to go out on a limb in class. What I notice from this, was that eventually these students were able to verbally communicate more in class, because they felt comfortable in class, and they knew they were amongst people who cared for them or maybe better valued their input.

In her observation, this teacher noted that students who otherwise might have been invisible now have a voice, a means for communicating their ideas. For them, having access to a computer also meant providing them an opportunity to build enough confidence to eventually speak up in class.

Because they were more interactive with their students, teachers seemed to know them better than they might have other students. One teacher indicated that she “really enjoyed working with this group of kids [and] felt like I knew them better than my other students.” She attributed this change to “the ability to talk with them outside of class and help them with problems that they might be having with certain assignments.” To these teachers, this discovery made teaching and learning more meaningful as they grew to know their students in a deeper way than they knew their other students.

**Laptop Teachers Became Program Leaders**

Teachers’ roles expanded throughout the initiative to include taking ownership of the program. In their leadership roles, they began to pave the way for other teachers to consider teaching with computers. Through Veronica’s example, other teacher leaders came forward.
Veronica’s role as lead teacher continued to evolve as she stepped up to assume more responsibility for the program. In the summer of 2005, Veronica facilitated getting the last minute equipment that teachers would need at the start of the year. As the school year began, she consistently sent out team meeting agendas for me to review and make additions. She also coordinated the communications regarding what day the meetings would be held and facilitated changes in meeting times to accommodate everyone’s availability.

Veronica and I emailed and instant messaged each other regularly, usually at her request. Often, I would get an email asking me if I would be up that night and able to chat. In our online discussions, she and I theorized how students were reacting to the pilot and what we could do to help them become acclimated. She also kept me apprised as to the general temperament of the two youngest teachers, letting me know when and how I could relieve pressure from senior faculty members as attacks from them became more prevalent. She became their personal advocate and helped them discuss ideas for continuing to incorporate laptops in their classes. By the end of the semester, she was leading the team meetings while I observed, and then I stopped attending them.

As the pilot continued, the other laptop teachers’ roles evolved beyond that of a classroom teacher, and they shared some of the leadership responsibilities of the pilot. Stacy (a pseudonym), for example, assumed responsibility for recruiting future students. She coordinated the application process and helped establish the process to review students’ applications.

As these teachers assumed leadership of the program, they became bigger advocates for the initiative. Because the other teachers had limited understanding of a program that had been implemented without their involvement, the laptop teachers felt it was important to explain its purpose, as they understood it. Their support of the laptop pilot emanated from a belief that as
educators it was essential to connect to students on their level and to prepare them for life outside of high school. They saw the laptop initiative as a way to advance their personal mission to teach. One teacher explained, “I think Kapaun chose to do the pilot so that we could be innovators, not followers. We want to show what can be done. As educators, we want to give the students the best of what is out there (especially technology).” Another teacher expressed the belief that incorporating technology into instruction is important and necessary to prepare students for the world of the future. This teacher conveyed, “In order to compete with the rest of the college preparatory schools in the nation, we need to provide students with the skills that will enable them to compete in the digital world.” They communicated their passion for teaching with laptops in how they approached dialogue with their colleagues.

As program advocates, laptop teachers set the example for others to begin incorporating more technology into their classrooms. Often, other teachers would approach them and ask them about the initiative and to help them formulate an idea of something that they would like to try. They relished the opportunity to work with other teachers. For example, one laptop teacher commented, “I think that every student in the program has benefited from this experience, and I can't wait to introduce this to more people.”

In assuming leadership for the laptop initiative, the teachers believed it was important to get all faculty members to incorporate technology in their instruction. They were optimistic that Kapaun teachers would come to accept and incorporate technology into their instruction, as one laptop teacher indicated, “I think that eventually all will have varying levels of comfort with technology, and I think that at some point, they will hopefully see the benefits technology can provide in education.” They envisioned within a few years, “ALL students at KMC will have laptops (as well as the teachers) and that all teachers will have the reflective experience that I had
about what a teacher's role is in a student's learning.” Teachers assumed leadership roles that were not present before the beginning of the initiative, offering ways in which they could help other teachers build bridges between old ways and new ways of teaching.

Confronted by Opposition, Laptop Teachers Formed Together in Community

Even though the laptop teachers felt they were leading their students in a good direction, they faced opposition from those around them. The opposition came primarily from the department chairs, although comments about the laptop teachers and what they were doing trickled into many lounge conversations, and ranged from mild negative comments to outright attacks. Working through the attacks, laptop teachers formed an alliance with each other as they defended their position. They formed a tight knit community with those who taught and learned in the initiative.

The laptop teachers accused their department chairs of leading the charge against them and for being the biggest critics. In the LRHCCM, the teachers communicated what they could not say to their chairs in an imagined dialogue. The teachers’ anger toward the department chairs was palpable. To illustrate, one laptop teacher would like to have said to the department chair:

You being one of the biggest critics of this pilot have shown no interest in what is going on, but yet you feel qualified to voice your concerns about the program. In the time I had this class you never once came in and observed. So naturally you feel you have all of the evidence you need to cast doubt on the entire program. For you to criticize the program, and not attend one of my classes is reprehensible. You complain about the noise from the typing; you could have come in and witnessed that it wasn’t that big of a deal.

Another teacher responded similarly, “I really think that it is unreasonable to be so against something that you have never even tried. I’m sure that your students would really find
new challenges in using this tool.” Some teachers felt the department chairs in particular ridiculed and sabotaged their efforts while others wished their chairs better understood what they were trying to accomplish. Almost in spite of their department chairs, they internalized their personal mission that reflects the mission of those teaching in a Catholic high school.

**Belief that Technology Enhanced Catholic School Mission**

Despite what they felt about the department chairs, the laptop teachers focused their efforts on the students and adopted the Catholic school mission as their own. Teachers in a Catholic High School are expected to explicitly articulate that they are performing God’s work through their vocation of teaching. For teachers in the laptop pilot, the technology enhanced their ability to help students become well-rounded people, academically, morally, and spiritually. Examples supporting this claim abound from their comments, but appeared mostly in the Left-and-Right Hand Case Column method as the teachers constructed an imagined dialogue with their department chairs. In these imagined conversations, the teachers drew upon their faith to justify why they were a part of the pilot and why the school chose to create and maintain this approach. One teacher opined:

In other words, I would hope that these students receive a well-rounded education in every aspect of human learning and, at the same time, be so comfortable with the technology that they can easily communicate the truth to others. If you would, that they would become leaders in whatever field of endeavor they chose, infusing the Gospel message into the present culture.

Another teacher conveyed that using the internet as a part of her instruction, she “would be forming them in where to look, how to evaluate sources and how to navigate the moral pitfalls of the system so that they would personally remain faithful to their beliefs and morals.” Thus, rather
than preventing students from accessing the Internet in fear of them finding inappropriate sites, teachers wanted to provide the students with a moral compass to locate high quality websites and to make good decisions about the appropriateness of online content.

In addition to emphasizing the moral skills students needed in the present, teachers felt students benefited personally and academically from understanding the social justice aspects of the Catholic school mission. For example, the school giving students access to a computer helped narrow the digital divide by providing a computer to students who otherwise would not have been able to afford this tool. One teacher explained this social justice issue, “To give access to students in every economic background, means that the poorer students get equal access to learning that the wealthier students will get whether we provide it or not.”

In addition to preparing students spiritually, another component of the Catholic schools mission is to prepare students academically to meet the demands of a changing society. The teachers helped students, as one teacher coined, “the digital natives,” stay interested in academics by connecting the students’ learning to their world outside of school. Teachers felt they could accomplish this by “learning new ways” to “deliver instruction,” specifically by helping students understand how to use technology for learning and how to help students develop skills that they will need in the 21st Century. One teacher suggested that by “using the laptops the students will have access to so much more than they can in a conventional school setting. They can get primary sources or contact experts to answer their questions.” Thus, they believed learning with technology would be more meaningful to the students.

Catholic high schools are expected to impart the values of the Church and to help students understand how to live in a community. As community members, teachers had to work through attacks on them and the program. Because the students and teachers were experiencing
negative feedback, because they had deep, collaborative learning experiences, and because they spent a great deal of time together inside and outside of class, they banded together and formed a cohesive group. One teacher shared that she enjoyed the opportunity to work on a team dedicated to the same vision. She indicated, “I have LOVED the people that I have had the opportunity of working with.” Another teacher indicated the benefits of working with the students clearly outweighed the frustrations of people’s reactions. She related, “I enjoyed the whole experience: getting to know the kids, trying new things, and taking on challenges as I faced them.” Dealing with these challenges helped her internalize the benefits and inspired them to move forward.

At the end of the year, the teachers decided they wanted to help the students realize what they had participated in creating. They determined the best way would be to solicit ideas from the students, and together they determined that everyone in the pilot – teachers, students, and me – should submit a Power Point slide that encapsulated their view of the pilot. Through several images, they showed what it meant to them to work together, what students felt about their teachers and each other, and how teachers felt about their students. They demonstrated what it was like to be part of a community.

In this section, teachers shared how they experienced the initiative and how they experienced working with other faculty members outside of the initiative. In the next section, students offer their experiences with the pilot initiative and their perceptions of the school’s reaction to them.

_Laptop Students_

The pilot began with 21 students, but by the end of the fall semester of 2005, two students dropped out: one student wanted to be with her friends, and the other student elected to return to a traditional setting. The remaining 19 students participated in the study and their
findings come from analysis of their reflective journals, emails, and applications to participate in the laptop program for their junior year. Students were asked to complete the application so their responses could be compared to the candidates for the 2006-2007 school year. Findings also come from two focus groups conducted with the laptop students at the end of the pilot’s first year.

Students involved in the one-to-one laptop initiative experienced three distinct transitions during the pilot year. The first transition was from being inexperienced laptop computer users frustrated with hardware, software, and Internet connectivity to knowledgeable and comfortable technology users. A second transition they experienced was from expectations for traditional learning activities to that of non-traditional, interactive learning. The third transition was moving from an individual with a laptop to a community of learners. Each of these transitions is described in the next section.

*From Technology Novices to Technology Experts*

When the pilot began in August 2005, students were not adept at figuring out how to resolve problems they encountered when using the laptop. During the first few months of fall semester, days of instruction seemed to have been lost as frustration with the technology and infrastructure mounted. As the pilot progressed, however, students became technology experts who were able to troubleshoot and take care of technology problems on their own with relative ease.

Students initially felt isolated and unsure of themselves with their computers. They did not know how to resolve technology issues and knew they could not rely on their teachers for assistance. One student reflected, “It was scary at the beginning, knowing that we were the guinea pigs. We know that the teachers and us and the administration didn’t know how [to
resolve many issues].” Another student added, “And we had a lot of computer problems. The teachers knew just as much as us. We couldn’t really go to them for help at the very beginning because they didn’t know either.” Another student was afraid that she was going to break her computer. At the beginning, troubleshooting the laptop initiative was frustrating and time consuming for students.

Specific problems students initially faced included connecting to the wireless network, dealing with their technology missteps, accessing online textbooks, and exchanging electronic papers with teachers. Through a process of trial-and-error, accidents, and discovery, students figured out how to correct computer problems, or who to go to for help.

Students were challenged by their inability to connect to the wireless network and frequently had to restore their connections or restart their machines. This was particularly tiresome as students also needed to be connected to the network in order to access their files and connect to their teachers’ Synchron-Eyes monitoring software. Jim (a pseudonym), the Director of Technology, and I showed individual students how to reconnect to the wireless network, and students shared this process with their peers. One student commented that she “didn’t know how to…turn my wireless radio on. I figured out how to do this…it was off, and [another student] showed me how to.”

Students lost the use of their laptops when they did not know how to correct mistakes or were unable to access resources because they forgot login names and passwords. For example, students discovered that if they saved their documents on the school’s server, their computers would freeze, and they could not access their files or use their computers at home. One student explained her frustration with “not being able to open my documents at home, not being able to get online at school on Wednesday… not being able to log into Synchron-Eyes, and not being
able to open this document today!” Another student found that pushing a certain combination of buttons caused the screen to flip upside down. He did not, however, know how to return it to a normal position. To correct this, it was necessary to re-image his computer, which involved erasing his entire hard drive, reloading the operating system, and reinstalling all software. When his machine was re-imaged, he lost all of his files. When the same problem occurred again later, he figured out how to correct it himself. Students had difficulty accessing their online textbooks because they could not remember several login names and passwords. One annoyed student commented, “I often waste more time getting into my books and other things like that working rather than doing my homework.”

Students became exasperated as they learned how to efficiently exchange electronic papers with their teachers. At first, students attached files to emails on school-generated email accounts. As teachers quickly became overburdened with emails, they presented different solutions for how they wanted students to hand in papers. Confused students struggled to determine when and how their teachers wanted to collect their work. Students questioned the reliability of email and did not know whether or not their teachers received their assignments. One student’s anxiety was evident in this comment, “If I don’t know that my homework is through or not and it doesn’t get through I will get a zero and there will be no proof that I sent it in on time.”

At the beginning of the year, students (and teachers) frequently commented about “what was going wrong” and it took the teachers, students, the Technology Director, and myself working together to analyze the problem so that a solution could be determined. Working through these frustrations eventually yielded results, as students developed the capacity to resolve their own technology problems. In many cases, students learned from their peers about
how to resolve issues and became first responders for each other. If other students could not help them figure out how to resolve the issue, students would acquire help from their teacher or from me. Through this process they became technology experts.

As students became more comfortable with their laptop computers, they transitioned from technology novices to technology experts. They began to learn more about what they could do with their laptop computers. They also developed confidence in their abilities to overcome many of the frustrations they initially encountered. They learned how to exchange electronic documents and used the technology to develop organizational skills.

*Increased Confidence*

Students’ confidence increased as their computer skills increased. They felt it was easier to learn new things on the computer and became more comfortable taking risks when presented with new software. One student explained, “You also get a feeling of independence when you have your own computer where you can do your own thing, like if you don’t necessarily know what you’re going to do, what kind of new program, you just test it out.” Other students shared that as their computer proficiencies improved, they became the “family expert” and their family members came to them for help. For example, one student said, “Last year, I didn’t know anything about computers at all, so I’d ask my dad for help, now I’m the one that they go to.” As students began to solve their own problems, they built confidence in what other technological challenges that they would face. Even though they were more proficient users, they had to determine which software would best fulfill what function. This challenge was found in their inability to turn in assignments.
Submitting Homework and Exchanging Papers

After students and teachers frustrations with electronic paper exchange finally became intolerable, at the beginning of October 2005, the Director of Technology provided students and teachers access to Class Server, a software program that allowed teachers and students to exchange papers with the click of a button. A learning management software program, Class Server operates on its own networked file server. Class Server helped teachers and students manage the paper flow associated with electronic grading. With access to Class Server, students were able to exchange documents with their teachers from school and home. During their end of the year reflections, students touted the benefits of having Class Server, referring to the software as “one of the best adjustments made.”

After Class Server was installed, students commented on how the process of homework exchange seemed much easier. Students’ attitudes about homework also changed from the first nine weeks to the second nine weeks. To illustrate, one student commented:

I was surprised by…how easy it’s been becoming to do my homework every night. For the first week or so it was even a little more time consuming for me to do my homework because I had a hard time finding my assignments and notes, but now I have a system and, for the most part, the teachers are able to give us instructions on how to turn in our homework, etc., so that we are able to understand.

With Class Server as a tool at their disposal, students began to feel less anxious about their assignments and used the computer to help them become more organized.

Developing Organizational Skills

As they became more proficient with the technology, students’ organizational and prioritization skills improved. At first, students found it difficult to find information on their
laptops, but over time they developed their own systems for organizing their schoolwork. One student explained the advantages of a laptop over the traditional 3-ring binder or notebook:

In the course of the year, if you’re not in a laptop class, then your notebook just ends up a big mess… your notes are all over the place. But with a computer, they stay exactly where you put them, and you can categorize them exactly how you want it, and it’s a lot more efficient. It makes it, at the end of the year, when you’re trying to review for finals, a lot more easier too.

Students also felt the laptop helped them become more efficient; in particular they managed their workflow by using the laptop as an electronic agenda. One student used Microsoft Outlook to help him manage assignment due dates.

With the help of their teachers, students learned how to use the laptop to enhance their note taking skills. Using Microsoft Word, students learned to highlight, fill in the blanks, and add comment boxes to their notes. Overall, students found that “taking notes is less complicated” and that it was “much easier to take notes if you type them.”

In addition to students’ becoming more efficient and organized, they had to learn how to manage their time, especially in light of the multiple distractions the laptop made available to them. Instant messaging (IM or AIM) and computer games had the potential to interfere with their learning and were temptations that initially led students to procrastinate on completion of assignments. One student offered: “I think that a big problem to getting work done is the fact that AIM is a huge distraction and addiction sometimes and I hate it and I always have because it wastes my time.”

Overcoming these distractions took considerable discipline and problem solving on the part of students. For example, one student described how he overcame the distraction by going
“into a quiet room with no music on and do not IM.” The student understood that to do well on tests and quizzes, “I need to make sure that I don’t turn on my radio and don’t even sign into my IM. It really works!” Others acknowledged that they procrastinated more than they should, as one student realized, “I learned that procrastination kills you in the long run.” Another student concluded, “I should get my homework done the day it is assigned.” Through self-discipline, students learned to make better use of their time.

Throughout the pilot year, students realized that the issues that caused confusion at the beginning were eventually resolved and they learned how to resolve their own technology problems. As students became more familiar with the hardware, software, and interconnectivity, they began to understand how to use their computer for learning.

*From Traditional Learning Expectations to Interactive Learning*

During the first nine weeks, students described learning in the pilot in terms of what it would be like in a traditional classroom, which at Kapaun consisted primarily of the teacher lecturing, with the students taking notes, completing assignments, and taking exams. Therefore, even though their classroom teachers employed computer technology, the ways in which students understood their use was very similar to the ways in which class would have been conducted without them. During the second semester, however, students began describing their classroom experiences in a different way; they were able to explain how much or how deeply they were learning. The way students talked about their learning reflected the change in the manner, not only in the way they were taught, but how they learned, as students became more receptive to an interactive learning environment.
Expectations for a Traditional Classroom

Early on, students’ expectations for how they would use their laptop in class mirrored what they would have done without one. They expected to use their computers to receive information, which was consistent with the more passive approach to learning to which they were accustomed. When teachers encouraged them to be more actively involved in their learning, they resisted.

In the beginning, students in the pilot expected to accomplish the same assignments as students in other classes, except their assignment was in electronic form. That is, the computer simply facilitated what they were already doing in class, just more expediently. For example, one student said, “I was surprised by…how much faster I am beginning to type my notes.” Another student also indicated that taking notes using the laptop is “a little easier because you can go faster.” Students talked about taking notes on the computer instead of using paper and pencil, but the activity was still taking notes as the teacher lectured.

Students were comfortable with a passive mode to learning, even though the computer had the potential to help them become active and engaged. For example, they had problems, at first, adjusting to the format of the electronic textbook, but over time they began to utilize some of its functions. One student described her introduction to electronic classroom materials, in this case reading stories on the computer screen instead of the book:

When I was reading my English short stories, it was sort of hard for me to read the computer screen, but it was okay. I liked it, before I read them, there was a place where you can listen to a summary of the story before you read it, and that helped me to understand the story more.
Another student described how he was able to use his computer in history class to help him learn as he watched “a movie and learn about tribes that have disappeared.” Although they used the computer, students simply traded one passive way of learning for another.

As teachers continued to challenge the students to learn with more application-based, hands on activities, students’ reluctance to engage eventually dissipated and they became excited about trying new ideas. Their enthusiasm was dampened, however, when they received their grades at the end of the first semester, which were lower than they had expected. As teachers attempted to use more constructivist practices, they also shared their expectations and corresponding criteria for student products in the form of rubrics to which students were not accustomed. This contributed to students’ ill feelings of how their grades did not meet their expectations of their past performance. One student emailed, “The year started out not so smoothly and it has been hard to bring my grades back up to where i [sic] expect them to be.” After their grades slipped, students began complaining, as they attempted to reconcile teachers’ attempts to use constructivist teaching practices with how they might be evaluated. When teachers attempted to push them out of their comfort zones, students politely rebelled and blamed the teachers for their academic difficulties. The same student quoted above continued in an email:

Because this is an entire new learning experience, it's been making it hard sometimes on our class. we have been asked to adjust tremendously...and I believe that we have done so as gracefully as we could, but it can't only be the students adjusting, the teachers must do so as well … i [sic] have never been and exceptionaly [sic] smart student, but i [sic] have always been able to maintain my a's and b's and this year i [sic] find myself struggling with a C…
Students complained they were expected to accomplish more work than students in other classes and became overwhelmed by the perceived increase in work and the adjustment they had to make to learning with their laptops. One student explained:

I don't know if we are getting more or less homework or work in general than any of the other classes but it seems like we have plenty more. I also heard that sophomore year is supposed to be the easiest year and right now it just doesn't feel that way. Maybe the reason is just that we are still getting used to this new technology or maybe we lunged into it too fast. I don't know but whatever the problem is it isn't working very well for me and things that were simple last year have become a hard task.

Students were selected for the pilot because they had a propensity toward constructivist learning (See Appendix H), but when it came to grades, they resisted activities that might hurt their grades and reacted negatively for not performing to their expectations. Their inability to reconcile constructivist learning practices and receiving the grades they deserved made them anxious about learning with laptops.

As noted in the previous section, to help students become more comfortable with using technology as a learning tool, the teachers administered an online learning styles inventory. The inventory provided students with a language and framework to describe and understand their experiences. Upon the completion of the inventory, students began to discuss how their learning was unique and how they could use their laptop to support the way they learned.

*Discovering Learning Styles*

As they participated in classroom activities that were increasingly interactive and students became aware of their individual learning styles, they tailored their laptop experience to match them. For example, in students’ reflections in August and September 2005, they listed
their learning style as evidenced on the inventory. One student described herself as a visual learner and explained how she thought the computer helped because she was able to have everything open in front of her. Another student believed she was split between two different learning styles: “visual nonverbal and tactile kinesthetic,” which means that she could use the laptop by taking things in visually and interacting with them by manipulating information and objects on her screen – i.e. using the mouse to organize information and pictures into categories. Another student indicated that she also had two learning styles. She indicated, “I am a visual learner, and I also learn by listening to someone,” meaning that she would prefer the computer to read to her aloud while she simultaneously views the same information.

In May 2006, students’ awareness of their learning styles carried over to how they described learning with their laptops in the focus groups. One student explained, “Well I know that I’m more of a visual learner and so our teachers, we can go on the internet and find examples visually instead of just in words that help explain it better.” Another student noted, “I just learned that I’m just a better visual learner because I can remember… about history looking at pictures of battlefields.” These quotations are significant because the students were introduced to learning styles vocabulary in August, and by May they had applied their understanding to the unique ways they learned specific content.

At the beginning of the pilot, students talked about learning as received information. Even though students were participants in the laptop pilot, many of them did not initially see themselves as being involved in anything different than a normal classroom environment with the exception of having a computer. As they discovered how they learned, they became more receptive to using the laptop to support the way they learned. As the pilot progressed, the
students took responsibility for their learning and described themselves as active learners involved in an interactive learning environment.

*Interactive Learning*

In Spring 2006, at the end of the school year, students began to understand that increased interaction with people and increased opportunities to manipulate information encouraged them to deepen their understanding of what they learned. These interactions included having ready access to web-based resources to support their learning, using interactive textbooks, and utilizing interactive software such as Instant Messaging, email, and word processing (defined in this context as the ability to write, then revise as thoughts become clearer to the user, as opposed to typing something verbatim off a paper).

Teachers encouraged students to interact with the Internet during class to enhance their learning. Students described how this differed from a textbook that just gives the reader “the information that you need to know.” A website, in contrast, gives the reader “extra information that leads to other things that just keeps on, like it’s a process or a cycle, I guess, it just keeps on wanting to figure out more about the topic you’re on.” Students were able to immediately conduct research and access information, which piqued their interest and motivated them to want to learn more about a topic.

Students supported their learning through the Internet as their teachers provided some direct instruction to help frame curriculum units. During lectures, teachers would often stop and explore the web to illustrate points or to help students search for more information about what was being discussed. As students became more proficient, they were able to find information on their own. One student explained how having access to the Internet in class helped them, “I think that we really can get what we’re understanding a lot better. We can get more examples and
more experiences on what the internet can provide than we can in a regular classroom. So, we’re still learning, and we can get deeper into it.” Other students provided examples specific to each subject including seeing pictures of people and events and having access to multiple sources and points of view “from different countries who write about history differently.”

*Interactive communications software.* Students used interactive communication software (email, instant messenger, and digital voice recording) in a variety of ways to support their learning. Instant Messenger was a particularly useful teaching tool. Throughout the year, teachers asked students to use instant messenger directly between two students for the purpose of completing discussion questions. The chat function permitted students to work together in synchronous groups without raising the noise level. Students expressed that instant messenger helped them learn more than other transmission methods as evidenced by this student’s opinion, “The activity or project that caused me to learn the most this week… the science project when we used AIM to talk to each other or in English when we use chat to discuss the stories.”

After teachers demonstrated how to use instant messenger for learning, students discovered other ways in which the tool could be used to process information. One student cited that instant messaging allowed them to “talk with your friends and ask them for help with your homework.” Students also received help from their teachers via email and instant messenger when they needed to understand the material better, both in and outside of class. Because teachers had their laptops with them all the time, they were readily available to students with questions. One student explained that teachers “constantly have their laptops with them so in their classes, they’ll be checking email and they’re constantly checking email and doing all that and so they get back with you pretty soon if you have any questions.”
Prior to a test, students and teachers would meet in a synchronous chat room to quiz each other and to ensure that they understood what was expected of them. One student explained that for her science class, “people got into a big chat room and the teacher would review for tests with us… and we have a lot teachers who get on AIM with us.”

Instant Messenger enabled students to interact and collaborate on projects during the school day and at night. Students learned to use a combination of instant messenger and email to collaborate as they completed group projects from home, preparing entire presentations assigned on Thursday and due the following Monday without meeting in person over the weekend.

Students also utilized free voice recording software to record their discussions on their laptops. One teacher encouraged her students to work together in groups to develop these activities into a pod-cast, infusing music, a scripted storyline, and an interview to convey their understanding of questions about a story they were reading. A student indicated that he really enjoyed this medium explaining that it “was kind of cool, where we all kind of got to set down and make our own little voice clip section of In Cold Blood that we were doing.”

*Using Microsoft Word to enhance writing skills.* In addition to interacting with others, technology allowed students to communicate what they learned to their teachers and consequently become better writers, as they learned to use Microsoft Word to review, edit, and organize their thoughts. A student discovered that by using Word in class she was able to dig deeper into the content because she was able to focus upon explaining the content rather than worrying about the structure of writing to communicate her ideas that sounded good the first time she wrote them. She noted when students have to write it out by hand, you’re thinking more about the structure instead of the content, because it’s hard to go back, unless you draw an arrow, it’s hard to go back and
put stuff in or take stuff out but if you’re typing it all out, then you can just say whatever you need to say and organize it later.

Through the interactive process of writing, students learned how to use the software to express themselves. In addition to writing, students discovered that reading could be an interactive process.

*Interactive textbooks.* As previously discussed, students did not always enjoy reading stories on their laptops, but they did like learning course content through electronic textbooks. For example, a student liked the fact that the biology textbook allowed her “to watch video clips and listen to people read words to me that I did not know how to pronounce… It was more interesting and informative. There was more to do than just read, you could explore and learn.” Electronic textbooks were more interactive than digital books, which appealed to students who were able to utilize their textbooks to bring life to concepts that were difficult to visualize. Another student also enthused about the interactive nature of the biology book, noting how through a mouse click he could “view the DNA unstrand and copy itself.” He marveled, “You can actually watch it do that. You can read about it, but the visual helped me a lot with the tests and stuff because I could imagine that - unwinding proteins getting thrown around.”

Throughout the first year, students transitioned from expecting information to be transmitted to them via a passive format to finding that they could use technology to interact with the process of learning. Although this transition was not easy for them, their teachers continued to provide ways to show how technology could be a tool for learning.

*From Individual to Community*

The third transition that students made during the course of the laptop pilot year was from the sense of themselves as independent individuals with a laptop computer to feeling part of a
distinct community that was larger than them. Students were primarily motivated by self-interest to join the initiative, and saw it as a way to gain an advantage over others. Some conveyed they were intrigued by the novelty of having a laptop in class, and others “wanted to experiment with something different to see what else we could do with our education.” Other students believed the technology would give them an advantage when the time came for college. To illustrate, one student joined the pilot because he “found out that many colleges were trying to have people use laptops as a requirement to be in the college and so I thought I might as well get a head start on it.”

Although they frequently worked in groups, at first the students’ focus was on their individual roles and contributions to the project than on the group itself. They enjoyed the social interaction of group work, but preferred to work by themselves if the activities would affect their grades. They often were critical of each other and of the situation in which they were expected to work. One student explained, “The last [group project] we just did my partner wouldn’t email me his part until about midnight the night before it was due causing me to stay up all night when I could have finished hours before.” Students defined working in groups as dividing up the responsibilities of the assignment, then putting the pieces together later instead of an opportunity to learn together.

Laptop students struggled to work together on group assignments. Some students felt they had to push and cajole others to contribute to the group’s work. One student noted, “I am sometimes able to take control of a small group and push them towards getting done fast and accurate.” Another student explained that it was necessary for her “to keep my group on-task. I think that a group project should involve everyone in the group contributing.” She implied that not everyone in the group was doing their part to contribute to the assignment.
Students entered the pilot because they felt they could benefit individually. As students learned about themselves and how they needed to work together, they became aware of what each person contributed to the group. They also learned how their individual talents benefited others in the pilot. As they contributed to each other’s understanding of what made a team function, they began moving toward becoming a community of learners.

To a Community of Learners

Even though students joined the pilot as individuals, over time they realized they could use what they learned to benefit each other. As the pilot progressed, students learned to work together, dealt with and reacted to others’ negative perceptions of the laptop pilot, attempted to prove that they were successful, and as a result became a learning community.

Students did not learn to function together in learning groups until well into second semester. After they realized what each of them contributed in order for a group to be successful, they requested more group work. One student realized that she was an effective group member when she was willing to “do my part of the job and I am very easy to cooperate with.” As students worked in groups, they understood the benefits of using people’s combined strengths to complete a given task. Citing multiple projects, students found that “things can get done in a short period of time if you all work together as a group.”

Students felt that by working in groups, they were more interested in the content, and they learned more. One student offered, “I learn new material easily if I am working in a group.” Another student echoed this sentiment when she responded to my email that asked students to offer advice to make the pilot better for the second semester. She wrote, “I think we can do more projects in groups, i [sic] think that would make the classes more interesting and if we become
interested then we learn more.” Students became interested because of the unique perspectives that peers brought to their learning.

Students also suggested that the laptop initiative allowed them to combine all of their resources, including each other, so everyone could be successful. At the beginning of second semester, teachers granted them the opportunity to work even more collaboratively.

*Cohesion in the Face of Adversity*

As the pilot progressed, students became a close-knit community. One primary reason they became close was they could only turn to each other, as they collectively faced an onslaught of criticism. They were assaulted with negative comments, such as being labeled “Computer Nerds.” One student defended against this stereotype, “But we have some good athletes in our group that shows them we aren’t. And we’re in it to get the experience and not to come across like that.” Regardless of how inaccurate they were, the labels and name-calling were hurtful.

Students, mostly honors students, and some teachers outside the initiative openly talked negatively about the pilot. A student related that some of the honors students thought the laptop initiative “was a joke.” Students recounted specific instances in which the honors students treated them differently. One recalled, “I was in Spanish and [an honors student] was saying a lot of bad things about it and didn’t like it for some reason. I just never knew until then that a lot of kids don’t like the laptop people. It’s kind of shocking.” Another student asked, “I don’t understand what they have against it because they have the same opportunity to be in it.”

Laptop students responded to the negativity by defending themselves against attacks. Many of the students particularly resented being called “cheaters.” They believed other students thought the laptop students used their computers to cheat on assignments by taking turns completing homework and copying and pasting assignments so that others would receive credit
for them. One student explained, “They make assumptions that all we do is cheat and send homework to each other.” To non-laptop students and teachers, laptop students felt compelled to justify how and why they were using their computers. The same student quoted above went on to say, “You will usually see people, like I had mine out in the library once, and there were four people, I don’t even know who they were and they were like, ‘Oooh laptop kid!’” She confronted the students and told them, “I’m sorry, I’m doing my homework.” As students endured these kinds of experiences, they collectively became more resilient to attacks. In response to attacks, they began to defend the program and their involvement in it and through their defense became advocates for using laptops in school.

As students became advocates of the initiative, they were often called upon to respond to questions about it. One student said, “I know that a lot of kids, they want to know how it actually works, because, they’ll question you: ‘What do you actually do? What do you even use the laptop for?’” Some students outside the pilot asked questions about which they seemed genuinely interested; other students asked pointed questions about the pilot that indicted its ineffectiveness. Laptop students had to balance their responses according to the way they perceived the questions were phrased. One student surmised, “I think that if they just spend a day to figure out what we really do, it might change a few people, then if they could actually get one that might help too.” They believed that if more students outside the pilot better understood the program, they would not be as negative about it. They believed that providing more students with computer access might lessen their resistance to the pilot.

In addition to the non-laptop students’ negative reactions to the pilot, laptop students endured comments from non-laptop teachers, which further developed their solidarity. The students knew which teachers were in favor of the initiative and which were opposed. One
student explained that one of his teachers “didn’t like it… because he’s not good at computers and he’s kind of jealous about it because the kids have better computers than he does.” Another student conveyed that his teacher did not approve of having a laptop in her class. He stated that he pulled out his laptop to make an entry in his electronic agenda and the teacher assigned him a detention, “just for writing in my agenda. And I tried to explain it, and she said, ‘I don’t care. Get it out of here.’”

Students speculated that teachers might have been resistant to accepting laptops because they were threatened that computers would one day replace them, and because they were threatened, they discredited their use. A student explained:

With the teachers, I know that not a lot of them like the idea of having laptops because they don’t feel like a laptop can teach you, they think a person needs to teach you, and from what I’ve heard, they don’t really feel like laptops are necessary and that kids are just going to screw around on them and not try to learn.

As students attempted to understand how others viewed them, they took solace knowing that not every teacher was against them or the initiative. Some non-laptop teachers were supportive, as students were allowed to use their laptops in other classes, as a student conveyed, “I have used it in other classes that aren’t part of the initiative and . . . and the teachers think it’s cool because there’s so many ways we can use a laptop.” Students also sought refuge in the library as they perceived that the librarian “really likes you” if you are a laptop kid.

**Solidarity in Success**

Because students’ perceived that others were against them, they pulled together to demonstrate that they were successful. They responded to challenges of others who insisted that they offer proof that using computers was a better way to learn than more traditional methods.
One student said, “I’d like to see the whole school go to laptops so that we can show the honors kids and everyone who’s against them what we really do in the classes and that it does help.” These students’ efforts were validated through their group performance in class.

As a result of the pressure from the other students, laptop students began paying more attention to their grades and to their performance on standardized tests. After the first semester, a student shared, “I think that our grades are doing better than other classes. Like teachers say we have better grades than other of the same classes who don’t have laptops.” Another student remembered that their average in math class was “93%.” Even though they didn’t have the test data, students believed their test scores were higher than the rest of the student body. One student asked, “didn’t they say our test scores are higher?” Another student agreed, their teachers had told them that as a group their sub-scores were higher than other students on one of the standardized tests.

Students defended themselves against the attacks by proving that they would not let each other fail by supporting each other and helping each other succeed. For example, prior to Christmas, a student had written a detailed explanation about why she wanted to leave the pilot, but as she shared her concerns with her peers, they pulled her back into the fold. She explained, “I know that my parents were telling me that I could quit if wanted to, and I almost did around Christmas time. I know that a lot of people were just like, ‘Don’t quit, Don’t quit.’” The students’ approach to showing her that she belonged with them strengthened their ties to each other, and they became more like a family.

Becoming a Family

In August 2005, students entered the pilot as individuals who wanted to try something new and by April 2006 they became a group of people dedicated to sticking together. They
became much like a family. These students attended most of their classes together; therefore, they came to know each other in ways that are unique in a traditional high school setting the size of Kapaun. One student likened their experience in the laptop pilot as traveling in a “herd.” He explained, “We’ve been in a herd this whole year, like just like going to every class together to be with the same people every day.” Another student clarified, “I mean at first it was really painful, but I think that we got used to it, and we actually had a lot of fun with it.” Another student shared, “So we have our own laptop club,” and several other students affirmed by saying, “yeah.” Because the “herd” traveled in a pack, they knew each other better than they knew other students in the school. One student offered, “We kind of formed our little group we know so much about each other now.” Another student suggested, “You get to know your classmates better because you have almost every class with them.”

Students bonded together at a deeper level than just acquaintances in a classroom. One student observed at the beginning of the year that he was surprised by “how quickly a lot of the kids in this class bonded.” Another student tried to explain, “Yeah, it’s also like your friends.” Another student interjected, “All of us.” And another added, “You really become family oriented like in class.” While the student was speaking others laughed and said “yeah” in agreement. As they became more like a family, they would have fun at each other’s expense. Inside jokes appeared as students behaved more like brothers and sisters than classmates. For example, they borrowed each other’s computers and altered them slightly for fun.

Students bonded as they recounted past frustrations with technology that had become part of their collective memory; their shared experience. For example, all students remembered “Kevin’s Accident,” in which he flipped the image on his screen. One student shared that her favorite story involved Kevin’s comment that his “screen’s upside down and it looks completely
different.” These students knew each other in ways that students from outside could not comprehend. They knew which things would be funny as they teased each other, and got involved in keeping each other connected.

Laptop students endured another common albeit unfortunate experience that required all of their computers to be re-imaged. One student caught a virus through AIM and accidentally sent it to everyone who was on AIM. Students shared that, prior to re-imaging, if they had not backed up properly they lost their work. Students commiserated and shared this experience together. In the focus group a student explained, “You learn real quick how to do it (backup) after the first time that your stuff’s gone” to which others laughingly agreed. Others indicated backing up files meant that they had to pay attention to details or they could “screw it up.”

These kinds of shared experiences brought the laptop students closer together. In these realizations, students identified that they were conscious of being formed into a group. A student said he felt special being selected to participate in the pilot, “It’s kind of cool that we’re in a group that’s really for us and that we were chosen to do this. It’s something that kind of makes you feel cool inside or special.” Throughout the pilot the students reflected how they were, in fact, special and unique: they were selected because they met certain criteria not representative of all students, they learned together, and they formed a tighter community than what would normally be found in a high school.

The previous two participant groups offered their perceptions of the laptop initiative as it was happening and through reflections after the fact. Over time, they developed support from others in the building. When enrollment for the 2006-2007 school year began, interested teachers and students joined the initiative.
Section II:

Teachers and Students Joined the Initiative in Preparation for the 2006-2007 School Year

In April 2006, students and teachers were selected to participate in the next phase of the pilot to begin during the 2006-2007 school year. With the exception of Veronica, who accepted a position in a public school district, and the theology teacher who moved up with the students, the veteran laptop teachers who taught in the first year of the pilot, prepared to meet a newly selected group of sophomores. As the veteran sophomore laptop students became juniors, new teachers were added to the pilot.

Teachers and students new to the initiative were able to provide a glimpse of the pilot from an outsider’s perspective. As they joined the initiative, they became more familiar with the inner circle of the laptop community but remained on the margins as neither insiders nor outsiders.

New Teachers Were Added to the Initiative

In March 2006, toward the end of the first year, five teachers were added to the initiative. These teachers were selected upon the advice and consultation of the department chairs. Teachers added to the pilot were a biology teacher with 8 years of teaching experience, an AP US History II teacher with 15 years of experience, currently in his 8th year at Kapaun after spending 7 years in another district, and two theology teachers (one for each semester), one with two years both at Kapaun, and one with 7 years, the last one at Kapaun, and a English teacher who has taught for 3 years, all at Kapaun. Veronica’s teaching position was filled by a sophomore biology teacher with 8 years of teaching experience. Although the pilot was expanded to include a new group of Sophomores and a few new Juniors, all teachers in the building were issued new laptops at the beginning of the Fall 2006 school year.
Teachers new to the laptop program were to receive the students who had been sophomores in the pilot during the first year and in Fall 2006 would move into their junior year. All teachers at Kapaun had completed the majority of Intel’s first training module in 2005-2006 through in-service activities. Additional training for the new laptop teachers did not work well with their summer schedules, and, because many of them had directly observed the pilot, had talked with the veteran laptop teachers during the second semester, and had already been trained in Intel, I did not think it was necessary to provide them with the same level training. They entered the pilot with knowledge from the previous year, the support of an additional teacher who had already been through the pilot, and the knowledge of the first training. They received a brief orientation to Blackboard and Class Server software in August.

Additional planning time was offered to one of the teachers who had more than one class preparation. She declined the offer. The other teachers were not offered additional planning time as doing so would have increased class sizes beyond capacity in their departments. Like the first year teachers, the new junior pilot teachers had a common planning time.

Data collection activities for the new teachers followed the same format as the other teachers: Left and Right Hand Case Column Method and responses to three open-ended survey questions. Both sets of teachers completed the data collection activity at the same time.

Analysis of the data considered how teachers new to the initiative verified the original teachers’ findings and considered how their unique position offered insight into the pilot, as they were not teaching with the technology during the 2005-06 school year, but were otherwise intimately involved with the laptop teachers. New teachers’ findings include their unique perspective of the pilot, their insecurities about teaching in the initiative, and their responses to teachers’ negativity.
For most of the 2005-06 school year, teachers new to the pilot observed it from the outside. During the last few months of the school year they had an opportunity to learn what it would be like to teach in it. New laptop teachers solicited information and opinions from the original laptop teachers and were involved with discussions with their department chairs. As a result, teachers new to the initiative were privy to many of the thoughts and feelings of the laptop teachers and to those outside of it.

New Teachers’ Insecurities

The new teachers generally supported the pilot, although they had reservations because they were aware of the friction between the chairs and the veteran laptop teachers. Furthermore, the new teachers had not yet taught with the technology. A teacher who joined the pilot at the beginning of the second year understood what he was getting into, “I have heard a lot about it from teachers who are currently involved in it. I think there have been ups and downs, but overall the students have been happy with it and it has allowed teachers to be more creative and effective.” This person felt the initiative had more benefits than not.

Although they were supportive of the pilot, new teachers were unsure of themselves, as they had no experience teaching with laptops and did not have the training needed to teach with some of the software that they would be expected to use. One teacher conveyed her concerns:

Preparation could become very lengthy. With all the sites and information, which is reliable? How much access does that mean? Will the students be able to collaborate like they do without laptops? And, not to mention, they might know their way around the computer better than me.

Her concerns reflected some of the insecurities she and others held about the pilot – knowing how to guide students to appropriate websites, how often the students were expected to use the
computers, and how much time it would take to adequately prepare. Another new teacher wondered if she would be expected to work after 3:30 to keep connected to students and if she had enough prep time as most teachers the first year had an additional planning period to prepare, and they did not.

New Teachers’ Responses to Negativity

Teachers who began the initiative during the second year were less patient with teachers who resisted the laptop initiative. One new teacher said bluntly, “We will have to convince some teachers that it is a good thing or replace them with faculty that are more in tune with the 21st century.” Patience was wearing thin for teachers who rejected the laptop initiative.

New teachers also were less optimistic than the veteran teachers about what it would take for the faculty to make the transition from more traditional instruction to a constructivist approach that involved computers. One teacher suggested that it was necessary to begin this process as soon as possible as indicated in the following comment, “If we didn't start it now, our students would be behind--especially as slowly as some of the teachers here move.” His criticism of his colleagues helped verify another teacher’s observation that “some members of the department rely too heavily on lecture and note taking. I see kids that are already so bored with our subject area in their every day lives, and then they come into the classroom and it just gets worse.” This teacher believed that incorporating laptops into instruction might help teachers develop a more interactive approach toward student learning which in turn would help the students better connect to their classes.

In their imagined dialogues with their chairs, new teachers were critical of the negative comments about the initiative to which they had been exposed. One teacher felt she could not say to her department chair, “We live in the age of computer/technology and are kidding ourselves if
we think it’s not for education.” Another teacher responded to a sentiment among some teachers who feared that computers would, one day, take the place of teachers. She responded, “I don't see laptops taking the place of teachers, rather they should HELP teachers do what they do best: connect their content to their students' lives.”

Throughout their comments, new teachers felt, while they were apprehensive, participating in the pilot was important to the immediate needs of the students. The pilot would help teachers transition into a more contemporary way of teaching and that the students would connect better to their classes and to school.

New Students Were Added to the Initiative

Six students joined the pilot at the beginning of 2006-2007, during their junior year at Kapaun. In an effort to increase participation in the pilot and to balance class sizes without hiring additional teachers in high need areas, these six students were selected out of twelve who applied. These new students were key informants who were able to share how they viewed and understood the pilot during its first year as non-participants. When the focus group was conducted with them, they had been in the pilot for one semester in Fall 2006 and thus were able to offer a perspective on their experience as new members of the pilot. Findings in this section include how these students viewed the pilot from the outside looking in, how they transitioned from being non-laptop to laptop students, how the program did not meet their expectations, and how they benefited individually from their involvement.

Students On the Outside Looking In

During the 2005-2006 school year, new students observed the pilot from afar, and were drawn to the pilot by the ways in which they observed and interacted with laptop students and teachers. One student had heard from a good friend in the pilot that it “was a lot of fun [because]
they did a lot of fun projects.” Another student had heard that the students had more access to their teachers and thought that being involved in the pilot would provide an opportunity to develop better relationships with their teachers.

Novice laptop students also observed their peers and the laptop teachers using their laptops in non-laptop classes. One student noticed that his friend was more adept at finding his assignments than he was. His friend’s apparent organization motivated him to want to be involved in the pilot:

Yeah, it definitely helps with the organization. Like I remember in like Communications, we’d have to take notes sometimes, and I remember that Anthony was sitting next to me, and he’d sit there and click, he’d have his notes like ready, and I’d have to go and like look and like search for like my notes for the thing that we were doing, so I definitely think it helps with organization.

Another student observed one of her teachers use her laptop for instruction. She recalled that the teacher used PowerPoint presentations and showed videos of various authors on her computer. She recalled in her teacher’s class:

We took notes from power points she made and even watched some online videos about certain authors whose books we were reading. I believe that if our whole English class had laptops we could have done more, and it would have been easier to take notes… This class would have been more exciting because more people might have wanted to follow along.

She surmised that if everyone had laptops, her class would have been able to accomplish more.

Another student was motivated to join the pilot because of his summer service project where he helped the Director of Technology set up the wireless network. He wanted “to be a part
of establishing technology in education. It’s definitely an exciting prospect!” In his work with
the school, he “was amazed by how many ways new technology can be incorporated into the
classroom.” This student felt a personal connection to the pilot in that he felt good when he could
help “others with their computers,” even the teachers.

Armed with what they felt was first hand information these eager students believed they
knew what to expect. They carried their expectations into their first year of the pilot. What they
experienced, however, was much different from their expectations.

*Between Two Worlds: New Students Struggled to Belong*

As new students joined the pilot in the fall of 2006, they found that the students in the
pilot were a tight group that had already bonded together. These new students felt out of place as
they attempted to join the veterans who were much more computer savvy than they were.
Overwhelmed by new computers, new software, and a seemingly new world, these laptop
novices had to quickly catch up to the veteran laptop students who already had a year of
experience.

When the laptop novices joined the pilot, they did not fit in with either the friends they
left behind or with the students in the pilot. These students recalled how they participated with
other non-laptop students in making negative comments about the laptop initiative last year. One
new student admitted, “Well a lot of people… Well, we kind of made fun of it last year.”
Another student remembered mocking “the laptop nerds carrying around their big bags.” A third
new student confessed, “I made fun of it last year.” Being in the laptop program means that he is
now on the receiving end of jokes, as he acknowledged, “but now we get it this year, because my
friends always make fun of me because I always hit people with my bag.”
As was previously reported, the original students endured much harassment the first year, and as a result had developed a close bond with their teachers and with each other. Thus, these newcomers really did not fit into either group, that of the students they left behind who were now making fun of them or the group of students who already had a year’s experience in the one-to-one initiative. One new student expressed that compared to the original students, they “were like the six new kids and everyone else knew what they were doing, and we didn’t… So everyone was like a step ahead of us, and we’re kind of slowly getting used to it.”

The new students had difficulty acclimating to the new environment and knowing how to “fit in” with an existing group that had developed its own identity. In addition to acclimating to the laptop program, the new students had to learn about the technology hardware and software because they only received two-hour orientation to the program they had attended with the incoming sophomores. The purpose of this training was to go over procedures, permission forms, insurance policies, and to answer questions from the designated laptop mentors.

*Lack of Training for New Students*

Despite the orientation, students new to the pilot indicated they should have been better prepared for what to expect and believe they would have benefited from additional training in what software was available to use in class. Although they had already learned about many of these programs in their freshmen Computer Applications class, they had not been expected to apply these programs in their daily lives. One student indicated, “I think that we (including the teachers) should all have to have a simple training class for the program. I think we could all benefit from some training with Windows, Office, and organization in general.”

In addition to learning software programs, many of the safeguards built into the system last year were not communicated to the new students. For example, laptop novices did not realize
the importance of backing up their files. One student’s computer stopped functioning and had to be sent in to the manufacturer. Because she had not backed up her files, she lost all of her work from the first quarter. She explained, “I ran into some problems in the middle of the quarter when my tablet decided to die. All my assignments, notes, settings and information were lost. This wasn’t expected at all because I had not backed up any of my information on the server yet.” The veteran laptop students knew the importance of backing up their files.

*Trying to Fit in and Getting Needed Help*

Because they did not know what they were doing, and did not know who to turn to for help, students felt overlooked by their teachers who, they felt, could have helped them. One student said that the teachers did not help them become acclimated, so they did not understand what to do. She recalled, “We were like the new kids at school, and everyone else was like together, and we just had to creep in and do it ourselves, because the teachers assumed that everyone knew what they were doing.” Another student thought that it would have been nice to know how to use the technology to communicate with their peers such as knowing that they all had email accounts and their instant messenger names so they could ask for help. He suggested, “A place to access all of these would be awesome. Maybe we can make an address book of these that everyone can import into Outlook.” Because they did not know how to use the technology to communicate with their teachers and peers, they felt awkward asking or were unsure of who to turn to for help.

Students new to the pilot also had difficulty understanding what help they needed and learning many of the existing processes and procedures such as accessing materials online and handing in assignments. Students were expected to use programs like Class Server and Blackboard, but felt they had to advocate for themselves to learn these things. One student
indicated that she learned how to use these programs by “asking others to help me and show me the ropes.” Another student indicated that she learned how to do things that she didn’t know how to do by watching others. She explained, “Much of this was just catch on as you go, seeing as everyone else knew how to do things, I had to just watch and see, and ask questions and just suck it all in as it came at me.” Students learned what they didn’t know by observing others and asking for help, but they had to approach those who could help them. When they did ask, veterans responded.

Students believed knowledge of the processes and procedures was the key to fitting in to the pilot. When the original laptop students did help them, they felt good about the help they received. One student conveyed that one veteran shared with him the list of everyone’s screen names shortly after he asked for them. After he talked with her, he was surprised that “ten minutes later a list of people and their screen names was in my inbox.” The same student was also surprised that veteran students were willing to help him learn how to use Microsoft Office products. He related,

I’ve been learning more about Office than I ever have before. Others around me can help me, too. I’m not used to not knowing how to do something; it feels good to know that someone can help you out and is willing to do so.

Another student indicated that when she finally learned to use the laptop to take notes, she became a member of the group. “I felt best this quarter when I finally got the hang of taking notes on the laptop. This made me feel normal and in with the rest of the students.” As veterans began to help novices, less of a division occurred between them, and the novices started to become part of the group.
Taking Advantage of Technology Breakdowns and Managing Off-task Behavior

Because they were new and inexperienced, laptop novices found themselves more easily distracted than the laptop veterans, who had already developed strategies for overcoming them. Novices were frequently distracted by playing games and by becoming mesmerized with online supplemental materials, such as websites that supported course content. One novice student explained how she was distracted by the laptop. She said the laptops can kind of distract you more, because I know, like when I’m like playing around on the computer, I see news stories that I want to read, and I get on CNN and I play on that for a while, or if I get bored, I play Sudoku or something, so it’s not always a good thing, I guess. It’s easier to get distracted and have things to do.

When they discovered that Synchron-Eyes did not work as it had last year, all laptop students were able to have more freedoms than they had in the past. As a result, students took advantage and got by with more off task behavior in class.

One novice student indicated that “not being able to use Synchron-Eyes” was a huge problem and a big distraction for him, but in the way that the other students’ off task behaviors affected the class:

I know many students like it this way, but I find it REALLY annoying when a teacher has to take time away from class to make sure everyone is on task. Other times teachers have had to repeat things several times because students weren’t paying attention. I know this is an extremely complicated problem, but I will be happy when it’s fixed.

Because of this problem novice and veteran students were able to undermine teachers’ efforts to monitor their work when they did not have the technology to do it for them. One student indicated that teachers are even trying to monitor their screens by standing at the back of
the classroom behind them, although another student said that the students were still able to do things they were not supposed to by dimming their screens. One student admitted, “We’ve got our little tricks.” Some novice students found these “tricks” detrimental. The sense of community and relationships that the previous year’s teachers and students had formed was fractured when the students became juniors and left those teachers behind. The students’ sense of community with each other was continued as they “broke in” a new group of teachers, who had less experience and knowledge of the technology than they did.

While laptop veteran students had learned to manage their off task behavior and get back to work more quickly, new students had difficulty with getting back on track. One student indicated that the loose classroom environment allowed him too many freedoms, which in turn contributed to poor grades. He suggested, “Whenever you’re bored, you’re like you can mess around all you want because teachers have no way of monitoring what you’re doing, and so you’ll play games all day, so you get distracted easily.”

Even when they were paying attention and following directions, some new students had difficulty learning with their laptops. Students expected that having a laptop would make their schoolwork easier to manage, as they had perceived occurred with the veteran students. One novice said, “I was surprised by the fact that laptops don’t make everything easier like I thought that they would. In fact they make things more complicated.” Her comments indicated her difficulty managing the distractions of the laptop with their normal school work. Learning to overcome distractions and how to use the machine caused them to consider how they would be able to learn with laptops.

The novices, in contrast to the veteran students, also had more difficulty understanding how to use their laptops as a learning tool to enhance the curriculum. In their struggles, they
attempted to explain how they learned. One student explained that she felt like she learned more by writing things out by hand instead of typing. She theorized, “sometimes I am better at writing things out then typing them, because when writing it stays in your memory better.” She felt she should resort to strategies she knew would be successful for her, instead of figuring out how to use the laptop for learning.

The Program Did Not Meet Newcomer’s Expectations

The six students who joined the pilot did so with eager anticipation based on what they had observed the previous year. They came into the program with high expectations that ultimately were not realized. There were two primary reasons for their disappointment. First, students were under the impression that all of their classes would be laptop and that they would have access to more electronic materials. Second, the teachers did not consistently integrate the technology into their instruction.

Because students’ course schedules interfered with when all laptop courses could be offered, fewer courses were offered that accommodated everyone’s schedules. They were disappointed to discover only a few of their classes were laptop and they only had “one textbook online.”

A second reason students expressed disappointment in the laptop program was in the few laptop classes that were offered, students were not always encouraged to use them. Because two of the three teachers had little experience working with laptops and had little time to prepare, they were not as adept at teaching with technology as were the sophomore teachers. One student conveyed, “Well, our teachers who are supposed to be laptop teachers sometimes we don’t use it in their class, they don’t have us… they just have us use paper, so that’s why I’m kind of let
down I guess.” Recounting what they observed of the pilot last year, students indicated that their quizzes and notes were still on paper, and homework was handled via paper exchange.

When students were expected to use their laptops, they indicated that they could have done the same project without using the laptop. Students suggested that their laptop classes were very similar to classes that other students were taking. This is in contrast to the first year, when the new students observed that the laptop classes were “doing completely different things than we were. They were like making pod casts over books, and they made like a movie, and didn’t do any of that in regular English last year.”

Students speculated a number of reasons for their teachers not teaching with technology, including lack of knowledge and training, lack of interest, and lack of time. Some students surmised that their teachers were new, just like they were, and had difficulty learning how to incorporate technology into their instruction. The new students recognized that their teachers lacked training in how to teach using laptop technology. One student conveyed:

I think that before the teachers can like teach using the laptops, they need to understand more, because I don’t think that they understand how to use it, and what you can do with it, and so if they can’t use it in our classes, since they don’t know what they’re doing, and sometimes they ask [the student who was a summer intern for the Director of Technology] for help.

Another student suggested that that all of the teachers would benefit from additional training. She said:

I think also to get it better; I would also think that, they should require the teachers to have Mr. Carlson give them a tutorial or something – somebody with higher knowledge. Somebody to do something, like we expect adults to know more than us, and that’s just
because that’s how it’s always been. With technology, it’s not that way, since it’s so new. They need to be educated I guess, go back to school kind of, and learn how to use the computers and all of the things it has to offer.

Some students even suggested that teachers were apathetic toward integrating technology into their instruction. A student described one of his laptop teacher this way, “I don’t think he’s in to the technology, or he doesn’t get it,” although the teacher did allow them to occasionally use computers in class. Another student observed last year “they had teachers that were a little bit more into it… [having] them do all kinds of special stuff all the time.”

Another reason students identified for teachers’ failure to teach with the technology was this year’s teachers simply did not have enough time to make the classes different. One student suggested that she thought that the teachers had additional classes for which to prepare and surmised that if more laptop classes were offered, it would make it easier to prepare for more than one class.

Students Benefited Individually

Even though the students were disappointed by the new teachers’ inability to effectively teach using their laptops, students still believed they personally benefited from being involved in the pilot. For one student, the computer helped her feel more organized, which she believed was beneficial. She recalled, “Last year I was a lot less organized with my papers.” Other students indicated that having a laptop made the learning process quicker and more efficient, making note taking “twice as fast as everyone else with paper.” Students also had immediate access to teacher-made instructional materials, like Power Points, where students could write notes within the presentation; non-laptop students had to wait until they got home to download the presentations.
Similar to the original laptop students, in addition to increased organization and efficiency, the new laptop students felt that as a group they learned more than students in non-laptop classes because they had access to the internet during class. Commenting about the history class, one student indicated, “I think that our class understands better than their class even, because I think that overall we do better on our tests than they do. And we have the same teacher, and we’re learning the same stuff.”

Teachers and students new to the pilot provided unique insights about the pilot as they witnessed the pilot as outsiders, then as insiders. Teachers who joined provided insights into the tension between the chairs and the laptop teachers. Students who joined provided an insight into both the first year of the pilot when they were outsiders looking in and the second year when they were part of the group. Their joining provided an imagined and a real picture of events as they unfolded at the beginning of the second year. While these groups were eventually a part of the initiative, one participant group in this study never felt included in the pilot and shared another unique perspective. The department chairs unique perspective is presented in the next section. They questioned the pilot’s necessity, as they believed it divided the school. They also questioned the value of learning experiences in the pilot, especially when they enjoyed success using more traditional instructional methods. Their reactions to the pilot appear in the next section.

Section III: Department Chairs Disenfranchisement with the Laptop Pilot

Throughout the pilot, the most volatile comments about the initiative came from the department chairs and their contributions to the study verified these negative views. From their perspective, the laptop pilot caused a division in the school and communicated that teachers were devalued. The department chairs believed that since their contributions were not valued, they
were apathetic toward the initiative. Finally, it also assisted them in thinking about ways in which teachers could use technology in their classrooms, if more was available.

*Laptop Pilot Divided the School*

To the department chairs, the laptop pilot severed the school, dividing the faculty into teachers who used technology, or wanted to use it, from those who preferred a traditional approach to instruction. Many department chairs were aggrieved and hurt that they were not consulted prior to the selection of teachers and students and implementation of the pilot. One chair conveyed, “I really do not feel that the concerns of department chairs were a consideration in the creation of this program or that our input, when given, was valued.” As they believed their opinions were not valued, they perceived that the school was divided into two, warring factions.

Chairs blamed the division among faculty on the administration for not communicating anything about the initiative prior to and during the initial stages of implementation. They felt the lack of communication bred confusion and ill feelings toward those teachers with the most seniority in the school. They saw the administration as secretive about the laptop initiative, which further devalued their involvement. The chairs expressed dissatisfaction that the administration was elusive when it came to answering harder questions about the initiative, questions for which they wanted answers. One chair felt “that department chairs are often kept out of laptop discussions because we ask difficult questions that should be addressed but are more easily ignored.” Because of the lack of communication, non-pilot teachers had no understanding of what to expect. Chairs expressed if they had been consulted, they would have kept the school from becoming so divisive. Toward the end of the pilot’s first year, chairs believed a large chasm had been created between teachers teaching with laptops and those who did not have them. One chair indicated that the pilot is
a constant source of complaining among teachers, many of whom question whether the administration is more concerned with learning or with proving that something works. It has significantly increased the workload of teachers who have more preparation to do and has increased the general level of stress within the building.

Some of the stress in the building stemmed from the perception that while the pilot offered laptop teachers more time plan and their planning time was consumed by pilot responsibilities, separate meetings, etc., doing so detracted from the teachers’ other duties. Moreover, to them, laptop teachers seemed separated, withdrawn, and received preferential treatment from the school’s administration. They believed this contributed to the apparent division.

Department chairs also expressed that little or no communication about the initiative was detrimental to any success that might come out of the pilot. They specifically cited that, in order to affect needed changes in the building, including the faculty in discussions was necessary to respond to the administration’s expectations. One chair indicated, “faculty buy-in is important to the success of any program and communication would have gone a long way in achieving this, but unfortunately it was seriously lacking in our initiative.”

Department chairs were also concerned that the honors program was no longer receiving the attention they felt it deserved, attention that it received in the past. One chair indicated, “The laptop has been given more attention than our outstanding honors program.” Even though they believed the honors program was being pushed aside, they did not see teaching with laptop as relevant for the future success of the honors students, as is evidenced by one department chair’s remarks, “I worry that we will all be forced to teach in the laptop program when not all students will learn best in this format (especially students in our most advanced classes).”
As noted above, department chairs questioned the role of technology in teaching, as they believed it provided shortcuts, and was used as a substitute for hard work and self-discipline. One chair indicated “less emphasis on this [technology] and more emphasis on just plain good teaching would be welcome… Recognizing that education happened before laptops and will happen with or without them might be helpful.” Another department chair indicated that the Internet was an invalid source of information for students to use because they departed from books and journals. This chair observed that if students can't do their research on the Internet, they don't do it at all because they don't have the self-discipline to put the work into it. Since the Internet is loaded with misleading or at least shallow resources in [subject], have students do research projects and papers is barely a valid means of bringing about learning.

This observation reflects their perceptions that the information is not reliable and that students do not know how to discern accurate information.

*Technology is Valued More than People*

Department chairs felt the administration valued technology more than people. Department chairs were especially concerned with the amount of money that the administration allocated toward the pilot, and were critical of the administration spending “thousands of dollars…on a small percentage of the student population.”

Chairs were critical of the ways in which resources were allocated toward the pilot and away from teachers’ salaries. One department chair conveyed, “Almost all teachers in the building feel underpaid” especially since teachers in the large public school district had recently received a substantial salary increase. The chair conveyed, “Many teachers feel that the resources directed to the laptop initiative could be used to improve the salary schedule.” One chair
indicated that even though members of the administration stated, “the funding for one does not affect the funding for the other,” teachers were not convinced.

Chairs also felt this endeavor was a waste of precious resources that competed with other interests within the diocese. For example, one teacher indicated that some pastors, who send students from their parish school to the high school, cannot afford technology, yet Kapaun has squandered these resources at the high school level. With these competing interests, the chairs believed the school should not be heading in this direction, as laptops are an unproven fad and the school would likely revert back to the way it was prior to the implementation of the initiative.

The chairs saw the laptop as dehumanizing and contrary to the mission of the Catholic high school. One chair indicated his dissatisfaction with the concept of accelerating students and giving them more access to information that would further overload them:

In a world in which information comes too quickly and people don't learn the more important tasks of reflection, I think the constant focus on technology and on increasing learning is not the focus a Catholic school…. We would do our students a greater service by helping them slow down.

Finally, also contrary to the Catholic mission, chairs believed the presence of laptops placed students in harmful situations that might thwart their continued moral development, as access to the Internet meant access to pornography and other evils to which the students should not be exposed. Using resources in this way place students in harms way rather than helping them be successful in a safer environment.

*Little Input from Department Chairs Breeds Resentment*

With all of the changes brought about by the laptop initiative, department chairs did not see their function as the department’s lead curriculum advisor to have any influence on the pilot.
In fact, many of them indicated that they had no change, or that their jobs were not affected by the presence of laptops in their departments. Many also expressed their leadership was ignored by the administration or not consulted, and, as a result, they did not feel that they were part of the decision making in the school and had no vested interest in supporting the program. One department chair said, “In regard to the job of department chair, it does not change my job as the program seems to function autonomously with no impact from me.” Because their opinions were not valued, they were not supportive of the initiative.

The Laptop Pilot has Modeled Teaching with Computers.

Even though the laptop pilot has caused a great deal of heartache and resentment, department chairs also admitted they are now thinking about how teaching might be different with the presence of technology. One chair indicated “it has made us think of other things that we could use the laptop/computer for in our curriculum.” This pilot has created a lot of discussion and the discussion has caused them to think about different ways to incorporate technology.

The pilot also created opportunities for teachers using laptops to share with other teachers in their department what they were doing in their classrooms, although this was certainly not universal. One chair conceded that the pilot laptop teacher in his department “has become fairly proficient with the computer and so is able to show us things that might be helpful in other classes or introduce us to web resources.” Having an example of student usage within the department has spurred interest in using more computers.

Although they were willing to concede that technology had a place at the school, overall the department chairs’ expressed negativity about the laptop pilot. Much of that negativity was due to little or no communication about the initiative from me. Because they should have been
involved in discussions about the laptop pilot from the beginning, they would not support its growth. To the department chairs, the communications barrier could have been prevented had I asked their opinions about the concept prior to the laptop pilot’s inception. In the next chapter, I offer my view of the pilot as I also discuss the challenges of conducting research in an initiative I am trying to lead.
CHAPTER 5

Findings: Researcher-Leader

This chapter consists of my observations of the pilot as a participant-researcher. These findings reflect the struggles of conducting research in a pilot in which I had the dual role of leader-researcher with a vested interest in a program that I conceptualized and oversaw its implementation.

Roles in Conflict: Examining the Dual Roles of Program Initiator and Researcher

In addition to my other job responsibilities as an associate principal, much of my professional life and identity at Kapaun has been connected to improving the school. Within that role, for the past five years I have been responsible for upgrading computers and encouraging their use in instruction; the last 3 years have been consumed by the laptop pilot that began with a direct question posed by the school’s president: “What would it take to have a one-to-one laptop initiative here at the school?”

The question posed six years ago still has no clear answer as it involves many considerations. At the time the question was posed, our technology was piecemeal, aging, and falling apart. Teachers used outdated Pentium 1 processors in their classrooms to take attendance and to complete grades. The only computers accessible to students were a handful in the library and in one of 2 business department classrooms set up as computer labs opened for after school use. These labs consisted of used computers that had been in place since the late-1990s. They had replaced an even older donated computer lab that had been farmed out to the teachers for use in their classrooms. When I arrived in 2001, I facilitated the process of updating the computer lab and replacing many of the teachers’ computers throughout the building. This computer upgrade coincided with a building expansion project in which the business computer labs expanded from
2 classrooms in the old building to 3 new classrooms side by side in the new Science and Technology wing.

In 2002, three years prior to the beginning of the laptop pilot, some of the desktop computers in the original business labs were farmed out to teachers’ classrooms to update their machines, and laptops were purchased to replace them. The 3 new business labs had access to 60 laptop computers that were housed on 2 carts stored in closets between the three rooms. Students learned to use laptop computers in their required Computer Applications class. At the beginning of each class, the students unloaded the laptop carts and carried their laptop computer to their workstations. When the class ended, students returned their computers to the cart. Even though the laptops were portable, they did not leave the business classrooms.

In 2003, two years prior to the laptop pilot’s beginning, additional desktop computers were purchased for one of the business classrooms and the laptops became more or less stationary, as they were primarily used as desktops in two rooms. The room with desktops became a computer lab that was available a few blocks each day to all teachers.

Over the course of the past four years, from 2003 to 2007, I have worked with the Director of Technology to develop a vision that incorporated technology into the curriculum. I shared with him what I wanted to accomplish. He made recommendations regarding available technology, and facilitated installing the hardware and software resources to make this happen. I spent a great deal of personal time meeting with teachers and school administrators at the building and district level to explain why the school’s computers needed to be upgraded. I worked with the teachers, building administrators, and School Council liaisons to develop a technology plan. I met with donors and vendors regarding purchasing equipment. I engaged in many discussions with teachers about how computers could be incorporated in all levels of
course content. I took teams of teachers to visit high schools with one-to-one initiatives, and have influenced the direction of technology in our school.

In this process, I developed a plan to incorporate laptop technology in all course subjects based upon the way I understood our school to address the question the president posed: “What would it take?” The answer: a good deal of time, patience, courage, disappointments, hurt feelings, and a lot of personal growth in which I have had to reconcile my role with the challenge that anything new brings to people, especially those for whom I deeply care.

Suspecting that the building would encounter bumps in the transition from using very few computers for instruction in the core subject areas to having one computer for every student, I conceived a pilot project that I thought would help the school more easily make this transition. Developing a laptop pilot took considerable time, and I had a vested interest in the outcome. I chose to study its implementation and how it affected the school as the focus of my dissertation. I hoped to learn what areas needed further development before including more students and teachers in subsequent stages of implementing a one-to-one laptop initiative. During the pilot, I kept a reflective journal of my reactions to challenges, many of which I did not see coming. This journal has helped me reflect about some of the oppositions and successes of rolling out an initiative based upon the framing question, “What would it take?”

Considering these challenges, and studying their effects, however, were two completely different processes: how to lead a laptop initiative that challenged many people’s beliefs about teaching, learning, and the Catholic school mission and how to be objective when studying it. In my dual roles as facilitator of the laptop initiative and researcher, I had the most difficulty with truly being objective. My leader self constantly influenced my researcher self. Over time the
researcher role helped inform my leader role, and I was able to start bridging some of the gaps between the two roles.

*The Dilemma of Researching and Facilitating the Laptop Pilot*

My researcher self was first challenged by others’ recognition that I had conflicting roles. I felt set back by the preposterous suggestion of my dissertation committee that I should not collect my own data. I struggled to understand that I could not be objective in my own data collection activities, as I was sure that I knew exactly what was occurring with the laptop pilot each step of the way. I had planned, communicated, and executed a laptop pilot program. I knew that it challenged the beliefs of many of those in the building with whom I worked. However, I saw myself as a change agent, and I thrived on living between two paradigms, for I believed I had a clear sense of both worlds. I was going to move the building away from a traditional, teacher-driven approach to instruction toward a technology-rich, learner-centered, teacher-facilitated approach. My committee was supposed to be helping me, not setting me back.

What I did not know was how right they were. It has been a humbling experience to learn that I was an arrogant egotist who thought I knew everything about the school. I have come to understand that my “change at all costs,” take-no-prisoners attitude contributed to hurt feelings, miscommunication, or worse, no communication. I left some people truly in the dark and expected them to do their jobs without providing the resources necessary to be able to see where I clearly saw we were headed. As I moved forward with my agenda, I witnessed the way I saw the pilot unfold, not acknowledging that others perhaps viewed the implementation of the laptop program differently. I learned and grew and am glad of having had this experience.
Data Collection and Preliminary Analysis

As I was advised to have others collect data for my qualitative study, I was met by various obstacles to have people facilitate focus groups, gather data from teachers, explain methodologies, and to reconcile busy end-of-the-year administrative, teacher, and student schedules. I am deeply indebted to those who helped me collect data that enabled individuals to honestly share their feelings and attitudes that differed from my own.

As I reviewed the collected data, listened to and transcribed focus groups, read students’ reflections and teachers’ responses to emails and online narrative surveys, I realized the many individual contributions and sacrifices people made to move this pilot forward. In some cases, I argued against the data as I felt it had unfairly painted the wrong picture of my intentions and the intentions of those who wanted to see the pilot succeed. I found myself wondering how they could have possibly interpreted my actions the way they had, only to sometimes discover later that my actions had unintentionally caused teachers grief.

Dual Role Conundrum

As I reviewed the data, I was also challenged by knowing that I was living in two worlds, one as the practitioner who was attempting to create opportunities for what I believed constituted a learning atmosphere that included laptops and that of a researcher knowing that my leadership actions were affecting my research. My emotions were tied to each role. I often felt unsure of myself and wondered if I had enough data to complete my research and occasionally created more work for myself and for others in data collection activities than the teachers and I needed.

To better understand my two roles, I kept track of my reactions to the data analysis process in a reflexive journal. As I coded data from the participants, I wrote my reactions, observations, and noted connections among the data, often arguing with the data as I confronted
my own assumptions. This journaling process began in June of 2006 and continued through March 2007. I then imported my reactions into Filemaker Pro and coded and labeled my own responses. My awareness of what it meant to look at my own data is apparent in the following entry: “It is very difficult for me to look at my own data as it has been all summer. I feel that has been a curse. The closer I get to the data, the more difficult the situation is.” My difficulties lie in many of the realizations I had about the process of collecting data and the shadows of the past that, really, were blind spots to me in both roles. My initial reactions to the data helped me understand the context within which teachers, students and I viewed the same events and which events were important to each participant group.

To understand the experiences of the laptop faculty, I asked them to participate in a data collection activity on a day in June where I could bring everyone together. I felt conflicted asking teachers to participate in research activities when they were not under contract and remember thinking at that time that they were doing me a huge favor with their participation in the study.

To gain data about the laptop students’ experiences, I felt equally conflicted as throughout the year I had asked them to write reflections in which they shared their struggles with new machines, software, and each other as they adjusted to a collaborative learning environment. Now I was asking them to spend their own time after school to participate in focus groups, and I felt guilty for their willingness to serve.

When confronted with the data, as a researcher-leader, I also felt awkward not knowing the sources of comments so that I could help clarify, explain, or even apologize. I felt some of their pain in their responses, and it became difficult for me to bear reviewing the data to understand their viewpoint so that I could change my approach to working with them, so that I
could become more patient, and more receptive to all needs, and not just those who were involved with me in the pilot.

When analyzing the data, I also had to reconcile the fact that as I was attempting to retrospectively make sense of the pilot’s first year, as I was living in the present. I often became confused by which issues belonged to each moment. Occasionally as I looked at the data, knowing that while I was researching to understand the past, I was ignoring the present. The present situation continued to cloud what data I had to support my assertions as I attempted to react to the needs of the moment. For example, I often would blend immediate needs with past needs – how to connect students and teachers to Synchron-Eyes, how to help people get connected to the wireless, etc. Both issues surfaced in each year, but had different reasons for not working.

Though painful and often confusing as these data collection activities and my concurrent and subsequent analysis of them were, they provided me personal and professional benefits that gave me insight into my leadership. The following section reflects my current understanding of myself as a leader.

*From Researcher to Practitioner: Insights into Leadership*

Throughout the year when I was asking students for reflections and teachers for their feedback, I grappled with how to manage the dual role as a researcher-leader. In addition to my conflicting roles as researcher-leader, my analysis of the data challenged me to grow in ways that I did not expect: understanding and coming to terms with the way I lead and think about leadership, the role I played in providing direction to teachers and students, and the way I handled my feelings as the lead laptop teacher accepted a position in a different district.
I have been at Kapaun Mt. Carmel Catholic High School now for six years, two years as an assistant principal, and four years in my current position as Associate Principal/Academic Dean. Shortly after I was hired, I was asked to help incorporate technology into the school’s instructional activities. As I considered how I would lead the school into a one-to-one laptop initiative, I had to consider how the teachers reacted to new programs.

For the first few years at Kapaun, I observed the academic principal attempt to institute a Health Care Academy, which was a joint effort between our campus, another high school within the diocese, and the Catholic hospital system. He attempted to involve the faculty in the initiative, specifically the department chairs. From my viewpoint and his, the chairs closed down the opportunity for the academy to grow, as they discouraged students from participating and downplayed its importance. Frustrated with the department chairs undermining the program, that academic principal left after my second year. Watching what he went through to introduce something new, I assumed the faculty would react in a similar way to the laptop pilot. This piece of organizational history influenced my earlier decisions of how to approach implementing the laptop pilot. I thought the laptop pilot was innovative and would undoubtedly challenge their comfort levels. I also thought that the department chairs would be unsupportive of the introduction of laptops, so I chose to bypass their involvement, until I had teachers selected and had a process in place to select students.

Knowledge of how other innovations at Kapaun were received further influenced my decisions about how to introduce the laptop program. While Kapaun prides itself on being somewhat progressive, its roots are grounded in what constitutes a high performing private school. Our innovation history includes some progressive movements from over fifteen years
ago, when our school moved from a traditional schedule to a block schedule. While we operate on a block schedule, however, we still keep a very traditional classroom format. During and prior to this transition toward including more technology, much effort has been placed upon effectively utilizing the block schedule. This continues to be an evolutionary process, although many teachers at Kapaun are what I would classify as very traditional, meaning they tend to lecture, with students expected to take notes and recall the material. This is especially the case in the honors program, which was a major source of contention throughout the pilot’s first year.

Our recent innovation history also includes de-tracking the school. Five years ago, we still had 3 distinct tracks, or academic levels. Within the past four years, under the guidance of our current principal, we fused the lower “General Studies” track with the “College Prep” track. We now only distinguish between honors and non-honors tracks in five areas: English, Math, Science, Social Sciences, and World Languages. While students may take a combination of honors and non-honors courses, the majority of honors students take mostly honors courses.

Although I’ve characterized the teaching approach in the honors program as “traditional” rather than innovative, it seems to have worked for students and teachers as they prepare students to apply for entrance to prestigious in-state and out-of-state universities and colleges. Our honors students’ efforts have been validated as they continue to have high test scores, and several of the students annually are accepted and attend the schools to which they apply.

Consequently, when the time came to begin discussing the pilot, I did not communicate with everyone involved, particularly the department chairs who mostly teach the honors students, partially out of a fear that the chairs would shut it down before it began much like they had with the Health Care Academy. I also considered that proposing to use computers daily in the instructional environment with students would really challenge them to consider how they might
use technology in their traditional teaching styles. As I previously mentioned, most teachers did not have up to date technology in their rooms. I surmised they would not be able to comprehend the pilot until they saw it in action.

Toward the end of the 2004 Fall semester, while conceptualizing the laptop program, I enlisted the help of Veronica, with whom I shared many ideas about educating students in today’s world. She agreed with me that the chairs, particularly two in the building “with a lot of pull,” would likely shut it down. I kept a very low profile as I continued to gain support and enlist teachers to join my vision of teaching with technology. I thought the only way our traditional building would accept technology use in the classroom is if they could view an effective model while we continued to put in place the necessary infrastructure and supports. These infrastructure and supports included identifying curriculum standards and assessments, building computer networks with wireless capabilities, and developing the professional development components necessary for teachers’ growth. As I talked with each laptop teacher, I mentioned to them that I wanted to discover what it would take to increase the traditional teachers’ receptivity to accepting technology and its instructional use. My decision to follow this course of action created friction between the department chairs and me.

Relationship with Department Chairs

After the laptop pilot was announced to the rest of the faculty, I had not at that time determined whether or not students in the honors program would receive honors grade weighting for their participation in the pilot. Five of the students who were solicited were enrolled in all honors courses, which meant that they could receive a special distinction if they remained in all honors. Some students were enrolled in one or more honors courses. In this meeting, I wanted to consider whether or not the students could remain in the pilot and receive honors weighting
while performing additional assignments to retain their weighted grades. The department chairs rejected this idea, and, furthermore, pushed an agenda that honors students should have to choose between remaining in honors and joining the pilot. They were adamant that they did not want students with laptops in their classes.

As students considered whether or not to accept the invitation to join, the department chairs asked me which students in the honors courses were invited. I provided them a list. Some department chairs and other honors teachers approached the students and their parents individually to talk them out of joining. Until that time, I had considered allowing some students to participate in the pilot and remain in some honors courses with their laptops, but based upon the department chairs’ hostility, I thought the students would be targeted. Eventually, I determined that the laptop students had to be in all classes together.

Even though I did not include the department chairs in initial conversations about the laptop pilot, looking back I can see that I alienated their effectiveness to lead curriculum development that incorporated computer technology. In their data, they were very critical of my lack of communication about the initiative. In my reflexive journal, I reacted to this discovery: “Some department chairs are supportive and some are not. One respondent said that she feels that her department chair is frustrated because no one listens to her or him. I wonder how much this has to do with me.” In this entry, I wondered if what I had communicated to the teachers about the exclusion of the chairs in the early discussions and the chair’s reactions to them affected the relationship the chairs had with the laptop teachers.

As I continued to explore the data, I found myself beginning to understand that I had to take ownership of the situation. In the following entry, I indicated the beginning of my realization.
Earlier this summer, I discovered, or feared, that I was not communicating with one group, the department chairs. I was upset/frustrated that I couldn’t develop the trust I needed in them, when, in fact, it was me who couldn’t be trusted to share the information.

The building is now healing after my lacking communication. This realization caused me to feel both insecure and guilty about my leadership decisions, and I determined how I would address this with the chairs in the future. I acknowledged their collective responses in my opening meeting with them in August 2006.

Reconciling Differences among Teachers and Department Chairs

From the very beginning of the pilot, I sensed the division in the school between the laptop teachers and their few supporters and the rest of the faculty. I tried to intervene in an attempt to reconcile the differences I observed. In Fall 2005, a department chair asked pointed questions to the laptop teacher in her department. The teacher shut down and chose not to address her questions. I consoled the teacher and talked briefly with another teacher in the department to get a sense for what happened. I made myself available to talk with the chair about whatever questions she felt needed to be answered. The conversation between the chair and me ended quickly when she said curtly that she did not have any questions.

By Spring 2006, the laptop teachers had separated themselves from the rest of the faculty. From January through March, the school seemed to have divided into thirds, polarized by the laptop teachers with those who saw value in the initiative and who consoled the laptop teachers and sometimes defended them and department chairs and those who supported a traditional instructional format. The third group was either disengaged or listened to both sides. Negativity between the two warring groups of teachers peaked. I attempted to bring the pilot teachers back together with the other teachers by placing them in groups with non-laptop teachers during in-
service activities. By then, it was too late as the laptop teachers preferred to isolate themselves, even when the rest of the school faculty was meeting together. For example, I remember preparing for a technology in-service to complete the Intel training with the rest of the faculty, and suggested that the laptop teachers take part along with their peers, even though they really did not need it. In doing so, I was hoping to foster communication between them about the initiative. The laptop teachers refused to participate and explained that they were tired of the negativity.

Conscious of the division and the laptop teachers’ feelings, I asked the two teachers who co-chaired the Staff Development Committee (SDC) for their insights. As I was reviewing emails for the document review, I reflected:

I’m conscious of the division long before everyone else is. Leading up to the laptop question box discussion, I tried many times to bring the [laptop] teachers back into the group. I think that I purposefully set up a conflictual situation, though I’m not sure that there was any other way. The card that started my thinking about the reflection is when I asked if there was opposition beyond the department chairs.

The SDC Co-chairs speculated that most people who were upset about the pilot knew little about it. They suggested placing a “laptop question box” in the faculty workroom so teachers could anonymously ask questions about the laptop pilot. While many teachers did ask questions about the initiative, some teachers used the question box to challenge administrators to address other concerns, including teacher salary. The local public school district announced a significant increase in teachers’ salaries at the beginning of the 2006 school year. As the cost of the pilot became more public, several teachers felt expansion of the pilot during the second year would compete for the money that Kapaun teachers needed for their salaries to be competitive with
those of the public school. In addition to requests for funding clarification, several teachers placed questions in the box that asked administrators to share more information about the pilot and challenged us to show how the pilot did not compete with salaries for funds.

Although intended to be anonymous, the question box became a focal point of contention as it allowed teachers a vehicle to publicly express their concerns. Teachers worked on questions together, and often, the questions were presented directly to the laptop teachers as challenges. The laptop teachers felt attacked by what seemed to be unending challenges. When I heard of new attacks, I attempted to meet them head on, especially if they seemed misplaced or divisive. For example, a department chair attacked the laptop English teacher, who was not in her department, about grammatical errors on the pilot’s website. Another teacher reported to me that the laptop English teacher was shaken and had begun crying. I asked the department chair to meet with me in my office and told her that the negativity must end and that any questions about the initiative needed to be addressed directly with me. The laptop teachers began to avoid the faculty lounge/workroom where they had often remained during their planning periods. I finally removed the box and typed all of the questions to review.

After I typed the questions, I shared them with the Staff Development Committee Co-chairs and the building principal. We decided that these issues needed to be addressed at the next faculty meeting. As many of the questions related to salaries, I asked the president of the school to attend the meeting and address the financial situation with the teachers. I also developed a PowerPoint to address questions about the laptop initiative and asked the laptop teachers to share what they were doing. They nervously accepted the opportunity to share, although they felt like they were putting themselves in front of a firing squad.
Fortunately, the presentation/discussion was well-received, especially when the laptop teachers showed examples of student projects and how they used Class Server. Addressing publicly the issues that arose in the laptop question box began a slow healing process. The path toward reconciliation included my addressing department chairs individually, so in late spring 2006 I included them in discussions about which teachers in their departments should receive the laptop students for the following school year when they became juniors. A contentious situation arose regarding which teachers would receive laptop students who wanted to take some honors classes and whether or not they would be allowed to use their laptops in those classes. We determined the teachers could decide how and when the laptops could be used, if at all. I invited the chairs into the conversation about the laptop pilot and they accepted by offering some input. I began the process to reconcile divisions.

Recognize the Need for Training and Reconciling Divisions Formed from Neglect

As my attention shifted to working with the department chairs, I discovered that I had neglected the next group of laptop teachers and students. As I reviewed the comments that the new teachers made in their data collection activities, I realized that a few of them were unsure of their abilities to teach laptop classes. I reflected, “Wow… we need some serious training and a better understanding of the vision. These teachers were kind of thrown into the middle of things without thinking about the training.” This became more apparent as I read through the students’ reflections toward the end of the first nine weeks in Fall 2006. I also realized how important it was for students to receive training as well, so they would know what to expect. To facilitate the process, I invited the junior year pilot teachers to review their students’ reflections from the first nine weeks. As all students seemed critical of teachers’ apparent abilities to use the laptop instructionally, I used the student’s reflections to offer them help, where needed. The teachers
initially felt affronted by some of students’ suggestions, but I explained that students’ reactions to the pilot were more a reflection on my inability to prepare the teachers than it was on their abilities to teach. We dialogued about what would be needed to help bridge the gaps.

Abandoned by Veronica

My reflexive journal provided insights into the grievous effect our laptop lead teacher’s decision to leave had on me. Regardless of the logic and the opportunity that she had to fulfill her personal goal to move into an administrative position, I was still taken by surprise. She and I spent many hours at night chatting through AIM trying to figure out how to take the next step forward with the pilot. She and I shared many of the philosophies now embedded in the pilot. As I coded email communications, I discovered, “I’m finding a lot of emails that I’ve forwarded to Veronica or have written to her, that she turned into prompts for everyone else.” In many ways, we helped clarify each other’s thoughts and ideas and how to communicate them to the other teachers, or how to draw their ideas into the fold of our own so that the team could grow.

Through the first semester in Fall 2005, Veronica shared with me her goals to eventually move into a central office role. When I understood them, I suggested that she consider applying for the District Leadership program at Wichita State. She was unaware that she could enter the program as a teacher without a school administrative license. She applied and was accepted. Through the spring of 2006, Veronica became more involved with discussions of education systems and had questions about her Power and Politics class. As she was exposed to more of the coursework, her understanding of it became the subject of our discussions as we processed the Power and Politics discussions, using Kapaun and the pilot as an example. In my journal, I noted, “I’m noticing a confidence level in Veronica after she begins the WSU program.”
end of May, she was offered and accepted a job in another school district, her dream job as a science curriculum coordinator.

While I was happy for her, I also was saddened by the loss to me professionally – someone who enjoyed having discussions about what students needed to be successful and how the laptop pilot could accommodate their needs. In short, the students lost an innovative teacher, the teachers lost their leader, and I lost a valued colleague. Looking back at our discussions, I blamed myself for not understanding what she was experiencing as she conveyed later that she was very torn in deciding to pursue her dreams and leaving Catholic education. In my reflexive journal, I noticed:

We had an interesting meeting this afternoon [laptop teachers]. The teachers were reflecting on certain aspects of the program. I am worried about Veronica. She looks tired and seems unsure about something… Earlier, she had talked with me about pursuing a job with 259 and then kind of dropped it, so I’m not sure where this is heading, if it’s heading anywhere.

When she announced that she was leaving, I wondered why I didn’t see this coming. I also dealt with the issue of who would lead the group, as she was a driving force in the laptop initiative as well as an articulate buffer for the younger laptop teachers. I had to balance her need to pursue her leadership goals with my own desires to continue to move the pilot forward. I was conflicted by wanting her to be successful and wanting her to continue in her role as lead teacher for the pilot.

At the end of the 2005-06 school year, Veronica started spending more time away from school and wanting to do more to prepare for her new job. In retrospect, I had a dilemma in that I
wanted to be supportive of the teachers’ development, but I thought that she would not leave. As a leader, I had to come to terms with what my role is in mentoring others to achieve their dreams.

Community

Like the students, the laptop teachers and I discovered that we had become a community of learners. This realization appeared early in my journal as I observed students and teachers participating together in community. I also noticed how far we had come as we had helped each other achieve this milestone of completing the first year together. Weathering the many storms of the laptop pilot, we had bonded together and formed our own community.

At the end of the semester, the teachers determined that they and the students would finish the year by having everyone in the initiative develop a PowerPoint slide, which they debuted after the focus group data collection activity in May 2006. Several things about the event struck me, and I recorded them in my journal.

First, the student who volunteered to make sure that everyone was included in the presentation was the same student who wanted to leave the pilot after fall semester. She also was instrumental in ensuring that each person had the final presentation burned to a CD.

Second, as I observed students’ reactions to the slides, I noticed how close they sat to each other. In my reflections, I observed, “I think that the essence of community is huge. The kids come together, parked in the middle of the library. They all hang out and talk. Teachers also have informed me of the way the individuals have formed together.”

Finally, I noticed that the most important thing that came out of this pilot was the way students formed together in community. After reviewing the data, I reflected, “The notion of community strikes a major chord with me in that I think that I’ve said these words to more than
one parent who was interested in the pilot program. It develops a sense of community,” a small community within a larger community that developed out of necessity for survival.
CHAPTER 6

Conclusions and Implications

In this chapter, I examine the findings through the lens of Organizational Sensemaking (Weick, 1995) in an effort to explain how each participant group made sense of the initiative. I begin by briefly re-introducing the theoretical framework. Then, I apply the framework to explain how the initiative disrupted the school and how each participant group made sense of the disruption. The chapter concludes with implications for theory and practice.

Making Sense of a One-to-one Laptop Initiative

Organizations are comprised of people who have similar, yet different interpretations of daily organizational life (Daft & Weick, 2001). Each person constructs his or her interpretation of the way the organization functions, who the key players are, what rules to follow, and how they fit in with the direction that the organization is heading. At best, organizations are “loosely coupled systems” (Weick, 1995, p. 134) in which people seem to have shared understandings that help them identify that they are in the same place. People’s daily meanings are interwoven into their understandings of the way the organization operates.

Sensemaking within an organization begins as people turn a flow of organizational circumstances “into words and salient categories” (Weick, Sutcliffe, and Obstfeld, 2005, p. 409). When an individual turns his or her thoughts into words, it triggers shared meaning with others who confirm or deny how he or she should perceive the event. A confirmed event enters into their repertoire of understandings that comprise organizational life and become taken for granted (Weick, 1995). When an event is cataclysmic, it causes people to stop and find others who, in turn, help them understand how to respond to the event. Disruptive events can splinter
organizations into different factions as people form groups to make sense of what the event means to them and how the event fits into the organization.

As applied to this study, sensemaking occurred when a technology initiative was introduced into a high-performing Catholic high school. The organizational participants – teachers, students and administrators – stopped and determined what the presence of such an initiative meant to them individually and collectively, and to the school’s future. In this chapter, sensemaking is used as a lens for interpreting the findings from the study, as a framework for explaining what transpired when the laptop initiative was introduced at Kapaun Mt. Carmel Catholic High School.

One-to-one Laptop Initiative Disrupted Life at Kapaun and Prompted Sensemaking

Introduction of the laptop pilot at Kapaun disrupted its everyday routines and provided the circumstances for sensemaking. Additionally, information about the initiative was conveyed at different times to different people, causing each group to make sense of the initiative based upon when and what information was presented. Each of the groups in the study, pilot teachers, laptop students, new teachers and students, and department chairs all made sense of the initiative in different ways. As the initiator of the laptop program, I provided the cues that created the conditions for sensemaking to occur.

My own sensemaking began when I was asked nearly 5 years ago to consider what it would take to begin a one-to-one laptop initiative at Kapaun Mt. Carmel and to develop a vision of a laptop pilot that was linked to teaching and learning. At that time, I started to make adjustments and to develop an infrastructure to support the way I thought laptops could be incorporated into instruction. I had a clear vision and sense of purpose for the laptop initiative at Kapaun. I wanted to develop an initiative that would be built upon learning as a process of
discovery – one that could tie the students’ lives to the curriculum framework that we were trying to develop. Because of my past experience, however, I feared my approach was too progressive for our school. Therefore, I only shared my vision with a few key people that helped me craft the laptop program from a dream to something plausible. One of those key persons was Veronica. She and I critiqued what we felt were ineffective teaching styles and helped each other clarify what we valued in teaching. We discussed ways in which we thought laptops could be utilized to help students construct their own meaning. We also justified our subversive meetings and planning due to our fear that the department chairs would not support the program.

Veronica and I had been meeting for about 2 months when I approached the teachers I wanted to participate in the pilot. I communicated my fear of the department chairs’ undermining the initiative to them, and we continued to work underground for another three weeks before an announcement was made to the rest of the faculty. Thus Veronica, the laptop teachers, and I had developed a common understanding of how we envisioned the pilot’s occurring in the school, making sense in isolation from the other teachers, well before any other faculty members knew about it.

When the pilot was finally announced to the entire faculty, it triggered sensemaking for them. Department chairs and the rest of the faculty members were caught off guard and responded in different ways. Department chairs felt they should have known about the laptop initiative and fought against it. They and the other honors teachers got together and determined they did not want the honors courses involved in the pilot. When they found out which students had been solicited, they approached these students and gave clear cues that they thought this was a mistake. Students who were invited to participate in the initiative had to consider whether or not to join; some felt pressured to choose between remaining in honors courses and joining the
initiative. The result was a division between the laptop pilot and the honors program. In addition to the timing of the announcement, the lack of clarity of the reason for adopting the initiative in the first place prompted sensemaking.

*Ambiguous Purpose for Laptop Initiative*

The diocese’s purpose for wanting a laptop initiative at Kapaun was never clearly understood or communicated; consequently, that ambiguity resulted in each group that participated in the study constructing different and incommensurable meanings for its purpose. Even though I thought I had a clear picture of what I wanted to accomplish in the initiative, laptop teachers and students, new teachers and students, and department chairs had their own ideas. Each group in the study grappled to make meaning about why the laptop pilot was introduced and developed plausible reasons for its introduction. As more information was presented or realized, people, at different times, interpreted reasons for the initiative’s introduction causing a wave of mixed understandings as they attempted to make sense of it.

Multiple reasons for introducing laptops emerged as divergent individual reasons helped individuals make sense of how the pilot fit with their interpretation of the school’s future.

Laptop teachers and students felt honored to be selected and thought the primary purpose of the pilot was to prepare students for college. First year laptop teachers further thought students should be able use the electronic tools they use at home at school so they could develop more meaningful understandings of the curriculum. New teachers who joined the initiative for the 2006-2007 school year posited similar reasons for the pilot. These teachers indicated that the school’s delivery model should be updated to reflect the students’ needs. New students thought the pilot would be a lot of fun and were attracted to it based upon what they had heard from the first year’s laptop students and what they had observed laptop teachers and students doing with
computers. Veteran and new laptop teachers saw the pilot’s introduction as meeting the educational needs of today’s students, as they would likely apply what they had learned about using computers for learning in their post-secondary education. They also felt participation in the initiative would help their colleagues make the transition from traditional to more application-based teaching styles.

Department chairs, in contrast, made entirely different meaning regarding the school’s rationale for launching the initiative; one they believed had little to do with students’ educational needs. They perceived the pilot to be administratively driven to prove a point. These multiple and conflicting understandings originated from top-level diocesan administrators who did not clearly communicate the purpose for the laptop pilot. As people attempted to understand its purpose, they created their own stories for how computers might be used in the high school’s future.

Narratives in Transition: Participants Socially Constructed the School’s Future to Make Sense of the Present

As the participant groups attempted to make sense of the laptop initiative, they reconciled their perception of it with the way they perceived where Kapaun-Mt. Carmel Catholic High School was headed and attempted to rewrite their school’s narrative as more information emerged. That is, as organizations evolve, individuals make sense about decisions based upon where they perceive the organization is going. In pursuit of direction, sensemaking (Weick et al., 2005) is the “continued redrafting of an emerging story so that it becomes more comprehensive, incorporates more of the observed data, and is more resilient in face of criticism” (p. 415). Consequently, multiple beginnings existed to each story at Kapaun among the study participants about the purpose of the laptop initiative. As these stories emerged, each participant group
developed collective understandings and formulated possible outcomes to the stories’ conclusions. For example, department chairs, who had been in the building the longest, had an understanding that Kapaun was already a good school and, consequently, determined that computers were a wasteful resource that distracted from tried and true methods of instruction. In their view, the laptop pilot did not make any sense to them at all as it did not fit with the way they understood their view of Kapaun. Their collective understanding contrasted with the laptop teachers who envisioned their students understanding how to use laptops in their learning, as they perceived that they would need to do so later in college.

While the department chairs and laptop teachers (new and veteran) authored plausible narratives to understand the reasons for the initiative, students also developed their own stories. Students were more open than the adults to consider other possibilities than their first impressions. During the pilot’s first year, students who later would join the initiative made fun of it. After interacting with students and teachers in the pilot, some adapted their story and applied to join the initiative. Adults’ and students’ emerging stories at Kapaun were socially constructed realities that fused their working understanding of the school’s future to make sense of the present. Their constructed realities were reconciled with their interpretations of the laptop pilot’s introduction which were driven by “plausibility, coherence, and reasonableness” (Weick, 1995, p. 61) of the way they thought the pilot would unfold. Reconciling past, future, and present interpretations of their stories provided department chairs, laptop teachers and laptop students’ comfort and direction, even though their stories were very different. Their stories allowed these groups to continue their work as they determined how they might respond.

Because the reason for the initiative was not clearly articulated and information about the initiative was presented to different groups at different times, study participants constructed
different understandings of the school’s reasons for the pilot’s introduction. As they made sense of the purpose of the pilot and where the school was heading with it, each study participant group or individual had to come to terms with what they thought the direction was and how they fit in with that direction. Their initial understandings brought into the open other incongruent core areas: what constitutes meaningful instruction, the role of technology in education, and the mission of Catholic high school.

*Teachers’ Divergent Sensemaking:*

*Instruction, Role of Technology, and Mission of Catholic High School*

Because information was presented to different individuals at different times and Kapaun’s administration did not provide a clear reason for the initiative, groups of faculty members made sense of the initiative in their own way. Building-wide consensus of the pilot’s rationale was not evident, which resulted in faculty members working independently to accomplish different agendas. Although not an expressed outcome of the pilot, the pilot’s presence brought to the surface divergent agendas, which sparked aggravation and frustration for many faculty members. It was the study of the pilot, however, that provided a forum for laptop teachers and department chairs to articulate issues surrounding its implementation. The study revealed that Kapaun laptop teachers and department chairs were struggling to reconcile three incongruous ideologies: what constitutes effective instruction, what role technology plays in instruction, and how to put into practice the mission of the Catholic high school. The introduction of the laptop initiative was the catalyst that brought to the forefront three areas in which department chairs and laptop teachers had taken for granted assumptions. How each group made meaning of these concepts is discussed in this section.
Divergent Beliefs about Teaching and Learning

At Kapaun, laptop teachers and department chairs had different beliefs about teaching and learning. Laptop teachers viewed teaching and learning from more of a constructivist perspective, as a process of discovery. Veronica and I shared this perspective on teaching and learning and helped make final plans to tie the pilot to this approach, including selecting teachers and students to be involved in the pilot’s first year that we believed also had constructivist orientations. Laptop teachers adopted a project-based approach to learning, which required students to construct meaning out of information from multiple perspectives in order to create knowledge that was not present before the project.

In stark contrast, the department chairs supported a teaching and learning environment that was steeped in tradition, which was expected of the honors program at Kapaun. They believed use of lecture with students taking notes, completing assignments, and taking exams that emphasized recall of the material was the appropriate instructional approach for college-bound students. At the time of the pilot, they were not able to reconcile a rationale for the pilot that fit with their perception of teaching and learning. They felt that emphasizing technology was a waste of time and welcomed opportunities to emphasize technology less and focus on “just plain good teaching.” They defended what they believed was a tried and true approach to teaching and learning that had withstood the test of time. They viewed the pilot as another educational fad that would come and go. In short, they thought that the laptop pilot was a mistake and did not want the honors students to be involved.

As the teachers in the school had two dominant and divergent views of teaching and learning, laptop students were probably most affected because they had experienced both approaches. During the first semester of the pilot’s first year, students left an educational
environment where they knew what to expect, and entered an uncertain environment where teachers were using project-based learning approaches. All laptop teachers had received training and discussed together how they would have their students utilize their laptops in their classrooms. In these discussions, they visualized what type of learning environment would best support computer usage. As they implemented these practices in their classroom, students at first complained that their teachers were not providing instruction, but were expecting their computers to teach or that students should learn on their own. Teachers became frustrated when students expected the teachers to tell them everything that they needed to know. As teachers and students continued to engage in project-based learning opportunities, the students began to see how the laptops could be used as a form of discovery. Eventually, they understood that learning was more of a process than a destination.

_Divergent Views on the Role of Technology in Instruction_

With different orientations to instruction, department chairs and laptop teachers also had different understandings of the role technology played in the learning environment. Department chairs did not understand their necessity because it did not fit cleanly into how they taught in their classrooms. Laptop teachers, however, had a much different and evolving understanding of how laptops could be utilized in the learning process, which extended from their constructivist view of teaching and learning. Most of the differences between the two groups of teachers originated from what each knew about what was occurring in the pilot. The laptop teachers and students had more firsthand information about how computers were used, so the department chairs’ views about technology were considered only in terms of how they viewed teaching and learning. In other words, they had no other opportunity to understand technology any other way
than how they individually taught. Therefore, they did not understand how the laptop teachers were teaching with technology.

Major differences between the laptop teachers and department chairs regarding technology use occurred around two areas: beliefs about who controlled information and how technology was used and for what purpose. Both are discussed in the following section.

_Differing Beliefs about Who Controlled Information_

Department chairs and laptops teachers held different beliefs about who controlled information and how information was delivered. These differences caused tension, especially regarding the use of the Internet, which prompted department chairs and laptop teachers to make sense of the initiative in different ways. In a lecture-based teaching style in a traditional classroom, the primary source of information is the teacher, whose function is to provide students with the subject matter the teacher is trained to deliver. Department chairs believed it was the teacher’s responsibility to determine not only when and how they presented information to their students, but what information they should be given. Laptop teachers, however, viewed the free flow of information as necessary to creating new knowledge, and they believed their students should have access to as much information as possible. In their classrooms, they guided their students to select credible information and encouraged students to determine for themselves what information was important and how it cohered with other information.

Because of these differences about who should control information, laptop teachers and department chairs differed in their views regarding how students accessed and used the Internet. Laptop teachers encouraged students to use the Internet during class to keep up with lectures and to conduct additional research. Laptop teachers helped students determine what information was credible and what was not so students could make their own decisions about appropriateness. In
essence, they gave their students “more control of their learning.” In contrast, department chairs viewed the Internet as a shortcut and accused students who used the Internet for research of being lazy or unmotivated.

Each group’s interpretation of the role technology plays in the learning environment prompted conclusions that there was only one way to view the initiative, theirs. As a result, each group did not understand how the other could view the initiative so differently. Department chairs distanced themselves from the initiative and critiqued it in terms of the way they thought laptops could be used in their classrooms, if they had them. They had no idea what the laptop teachers were doing and could not imagine the possibilities that computers held for their instruction. They could not envision what a technology rich environment might look like. They were unfamiliar with the hardware and software and did not have the vocabulary associated with laptop use, such as real-time and asynchronous learning environments and electronic groups.

As was evident in the findings, laptop teachers found multiple ways to use laptops in their classroom instruction. They used laptop computers to provide interactive learning opportunities, including many of the interactive software tools, such as instant messenger and electronic chatting to work in groups. Outside of the school day, teachers and students participated in interactive, electronic study groups.

In the laptop environment, most of the students’ textbooks provided them with multiple modes to understand information. Laptop students discovered that it was more efficient to exchange assignments with their teachers and to take notes on the computer. They learned it was easier to keep track of their notes and materials if they had everything on their computer. Students also had opportunities to revise their written work as they were creating it and to tie their thoughts to a curriculum framework with an essential question. As a result, they were able
to focus “less on structure and more on content” which allowed them to put ideas together and elaborate upon their connections.

Laptop teachers and department chairs had different beliefs about the educational value of computer technology. As they attempted to reconcile why the other group did not see it their way, they considered how the initiative did or did not fit into their understanding of the Catholic school mission.

_Divergent Views of the Catholic School Mission_

In addition to raising issues about instruction and the role technology plays in the learning environment, the study prompted laptop teachers and department chairs to make connections between the laptop initiative and their own understanding of the Catholic high school’s mission. Building a sense of mission in high schools builds “loyalty, commitment, and confidence in the school community” (Hargreaves, 1993). Both the laptop teachers and the department chairs did have a sense of mission but constructed the mission in completely different ways. Laptop teachers articulated the Catholic school’s mission was to prepare students for life by helping them live in and make sense of the moral issues confronting contemporary society. Thus, the laptop teachers believed having access to the Internet and using modern tools enabled them to form students morally and ethically in making the right choices consistent with the Catholic Church, spreading the Gospel truth to others. Providing students with laptops also was viewed as a means to practice the Catholic school mission of social justice, making technology available to all income levels. These teachers agreed with the direction and to them, their involvement in the pilot meant they were accomplishing the school’s Catholic mission. With the pilot teachers, it developed a “loyalty among the faithful and confidence among the committed” (Hargreaves, 1993) where they felt a commitment to a higher calling.
Department chairs, however, stated much different interpretations of the Catholic school mission, which emanated from their understanding that the administration was trying to “prove that something works,” by introducing a technology that was not needed. In their interpretation of the Catholic mission, chairs were critical of the administration’s decision to place computers ahead of people, finding this approach de-humanizing and wasteful of the school’s resources that should be used to address other, more pressing human needs. Department chairs’ understanding of Catholic school mission was communicated in two ways: first, it reverberated in their comments about resource allocation, specifically in the discussion about teacher’s salaries and purchasing computers for high school students when parish schools were not able to do this for their own students, and second, the pilot placed students in a fast-paced world as they now had access to too much information and little time to reflect about it. In their sense of mission, when confronted by the laptop teacher’s lacking respect for their interpretation, chairs’ sense of mission cast them as heretics to the mission of the school (Hargreaves, 1993).

Each group made sense of the initiative by communicating where they believed (or perhaps desired) the school to be headed, how this approach interacted with their understanding of teaching and learning, and how it connected to the purpose of Catholic schools. These understandings became their belief system that supported how they managed their role in the school to achieve these ends.

Making Sense of an Innovative Pilot in a Traditional School Structure

The introduction of an innovative laptop pilot continually collided with traditional school structures that, at Kapaun and most comprehensive high schools, have withstood the test of time. As the pilot touched these structures, they invited sensemaking as study participants interpreted
how grades were assigned, how teachers expected students to learn, and how students could incorporate projects into their learning.

The process of grading in the laptop pilot introduced new ideas about teaching and learning that differed from students’ past experiences. Students were eager to learn in new and innovative ways, until their earned grades were inconsistent with their past performance in traditional classrooms. Teachers and students had to reconcile project-based learning situations with grading practices that fit traditional classroom environments. To accomplish deeper learning experiences for students, teachers became more facilitators of learning than deliverers of information. As students were accustomed to receiving grades based upon what information they remembered from taking notes, students and teachers had to make sense of grades and grading in the new way of learning. Before embarking on projects, students were presented with rubrics that provided them with the criteria that would be used to assign grades. As students began to critique their own performance against the criteria, they knew what to expect, but they could not always meet their teachers’ expectations. This differed from their past experiences where they may have been assigned worksheets and study guides and received completion grades.

Students also were challenged to meet teachers’ demands that they be more independent, constructivist learners. To accomplish this, they had to think about how their learning was an infinite process of discovery rather than a finite body of information limited to what the teachers told them they needed to know. The learning style inventory prompted sensemaking as it became pivotal in their learning process, as students came to understand how to use their laptops to support the way they thought they learned. In their early reflections, students discussed how they learned using their laptops, and still talked about their learning styles in focus groups at the end of the first year. Over time, students’ comments about their learning transformed from taking in
information to discussing how they learned collaboratively and how they utilized their computers to meet their learning needs.

In spite of resistance, laptop teachers persisted in providing project-based learning opportunities, and students became more accustomed to them. Students came to understand how to use their computers to help them learn more, and students and teachers took collective pride in the grades that they earned. To students, earning grades became an opportunity for them to come together to achieve an end. They created self-formed study groups and sensed that they were in this together. Working together, students and teachers participated in an online collaborative, after hours learning environment.

*Laptop Students Re-Entered a Traditional Learning Environment in the Initiative’s Second Year*

When first year laptop students entered their junior years, the second year of the pilot, they were relegated back to a more traditional teaching and learning environment as they joined new second year students and new teachers. After their experience in the laptop pilot, their momentum slowed considerably as they discovered the new junior year teachers and students were not ready for a highly collaborative interactive learning environment. They responded by taking advantage of their teachers and engaging in off task behavior. Thus, the conventions of high school structures and scheduling challenged the sense of community teachers and students had formed in the first year.

*Laptop Insiders Created Their Own World Inside the School*

The introduction and implementation of a laptop pilot in a very traditional setting collided with traditional structures and ways of doing things at Kapaun. As the pilot encountered resistance from those outside of the initiative, laptop teachers and students had to make sense of
the initiative in their terms, reconciling how they thought about themselves in a more traditional setting with how they adjusted to a new world of teaching and learning.

*Laptop Insiders Co-Constructed Meaning*

Both teachers and students developed instructional delivery methods that allowed them to co-construct meaning. Laptop teachers indicated being involved in the pilot allowed them to think differently about the roles of students and teachers and was therefore one of the best professional decisions they made. They led the charge with their students to move toward constructivist practices by giving students “more control over their learning.”

Taking cues from their teachers’ expectations for project-based instruction, laptop students’ views of teaching and learning transitioned throughout the pilot year. Initially, students thought of themselves as traditional learners and expected to use their laptops to receive new information. Teachers introduced students to the language of learning styles, and, over time, students began to view learning as a process, rather than an event and touted the depth of their learning experiences and considered having access to the Internet as instrumental to getting “deeper” in the content.

*Laptop Pilot Facilitated a Small Learning Community*

The highly interactive learning environment brought students and teachers together in unexpected ways, and teachers and students benefited from being a part of a smaller learning community. Students relished the opportunity to use AIM in class and at home, touting its benefits to increase communication between their peers and their teachers.

Teachers found that their relationships had changed with their students in that electronic communication increased students’ confidence in class. Both teachers and students commented
upon how they knew each other in ways that they did not know other teachers and students not involved in the pilot.

Ironically, community developed out of necessity and was strengthened when teachers and students both had to face an onslaught of personal attacks. Recall one students’ response to another student’s comment, “Oooh laptop kid!” She felt she had to defend her ground and explain that she was doing her homework. Teachers also felt they had to defend against the attacks from other teachers and in some cases counterattack, or dreamed of doing so. These responses brought them closer together in community as they knew that they were the only ones who would understand how each other felt.

*Laptop Insiders Constructed New Identities for Themselves and Others*

Students and teachers thrown together in the pilot created a unique organizational identity within the context of a larger organization. Tied to sensemaking, identity construction is influenced by “who we think we are (identity) [and] shapes how we enact” (Weick, Sutcliffe, & Obstfeld, 2001, p. 416). Laptop teachers constructed their identities as facilitators of learning and provided students instructional opportunities to process information. This orientation to their classroom is intertwined with the way they construct their identities as classroom teachers (Watson, 2006). As facilitators of learning, laptop teachers often placed students in collaborative learning groups. They also found ways to communicate with students outside of the school day, through instant messenger and email. Laptop students and teachers commented about the way in which they enjoyed learning in this format.

Based upon the cues they received from their teachers, students transitioned from being students who received information to students who engaged in an open learning environment. This transition took time and was prompted by the introduction of learning styles and students’
increased understanding of how their computers supported their learning. As students received feedback about their performance from their teachers, they eventually figured out what they needed to do in order to receive the grades they wanted to earn.

As people outside of the pilot attempted to understand what they were observing, they cast negative comments about the pilot and the members themselves who were not well received by the other members of the school. These often negative interactions with others outside the initiative helped laptop participants form an understanding of who they were. “Constituted out of the process of interaction” (Weick, 1995, p. 20), identities were formed as students and teachers made sense of others’ negativity by auditioning identities to see which is appealing or appropriate to the situation (Weick, 1995). Some externally imposed student identities were rejected such as “nerds” or a “herd” or “cheaters.” Others, like “Laptoppers” were more appealing. They accepted the ones that were most positive and quickly rejected and defended against those that were not.

Dutton, Dukerich, & Harquail (1994) posit an individual’s identity with an organization is strongest when “(1) his or her identity as an organization member is more salient than alternative identities, and (2) his or her self-concept has many of the same characteristics he or she believes define the organization as a social group” (p. 239). As students accepted some identities and rejected others, they pulled together and defended their involvement in the initiative. In so doing, they also created identities for others outside the initiative. They labeled teachers as ones who liked them and ones who did not. Students also constructed identities of their peers, specifically of honors students who did not like the program or thought it was a joke. Honors’ students’ perceived reactions compelled laptop students to defend their involvement and to correct the honors students’ unfounded beliefs, casting a more positive orientation to the laptop pilot than
what was presented. This is similar to Dutton and Dukerich’s (1991) assertion that the personal connection between the organization and the individual invites responses that are “personally motivated to preserve a positive organizational image and repair a negative one through association and disassociation with actions and issues” (p. 548). Students fought hard to prove that they, in fact, were not cheaters and that they were using their laptops to complete their homework. As they defended themselves, they defended the pilot and sustained a socially constructed meaning that reflected “favorably on the organization and one that also promotes self-enhancement, efficacy, and consistency” (Weick, 1995, p. 21). Students began to feel it was their duty to advocate for the pilot and to recruit other members to join the initiative. They created images that they were like a family, and as a family they should work together to make sure that no one dropped out of the pilot, ensuring that each was successful.

Like the students, teachers also strengthened their identities as they responded to opposition, touting the programs’ benefits with their colleagues. In so doing, they developed a deeper sense of purpose in the way that they related to students, explaining that the laptops provided additional ways for them to get to know their students. Teachers took on leadership roles to keep the program afloat by finding things that needed to be accomplished and stepping up to help bring the pilot forward. As they stepped up, they took ownership of the pilot and advocated for the approach they were taking with their students and articulating the pilot’s importance, eventually preparing to mentor other teachers who wanted to incorporate more technology in their classrooms.

Laptop Insiders created multiple identities for themselves and for other people. Students created for themselves identities as mentors to the new students and advocates of the initiative. They used metaphors of family members, and pioneers blazing the trail for others to follow to
describe these identities. Teachers also created identities for themselves as innovators, leaders, mentors, advocates, and facilitators.

I, too, created identities for myself and for others. As Veronica continued to seek my guidance, I became her mentor. When she would come to me, or when I heard about outsiders attacking the laptop teachers and students, I reacted to protect them. As their protector, I became attached to the initiative in ways I was not expecting. My identity in the organization became synonymous with the initiative, as I continued to find ways to defend what we were doing, using available data to justify the expense of operating it. I created my own identity as a change-agent, a program advocate, a mentor, and a defender of the initiative. These identities contributed to my conflict with the department chairs.

Self-Fulfilling Prophecies: Making Sense of My Entanglement with Department Chairs

In my constructed identity as a change-agent, I determined to make a change, rather than allowing the change to happen. In so doing, I enacted a self-fulfilling prophecy (Weick, 2001) about the way others, namely the department chairs, would react to the change. In his explication of Warwick’s (1975) research on bureaucracy of the State Department in the mid 1960’s to the early 1970’s, Weick depicts, “a new administrator, suspecting that old-timers are traditional, seeks ideas from other sources, which increases the suspicion of old-timers and confirms the administrator’s original presumption” (p. 349). This is very similar to the way in which I couched how the department chairs would react to the change. After I watched their resistance to other innovations, I presumed they would respond to the laptop pilot in the same way. My prediction about the department chairs’ reaction to the laptop was fulfilled, as they did not support the pilot and distanced themselves from the laptop teachers. They scoffed at the laptop teachers’ approach and were incredulous to understand how the laptop pilot had been receiving
attention it did not deserve and competed with the “outstanding honors program.” Because they were threatened by its popularity, they grew concerned that at some point they would be required to use an instructional format they believed would not work with honors students. Because I did not approach them first, department chairs felt that their opinions were not wanted or valued. They constructed identities that indicated the administration had an agenda that did not include them or cared that the chairs had challenging questions. When they were finally invited into the conversation, however, they agreed to participate.

*Lost in Transition: New Laptop Participants Struggled to Make Sense of the Pilot*

In spring 2006, new students eagerly applied for and joined the initiative in the fall. New teachers agreed to participate, but were unsure of themselves and the amount of time it would take to plan for their laptop classes. Veronica’s leaving left a void in leadership upon which others, including me, relied heavily. These teachers and students were lost in transition.

*Insiders/Outsiders: Between Two Worlds*

New teachers and students were lost in transition as they struggled to catch up to the first pilot group. They initially viewed the pilot from the perspective of outsiders and did not have a formal introduction until the first-year laptop teachers and students had already made initial sense of it. Their views were unique as they had been introduced to the initiative and then had a year to gather additional information about it that helped them come to understand the initiative in ways similar to the insiders. Apparently, they saw value in what they had observed during the first year and decided that they wanted to join. When they joined, however, they discovered that, while they wanted to participate in the initiative, they did not have the skills that the veterans had learned after spending a year in it. New teachers and new students handled this transition differently.
Novice laptop teachers desired to join the laptop initiative because they wanted to break free from the expectations of traditional instruction. They critiqued their lecture-based colleagues whom they thought bored their students. While they desired to make learning meaningful by using laptops in their instruction, they were also apprehensive. They wondered if there would be enough planning time available to do what had been suggested and that they might not be at the same skill level with their students. Their concerns were realized during the first part of the school year.

Unfortunately, I underestimated the amount of support they needed. I relied heavily upon the fact that all teachers went through the first year of Intel training together. In retrospect, the training was rushed and disconnected from knowing that it would not be applied immediately, but the following year. If the new teachers did retain what they learned at the Intel training, they did not have the time to implement a new way of teaching and learning that differed from what they were doing with their other classes. Consequently, each teacher independently adapted their regular classes to their laptop classes.

Even though they had similar reasons for joining the initiative as the veteran laptop teachers, the new teachers did not have the skills they needed. Neither did new teachers have the benefit of the first year’s teachers’ experiences, and as a result, did not understand how to use the software associated with the program. Furthermore, they were not provided with training that would have helped them understand burdens of exchanging papers via email. Even if they had received more intense training, they did not have the benefit of receiving the extra planning time to move their activities to Class Server. As a result, they quickly returned to what they felt comfortable with until they were confronted with the students’ reflections. The new teachers’ surprise at the students’ reflections caused them to rethink how they could tailor their instruction...
to include more projects and group based activities and to have their utilize their laptops beyond taking notes.

Student Outsider/Insiders made sense of the initiative as they observed the laptop teachers and students use their computers during the 2005-06 school year and asked them questions about it. Veteran laptop students sold the pilot to newcomers as interactive and project-based. New students joined the initiative, expecting it to be similar to what others had experienced only to discover, to their surprise that it did not meet their expectations. Instead their classes were similar to what they had participated in the previous year. As a result, new students faced additional distractions that having constant access to the Internet and games imposed and had difficulty managing their distractions.

New students also entered a tight knit group that had formed in the first year and felt behind the other students who were already proficient with their computers. They felt awkward and out of place. When new students joined, they felt like “the six new kids.”

They learned how to participate in the initiative by watching others and by asking for help. When they did decide to ask for help, they were surprised how welcoming the veteran students were to them. As they learned more about how to navigate within the initiative, they felt that they could have had a smoother start, if they had been provided more focused training than what they had received. They suggested that they needed to understand how everyone in the pilot communicated and how to exchange papers. They felt unnoticed by their new teachers who had assumed that all laptop students knew what they were doing.

As a result, new students joined forces with the community of the veteran students and engaged in off-task behaviors. They formed new identities with other students in the initiative.
and undermined teachers’ efforts to monitor their online behaviors. Like the new teachers, the new students had to discover on their own how the laptop initiative operated.

As they made sense of what to do to be successful in the pilot, they also discovered that they benefited from being involved in it. Throughout the first semester, they discovered they were became more organized and more efficient note-takers.

*Implications for Theory and Practice*

Findings and conclusions from this study contribute to an emerging body of research that examines how one-to-one laptop initiatives affect school environments. As many more schools add ubiquitous technology into their instructional programs, school leaders and policymakers must have a clear understanding of what they hope to accomplish and communicate their vision to all stakeholders. School leaders also have to understand how the faculty and the students understand such an initiative. Understanding how sensemaking can occur in a school environment may help high school faculties make sense of the presence of technology in their schools. Sensemaking is always retrospective and this study affords opportunities for high schools to learn from the implementation of Kapaun’s laptop initiative.

This study provides recommendations for school leaders who will consider introducing one-to-one computing to their school settings. Recommendations include providing support for teachers as they attempt to incorporate one-to-one computing into their classrooms, understanding how the presence of ubiquitous computer as consistent with the school’s mission, and how the schools can utilize ubiquitous computing to encourage a smaller learning community within a comprehensive high school.
Encourage Time for Reflective Dialogue

In this study, teachers made sense of the role technology played in the school in isolated groups. While teachers need time to make sense of initiatives, they also need to understand the vision the school’s leadership has for the initiative. Since this was not clearly articulated to all stakeholders to begin with, nor did stakeholders have an opportunity to contribute to the vision, they made sense of the initiative independent from common dialogue. In isolated groups, teachers attempted to find information that supported their assumptions instead of trying to discover what information the school could learn together about its processes. Taking time to have some of the discussions in a planned environment might have helped the teachers and students been more accepting of others’ interpretations.

In addition to common reflective dialogue, pilot teachers need time to reflect on the impact technology has on them professionally. Offering extra planning time during the pilot year, and not the second year, contributed to novice teachers not understanding how to make their classes different from other classes where technology could not be incorporated as readily. Because they did not differentiate their laptop classes from their non-laptop classes, students took advantage of having access to distractions such as games and instant messenger that teachers initially could not manage. Teachers responded by having their students put their laptops away, rather than attempting to use them instructionally. Additional planning time would have allowed more time to adjust to a new way of teaching.

As much as teachers needed individual time to plan, they also needed group time to meet together, which was part of the planned activities of the first year of the pilot, and overlooked the second. Not having planned collaborative time contributed to new teachers’ feelings of isolation. Where possible, common planning time should be awarded so that teachers have the opportunity
to reflect and make sense of what is occurring in the pilot. Moreover, they felt they needed to have it and that the planning time was useful.

*Plan for Who Receives Pilot Students*

In this study, teachers’ and students’ learning about their computers and how to use them instructionally was intertwined, especially during the first year. Students and teachers made sense of the pilot together, then during the second year, went in different directions as they both expected to continue learning together. When students moved from their sophomore to their junior year, they encountered a learning environment in which the students were more technologically proficient than their teachers, and students expected their interactive learning environment to continue. Teachers and students’ learning experiences could have continued uninterrupted if the students had remained with their same teachers for two years. The second group of laptop teachers would then start with a new set of students. Doing so might have created more opportunities for students and teachers to learn together and build community as the first year teachers and students had.

*Opportunities to Shape Organizational Identities*

In this study, several key discussions would have helped teachers make sense of what happened with the laptop initiative in terms of the way they viewed themselves and their organizational identity, which were extremely fluid (Ancona, Malone, Orlikowski, & Senge, 2007). Key discussions about the role of teaching and learning, the role that technology plays in the classrooms, and understanding the mission of the school would have helped, had they been planned discussions, prior to the initiative’s beginning. While these issues might still not have been reconciled prior to beginning the laptop initiative, it might have helped ease the tension
people experienced as they attempted to defend their perspective and/or positions. Guiding questions that might have helped this faculty open discussions are:

1. What does our school mission mean to me as a teacher? How do I continually support the school’s mission? What areas of help would I like to have to support the mission?
2. How do I foresee my role changing as technology is introduced into the learning environment? What are my fears? What support do I need?
3. What does teaching, learning, and assessing student performance look like in a one-to-one classroom?
4. What is the purpose of information in the learning environment?

As school leaders consider how to introduce technology to students and teachers, they must first consider teachers’ understandings of students’ learning. Watson (2001) cautions, “Teachers use ICT in their classrooms only when it has a particular resonance with their pedagogic and subject philosophy. And yet the same pedagogic subject philosophy supports and underpins colleagues’ professional judgment not to use the innovation” (p. 260). Thus, the orientation teachers and students have toward teaching and learning influences how they interpret a computer’s purpose in the classroom and how they use their time preparing for instruction (Garthwait & Weller, 2005). The discussion of how teachers view learning and accompanying pedagogy could have been incorporated into early discussions and helped teachers develop a common dialogue that could enable discussions among stakeholder groups.

To understand the orientation teachers might take toward student learning, professional development could be tied to the concerns teachers have toward implementing technology in their classrooms. Donnovan, Hartley & Strudler (2007) utilized Hall & Hord’s (2001) Concerns-Based Adoption Model to discover how middle school teachers viewed their concerns about their
technology initiative. Understanding teachers’ concerns about technology adoption could have advantages for school leaders who respond to teachers’ needs as they acclimate to a new learning environment. Giving teachers the opportunities to articulate their concerns can help them make sense of change and assist them with developing a better understanding of the assumptions that drive their reactions to the initiative. Professional development can then be tailored to address those concerns.

Leaders Should Facilitate Active Sensemaking

Points of periodic sensemaking could have helped the faculty understand what was occurring during the initiative. Key moments of reflection and sensemaking could have been worked into professional development activities. Points of reflection could ensure that all stakeholders understand a clear vision of what school leaders hope to accomplish. This vision could be communicated purposively from the onset. Sharing the vision and understanding the concerns that teachers might have about such an initiative could provide opportunities for discussion where differing perspectives can be articulated.

Ancona, Malone, Orlikowski and Senge (2007) suggested that an effective leader is purposefully incomplete, one who recognizes his or her strengths and finding others who can offset their weaknesses. In so doing, the effective leader is one who considers four overlapping capabilities in his or her leadership style. First, the leader “makes sense” of the situation before acting. Perhaps more important, he or she seeks out the way in which others view a situation and shares his or her individual perceptions of they way they see events unfolding. Second, the leader builds relationships by find a balance between inquiring and listening about the way others understand a situation or a problem and advocating for what he or she wants to accomplish. The leader then connects people and ideas together to create a “network of confidants” (p. 96) who
can help enact the changes that need to be made. To create a network of confidants, the leader of the one-to-one laptop initiative could make information about the initiative available as it occurs which could help teachers make sense of it. Weick (1996) additionally advised that leaders encourage respectful interaction whereby they respect others’ reports and place trust in them, report frequently to others so that they can determine valid beliefs, and to integrate the leaders’ belief with the reports’ belief without deprecating either belief holder. To summarize, establishing relationships with other leaders in the school involves establishing trust, communicating frequently, and respecting beliefs of all constituencies.

Placing respectful interaction into the context of a laptop initiative, to establish trust, school leaders need to communicate trust in their constituencies and honor the way in which others understand the initiative. School leaders must communicate how they see the initiative unfolding, which could be through laptop pilot teachers who could present information about the initiative to the constituencies, in department meetings, or other natural group settings. In this case, acknowledging the depth of resentment about the initiative late in the process created avenues of communication between department chairs and me and between chairs and the laptop teachers that had not existed previously. In retrospect, quarterly examples or reports presented by laptop teachers or students could have been helpful to teachers who might have difficulty knowing what had been occurring.

The third mark of an incomplete leader is his or her ability to create and sustain an evolving vision, getting people excited about a combined vision of the future. This process involves creating the future while simultaneously and retrospectively revising the past (Gioia, Corley, & Fabbri, 2002). This process utilizes the retrospective nature of sensemaking to shape the interpretations of the past. In the context of Kapaun, this would mean for me to help others
understand that they are and always have been a progressive school, highlighting historical successes that started as innovations and have resulted in successes or conveyed a detailed understanding of why something did not come to fruition as designed. In other words, the organizational participants would need to have a vision of the future than is reconcilable with past practices. School leaders in other contexts could determine the direction they think the school should move, then find and highlight specific examples in the school’s history that support its growth in that direction.

The fourth mark of an incomplete leader is his or her ability to invent new processes and procedures that would allow others to obtain the desired results. This would include having dedicated time to discuss the pilot and to break free from some of the structures that keep collaborative activities from progressing. Weick (1996) also suggested that organizational leaders develop teams’ and individuals’ improvisational skills. A teams’ ability improvise creates discussion, then sensemaking, as groups collectively respond to what looks like chaos.

Implications for Researcher-Leader

Great care must be taken for any researcher-leader to distance him- or herself from the situation. In this study, persons other than the researcher collected data on his behalf. Leaders must understand how teachers and students view their roles in a non-threatening way where they can be honest about their experiences. I would have not understood my biases until I confronted them throughout this process.

This awareness has already changed my leadership style. I find that my role as a sensemaking leader includes taking time and asking questions about how people understand past decisions and future and has allowed me to gain more input from people prior to making decisions that affect their work environment.
I contend that to truly integrate technology in high schools, each stakeholder must be afforded an opportunity to make sense of his or her interpretations and to share them with others in an environment encouraging of these interactions. As a result, the sensemaking school leader is incomplete and learns from others and about him or herself as he or she gains insights from others’ interpretations of the same events. As the leader collects data, listens to and interprets others’ understandings of the organizational phenomena, he or she grows with the organization. The laptop leader, then, is a researcher who seeks to understand the environment in which this technology is introduced. All organizational participants deserve to be heard, or asked about how they understand the phenomena.

Recommendations for Kapaun-Mt. Carmel Catholic High School

For the faculty and students at Kapaun-Mt. Carmel Catholic High School to take the next step together, opportunities for groups to make sense of the important next steps together are needed. At the beginning of the next school year, the administration should consider surveying the faculty using Hall & Hord’s (2006) survey instrument to determine the faculty’s levels of concern with the innovation. Professional development opportunities should be developed from their concerns (Donovan et al., 2007). Care should be taken, then, for the faculty to make sense of the results from the survey to determine how to structure professional development activities tailored to teachers’ specific concerns. Concurrently, the laptop pilot members need to communicate what is occurring in the pilot and be receptive to feedback about the initiative and future directions as many teachers have an opportunity to contribute to learn from the pilot. Although all teachers at Kapaun Mt. Carmel have laptop computers, they are not necessarily prepared to integrate them into instruction, and will need opportunities to make sense of their potential for enhancing instruction.
The pilot should continue to provide sensemaking opportunities to clarify the school’s mission and instructional approach. The pilot participants should also learn from other participants’ interpretations and respond, where possible, to their concerns. My leadership role next year should continue to evolve to actively seek all teachers’ viewpoints about where we should, as a school, head collectively. While it may be impractical to meet with each faculty member individually, I plan to solicit the help of a network of confidants (Ancona et al., 2007) who can help listen to the faculty and who will be willing to come together to make group sense of others’ perceptions.

This group should be able to reinterpret our traditional history to a collective understanding of our past innovation history so that the faculty can reconcile tentative future with past practice, hopefully embedding a process of retrospective sensemaking to chart the vision of our future.
REFERENCES


Trotter, A. (2007, March 29). Getting up to speed: U.S. schools have come a long way since connecting to the Internet was their chief technology challenge. Education Week, 26, 10-12, 14, 16.


APPENDICES
Appendix A-1

Online Survey Protocol – Department Chairs

I am conducting a study of our school’s one-to-one laptop initiative. Through your participation in the study, I hope to learn how students and teachers have made sense of the laptop pilot’s purpose and how this purpose has affected how you teach and how you think about your roles at school. You were selected to participate in this study because you have involved in the pilot this year as a participant or you have specific knowledge of the initiative that is important to this study. You will be participating in an electronic survey that will take approximately 30 minutes to complete.

Following the completion of your survey, your ideas will be reviewed in conjunction with other data about the laptop pilot.

Your participation in this study is entirely voluntary and you may withdraw your participation at any time.

Survey Questions:
1. Now that the school has been involved in the pilot of a one-to-one laptop initiative for the past year, how has the pilot changed the way you do your job?
2. Why do you think the school chose to pilot a one-to-one laptop initiative?
3. How has the one-to-one laptop pilot changed the way your department operates?
4. Has the one-to-one laptop pilot affected the way teaching and learning happens in classes your department offers? Please explain.
5. What do you think about the changes in your school that have occurred as a result of the laptop initiative?
6. What do you think about the one-to-one laptop initiative?
7. Please add anything else you want to say about the laptop initiative.
I am conducting a study of our school’s one-to-one laptop initiative. Through your participation in the study, I hope to learn how students and teachers have made sense of the laptop pilot’s purpose and how this purpose has affected how you teach and how you think about your roles at school. You were selected to participate in this study because you have involved in the pilot this year as a participant or you have specific knowledge of the initiative that is important to this study. You will be participating in an electronic survey that will take approximately 30 minutes to complete.

Following the completion of your survey, your ideas will be reviewed in conjunction with other data about the laptop pilot.

Your participation in this study is entirely voluntary and you may withdraw your participation at any time.

Survey Questions:
Please indicate in what years you are/were teaching in the laptop initiative:

1. Why do you think the school chose to pilot a one-to-one laptop initiative?
2. What has been your experience with the laptop initiative this past year?
3. Where do you see the school going with technology in the future?
Appendix B

Focus Group Protocol - Students

I am conducting a study about our school’s one-to-one laptop program. I hope to learn how students and teachers experience and understand the laptop pilot’s purpose, how this purpose has affected your learning, and how you think about yourself. You were selected to participate in this study because you have involved in the pilot this year, or you have specific knowledge of the initiative that is important to this study. You will be participating in a group interview that will last from 45-60 minutes. In an effort to help me keep track of the actual wording you use during the interview so that I may transcribe it later, I would like to record this interview. Do I have your permission to do so?

Following this interview, your ideas will be collected, recorded and reviewed in conjunction with other data about the laptop pilot.

Your participation in this study is entirely voluntary and you may withdraw your participation at any time. Do you have any questions before we begin?

Interview Questions:

1. Why did you want to participate in the pilot?
   a. What were the major factors involved in your decision?
2. Why do you think this school is piloting the one-to-one laptop initiative?
3. How is learning in laptop classes different from other classes? How do you know this?
4. What have you discovered about yourself as a result of your participation in the pilot? (Laptop students only)
5. How do you feel about being part of the initiative?
6. What were the most memorable events that have happened throughout the pilot? Select one event and tell me what happened (Laptop students only)
8. How do you think that next year will be different from this year? What would you change if you could, about the laptop initiative?
9. Where do you think the school needs to go with technology in the future?
Appendix C

Focus Group Protocol - Students

I am conducting a study about our school’s one-to-one laptop program. I hope to learn how students and teachers experience and understand the laptop pilot’s purpose, how this purpose has affected your learning, and how you think about yourself. You were selected to participate in this study because you have involved in the pilot this year, or you have specific knowledge of the initiative that is important to this study. You will be participating in a group interview that will last from 45-60 minutes. In an effort to help me keep track of the actual wording you use during the interview so that I may transcribe it later, I would like to record this interview. Do I have your permission to do so?

Following this interview, your ideas will be collected, recorded and reviewed in conjunction with other data about the laptop pilot.

Your participation in this study is entirely voluntary and you may withdraw your participation at any time. Do you have any questions before we begin?

Interview Questions:

1. Thinking back to last year, why did you want to be in the laptop pilot? What were the major factors that influenced you to want to be involved?
2. What experience were you expecting this year? How did this experience materialize, or not, for you?
3. Describe your classroom experiences last year. How did they differ from laptop classes?
4. Describe your first few weeks as a member of the laptop pilot. How were your experiences the same as or different from the students who were involved in the pilot last year?
5. How did people not in the laptop program describe (or talk about) the program last year? (Students, teachers?) How do they describe (or talk about) it now?
You have been invited to participate in a study of one-to-one laptop initiative taking place at your school. The study is examining how students and teachers understand and experience the initiative and its effects on the school. For this activity, you will be asked to construct a conversation between yourself and your department chair regarding the laptop initiative. In the right hand column, finish the conversation that has been started using as many pages as necessary. After you have finished creating the conversation in the right hand column, construct in the left hand column what you would like to have said, but did not feel you could say in the right hand column.

<table>
<thead>
<tr>
<th>Left Hand Column (What is not expressed aloud)</th>
<th>Right Hand Column (What is articulated verbally)</th>
</tr>
</thead>
<tbody>
<tr>
<td>You: I really wish you better understood what we are trying to accomplish with the laptop pilot.</td>
<td>Department Chair: How does providing some students with 24-hour access to computer technology going to help the students learn their faith better?</td>
</tr>
</tbody>
</table>
Appendix E-1

Teacher Consent Forms (Open-Ended Survey)

Dear Kapaun-Mt. Carmel Catholic High School Faculty Member (Open-ended Survey),

You are invited to participate in a study of how sensemaking occurs during a laptop pilot program in a Catholic high school. Through this study, we hope to learn how students and teachers have made sense of the laptop pilot’s purpose and how this purpose has affected their roles at Kapaun-Mt. Carmel. In order to gain a broad range of perspectives, approximately 43 teachers and students will be asked to participate in either individual or group interviews or another data gathering format in which the participants are asked to describe the pilot from their perspective.

As part of this study 8 faculty members will be asked to participate in an electronic open-ended survey conducted through an online survey instrument in which your responses will be anonymous. You have been asked to participate in this survey because you are a department chair in the building. The data collected from the surveys will be analyzed to determine how each participant makes sense of the laptop pilot.

The results of this study will be used to assist Kapaun-Mt. Carmel Catholic High School to continue its direction to incorporate technology into the instructional programs at the school. It is possible that this research from this study will benefit other Catholic schools in the diocese and other Catholic high schools implement similar initiatives in their schools.

You are under no obligation to participate in this study. Your participation is entirely voluntary. A decision not to participate will not affect your relationship with Wichita State University or your status as an employee Kapaun-Mt. Carmel Catholic High School in any way.

If you have questions or concerns about the study or your confidentiality please contact: Cameron Carlson at 316-634-0315, ccarlson@kapaun.org or Dr. Jean Patterson at WSU at 316-978-3325, jean.patterson@wichita.edu. If you have any questions about your rights as a research subject, contact the Office of Research Administration at Wichita State University, Wichita, Kansas, 67260-0007, telephone (316) 978-3285.

Your signature below indicates you have read the information above and consent to participate in an online survey. Please keep a copy of this form for your records. You may also withdraw from
the study at any time without penalty or fear of reprisal. Thank you for assisting us in this important study.

Sincerely,

Cameron Carlson

I agree to participate in an online survey.

Participant’s Signature __________________________ Date ____________
Appendix E-2

Teacher Consent Forms (LHRHCC)

Dear Kapaun-Mt. Carmel Catholic High School Faculty Member (LHRHCC),
You are invited to participate in a study of how sensemaking occurs during a laptop pilot program in a Catholic high school. Through this study, we hope to learn how students and teachers have made sense of the laptop pilot’s purpose and how this purpose has affected their roles at Kapaun-Mt. Carmel. In order to gain a broad range of perspectives, approximately 43 teachers and students will be asked to participate in either individual or group interviews or another data gathering format in which the participants are asked to describe the pilot from their perspective.

As part of this study 18 faculty members will be asked to participate in a data collection activity in which you will be asked to describe the initiative then to develop an imaginary dialogue about the initiative that you would like to have with someone of your choosing. The data collection activity is anticipated to be completed in 30 minutes. You have been asked to participate in this interview because you have been a teacher in the pilot this year or you have specific information about the school that is important to this study. The data collected from this method will be analyzed to determine how each participant makes sense of the laptop pilot.

The results of this study will be used to assist Kapaun-Mt. Carmel Catholic High School to continue its direction to incorporate technology into the instructional programs at the school. It is possible that this research from this study will benefit other Catholic schools in the diocese and other Catholic high schools implement similar initiatives in their schools.

As a participant in this study your identity will be kept confidential and you will not be personally identified from the comments made during your participation in the interview. Your identity will not be revealed anywhere throughout the final report.

You are under no obligation to participate in this study. Your participation is entirely voluntary. A decision not to participate will not affect your relationship with Wichita State University or your status as an employee Kapaun-Mt. Carmel Catholic High School in any way.

If you have questions or concerns about the study or your confidentiality please contact: Cameron Carlson at 316-634-0315, ccarlson@kapaun.org or Dr. Jean Patterson at WSU at 316-978-3325, jean.patterson@wichita.edu. If you have any questions about your rights as a research participant, please contact the Institutional Review Board at 316-978-3325, irb@wichita.edu.
subject, contact the Office of Research Administration at Wichita State University, Wichita, Kansas, 67260-0007, telephone (316) 978-3285.

Your signature below indicates you have read the information above and consent to participate in a focus group interview. Please keep a copy of this form for your records. You may also withdraw from the study at any time without penalty or fear of reprisal. Thank you for assisting us in this important study.

Sincerely,

Cameron Carlson

I agree to participate in this study.

Participant’s Signature ____________________________ Date ____________
Appendix F

Parent Consent Form

Dear Kapaun-Mt. Carmel Catholic High School Parent,

Your son or daughter are invited to participate in a study of how sensemaking occurs during a laptop pilot program in a Catholic high school. Through this study, we hope to learn how students and teachers have made sense of the laptop pilot’s purpose and how this purpose has affected their roles at Kapaun-Mt. Carmel. In order to gain a broad range of perspectives, approximately 43 teachers and students will be asked to participate in either individual or group interviews or another data gathering format in which the participants are asked to describe the pilot from their perspective.

As part of this study 25 students will be asked to participate in one of four group interviews. The interviews will last from 45-60. Your child has been asked to participate in this interview because he or she has been a participant in the laptop pilot this year or he or she has applied to and has been accepted into the program beginning next year. The data collected from the interviews will be analyzed to determine how each participant makes sense of the laptop pilot.

The results of this study will be used to assist Kapaun-Mt. Carmel Catholic High School to continue its direction to incorporate technology into the instructional programs at the school. It is possible that this research from this study will benefit other Catholic schools in the diocese and other Catholic high schools implement similar initiatives in their schools.

As a participant in this study your child’s identity will be kept confidential and he or she will not be personally identified from the comments made during your participation in the interview. His or her identity will not be revealed anywhere throughout the final report. With your permission, we would like to tape record the focus group interview, which will be transcribed so that we may examine his or her comments more carefully. He or she will be given an opportunity to review a summary of the findings to check for accuracy before the final report is complete.

Your child is under no obligation to participate in this study. His or her participation is entirely voluntary. A decision not to participate will not affect your or his or her relationship with Wichita State University or your child’s status as a student at Kapaun-Mt. Carmel Catholic High School in any way.
If you have questions or concerns about the study or your child’s confidentiality please contact: Cameron Carlson at 316-634-0315, ccarlson@kapaun.org or Dr. Jean Patterson at WSU at 316-978-3325, jean.patterson@wichita.edu. If you have any questions about your rights as a research subject, contact the Office of Research Administration at Wichita State University, Wichita, Kansas, 67260-0007, telephone (316) 978-3285.

Your signature below indicates you have read the information above and consent for your child to participate in a focus group interview. Please keep a copy of this form for your records. You may also withdraw from the study at any time without penalty or fear of reprisal. Thank you for assisting us in this important study.

Sincerely,

Cameron Carlson

My child may participate in a group interview under the conditions outlined above.

Signature of Parent/Guardian __________________________ Date ___________
Appendix G

Student Assent Form

Assent Form for Students Under 18

I have been informed that my parent(s) or guardian(s) have given permission for me to participate, if I want to, in a study about the laptop pilot initiative at Kapaun-Mt. Carmel Catholic High School. My participation in this research project is voluntary and I have been told that I may stop my participation at any time. If I choose not to participate, it will not affect my grades in any way.

Name: _______________________________________  Date _____________________
Appendix H

The School’s Criteria for Determining “Constructivist” Learners

Selection of Participants

Participants will be selected who exhibit the following characteristics:

- An Earned “A” or “B” in Computer Applications
- Teacher referral based upon each of the following criteria:
  - Motivated to Learn
  - Self-Directed Learners
  - Open to problem solving
  - Looks at multiple solutions to solving a problem, not easily frustrated or overwhelmed
  - Open minded
  - Accepts responsibility and doesn’t make excuses
  - Helpful to others
  - Comfortable with change
  - Communicates positively with the teacher and with peers
  - Willing to ask for help
  - Team oriented – ability to collaborate
- A list of students who meet the profile was forwarded and compiled. Students will be invited to participate following pilot feedback from the Superintendent and the School Council. If parents of selected students decide that their student should not participate, the Teacher Team will conduct interviews of students not initially selected. *NOTE: The initial list suggested that over 140 students were referred by teachers (90 kids fit the criteria and were referred from at least one class; 63 students were referred more than once). The list was narrowed by looking at the number of students that were referred 3 or more times in multiple areas of the curriculum and favoring students that were currently enrolled in an Algebra I or H Algebra class.*
- The individual participant’s goal will be to adequately complete the Computer Applications course by the middle of April. Students then will be enrolled in the Blackboard course to research and discuss what it would be like to learn in a technology enriched environment. During this month, students will learn how to use Blackboard and other interactive media to work independently and collaboratively to research, to create projects and to be exposed to online textbooks. Their feedback of the current system will be pivotal in understanding how to proceed.