ABSTRACT OF CAPSTONE

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The Graduate School

Morehead State University

April 11, 2013

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A STUDY OF ASYNCHRONOUS LEARNING OPTIONS THAT PROMOTE
CONTINUITY OF LEARNING IN K-12 SETTINGS

Abstract of capstone

A capstone submitted in partial fulfillment of the
Requirements for the degree of Doctor of Education in the
College of Education
At Morehead State University

By
Timothy Wade Bobrowski

Booneville, Kentucky

Committee Chair: Dr. Carol Christian, Assistant Professor
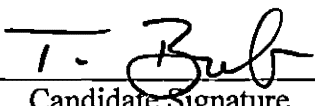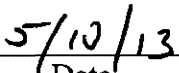
Morehead, KY

April 11, 2013

ABSTRACT OF CAPSTONE

A STUDY OF ASYNCHRONOUS LEARNING OPTIONS THAT PROMOTE
CONTINUITY OF LEARNING IN K-12 SETTINGS

This study investigated the impact of nontraditional instruction to ensure

continuity of learning during school closures due to inclement weather or other days

of unforeseen events that required school closure and their impact on teacher ans

student perceptions. This study will demonstrate how rural eastern Kentucky school

districts can overcome barriers to learning by utilizing technology to promote

learning for students when school is not in session. The significance of this study

reaches beyond just schools in eastern Kentucky. Capitalizing on the use of

alternative learning options will enable schools throughout the nation facing similar

calamity days to implement viable options for uninterrupted learning. Another

significant impact of this study is the innovative approach to learning requiring school

administrators to develop a paradigm shift in thinking in how we educate students in

today's society. Learning no longer has to take place as determined by the amount of

seat time, within the confines of a school building, meeting face to face with teachers,

or from a particular time each day.

KEYWORDS: nontraditional, snow days, perception, blended-learning.

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Candidate Signature

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Date

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By

Timothy Wade Bobrowski

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CAPSTONE

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Dedication

I dedicate this work to my wife, Tina, without whose assistance and patience I would

not have finished this journey. To my children, Cami and Caden, and all children who

live in geographic areas impacted by unforeseen weather conditions that become

barriers to equitable learning opportunities. Professionally, I dedicate this study and

my life's work to students, teachers, administrators, schools, and school district

administrators who choose to embrace asynchronous learning to improve student

achievement and who are continuously striving to improve to meet their needs.

ACKNOWLEDGMENTS

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CHAPTER ONE

EXECUTIVE SUMMARY

This study examined the asynchronous learning options used in the event of school cancellation to facilitate uninterrupted learning time and the resulting impact on teacher and student perceptions. Does learning exist solely within the walls of a school building? For 21st Century learners, are there other options available to teachers and school districts that allow learning to occur when school is called off or not in regular session? To what extent is learning interrupted when school is cancelled? How much review time does it take to get students caught up after being out of the "rhythm of learning" when unforeseen weather conditions cause school to be cancelled over extended periods of time? Once students leave the walls of a school building, do individuals cease to learn?

Each year, schools across the nation contend with weather related issues that interrupt the continuity of learning. Reasons for missing school can vary -- snow, ice, floods, tornadoes, hurricanes, or even illness. Geographic location impacts the definitive and specific issues that plague schools and districts. Schools located in areas known as Tornado Alley, flood zones, high snow accumulation areas and coastal states to name a few contend with the same issue of school cancellations year after year. Few states are immune to calamities such as these that can negatively impact student learning and school performance. With numerous options available today, including advanced technological resources, schools must seek alternative ways to meet the needs of the 21st Century learner. Employing continuity of learning

time opportunities for students while school is not in regular session can contribute to

a prevention methodology to ensure student learning is continuous.

Today's current school system in America was built on the assumption that

students attend class each weekday for approximately nine months in a given school

year. This expectation is supported by compulsory attendance laws (Balfanz &

Byrnes, 2012). Also known as the Agrarian Model, this historical, and perhaps now

outdated model, was designed to allow students time to work on the family farm in

the summer months. Students attended school approximately nine months out of the

year with three summer months off. As the face of the American landscape is

changed from an Agrarian society to an industrial and technological one, so too must

our schools. Schools therefore must seek alternative options to interrupted learning

caused by weather related conditions. The negative impact of loss of learning time is

unconscionable. The Center for Comprehensive School Reform and Improvement

Fund (Oakes, 2009) found that 90% of freshmen who missed less than a week of

school per semester were more likely to graduate than those students who missed

more than a week. Freshmen with high achievement test scores who missed more

than two weeks of school in a given year were more likely to fail a course than

freshmen with low test scores who missed only one week of school (Consortium on

Chicago School Research, 2007). Missing school due to weather conditions increases

the likelihood of students falling behind their grade level peers, ultimately resulting in

an increased number of failing grades and increased drop-out rates that impact the

lifetime earning potential of our students.

Although the focus of this study is centered on school days missed due to

snow, the issue being addressed is much larger than snow day cancellations of one

rural Kentucky school district described in this study. Schools across the nation need

to create strategic, alternative plans that promote on-going learning and eliminate

barriers that negatively impact continuity of learning. With regard to school results

impacted by snowfall, Marcotte and Hansen (2010), noted that schools that had an

average snow fall of around 17 inches per year had students who scored 1 to 2 percent

points lower than students living in areas with little or no snow fall. Marcotte and

Hansen's data (2010) indicated many of the schools would have made AYP had the

schools not missed regular instructional days due to snow. According to Marcotte &

Hemelt (2008), unscheduled school closures in February had a "consistent,

substantial, and significant negative effect on performance" (p. 333). Marcotte and

Hansen (2010) noted that each additional inch of snowfall reduced the percentage of

3rd, 5th, and 8th graders passing math assessments by one-half to seven-tenths of a

percent. While these statistics seem of little importance, the same study noted the

students who missed more school due to snow causing school cancellation scored 1 to

2 percentage points lower than their counter parts in areas of the country impacted by

little or no snow. The study also found the percentage of students who passed math

assessments fell one-third to one-half a percentage point each day school was closed

(Marcotte & Hansen, 2010). The Marcotte and Helmelt (2008) study gathered seven

years of data between 1994 and 2005. Their findings indicated that when schools had

relatively few unscheduled closures, students scored above the mean in math and

reading scores, and, in years with frequent closures, students scored below the mean.

What Marcotte and Hemelt (2007) found impacts rural eastern Kentucky on a

grand scale. Many districts in remote and rural Appalachian areas of Kentucky and

other states are located in geographic areas surrounded by mountainous terrain and

back country roads that are many times deemed impassible on calamity days. The

numerous days weather forced school closings further exacerbates the problem of low

performing state test scores related in part to increased interruption of learning time

due to inclement weather conditions. If Marcotte and Helmelt (2007) are correct,

then in Owsley County Kentucky, the focus of this study and also one of the poorest

counties in the nation, the estimated number of days school was closed to

unscheduled school closure may have decreased reading pass rates by more than

three-fifths of a percent (.614). In addition, research from Marcotte and Hemelt

indicated interrupted instructional time due to the number of school days missed had

a larger negative impact on the reading performance of the marginal student or at-risk

of failing student. Many rural school populations such as Owsley have a higher

number of identified at-risk youth as well as higher poverty rate data making the

number of school days missed even more critical.

For schools at the margin of meeting their imposed NCLB (2001) annual

measurable objectives (AMO) in a year, unscheduled closures could incur a

substantial handicap that imposes school sanctions. Per the research of Marcotte and

Hemelt (2007), the work of their study implies; in an academic year, with an average

number of five unscheduled closures, Owsley County would have had approximately

3 percent fewer 3rd graders performing satisfactorily on state tests (Marcotte and

Hemelt, 2007, p. 316). If held true, statewide in 2003, 30 of the 52 failing elementary

schools might have surpassed their annual yearly progress (AYP) threshold had there

been no unscheduled closures.

If school closure has such a negative impact on student academic

performance, the question is posed; why has there been no systematic approach

developed to address the problem and circumvent the negative impact on students in

Kentucky and across the United States? Kentucky's state average number of school

days missed due to inclement weather or acts of nature for the 2009-2010 school year

was 13.92 days. During that same school year, the four schools chosen for

participation in Kentucky's Snow Pilot Project missed well above the average; Knox

County, (39); Lee County, (35); Owsley County, (26); and Powell County, (31).

Each of these counties averaged more than double the state average. As a group, the

Appalachian counties in the state missed an average of 20.53. These districts and

some of the schools within them posted some of the lower state test scores with some

schools identified as persistently low achieving (PLA) and therefore provided state

assistance to implement turn-around strategies. By comparison, in the same school

year, other Kentucky counties reported the following number of days missed; inner

city Jefferson County, (4); Hopkins County (5), Fayette County (7), and Ballard

County (3). What these districts had in common was a tighter geographic land mass

for bus routes and a closer proximity to the school. Students enrolled in the schools

that missed on the average 22 or more days in a given school year, over the course of

a year, missed the equivalent of a month or more of school compared to peers in other

areas of the state. Over the span of a students' K-12 educational career, these

students realistically graduated (or not) from high school with ten and a half to eleven

years of schooling while their counter parts graduated with twelve years of schooling.

Clearly, schools and students impacted by numerous calamity days are at risk of

falling further behind, off track, in need of remediation and at risk of becoming a

drop-out statistic without alternative means that promote continuity of learning during

school cancellations.

In addition, according to a study by Marcotte and Helmelt (2008), "in winters with ten

unscheduled closings, more than 5 percent fewer third graders would pass reading

and math assessments" (p. 325). Data such as these continue to pose the question:

What impact on reading and math scores does the average of more than 20

unscheduled closings a year have on Kentucky's rural Appalachian counties? One

can merely conclude that doing nothing is not an option. Schools and districts must

be supported and encouraged to develop alternative cancellation plans for continued,

uninterrupted learning to take place.

In addition, one need look no further than career and college readiness data of

the four districts chosen to participate in the Snow Pilot Project to predict the negative

impact of school closures due to inclement weather on student achievement. Career

and college readiness is determined by students receiving a benchmark score of on

the ACT of 20 in reading, 19 in math and 18 in English. In 2011 Owsley County had

20% of its seniors graduating college and/or career ready, Powell 20%, Lee 26%, and Knox 26%. The numbers reveal a stark contrast when compared to Central Kentucky schools that missed few if any snow days. Hopkins County graduated 30% of its high school senior's career and college ready in 2011, Fayette 49%, and Ballard 34%. ("High school graduates", 2012).

Today, more than ever before, schools have more alternatives available to address calamities that force school closures. Options to help counter this problem are in front of us if policy makers, school board members, communities, districts, parents and educators are willing to implement alternative and innovative strategic plans as viable answers. The goal is that schools not merely give lip service to the issue, but take action to address interrupted learning and look beyond traditional methods of school; what constitutes a school day, a school year, how students have traditionally learned and what society has historically called school as being face to face sitting in a classroom with a teacher, Monday-Friday, 8:00-3:30 spanning August through May.

Problem Statement

Limited research exists on the impact of available alternative school options that ensure continuity of learning during times of unscheduled school closure on teacher and student perceptions and the learning of K-12 students. Many innovative options are stifled by state board of education governance policies that inhibit creative thinking in search of viable options.

Purpose of Study

. The purpose of this study is to describe alternative yet practical options implemented in one rural school district in Kentucky involved in a Snow Pilot Project. Specifically, this study will examine teacher and student perceptions of alternative options implemented during a three year study in one rural Kentucky K-12 school district. This study examined factors relevant to continuity of learning for students when regular school is not in session due to circumstances beyond the school's control such as, but not limited to, weather conditions that cause school cancellation. This capstone provides an innovative approach to resolving current day educational issues exacerbated by weather conditions that interrupt the school calendar. This capstone will explore nontraditional, synchronous, and asynchronous instructional methods that include blended learning, via hybrid learning and distance learning opportunities. For students and families that lacked internet connectivity, alternate synchronous methods were made available in the form of packet learning.

This capstone provides insight into strategies implemented by one rural school district to inform policy makers such as legislators and superintendents of alternative strategies to uninterrupted learning. These strategies will better inform decision makers of viable alternative methods that propagate continuous learning. This study hopes to further seek the support of decision makers and their continued approval and funding for such innovative problem solving approaches as the Snow Pilot Project so schools and districts can capitalized upon its resources and make continuous student learning a reality. Learning should be life-long. Learning should be continuous.

Learning should incorporate the resources available to 21st Century learning as supported by research.

This study hypothesizes that teacher and student perceptions of alternative and/or asynchronous methods to learning are viable alternatives to interrupted learning on school closure days. The ultimate goal of studies that follow the Owsley study is to demonstrate, through the collection of continued longitudinal data that student academic progress will be maintained or, better yet, demonstrate growth as a result of uninterrupted learning using alternative methods during school cancellations.

Significance of Study

This study will demonstrate how rural eastern Kentucky school districts can overcome barriers to uninterrupted learning as a result of unscheduled school closures by utilizing not only pencil and paper activities but also the technology infrastructure, software, and hardware to promote learning for students when school is not in session. The significance of this study reaches beyond just schools in eastern Kentucky in capitalizing on the use of technology. The results will enable other schools facing similar calamity days to ensure continuity of learning for students who cannot be in school. Students and schools in areas affected by flooding, tornadoes, and other national disasters could benefit by having this protocol in place. In the event of a natural disaster, Kentucky students and other students similarly affected across the nation could continue learning while accessing internet learning options. Another significant impact of this study is the development of an innovative approach to schooling that initiates a paradigm shift in thinking in how we educate students in

today's society. Schooling is no longer defined by a Monday – Friday 8:00 AM to

3:30 PM schedule. In addition, districts, especially rural districts, are often faced

with staffing and funding issues. Rural Appalachia and remote schools are many

times unable to recruit and retain highly qualified staff particularly in critical content

shortage areas. Blended learning via course shells, hybrid models and or distance

learning allow schools and districts to "share qualified staff" from other counties that

further promote continuity of learning. These alternative methods allow districts to

offer more advance course offerings and equitable access to high quality instruction

through the implementation of technology based/distance learning methods.

　　　With the advances in today's technology, school leaders have the means to

provide alternative answers to what once was interrupted learning. To continue to

function in the same manner as the Agrarian Model or as our 20th Century

predecessors is a disservice to today's school children. Schools now have resources

available to them that were not available even twenty years ago due to technological

advancements in today's society. Educators need the support and vision of

legislators, school leaders and teachers working together in creating innovative

approaches that meet the needs of the 21st Century learner to prepare them to be

competitive in a global economy.

Context of the Study

　　　The 2008/2009 Kentucky Legislative Session and House Bill 427 set the stage

for the context of the study. HB 427 states in part that ". . . school districts that have

missed an average of 20 or more days in the previous three years can use alternative

methods of instruction, including virtual learning on days when the school district is closed for health or safety reasons, on nontraditional days, or during nontraditional time . . ." (Kentucky legislature: HB 427, 2008, p 1 - 2). Four school districts in Eastern Kentucky: Knox County, Lee County, Owsley County and Powell County were selected by Dr. Terry Holliday, Commissioner of Education in Kentucky to participate in a virtual instruction pilot program designed to reduce the number of instructional days missed prior to the Kentucky Core Content Test (KCCT) administered in May of each school year.

A letter was forwarded from the Commissioner to superintendents about their interest in taking part in this initiative. As a result, these four districts were selected to participate in this study. The goal was to seek innovative ways to continue a student's education while reducing barriers to student learning heightened by calamity days. Each of the four participating pilot school districts was asked to address the following questions:

1. What do you plan to do?

2. Will you implement your idea district wide, in a particular school or for a specific group of students?

3. What unmet resource needs (fiscal and human) does the project have?

4. What are the connectivity and technology access barriers to implementing your project? (T. Holliday, personal communication, 2009).

During the 2009-2010 school-year, students enrolled in the Owsley County

School District missed 26 instructional days due to inclement weather, sickness, or

other reasons that forced school closure. The majority of these days occurred during

January and February of 2010. The three-year average for the district from (2006-

2009) showed an average of 21.3 days per year due to poor weather conditions. This

data was retrieved from Kentucky's statewide student data information system known

as Infinite Campus.

While those days were made up by adding instruction days to the school

calendar, instructional time, flow of instruction and meaningful learning may have

been compromised when school was disrupted this number of times in a given year

and addressed as an add on. Marcotte and Helmelt (2008) noted, "losing many days

may be more seriously disruptive, perhaps because lessons are forgotten and time

needs to be spent re-teaching . . ." (p. 325) This same study collected data that

indicated school years with more than 12 unscheduled closures, 0.05 percent fewer

students per day passed the math assessment. Marcotte and Helmelt (2008) findings

also indicated that unscheduled school closures reduced the reading pass rate of third

graders by .592 percent in schools where more than 67% of students received

free/reduced lunch. This finding is further alarming and relevant to school districts in

rural Kentucky which historically and consistently had a high percentage of poverty

students receiving free/reduced lunch.

Most rural Eastern Kentucky school districts follow a similar pattern of

weather related school closures. In the 2009/2010 school year, Owsley County and

its contiguous rural counties missed an average of 27.6 school days due to school

closure. In 2010/2011 the number of days Owsley County and its surrounding

counties missed equaled 24.27 days. In 2011/2012 the average for these same

counties was 22.36 days. This data was retrieved from the Superintendents Annual

Attendance Report (SAAR) report (Historical SAAR data, 2009, 2010, 2011).

In 2009/2010 in order of highest to lowest, Knox County cancelled school on

39 days, Lee County 35 days, Powell County 31 and Owsley County 26 days. In

2011/2012 in order Knox County cancelled school due to weather on 24 days, Lee

County 23 days, Powell County 18, and Owsley County 18 days. Compared to the

following schools in less rural areas the differences become apparent and noteworthy.

In 2009/2010, Fayette County schools missed 7 days, Madison County missed 10,

Carlisle County missed 3, and Clark County missed 9 days due to weather. In

2011/2012, Fayette County missed 7 days, Madison County missed 10, Carlisle

County missed 6, and Clark County missed 9 days due to weather. This data was

retrieved from the SAAR report (Historical SAAR data, 2009, 2010, 2011).

Upon being selected to participate in this pilot project and in response to the

interruption of learning due to school cancellations, Owsley County formed a project

team to research alternative options and began the planning, development and

implementation phase to address the problem. The innovative instructional team was

formed in August 2010. The team examined traditional methods of teaching and

learning; (synchronous or teacher stand and deliver methods) and; electronic methods

of instruction (asynchronous that included internet, hybrid and distance teaching and

learning models). The viability and effectiveness of the alternative options in addressing excessive school dismissal relative to weather conditions were analyzed according to teacher perceptions of the implemented options. In addition, the team researched the local internet connectivity capability of all student participants and teachers in the study. Information gathered determined not all students or teachers had connectivity and electronic resources. This information defined an initial barrier to the project implementation of virtual continuous learning options. Therefore the initial alternative options provided both lesson and activities electronically and through hard copy "packet learning" that will be described later in further detail in this study.

From large and small, rural and inner city schools, the number of days missed due to inclement weather negatively impacts continuity of student learning and at a greater degree in rural areas. As global warming and climate changes impact our environment, educators can neither accurately predict nor forecast the weather. What they can do is better prepare for weather related school cancellations with alternate plans that will minimize, if not eradicate the loss of learning time and promote continuity of learning using what resources are available.

Research Question

What impact do alternative learning options implemented on school calamity days have on teacher and student perceptions of effective learning?

Summary

In today's era of high stakes testing and college/career readiness goals, schools must work collaboratively and innovatively to ensure continuity of learning for all students regardless of geographic location of schools and communities. Research indicates that interrupted learning due to unscheduled school closures has a negative impact on student learning. It is paramount that states address this issue, particularly in rural Kentucky and Appalachian school districts where school closure due to inclement weather often reaches twenty plus days per school year. With the technological advances of the past twenty years, schools must seek alternative and innovative options that provide continued learning from settings outside the walls of school building. Educators must begin to vision the "new normal" of education as one that includes multi-faceted options that propagate on-going learning. With climate changes and patterns of more severe weather on the increase, schools and districts must become more proactive in seeking alternative options in continuous learning opportunities for students due to weather conditions that cause school cancellations.

Definition of Terms

AMO – is an acronym for Annual Measurable Objective

Asynchronous learning – is defined as a student-centered method of instruction that uses online resources to facilitate the sharing of information outside the constraints of time and place.

AYP – is an acronym for Adequate Yearly Progress. Under the No Child Left Behind Act of 2001 students are expected to make adequate yearly progress in math and reading.

Distance Education- an educational institution or organization provides learner support but no face-to-face contact or on-site attendance is required from the learner. The support and structures provided do however offer equivalent quality and learning experience as traditional on site or face-to-face instruction. At present, online charter schools or universities are the examples most think of when distance education is mentioned.

Effective Schools Correlates – (Lezotte & Snyder, 2010) the correlates are:

1. Safe and orderly environment

2. High expectations

3. Instructional Leadership

4. Clear and Focused Mission

5. Opportunity to Learn and Time on Task

6. Frequent Monitoring of Student Progress

7. Home to School Relations

Blended learning – a combination of traditional face-to-face classroom interaction with the focus on computer mediated instruction.

NCLB – No Child Left Behind

Non-traditional instruction – instruction that in NOT the traditional teacher and student face-to-face instruction within a single classroom.

PLA - is an acronym that stands for Prior Learning Assessment

Synchronous learning – is defined as students are learning the same thing, at the

same time, in the same physical place.

CHAPTER TWO

LITERATURE REVIEW

This section describes the literature support that serves as the framework of this study. This study is founded on Effective Schools Research with a focus on time on task and opportunity to learn. In addition, this study researches the effectiveness of alternative methods of instructional delivery that benefit student learning including synchronous and asynchronous learning methods. This study explores the benefits of learning using various electronic and alternative approaches to learning versus face to face instruction with the teacher as the sage on the stage. It is more important that learning is taking place... and not the place where learning occurs.

Research supports more time in school is needed to raise student achievement. (Fitzpatrick, Grissmer, & Hastedt, 2011) A study on kindergarteners conducted by Fitzpatrick, Grissmer, & Hastedt, (2011), suggests that time spent in school is responsible for two-thirds of the gain students make. Balfanz and Byrnes (2012) assert that "being in school leads to succeeding in school" (p. 3) and that achievement is sensitive to school attendance. They further stated that absences the equivalent of two weeks, over the course of a school year negatively impacts student outcomes. Marcotte and Hanson (2010) stated that with an additional ten days of instruction student performance on state math tests would have increased almost 0.2 standard deviations. An increase in absences is of paramount importance to educators in poor school districts whose students are "reared in poverty and benefit most from being in school" (Balfanz and Byrnes, 2012, p. 4). Again, the question 21st Century educators

must repeatedly ask is; "How important is time spent on learning, regardless of where

the learning…and how the learning takes place?" Learning does not have to be

interrupted due to school cancellation and does not cease when one leaves the

confines of a school building. Learning today is becoming 24/7. Students have the

option through electronic learning methods to choose the time and place and place to

learn provided they are given that opportunity.

The United States currently has one of the shortest school years of the

industrialized nations (Marcotte & Hanson, 2010). Before the Civil War, urban

students went to school a minimum of 240 days while rural students attended school

three months in the summer and three months in the winter. The 180 day calendar

began to emerge after federal child labor laws came to pass and industrialization

spread throughout the country (Marcotte & Hansen, 2010). In 2009, of the schools in

the Southern Regional Education Board area, Kentucky had the fewest number of

required calendar days per year with 175 (Dixon, 2010). Currently, Kentucky

requires at a minimum of 171 instructional days per school year, four days less than

required in 2009. Add to this scenario the disruption of school time due to

unscheduled school closures and conditions are set for lower test scores, increased

failures and increased drop-out statistics (Marcotte and Hansen, 2010). Less time

spent on learning is less time to learn. With the increasing number of content

standards to be addressed in a given year, interruption of learning time and school

cancellations are further cause for alarm for students and schools in preparing to

reach proficiently on state assessments.

This study implemented alternate strategies during inclement weather days to promote continued learning that included packet work and a blended approach (internet, hybrid and distance learning) models. Research has emerged in the past ten years examining electronic learning and its effectiveness. In spite of numerous studies on the quality of electronic learning methods, the fact remains, some learning is better than no learning whether it be fostered through packets, assignments posted in an internet course shell or through live streaming capabilities via Skype or distance learning options.

In Figure 1 the framework guiding this study is graphically represented. This study is designed with the premise that effective schools recognize time and time on task as a critical component in the continuity of learning. How schools manage that time through alternative methods of delivery is changing in the 21st Century education landscape. This study recognizes alternative learning options that support and enhance learning regardless of where or how the learning takes place.

Figure 1. The Owsley County Snow Pilot Project Framework
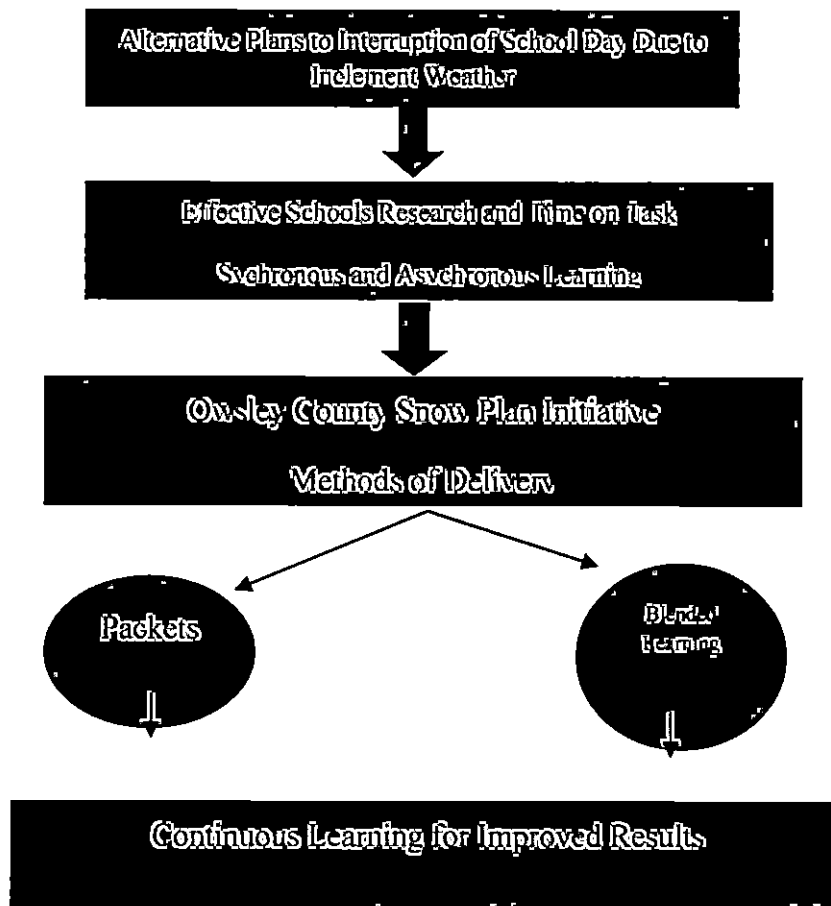
Effective Schools Research

The seven correlates of effective schools are outlined as follows: (Lezotte &

Snyder, 2010): instructional leadership, clearly stated and focused mission, safe and

positive environment, high expectations for all students, frequent monitoring of

student progress, frequent monitoring of student progress, maximize learning

opportunities, and positive communication between school, home, and community.

In relation to the correlate of a safe and orderly environment the snow pilot

project allows for teacher delivery of content to students while they remain at home

when weather makes travel to school unsafe. The design of the project allows for accurate teacher and administrative monitoring of usage.

The snow pilot project addresses high expectations in that it promotes rigor and relevance and allows teachers to increase student content knowledge while at the same time challenging students to use 21st century learning skills to complete assignments.

Instructional Leadership is addressed in that the snow pilot project allows for teachers to develop leadership skills in designing and engaging in conversations around the development of innovative ways to enhance teaching and learning to ensure learning of all students.

The snow pilot project has a clear and focused mission to perpetuate learning during unforeseen school closures while ensuring that continuity of learning continues. Lesson plans, instructional topics, and assessments allow for the delivery of clearly defined assignments and formative assessments to occur while participating in this nontraditional means of delivery of content.

Opportunity to learn and time on task is available 24/7 with the technology based snow pilot project via Blackboard learning in Owsley County Schools. There is no restriction of time or place. Correlates of effective schools (Lezotte & Snyder, 2010) indicate that a student's opportunity to learn and a student's time on task are important facets of improving a student's academic achievement. In effective schools, teachers allocate a significant amount of classroom time to instruction in the essential content and skills. For a high percentage of this time students are engaged

in whole class of large group, teacher directed, planned learning activities. Further research indicates that the instructional quality of the teacher is the most important aspect of improving student achievement in an asynchronous learning environment such as one in where students and teachers are both at home and learning is continuing and ongoing with adequate support provided.

Frequent monitoring of student progress is fully addressed in the technology based snow pilot project. Teachers and administrators can monitor usage and completion of tasks by staff and students using the class reports and performance dashboard features of Blackboard Learning. Teachers and students can use multiple tools in Blackboard to enhance though processes and learning while utilizing 21st century learning skills for students as they are prepared for college classes using similar delivery mechanisms.

The snow pilot project takes home to school relations to a new level. In fact, school comes home in the snow pilot program. Communications between school and stakeholders increase. Stakeholders can see in real time what students are doing and learning via Blackboard and Infinite Campus's Parent Portal.

Time on Task

Marcotte and Hansen (2010) noted that increased instructional time is as effective as the other commonly sought interventions designed to increase learning and performance. Conversely, a decrease in instructional time would decrease learning and performance. According to Marcotte & Hansen (2010) there are hazards in ignoring the time in school factor. One of those hazards happened to be fairness to

schools at risk of being sanctioned for poor performance; these schools can face

greater and more severe consequences if weather or other schedule disruptions limit

uninterrupted learning and negatively impact student achievement. The impact of

weather on instructional time and learning has not been historically under the control

of administrators and teachers. With innovative thinking through the support of

legislators and visionary leadership, schools have the power to maximize time on task

by developing alternative methods to support continuous learning when school is

cancelled.

Synchronous and Asynchronous Methods

According to O'Malley and McCraw (1999) synchronous and asynchronous

delivery of instruction functions in two dimensions, time and space. They further

define synchronous as instruction in which delivery and receipt of material happen at

the same time. They define asynchronous learning as learning where the delivery of

instruction occurs before the student receives it. O'Malley and McCraw (1999)

further define two levels of place as same and different. In same place instruction the

teacher and the student are both in the same physical space. In different place

instruction, the location in which the teacher delivers instruction is not the same

location as the location in which the student receives the instruction.

Synchronous

Synchronous instructional delivery methods are defined as same time/same

place delivery of instruction. Teachers and students are together at the same time

doing the same things. These methods are traditional methods of instructional

delivery with the teacher lecturing students in a face to face classroom setting within

an 8:00-3:30 school day. However, synchronous learning can also occur via live

distance learning (i.e. Skype. LYNC, Moodle, etc...). Teachers can offer the personal

relationship of teacher in front of the students through electronic cameras on the

computer. Students can interact verbally with the teacher and other students via

Skype. Synchronous means of education available through student presence in school

a school building sitting in front of the teacher for rural students in Appalachia brings

with it numerous obstacles to overcome for both students and staff (Duncan, 1996).

When weather causes numerous school cancellations, learning is interrupted for

students. One obstacle schools in rural Appalachia must overcome is the loss of

learning time due to school cancellations as a result dangerous and impassible roads

during inclement weather. Rural schools and students are more negatively impacted

by the inability to educate students when schools are closed. Survey data from the

Owsley County School District has indicated a significant increase of student

accessibility to the internet and having the recourses to access it compared to what

was evident two years prior. Research indicates that asynchronous distant education

was as effective as synchronous traditional learning methods and is cited as a means

to overcome this barrier to learning for students in rural areas (Cavanaugh, Gillan,

Kromrey, Hess, & Blomeyer, 2004). A meta-analysis of the effects of distance

learning on K-12 students using 116 effect sizes concludes that asynchronous

distance education method was as effective as synchronous traditional learning

methods (Cavanaugh, et. al., 2004). Pedagogy and teacher efficacy is a critical

component in the success of any technology based delivery instructional program. One must remember that technology alone does not produce learning gains. It is the correct use of instructional tools and strategies that matters from a teacher efficacy perspective (Hannum, Irvin, Banks & Farmer, 2009). Good teachers need to be equipped with good technology skills in order to manage a 21st Century classroom using multi-methods of delivery.

Asynchronous

The ability to educate students using asynchronous means has evolved with technology. New technologies can be used to enhance and continue learning while students are at home during inclement days. Asynchronous learning is defined most succinctly as learning that occurs when students and teachers are not in the same place at the same time doing the same things. In the past asynchronous learning may have been provided via a pencil and paper distance learning course or a recorded lecture. Advances in technology now allow for asynchronous learning to occur via internet using tools such as Blackboard Learning (K-12) and Edmodo. Further research indicates the instructional quality and efficacy of the teacher is the most important aspect of improving student achievement in an asynchronous learning environment such as one in where students and teachers are both at home and learning is continuing and ongoing with adequate support provided.

Packet Learning

Packet learning is one such alternative method that can be used to enhance learning when school is cancelled due to inclement weather conditions. In schools

and districts where there is limited connectivity, packets may be the answer to the

initial stages of bridging the gap between no learning and some learning during times

of school cancellations. One must only think back to the origins of the pencil and

paper correspondence course to see the logic here. In the absence of face-to-face

instruction, institutions of learning often offered correspondence courses in which

students completed pencil and paper work that was then mailed to a teacher for

grading. This paper and mail system is the foundation of packet learning. Students

are given pencil and paper activities to complete that are then returned to the teacher

for evaluation.

The packet approach was a part of the plan proposed by the U.S. Department

of Education during the H1N1 crisis. This plan created a framework for continuity of

learning that presented options ranging from hard copy packets to virtual classrooms

(Department of Education, n.d.). Packets may not be the most effective instructional

delivery, but in the absence of other options, it is better than nothing when used to

review of material to support prior learning or used to prepare the learner prior to the

introduction of new learning.

Blended Learning

The 1990's saw an increase in the usage and acceptance of correspondence

courses. As a result, those who supported their use and those who opposed their

usage sought to prove they were right. The result was the beginning of media

comparison studies. ("NSD: No significant", 2010) Thomas Russell compiled the

results of this work in his book, *No Significant Difference: A Comparative Research*

Annotated Bibliography on Technology for Distance Education. Russell (as cited in

"NSD: No significant", 2010) set out to compare the same student's success in a

course when the only variable was whether the course was via distance education or

face to face. What his study found was that there was no significant difference. In

short, his work illustrates that as long as the message is the same the media used to

deliver does not matter. However, Russell (as cited in "NSD: No significant", 2010)

does point out that after several generations of findings, the question often shifted to

"Can we improve learning by using technology tools in education?"

Here the media comparison studies showed significant differences and Russell

summarizes it thusly:

> These studies tell me that there is nothing inherent in the technologies that
>
> elicit improvements in learning. Having said that, let me reassure you that
>
> difference in outcomes can be made more positive by adapting the content to
>
> the technology. That is, in going through the process of redesigning a course
>
> to adapt the content to the technology, it can be improved. (as cited in "NSD:
>
> No significant", 2010, p. 2)

The U.S. Department of Education in their study, *Evaluation of evidence-*

based practices in online learning found that "students in online learning conditions

performed modestly better than those receiving face-to-face instruction." (Means,

Toyama, Murphy, Bakia & Jones, 2010, p xiv). It should be noted that of the 84

studies included in this work, only five involved K-12 students while 37 involved

undergraduate college students and 32 involved professional or post graduate level

students thus again revealing that distance learning has historically been within the

realm of post-secondary education. However, such instructional delivery methods

have been used successfully in other countries often found under the tag electronic or

"e-learning," an all-encompassing statement used to describe electronic learning

methods (Means et al., 2010). For example the International Association for K-12

Online Learning in its document titled Continuity of Learning (2012) it outlines and

discusses the plan used in Singapore to ensure continuity of learning. Singapore

began a systemic plan to ensure continuity of learning after 2005's SARS outbreak

thus establishing a seven year track record. Singapore used an e-leaning plan and

required teachers in all secondary schools to provide online learning opportunities.

Singapore uses e-learning once a year regardless of school cancellation that included

a quarterly e-learning drill where all schools shift to e-learning for a week. This

created a model of normalcy and expectation so that everyone was prepared to use the

model in case there is a forced shut down of face to face instruction ("Continuity of

learning", 2012).

Although information relative to implementing a short term technology based

P-12 instructional delivery system in the US as discussed is limited, a 2009 survey by

Picciano and Seaman estimated that upwards of a million US K-12 students took

online courses in the 2007-2008 school year (Means, Toyama, Murphy, Bakia &

Jones, 2010). Hannum, Irvine, Banks, & Farmer (2009) indicated that one-half of

students who were enrolled in rural education distance education classes at the P-12

level were satisfied and that a majority of these students finished the course work

required to complete the program and or receive credit for their work. It is also noted

in their work that rural school districts have difficulty in offering upper level classes,

advanced placement classes, and vocational courses because of financial and human

capital were able to access electronic course options creating a more equitable access

for all.

Additionally, all across the United States rural schools and their unique

context and lack of resources provide for a set of unique challenges in meeting the

instructional needs of students. According to Irvine, Farmer, de la Varre & Keene,

(2009), one third of the schools in the United States are rural and serve nearly 10

million students. Rural schools are more likely to have fewer than 200 students. In

fact, more than 50% of rural schools have fewer than 400 students (Irvine et al.,

2009). Combine small class size with geographic isolation and lack of staffing and

other resources, and you have the setting for limited class offerings. Online distance

education has been offered as one possible solution to overcoming these obstacles

(Irvin, et al., 2009).

The use of the internet and online distance education has the potential to

change radically the learning resources of rural American schools. An internet

account can make the differences between the large and the small school fades away.

Remote location, geographic isolation, and access to learning barriers fade away

when schools connect learners on the internet (Barker, Hall, & Wood, 1995). While

Barker, Hall & Wood (1995) detailed the difference online learning can make, a

recent issue of *Education Week* (Davis, 2012) details the growth and impact of

technology on teaching and learning. Several states in the United States now require high school students be allowed to take on-line courses. Florida and Utah require that students take at least one online course in order to graduate (Davis, 2012). In a move similar to the move to share resources that has been made between Owsley, Lee, and Madison counties, eight school districts in Utah have formed a coalition to provide students with online education. Patricia Levesque, Executive Director for the Foundation for Excellence in Education, states, "Kids can take virtual courses across district lines" (Davis, 2012, p. S5).

Distance education can take on a number of formats including instructional television (ITV), computer-based instruction (online learning), or a hybrid model that includes both online learning and some face-to-face instruction. The rapid growth of educational technology has helped to drive many of these distance education formats. The every expanding educational technology tools not only impacts educators who instruct in an online environment, but educators who teach in a more traditional classroom as well. Because educational technology is generally available to all educational settings (urban, suburban, rural, isolated, etc.) it has been called the great equalizer for students. Now, not only students in the larger, urban areas have easy access to museums, national exhibits, and other opportunities located only in cities, but students in small towns and villages can access the resources of the world though the power of the Internet. Given these new technological resources, educators who work in even the most isolated areas are only limited by the power of their imagination. Schools who struggled to offer specialty courses in mathematics, foreign

language, the arts, or the sciences can collaborate with other schools that have those resources, thereby making what was economically unfeasible, a reality.

The National Research Center on Rural Education Support (NRCRES, 2010) has investigated rural schools' use of distance education and the resulting feasibility of being able to offer advanced and/or upper-level courses in math, science, and/or foreign languages though the use of distance education technologies. (National Research Center for Rural Education Support, 2010). Rural schools often use distance learning to provide students with advanced courses and a more comprehensive curriculum that they otherwise would not have access to. Distance learning allows these schools to get around such barriers as lack of teachers, funding, or adequate class sizes (Irvin, Farmer, de la Varre & Keene, 2009).

The use of blended learning is a fairly recent development for K-12 public schools. With blended learning approaches students experience both face to face instruction and computer based activities and instruction. By moving part of the traditional classroom work online, schools and students can use resources and time much more flexibly than could be done in the traditional school environment (Pennsylvania State University, 2009) In this model, both synchronous and asynchronous instruction and learning can occur within a course.

As in Owsley County's Snow Pilot Project, synchronous instruction occurs via video technologies such as Lync and Mondo Pad to deliver real time lecture and discussion between two or more locations. Asynchronous learning occurs within the

same course as well as teaching and learning take place using email and Blackboard tools such as discussion boards, messages, blogs and other content items that can be accessed at any time by the student equaling 24/7. Both face to face learning and via the internet learning occur.

Summary

Unforeseen school closures interrupt student learning. Technology and planning can ensure that structures are in place to compensate and counteract the loss of learning that can occur when students are not in school. Consequently, the same type of structures can be used to allow districts to navigate around the barriers of limited resources and increasing the opportunities for student learning to continue in a nontraditional format that is student friendly and meets the needs and interest of today's learner.

CHAPTER THREE

METHODOLOGY

This section describes the research question, context and sample population, development of the Owsley County Snow Pilot Project, research design, instruments and limitations of this study.

Research Question and Purpose

This study analyzed the one research question of this study: what impact do alternative learning options implemented on school calamity days have on teacher and student perceptions of effective learning? The purpose of this study was to develop and examine alternative methods that promote continuity of learning on school days cancelled due to weather related issues. This study examined the Correlates of Effective Schools, time on task, and alternative delivery models with regard to learning. This study hypothesized teacher and student perceptions would support the positive benefits of implementing alternative methods to learning to keep students on task that included packet work and synchronous and asynchronous methods of learning during inclement weather days.

Context

Two school schools in the Owsley County school district were involved in this Snow Pilot Project initiated by the Kentucky Department of Education. The participating schools were Owsley County Elementary School grades K-6 and

Owsley County High School grades 7-12. Owsley County is located in rural

Appalachian, surrounded by rugged terrain and winding, country roads in Boonville,

Kentucky. "Since the federal government began tracking poverty rates in 1959,

Owsley has ranked as one of the nation's poorest counties" (Potts, 2012, p. 5). The

county population is predominantly Caucasian. The per capita income in Owsley

County is $14, 365.00 ("Economy in Owsley," 2010).

Owsley County is a small county covering approximately 197.41 square miles

(State and county, 2012). Socioeconomic factors from 2008 census data indicated the

median household income was $19,829 per person and the median per capital income

was $10,742 (U.S. Census Bureau, 2008). The percentage of persons living below

poverty was 37.6% and persons 25 years-old and older with high school diploma or

GED equate to 907 persons countywide out of 4,634 according to the same Census

Bureau data (2008). Persons 25 and older with college degree were 152 out of a total

population of 4,634 persons which equated to only 3.28% of individuals having a

college degree in the county (U.S. Census Bureau, 2008). Owsley County Schools

had a free and reduced student lunch count of 91% for the 2009 school year

(Kentucky Department of Education, 2010). Census Data from 2010 revealed little

change. Of the county's population 25 and older, 22% had less than a 9th grade

education. The percentage with a high school degree hovers near half at 57.7%. A

mere 2.9% of the same population had a graduate or professional degree. Of the total

estimated population of 4,671, 41.5% live below the poverty level. There is little

ethnic diversity as 98.5% of the population identifies themselves as white (US Census

Bureau American Fact Finder, 2006 – 2010). A report published on February 11,

2012 by the NY Times entitled "The Geography of Government Benefits" indicated

that 53.07% of the county's total individual incomes were the result of government

assistance (White, Gebeloff, Fessenden, Tse & McLean, 2012). Owsley County,

according to Soil Survey of Jackson and Owsley Counties, Kentucky , is comprised

of 545 square miles of narrow, long ridge tops, steep hillsides and valleys. The same

study also noted that most of the survey area was wooded. Average snowfall is 16

inches and in a 9 day average at least an inch of snow is on the ground (1989).

Geographic isolation can be a factor as there are only an estimated 24 persons per

square mile in Owsley County (US Census Bureau American Fact Finder, 2006 –

2010). The State Primary Road System (Kentucky Transportation Cabinet, 2011)

illustrates that state highway 30 and state highway 11 are the only state primary roads

in the entire county of 545 square miles. Branches of HWY 11, 28, and 30 are state

secondary roads. The same graphic (Kentucky Transportation Department, 2011)

shows that a large portion of the county is accessed via simple paved or unimproved

roadways. While initially 16 inches of average snowfall seems minor, snowfall on

steep hillsides and long, narrow ridge tops of unimproved roadways revealed a

picture of hazardous travel.

Table 1 describes the student demographics of each school at the onset of this

study in the 20010-2011 school year.

Table 1

Student Demographics for school year 2011/2012

Demographics	OCES	OCHS
Total # of Students	378	382
Caucasian	373	376
African American	2	6
Hispanic	3	0
American Indian	0	0
Asian	0	0
Other	0	0
Limited English	0	0
Free & Reduced Lunch	100	93.6
Students with disabilities	63	61

Note. Information provided in this table was retrieved from the Owsley County Infinite Campus Data System and the 2011/2012 School Report Card.

Table 2 describes the teacher/administrator participant and content demographics for 2010-2011

Table 2

Teacher/Administrator Study Participants' Demographics for 2009-2010 School Year

Demographics	OCES	OCHS
Total # of Teacher/Administrator/Counselor Participants	P-6	7-12
Science Content Teachers (only 5-6 is departmentalized)	2	2
Math Content Teachers	2	4
Social Studies Content Teachers	2	3
Language Arts Content Teachers	2	4
Special Education Teachers	5	4.5
Practical Living/ Vocational Studies Teachers	2	3
Administrator/Counselor	2	3
Average years' experience	11.3	8.6

Note. Information provided in this table was retrieved from Owsley County's Infinite Campus Data System and 2009/2010 School Report Card.

One initial barrier was determined in instituting a technology based

asynchronous instructional model in that schools and homes in Eastern Kentucky,

such as in Owsley County, have connectivity and technology barriers to overcome.

The 2009 – 2010 Owsley County Technology Readiness Survey data reflects that

only 44% of students in Owsley County had a computer at home. Forty percent had

internet access (Owsley County School District, 2010). However, the 2010 - 2011

Technology Readiness Survey data results indicated that 75% of students and their

families have computers in their home with internet access (OCSD, 2010). This

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tremendous gain could be attributed to a more efficient means of administration of the

survey with teacher assisting students as this was completed, regardless of the why,

the data said that Owsley County students had access to the technologies they needed

to implement the model.

A survey of slightly over half of the students enrolled in the Owsley County

School district was conducted. A survey of all teachers was conducted. With 75% of

surveyed students and 94% of surveyed teachers having the needed technology and

internet access, it was estimated that less than 25% of those in the school system will

need technology assistance or alternate means of delivery of instruction due to lack of

computers or internet access. Continuity of learning was provided for these few in

the form of packets of information, reading or handwritten assignments. This multi-

pronged approach in delivery of content to students who cannot attend school due to

weather extremes provide an opportunity for the continuation of learning during loss

of school days due to extreme weather conditions that cause school cancellation in

school districts in Appalachia.

Student families with internet connectivity determined 328 of 439 surveyed

students surveyed in 2010 had internet access. The remaining 111 surveyed students

did not have internet access; therefore, an alternative plan for these identified students

was developed. (OCSD, 2010) Area businesses were informed of the student

addresses located in isolated areas and their barriers to learning as a result of the lack

of internet connectivity. The collaborative partnerships with school and

business/communities were strengthened to improve accessibility and learning for all.

The Owsley County Snow Pilot Project

To begin the Owsley County Snow Bound Initiative, an Owsley County Snow

Pilot Project team was formed in the fall of 2010 to develop, implement and monitor

the alternative methods used in the project. The team consisted of: the district

superintendent, principals at the middle/high school and one elementary school and

counselors, school media specialists and central office staff members, and district

technology staff. The team was named the Owsley County Administrative Team

(OCAT). The team met in the November of 2010 to develop the focus of the study,

determine who would be involved, what content would be included in the packets and

what data would to be collected as a result of this study.

In anticipation of unpredictable weather patterns that might befall the study's

implementation years ahead that could pose a limitation to the study, the team

decided to analyze teacher perceptions of the alternative options to continued

learning. This proved to be a sound decision as in year two and three, Owsley

experienced unprecedented years of little snowfall and fewer school cancellations

than were documented in previous years.

Year One

During the winter of 2009, plans were developed for the snow pilot initiative.

The Snow Pilot Project implementation team (OCAT) met and determined K-12

teachers would send home "packets" of work for students to complete during snow

days. Focus of the packets centered district-wide on content vocabulary. In year one,

Question 7eight school days.

Owsley County teachers were instructed by to develop pencil and paper

learning activities (packet learning) to be sent home with students with instructions

for completing those assignments on days when school was not in session, thus the

name the "Snow Packet." Focus of the packets was on review of previously taught

content vocabulary. The goal was to have all K-12 teachers develop a packet of

lessons designed to review vocabulary and provide activities and assignments that

promoted drill and practice of previously taught material. Teachers were also

instructed to use some existing technologies such as Study Island where appropriate,

but paper copies had to be available as well. Reviewing previously taught material at

home on snow days minimized time spent reviewing material once the students

returned to school. Introducing new vocabulary would also help familiarize students

with the new words and definitions prior to the beginning of a new unit.

Teachers were expected and directed to develop up to ten days of quality

lessons for each content packet. Teachers explained the purpose of the packet to the

students in assemblies and in classrooms. Communication flyers to parents informed

them of the packet focus and expectation of student completion of these assignments

on snow days. Principals reviewed the packet expectations and lesson plan template

with teachers in faculty and department and grade level professional learning

committee meetings. Guidelines were developed for the assessment and monitoring

of the completed and returned materials. Consequences for non-completion of packet

materials by students were also developed. Building level principals were advised to work with their School Based Councils in developing a means of monitoring packet completion of student work. During the 2010-2011 school year, the district was allowed to count six days of student instructional time from school cancellation days. Information gathered from the Student Internet Accessibility Survey determined internet connectivity was a barrier to some families in being able to provide equal access to lesson via electronic means. The principal met with students in grade level assemblies to distribute the first set of lessons to students and explain the process and procedures. Principals monitored approaching weather patterns and learning packets were sent home one day in advance of weather forecasts indicating approaching weather conditions could lead to school cancellations. Packet work was collected and monitored by respective teachers and student grades were recorded. In year one, Owsley County missed school days due to weather causing school cancellation. A paper and pencil feedback survey was sent home with students in January 2011. These were reviewed by 1ˢᵗ period teachers and then sent to the respective principal's office at each school.

Year Two

Year two added the alternative option of a blended approach using on line learning during snow days for students in grades 4-12. Prior to the beginning of year two, 2011-2012, Owsley County worked with community business leaders in developing a plan that would ensure connectivity to all Owsley County students. Business leaders worked collaboratively with the school district leaders and OCAT

team to determine student addresses that did not have connectivity. Businesses

worked diligently to provide equal access. The goal of year two was to move more

away from pencil/paper packet work toward a 100% on line blended or hybrid

method of electronic learning on school cancellation days for grades 4-12. In year

two, The Owsley County School District had in place: Carnegie Learning

Mathematics and Cognitive Tutor, A+, Study Island, Renaissance Place, Discovery

Education Assessment and RtI probes, and ACT prep through Number2.org and

ACTstudent.org. Additional instructional and technology-based resources available

to enhance instruction included: Thinkfinity, teacher web pages, teacher and student

email accounts, as well as 100 iPads and 40 iPod Touch devices that Owsley County

Elementary School had available for check-out. The focus of year two was on new

learning related to curriculum and content standards with learning being measured by

a pre and post test. In addition, virtual classrooms became an alternative option in

year three. Through Discovery Education students could log on to

www.discoveryeducation.com and access their own individual homepage. From here

students could access lessons for each class on their schedule. To accommodate

students without electronic access, paper printouts of the same or equivalent content

lessons were provided to those students who did not have access. Units of instruction

were designed to encompass ten days of learning to coincide with the ten days for

which the district had approval to use alternate instruction.

Year Three

During year three (2012-2013) the district had numerous technology-based learning programs, the most significant for blended learning being Black Board, in place that supported and complimented electronic learning methods that enhanced uninterrupted learning during times of forced school closures. The focus for grades K-3 remained as packet work with a focus on vocabulary. Grades 4 – 12, lesson were designed to be thematic in nature, with a more concentrated focus on reading, writing and math. All content teachers were expected to have lessons and assignments for students using an interdisciplinary approach with math, writing and reading embedded within their content work.

Year three was designed to more fully utilize Black Board to deliver lessons to students. Teachers were trained on how to access Black Board, enroll users, design on line learning modules and access and create class reports. Teachers were then assigned to grade level teams to design units of instruction. This method of delivery served to better prepare students for on line college courses at the middle and high school levels.

Research Design

This study used a qualitative research design. Survey questions and open response comments provided data to determine perceptions of the alternative methods of learning implemented in this study to promote continuity of learning during school cancellations. The qualitative design allowed the researcher to analyze teacher and student perceptions of the Owsley County Snow Plan Initiative to conclude if the asynchronous method of delivery was as effective as transitional or synchronous

ways of learning. Data gathered allowed a detailed story to emerge that described

teacher and student beliefs of the alternative methods used in this capstone and its

impact on teaching and learning effectiveness, meeting individual student needs, ease

of access to support learning, lesson preparation and rigor compared to traditional

methods.

Instrumentation

This study used ten survey instruments to collect data. Three teacher

perception surveys and three student perception surveys were administered that also

included an open response opportunity. The perception surveys are referred to as the

Teacher Snow Pilot Perception Survey and Student Snow Pilot Perception Survey.

Four separate Technology Readiness Surveys gathered data on technology

accessibility and connectivity of teachers and students. Additionally, archival

documents such as lesson plans, emails, meeting agendas, etc. were collected. These

sources were used to gather and triangulate data. Each of these is described below.

Teacher Perception Surveys

Three Teacher Perception Surveys were administered. The first was

administered in March 2011 after one and a half years of the initiative that included

information on packet learning. Surveys in years two and three collected data on the

blended method of both packet and electronic lessons. The second survey was

administered in March 2012 and the third survey in February 2013 after two and a

half years of the Owsley County Snow Pilot Initiative. The final survey included

cumulative information from the inception of the initiative up to the second semester

of 2013. A variance in the use of packets only and the blended method is a result of

barriers to computer accessibility and connectivity at home as well as developmental

factors. Students in grade levels K-3, as determined by teachers, were administered

the packet only option. Additionally, K-12 students throughout the study who had no

computer accessibility or internet access were also provided packets when electronic

options were limited or non-existent. Owsley County High School students in grade

4-12 in year three had an additional opportunity of blended learning through an

electronic collaborative model. Owsley County High School, in partnership with

Madison County Schools in Richmond, Kentucky and Lee County Schools in

Beattyville, Kentucky teamed to provide a distance learning/teacher sharing option

referred to as the electronic collaborative model. On school days where school was

cancelled in Owsley County but not in Madison County, Owsley County High School

students were able to move forward with uninterrupted learning accessing the

Madison and Lee classrooms in session. If school was cancelled in all of the schools,

the lead instructor had the capability of providing on-line instruction from home as

students were able to and expected to access these lessons from home as well.

Technology Readiness Surveys

Three separate Technology Readiness Surveys provided data with regard to

internet accessibility and ease of use of technology from home for both students and

teachers. Information gathered from this survey informed school leaders of the need

to work with community business partners in ensuring accessibility and connectivity

for all.

The student and teacher Technology Readiness Survey consisted of twelve questions. These questions were developed by the district technology staff in conjunction with district administration and KETS guidelines. Data helped determine what families and students had internet capability, internet speed and access to computers at home. The surveys were administered four separate times in school years 2009 -2010, 2010- 2011, 2011-2012 and 2012-2013.

Data Analysis Plan

Data were analyzed to determine the impact of the asynchronous learning options for learning that promoted continued learning on snow days to promote continuity of student learning. Tables 3 and 4 illustrate this plan.

Table 3

Data Analysis Plan

Research Question	Instruments	Analysis Technique
RQ1 What impact does asynchronous learning options implemented on school calamity days have on teacher and student perceptions of effective learning	Three Teacher Perception Surveys (2011, 2012, 2013)	Descriptive Statistics
	Three Student Perception Surveys (2011, 2012, 2012)	Descriptive Statistics
	Four Technology Readiness Surveys (2009, 2010, 2011, 2012)	Descriptive Statistics
	Archival Documents (2009-2013)	Descriptive Statistics

Note: The information gathered from teachers and students in 2010 and 2011 was preliminary and limited in scope. The information did not impact the program other than determining that K-3 teachers preferred packet learning.

Table 4
Planned Approach Table

Research Question	Alternative Options by Grade and Year	
RQ2	High School 9-12	2010/2011 Packet 2011/2012 Blended 2012/2013 Blended
What impact do alternative learning options implemented on school calamity days have on teacher and student perceptions of effective learning?	Middle School 7-8	2010/2011 Packet 2011/2012 Blended 2012/2013 Blended
	Elementary 4-6	2010/2011 Packet 2011/2012 Blended 2012/2013 Blended
	K-3	2010/2011 Packet 2011/2012 Packet 2012/2013 Packet

Limitations

This study is no exception in having limitations. All studies have limitations. Below are several limitations of the Owsley County Snow Pilot Project.

1. This study's population examined one small, rural school district in Kentucky.

2. The sample schools were predominantly of Caucasian descent and high poverty with limited diversity.

3. The sample size of the entire study was limited to one school district with limited data collected at this preliminary stage of the study.

4. Attrition of teachers from the original sample group could have impacted teacher perceptions of the alternative options. All teachers completing the survey may not have been involved in each year of the study from start to finish.

5. To be in this snow pilot project, the state determined schools could apply that had missed 20 or more days of school each of the three years prior to application. Owsley County qualified. An unprecedented lessor amount of snow fall and school cancellations look place in Owsley County during this three year study compared to patterns of previous years. This limited data impacted findings.

CHAPTER FOUR

FINDINGS, IDENTIFIED STRATEGIES AND PRODUCTS

The intent of this capstone was to examine the benefits of a Kentucky State Department of Education approved snow pilot project that provided alternative options to identified districts in finding solutions to interrupted learning during inclement weather school cancellations. The district at the center of this capstone is the Owsley County Schools System, grades K-12. As stated in the introduction section of this study, in order to be a part of this state approved snow pilot project, districts had to have missed and average of twenty or more snow days three years prior to this pilot. Owsley County averaged 25 days for the three years prior. During this three year study, Owsley County missed a total of twenty days in 2010-2011, ten days in 2011-2012 and seven days in 2012-2013. These numbers for 2010 – 2013 indicated an unprecedented fewer number of days than historically missed in Owsley County. Data therefore is limited in the results and findings of this preliminary study. An unintended consequence therefore of this study became setting up the study in preparation of future years where it is anticipated inclement weather cancellations will possibly return to historical highs.

The one research question at the center of this study was:

1. What impact do alternative learning options implemented on school calamity days have on teacher and student perceptions of effective learning?

Qualitative results and descriptive statistics provided in chapter four included data analyses related to survey questions and open response comments to questions covering the alternative options of packet and blended learning implemented in the Owsley County Snow Plan.

Technology Readiness Surveys

Technology readiness surveys are administered each year by the school district and the results are submitted to the Kentucky Department of Education (Kentucky Department of Education, 2013). Reports for each year can be accessed there.

Teacher

Teacher Readiness Survey results from the 2009 – 2010 school year showed that 95% of the teachers in grades K-12 in the Owsley County School System had computer availability at home. Eighty eight percent of the teachers indicated they had internet connectivity from home. The Teacher Readiness Survey results indicated 75% of the teachers had fast speed internet service from home.

In the 2010- 2011 school year, 95% percent of teachers surveyed indicated that they had a computer at home, and 94% said that they had internet access at home. Ninety-three percent had DSL internet access.

In 2011 - 2012, 92% indicated that they had a computer at home and 92% said they had internet access at home. Ninety percent indicated that they had DSL internet access.

In 2012 - 2013, 92% of teachers surveyed indicated that they had a computer at home, and, 90%, of the teachers said they had internet access at home. Eighty-nine percent said they had DSL internet access.

Student

In the 2009 – 2010 school year, 44% of students indicated that they had a computer at home. Forty percent said they had internet access. Twenty-nine percent had DSL internet access.

In the 2010 - 2011, 83% of students said they had a computer at home and 75% had internet access. Seventy-five percent had DSL internet access. Grades K-3 were provided the packet learning alternative option only as teachers felt this option was more developmentally appropriate.

In the 2011 – 2012 school year, 84% of students indicated they had a computer at home. Eighty percent said they had internet access with 80% of those having DSL internet access.

In the 2012 – 2013 school year, 83% of students said they had a computer at home and 74% said they had internet access. Sixty-two percent of those had DSL internet access; however, 8% indicated they had access via a satellite dish or other means.

Teacher Perception Surveys

Three Teacher Snow Pilot Perception Surveys were administered during this study. These surveys was designed to determine teacher perceptions of the use of

electronic and packet learning as an alternate means in promoting continuity of

learning when school was cancelled.

Packet Work Option Results (Grades K-3)

Elementary teachers in grade K-3 that were administered packet work

believed packets were the best medium in delivering instruction on school

cancellation days. Therefore, throughout this study, these students only received

learning packets. Results from teacher surveys indicated teachers designed packets

that covered a review of vocabulary. Teacher comments on the open response portion

of the survey indicated students scored well on vocabulary quizzes the day they

returned after school cancellation days. Teachers expressed the vocabulary review

kept students in a learning more and benefited the students and teachers with less

learning time interrupted and less time spent reviewing vocabulary when school

resumed. Teacher comments indicated packet work was helpful to parents. Packets

provided parents with parent friendly work for them to assist their child at home.

Teachers commented grading student work was somewhat time consuming. More

time than anticipated was required to run copies and have packets available to

students and parents. Teachers commented packet completion rates were getting

better each year of the initiative. A summary of teacher and student comments are

noted below. The letter indicates student(S) or teacher(T) comments.

T: Students seem to be more familiar with the vocabulary words when we

come back to school after a couple of snow days.

T: When students come back to school, I spend less time reviewing material taught before school let out. Kids seem to be in a learning mode and less lethargic when they return.

T: Parents appear to help students with the packet work. I have realized little things like packet work provides parents with something to do with their kids on days off.

T: We decided as a staff that the packets were better for our age level of learner (K-3). The participation rates of completed and returned packers seem to be higher with the smaller students than our upper elementary teachers are getting.

S: I like packets. My Mom likes them too.

S: Too many papers. I'd rather be in school.

S: The packets gave me something to do when I was stuck at home. The assignments kept the words fresh in my mind.

Blended Option Results (Grades 4-12)

Perception results in grades 4-12 indicated an evolution from packets to blended learning alternative options on snow days. The OCAT team utilized advanced technology resources to develop and implement electronic alternative options that created a blended approach. Teachers were trained and equipped to offer asynchronous methods of delivery from a teacher's home to the student's home. Lesson options varied from; retrieving and posting lessons on blackboard, creating on-line modules, using on-line chats, multiple modalities that connect the teacher with students from home and the collaborative teacher sharing

option. Collective teacher and student comments are summarized below. The first letter indicates teacher(T) or student(S), the second letter indicates the grade level. (E= elementary (grades 4-6), MS/HS= grades 7-12).

TE: Surprisingly, upper elementary grade students accessed the electronic assignments regularly. Students who get bored being home on snow days took advantage of the on-line assignments.

TMS/HS: Some teachers and students had difficulty accessing the on-line work. More than an access barrier, it appears to be a technology skills barrier. As a result, we need to train teachers and students better and use this method of delivery more frequently throughout the year rather than just on snow days.

TE: I did not think I would like moving away from packet work at the upper elementary level but I am now a believer. Electronic work cuts down on paper costs, cuts down lost assignments and cuts time needed to run copies. Teachers can readily make adjustments in assignments. Once packets are run off, that is it.

TMS/HS: Having the online alternative option prepares high school students for college and dual credit classes. Kids expressed they felt like they were being treated more like adults through the online learning.

TMS/HS: I was apprehensive at first about online teaching and learning. The problem was me. After I learned how to Skype, provide an on line chat through the collaboration module of blackboard and enter lessons and attachments, it became an exciting new way to teach for me. Others have shared a similar feeling.

TMS/HS: I see an improvement in student assessment results. I cannot say definitively that it is a result of continued learning on snow days…and we have had fewer days missed than we have in the past. But…kids seem to come back more ready to pick up where they left off.

TMS/HS: I found the blended option to be helpful. It is like differentiation of instruction; one size does not fit all. Also…still having the packets as an option for middle school and high school students was helpful for students in our county who still do not have the connectivity they need to effectively engage in the on-line options we are making available.

SE: I liked being able to get help from my teacher on line. The worksheets were sometimes confusing but on line, I could ask questions.

SE: I never got any feedback on the packets. Sometimes I had trouble with getting to assignments electronically.

SMS/HS: It was kind of fun being able to see my teacher from home or chat with them and other students in my class on a snow day.

SMS/HS: If this is what college is like, maybe it is not so bad.

SMS/HS: Finally, teachers are doing something that hits the way I like to learn. Some of my teachers are good at teaching in front of the class. Some bore me to death. I hope teachers begin to do more with this way of teaching and not just wait for snow days!

SMS/HS: We work enough when we are in school. I do not want to have to work on a snow day. I am not in favor of the Snow Pilot Project.

Teacher Perception Survey and Descriptive Statistics Results

Some descriptive statistics were collected using the Teacher Perception Surveys administered. Survey questions provided data on what impact unplanned school closure due to weather conditions had students academically? Eighty percent of the teachers felt missing school on snow days negatively impacted student learning if alternative options for continued learning were not available. Eighteen percent of the teachers felt missing school on snow days had no effect and two percent believed days off had a somewhat positive effect if not in excess. Thirty-two percent of the teachers responded that the best thing the school could do on snow days was to send home packet work. Fifty-five percent thought on line lessons were more favorable. Thirteen percent preferred add instructional days to be added to the calendar at the end of the year. As a result of the snow pilot initiative, 82% percent of the teachers commented they have increased their knowledge of 21st Century teaching and learning skills. Teachers commented they are now more skilled with instructional technology. Sixty-seven percent of the teachers noted the Snow Pilot Program has had an overall positive impact on their teaching. Twenty-two percent had no effect. Eleven teachers thought the Snow Pilot had a negative effect on their teaching. Data collected on teacher perceptions of the pilot and its impact on student learning indicated 72% percent felt it had a positive effect, 10% a negative effect and 18% no effect. With regard to packet learning, data collected indicated the main barrier to this alternative option was students losing paper assignments or worksheets. A positive aspect of packet learning was that it was an option that provided equal access

to all students. Teacher surveys inquiring about on-line learning indicated two positives about this method; assignments could not be lost and students liked the computer engagement. The main barrier to on line learning was not all students had computers at home and connectivity. Overall, data collected indicated teachers liked the Snow Pilot Initiative.

Teacher Perception Survey Year Three

Seventy-one percent of the teachers responded to the perception survey in year three.

Question 1: When asked how effective is the teaching your students receive via the snow pilot? Forty-four percent responded the pilot was very effective. Thirty five percent responded moderately effective and 20% slightly effective.

Question 2: How well do the alternative methods of delivery meet the students' needs?

Forty-three percent of the teachers responded very well and above, 46% moderately well and 11% slightly.

Question 3: How are parents in assisting students with the snow pilot work?

Teachers commented 28% of the parents were very helpful and 71%percent slightly to moderately helpful.

Question 4: How easy is it for your students to access snow pilot work?

Teacher perceptions of student access to the work indicated 59%percent of teachers thought it was very easy for students and teacher to access on line work. Forty-one percent stated it was slightly to moderately easy.

Questions 5: How much time did you spend in class doing something related to snow pilot assignments i.e. showing students how to access, correct, complete?

Teacher data indicated 48%of the teachers spent 2-3 hours in class showing students how to access, correct or complete snow pilot work.

Question 6: How would you rank your growth in technology and 21st century teaching/learning skills as they developed through the experiences of the snow pilot project the last three years?

Eighty-nine percent of the teachers noted their instructional technology had skills had improved as a result of the alternative snow plan project.

Question 7: What suggestions do you have for improving the snow pilot?

Suggestions for improving the project included recommendations to increase day to day usage of technology in advance of snow days to better prepare students on snow days and provide an alternative method of teaching that addresses 21st Century learning skills.

Question 8: Do you feel that your students actually learned what you intended for them when they completed their snow pilot work?

Eighty-seven percent of the teachers indicated students learned what was intended for them to learn on snow days from the alternative options.

Question 9: Was the content of your students' snow pilot work similar to and/or equal in complexity to the lessons your students normally complete during a regular school day?

Ninety percent of the teachers indicated the work was equal in complexity compared to lessons provided on a regular school day, face to face, in class sessions.

Question 10: If given a choice, would you prefer to continue with snow pilot days OR would you prefer to add make up time for snow days to the end of the school calendar in May and June?

Eighty-two percent of the teachers indicated, if given a choice, they would continue with the snow pilot initiative.

Archival Documents

Archival documents provided information on whether a systemic structure was in place for the implementation and monitoring of the snow pilot initiative's activities. Archival documents include lesson plans, emails, meeting agendas, technology PD training sessions and hard copies of survey results.

Surveys and archival documents provided information that provided triangulation of data for this study. The ten instruments used included three Student Technology Readiness Surveys and three Teacher Technology Readiness Surveys administered in each of the following school years: 2009-2010, 2010-2011, 2011-2012, and 2012-2013. Three Teacher Perception Surveys were administered: March 2012, October 2012 and again in February 2013. One Student Perception Survey was administered in March 2013. Archival documents were collected throughout the study starting in 2010 and ending in 2013. In the Owsley County School District, 439 students responded to the technology readiness student survey in 2010; 335 responded in 2011; and 389 responded in 2012. In 2010, 65 teachers responded to the

readiness survey. In 2011, 66 teachers responded. In 2012, 49 teachers responded.

School administrator responses were included in the Teacher Perception Survey data.

Student Perception Survey Results

A student snow pilot perception survey was administered to students in March

2013. The survey contained ten questions that mirrored those of the final teacher

perception survey.

Packet Work Student Results

Given the young age of the students in grades K-3, their perceptions were

noted in verbal feedback to their teachers. The first letter indicated teacher, the

second letter the grade level.

Question: What did you like about the snow pilot?

SE: I didn't lose it. My teacher said I did it right.

SE: My mommy helped be with the hard part.

SE: At first I didn't like doing work on a snow day, but later I got bored and it wasn't

so bad.

SE: I won't have to come to school this summer. I did better on my spelling test

Friday.

Question 2: What did you not like about the snow pilot?

SE: I did not like to do school work when it snowed

SE: I didn't do it we rode our sleds and even at night

SE: It wasn't too bad, the math was hard

SE: it was hard...mommy had to help me a lot

Question 3: What would you change about the assignments?

SE: Not give any

SE: Make them easier

SE: The math was hard…but the reading easier

SE: I liked it I was ready when we returned from school

Blended Option Results

Ten questions were developed on the survey administered to upper elementary and middle school/high school students (4-12 grade levels) providing feedback on the blended alternative option.

Responses collected indicated 39% of students recorded the on line lessons as moderately effective and 32% felt that the virtual classrooms met their needs moderately well. Sixty percent felt that the snow pilot work was similar to in class assignments. Seventy-three percent of the students commented they would prefer to continue with alternative learning option if given a choice between snow pilot and make up days at the end of the school year. Seventy-seven percent of students indicated that their teachers were helpful with the blended learning approach and 33% percent recording very helpful and 12% recording extremely helpful. Forty-three percent indicated that it was very or extremely easy to access their snow pilot work. Open comments allowed students to give descriptive feedback as well.

Question 2: How well do the virtual classrooms created for snow pilot meet your needs?

SMS: I don't like the snow pilot

SHS: I like seeing other students' comments on discussion board.

SHS: I'm left with a whole lot of questions about what I'm expected to do.

Question 3: How helpful are your teachers in assisting you with snow pilot work on days school is closed due to weather?

SE: but I don't like the snow packet

SMS: For the most part, I can get ahold of a teacher if I'm stuck.

SHS: They are always available in some way or another to help you.

SHS: I haven't requested for help thus far but I'm sure they'd help through email or on blackboard within the day.

Question 7: What suggestions do you have for improving the snow pilot?

SMS: I think that it would probably be easier to do on paper

SE: I don't no

SHS: I do not have any suggestions. The snow pilot is very effective for me and i love it.

SE: on paper to improve the snow pilot

SMS: there needs to be a submit button at the bottom of each page so you can send your homework in and it should also tell you that it has been sent or not

SHS: Make it stuff that's easy to understand and easy to complete. Make it a little difficult but have it to where we can at least understand what to do for those specific days.

SMS:I would like for it to be easier to get to the blackboard account without having to download a bunch of junk into your computer.

SE: that it taught me more cause I ain't around kids that talk so I learn more

Question 8: Do you feel that you actually learned something when you completed your snow pilot work?

SE: I learned the stuff I forgot more and it helped me

SHS: The information was good it was just hard to access.

SMS: Depending on the assignment. Math was hard but the video links helped explain it better

SHS: I feel like I know more about Henry Ford and history now.

SE: It was all content we had already did but it was an excellent review.

SMS: It wasn't bad...I liked I could sleep in and then do my work

SMS: no more than I do in class

SHS: I enjoy using technology and made it nice I could do it when I wanted to not 8-3

Question 9: If given a choice, would you prefer to continue with snow pilot days or would you prefer to add make up time for snow days to the end of the school calendar?

SMS: continue

SE: snow pilots are stupid and no one wants to do school work on their day off for snow

SE: If we have 5-15 snow days, then yes snow packets are efficient. If we have lower than five, we shouldn't do the snow packet, and we can just make up the days.

SMS: I would rather be in school and have something to do than sit around the house all day anyways.

SHS: No matter how much I don't like doing this work, I would rather do it any day then add on to my senior year

CHAPTER FIVE

CONCLUSIONS, ACTIONS AND IMPLICATIONS

The intent of this study was to investigate what impact alternative learning options that included packet learning and non-traditional instruction (asynchronous or hybrid, and/or electronic learning) had on teacher and student perceptions of learning when implemented during unforeseen school closures in an attempt to continue teaching and learning when school was called off due to inclement weather. A triangulation of evidence from surveys and archival documents provided evidence that supported the findings of the capstone. Findings reflect the impact of three years of development and implementation of activities in the Owsley County Snow Plan Initiative effort designed to ensure continuity of student learning on school cancellation days.

The question guiding this capstone has been: What impact do alternative learning options implemented on school calamity days have on teacher and student perceptions of effective learning?

Survey findings conclude, in the preliminary stages of this study, the majority of teachers in the Owsley County School System would like to continue with the snow pilot project alternative options.

Teacher Perception Survey Findings

Packet Work Options Findings (Grades K-3) According to the Teacher Snow Pilots Perception Survey, K-3 teachers believed the packet alternative option should be the only option available to lower elementary students. Teachers already

had in place numerous worksheets, flashcards, word searches and vocabulary word games for classroom use that could be readily sent home on snow days. Teacher surveys indicated teachers attributed the packets to providing an opportunity for review at home when school was cancelled. Reviewing the vocabulary kept the words fresh in students' minds. Numerous parent comments during parent/teacher conferences indicated parents used the packet materials to work with their child on snow days. In year three, teachers elected to continue with the packet option for grades K-3. This option provided accessibility for all students regardless of computer availability at home and did not create an opportunity for apparent segregation between the haves and the have-nots. According to survey comments, teachers believed lower elementary students lacked the necessary computer skills to complete on line assignments without teacher supervision. The most pressing issue with hard copies of packet work was lost packets or incomplete packets being returned to the teacher. Each year from inception of the packet implementation, teachers developed a better system of disseminating packets and monitoring returned student work. In year three, each packet had a check sheet of materials within the packet. Parents and students were required to sign the check sheet and check off completed assignments. Each year of the initiative, fewer and fewer packets were lost and more completed packet work was turned in.

Grade 4-6 Findings Teachers in grades 4-6 expressed starting year one with the packets eased them into the alternative option initiative. Packets allowed teachers to see the impact of expecting students to complete work on snow days versus the

usual day off from school on inclement weather days. Packets acclimatized students

for what was to come (electronic learning alternative options). Packets also created

an expectation of learning on school cancellation days. In year two and three,

findings indicated a tremendous increase in the amount of video streaming, the

number of blackboard log-ins on snow days and the number of quizzes completed on

snow days. This finding revealed that students were in fact engaged in learning while

at home. Administrators noted previously recognized stronger classroom teachers

had greater levels of success with student engagement on-line and with the retrieval

of student work on snow days. It was noted the more innovative and exciting the

snow day lessons were, the greater the results on student participation and completion

rates. Findings revealed that electronic lessons were more readily accessed on

blackboard than packets.

Grades 7-12 Findings Survey findings revealed students and teachers

preferred the electronic options over the packet work. Teachers and students believed

the Snow Pilot Project had a positive effect on teaching and learning. Findings

indicated that teachers and students improved their technology skills as a result of the

electronic alternative options. Student findings indicated this option better prepared

them for college, dual credit opportunities and jobs involving computer skills.

Findings revealed that students and teachers elected to continue with the blended,

electronic options after the capstone study. The collaborative model developed at the

high school in year three proved to be a promising option. Findings indicated as a

result of this option, more advance course work was made available to students that

would not have otherwise been available. Through this model, teacher sharing among

districts increased course offerings and therefore increased the rigor in Owsley

County High School. Findings also indicated this option helped the district

financially. Rather than employing more teachers to teach advance courses or not

offering rigorous course work due to a small applicant pool of qualified teachers,

Owsley County was now able to offer more courses to student with this collaborative

internet based option. Teacher and student findings indicated the electronic lessons

were as rigorous as if not more so than regular classroom assignments. Findings

revealed students suggest teachers use technology on a regularly basis and not just

during snow days or the activation of the snow plan. These findings conclude that

this blended alternative option met the needs of the 21st Century learners.

At the end of this research period in 2013, 82.6% of teachers surveyed

indicated that they would prefer to continue with the snow pilot to ensure continuity

of learning during unforeseen school closures. Eighty percent of teachers surveyed

felt that unforeseen school closures had a negative academic impact on their students.

Eight two percent of teachers surveyed felt that participating in the snow pilot

program had improved their 21st century teaching and learning skills. In February of

2013, 89.2% of teachers surveyed still felt that participating in the snow pilot had

improved their 21st century teaching and learning skills. And the February 2013

survey reveals that 87% of the teachers surveyed felt that students actually learned

what it was intended for them to learn when they completed snow pilot work.

Actions

As a result of this snow pilot project, Owsley County looks to the future to continue with and expand the alternative learning options on school cancellation days. The district now has an intentional focus on eliminating interruptions to learning through the creation of this strategic plan of action that provided an alternative means of continued learning for our students in rural Appalachia. Owsley County Schools have been recognized as a leader in seeking innovative alternative options to school closure due to inclement weather conditions. The district will continue working collaboratively with legislators and Kentucky Department of Education leaders in promoting 21st Century thinking and solution seeking of answers to problems that create barriers to learning. Problems that particularly hinder rural, high poverty, disadvantaged districts plagued by high numbers of school days missed as a result of inclement weather.

It is a goal of this researcher at the completion of this capstone to present this innovative way of thinking at local, state and national workshops. Schools can no longer shut down nor can learning cease when weather conditions do not allow students to be transported to school. With today's advances in technology, educators, school leaders, community partners and legislators must work together in fully utilizing what is available to make learning equitable and continuous for all.

Implications

This study can impact State Department of Education policies, regulations funding guidelines. If school funding is bound by average daily attendance (ADA) as

it is in Kentucky, innovative alternative options such as the snow pilot project forces

policy makers and governing bodies to think outside the box. Regulations should

help and not hurt, guide but not inhibit alternative solution seeking to problems

schools face in helping students.

This study can impact the work of school based councils and school leaders in

allowing these governing bodies the freedom to work collaboratively in implementing

innovative plans that maximize time on task, utilize resources efficiently and function

as more effective schools. This study forces teachers to improve in the area of

instructional technology and more fully embrace 21st Century teaching and learning

skills and dispositions. Teachers must incorporate instructional technology often and

regularly in lessons to better prepare our students to effectively enter and be

competitive in a global workforce market.

Summary

Interruption of learning due to unforeseen school closures has the potential to

contribute to loss of learning. One key element is the determination of the length of

time students missed school as in Kentucky in which absences due to weather vary

from year to year. Schools across Kentucky during the winter months are at the

weathers' mercy which determines how many days students and teachers miss due to

weather conditions. Owsley County Schools missed 26 days in 2009-2010 and eight

instructional days in 2013. In 2009-2010 these days were made up at the end of the

school year after the state testing window. During the 2011-2013 instructional days

missed were made up prior to the testing window with students and teachers working

either with packets or via a blended learning approach to ensure continuity of learning while not being in school due to inclement weather. Prior research indicated that when school is closed due to unforeseen events such as snow and no time was made up prior to testing student performance of academic measures drops (Marcotte and Helmelt, 2009; Marcotte and Hanson, 2010). Schools across the nation need to create strategic, alternative plans that promote on-going learning and eliminate barriers that negatively impact continuity of learning while promoting asynchronous methods to adapt to student needs.

Additional Findings and Conclusions

In reflection, I do not feel that teachers, parent, and students fully realize the changes that blended learning would bring to the learning environment for staff and students. The most frequent parent complaint of feedback was that they couldn't help the child. In fact, this was the most frequent complaint each year. (For possible explanation please refer again to census data and educational attainment levels.) This also revealed and inability of the student to work independently. More integration of technology, particularly web based instructional mechanisms, into the day to day routing of teachers and students needs to occur. Why should online learning be limited to snow days? Why can't virtual lessons be built for each class that are useful for learning and exploration and are used frequently? These were seen in comments on teacher perception surveys as well.

There also exists a need for teacher leaders to step up during the implementation of new initiatives such as this. During our implementation of year

three's online learning two planners/teachers/trainers/troubleshooters stepped up and were able to help with most issues at the school level. The ability to feel comfortable with technologies needs to expand beyond the handful however. Expectations, time, and training will be needed.

Owsley County has exceptional support systems – fiber to the home, school technologies, etc. It was surprising that even those these exist and the technology survey indicated that 85% of students had internet access and a computer at home, large numbers of students used lack of access as an excuse to their teachers for late completion or missing work. One must question whether this was truly lack of access or an excuse.

During year three's online instruction we did find several "bugs" in our delivery system – Discovery Education quizzes that duplicated, online videos that played at school but not at home and text or graphics that wouldn't display.

When beginning the transition to online learning, hindsight and reflection reveals some important groundwork that must be done. Preplanning and establishing common expectations and timelines district wide. Direct instruction and teaching of the required technology skills that students do not already possess is critical to student success also. Items such as word processing, document formatting, sending e-mail, attaching attachments to e-mail, and navigating the internet for educational purposes all made the list of needed skills.

Another significant impact of this study has been the development of an innovative approach to public education that initiates a paradigm shift in thinking in

teachers, students, and parents in how we educate students in today's society and prepare our students for 21st century learning skills that will be necessary for them to be college and career ready.

Suggestions and Next Steps

1. Determine a focus for the study: (Determine content to be monitored. Phase in content as the study progresses; determine if lessons plans and activities focus: are snow day lesson plans focused on review, introducing new material, vocabulary etc.).

2. Develop a means of monitoring completed student work. Develop a plan to ensure students that did not complete the work on days are held accountable to complete the assignments.

3. Communicate the initiative clearly with staff, students and parents. The OCAT team was often more informed than others. To be as effective as any initiative can be, involve more stakeholders at the developmental level to improve implementation and success.

4. Work collaboratively with students, parents, community business leaders and teachers to change the culture of learning to one of continuous learning. Snow days can no longer be viewed as days off.

5. Be consistent with data collection and charting results.

6. Continue to seek alternative methods of continued learning during school cancellations. Be persistent in not allowing rules and regulations to stop innovative and creative thinking that can help reduce barriers to learning.

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Appendix A

Teacher Perception Survey

1. How effective is the teaching your students receive via snow pilot?

2. How well do the virtual classrooms created for snow pilot meet your student's education needs?

3. How helpful are your students' parents in assisting your students with snow pilot work on days school is closed due to weather?

4. How easy is it for your students to access snow pilot work?

5. How much time did you spend in class doing something related to snow pilot assignments i.e. showing students how to access, correct, complete?

6. How would you rank your growth in technology and 21st century teaching/learning skills as they developed through the experiences of the snow pilot project?

7. What suggestions do you have for improving the snow pilot?

8. Do you feel that your students actually learned what you intended for them when they completed their snow pilot work?

9. Was the content of your students' snow pilot work similar to and equal in complexity to the lessons your students normally complete during a regular school day?

10. If given a choice, would you prefer to continue with the snow pilot or would you prefer to add make up time for snow days to the end of the school calendar?

Appendix B

Student Perception Survey

1. How effective is the teaching you receive via snow pilot?

2. How well do the virtual classrooms created for snow pilot meet your needs?

3. How effective is the teaching you receive via snow pilot?

4. How helpful are your teachers in assisting you with snow pilot work on days school is closed due to weather?

5. How easy is it to access your snow pilot work?

6. How helpful are your teachers in assisting you with snow pilot work on days school is closed due to weather?

7. How much time did it take you to complete the daily snow pilot assignments?

8. Were the directions for completing assignments clear and easily understood?

9. Do you feel that you actually learned something when you completed your snow pilot work?

10. If given a choice would you prefer to continue with snow pilot days or would you prefer to add make up time for snow days to the end of the school calendar?

Appendix C

School Cancellation Data Map 2009 - 2010

Average: 27.6

County	Value
Breathitt County	30
Clay County	31
Estill County	18
Jackson County	28
Laurel County	18
Lee County	35
Leslie County	38
Owsley County	26
Perry County	24
Powell County	31
Wolfe County	25

Appendix D

2009 – 2010 Kentucky Counties School Cancellations
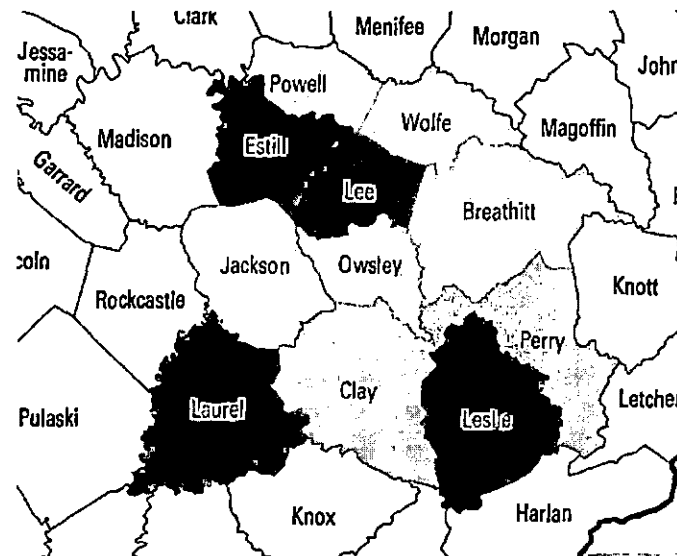
Appendix E

School Cancellation Data Map 2010-2011

Average:24.27

County	Value
Breathitt County	29
Clay County	24
Estill County	21
Jackson County	23
Laurel County	19
Lee County	29
Leslie County	31
Owsley County	20
Perry County	28
Powell County	18
Wolfe County	25
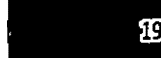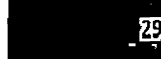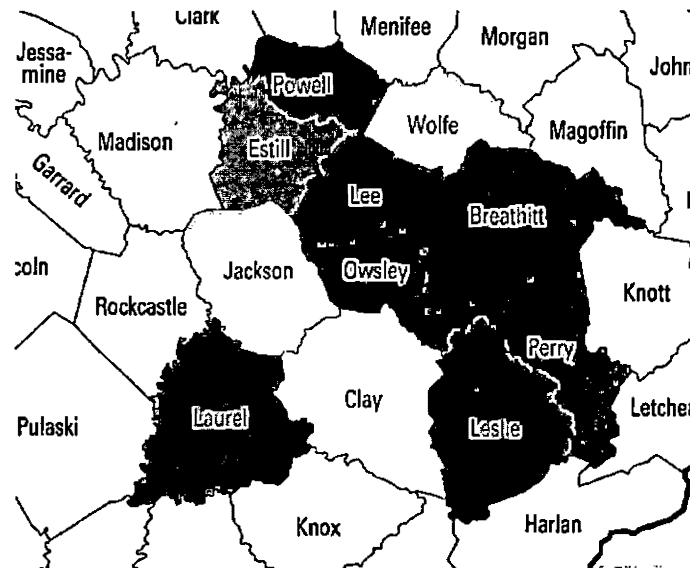
Appendix F

2010 – 2011 Kentucky Counties School Cancellation
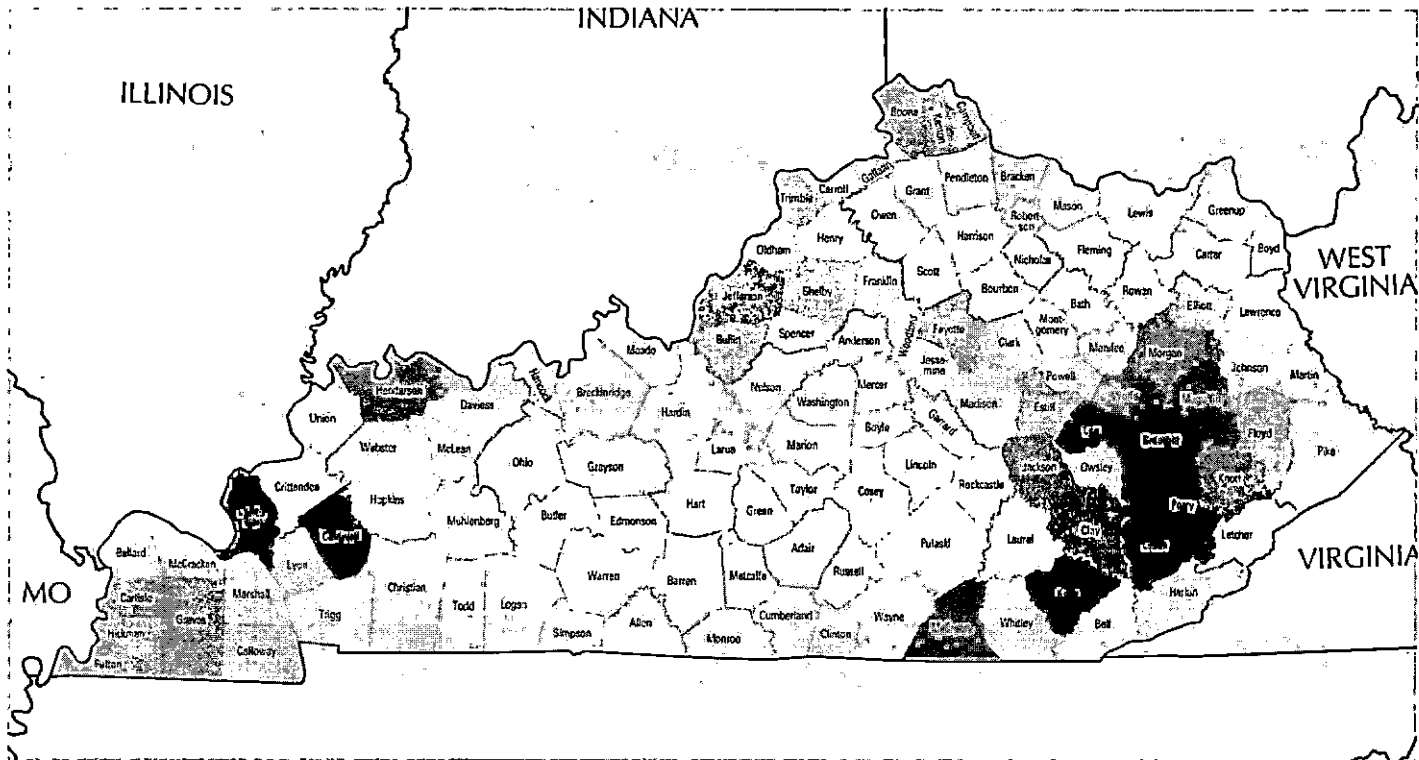
Appendix G

School Cancellation Table by County 2009 – 2010

County	Days	County	Days	County	Days	County	Days
Adair County	11	Daviess County	7	Knox County	39	Nicholas County	13
Allen County	15	Edmonson County	10	LaRue County	8	Ohio County	11
Anderson County	7	Elliott County	24	Laurel County	18	Oldham County	7
Ballard County	3	Estill County	18	Lawrence County	22	Owen County	12
Barren County	11	Fayette County	7	Lee County	35	Owsley County	26
Bath County	22	Fleming County	14	Leslie County	38	Pendleton County	15
Bell County	22	Floyd County	28	Letcher County	19	Perry County	24
Boone County	7	Franklin County	9	Lewis County	17	Pike County	23
Bourbon County	11	Fulton County	4	Lincoln County	18	Powell County	31
Boyd County	14	Gallatin County	10	Livingston County	4	Pulaski County	16
Boyle County	13	Garrard County	11	Logan County	10	Robertson County	13
Bracken County	10	Graves County		Lyon County	3	Rockcastle County	16
Breathitt County	30	Grayson County	12	Madison County	10	Rowan County	17
Breckinridge County	9	Green County	15	Magoffin County	36	Russell County	13
Bullitt County	6	Greenup County	20	Marion County	11	Scott County	13
Butler County	18	Hancock County	9	Marshall County	4	Shelby County	9
Caldwell County	0	Hardin County	8	Martin County	19	Simpson County	11
Calloway County	5	Harlan County	26	Mason County	11	Spencer County	7
Campbell County	9	Harrison County	17	McCracken County	4	Taylor County	14
Carlisle County	3	Hart County	12	McCreary County	28	Todd County	13
Carroll County	10	Henderson County	5	McLean County	8	Trigg County	7
Carter County	21	Henry County	9	Meade County	8	Trimble County	10
Casey County	13	Hickman County	3	Menifee County	22	Union County	7
Christian County	8	Hopkins County	5	Mercer County	9	Warren County	10
Clark County	9	Jackson County	28	Metcalfe County	14	Washington County	8
Clay County	31	Jefferson County Public Schools		Monroe County	15	Wayne County	16
Clinton County	17	Jessamine County	7	Montgomery County	12	Webster County	7
Crittenden County	8	Johnson County	22	Morgan County	27	Whitley County	24
Cumberland County	17	Kenton County	9	Muhlenberg County	8	Wolfe County	25
		Knott County	28	Nelson County	9	Woodford County	8

Appendix H

School Cancellation Table by County 2010-2011

County		County		County		County		County	
Adair County	14	Edmonson County	16	Knox County	32	Nicholas County	19
Allen County	16	Elliott County	21	LaRue County	12	Ohio County	13
Anderson County	12	Estill County	21	Laurel County	19	Oldham County	8
Ballard County	8	Fayette County	7	Lawrence County	19	Owen County	13
Barren County	14	Fleming County	14	Lee County	29	Owsley County	20
Bath County	17	Floyd County	21	Leslie County	31	Pendleton County	14
Bell County	18	Franklin County	8	Letcher County	15	Perry County	28
Boone County	6	Fulton County	6	Lewis County	15	Pike County	18
Bourbon County	12	Gallatin County	9	Lincoln County	15	Powell County	18
Boyd County	13	Garrard County	13	Livingston County	32	Pulaski County	16
Boyle County	12	Grant County	12	Logan County	12	Robertson County	11
Bracken County	12	Graves County	6	Lyon County	8	Rockcastle County	16
Breathitt County	29	Grayson County	14	Madison County	10	Rowan County	17
Breckinridge County	15	Green County	13	Magoffin County	27	Russell County	17
Bullitt County	7	Greenup County	16	Marion County	15	Scott County	13
Butler County	16	Hancock County	12	Marshall County	9	Shelby County	7
Caldwell County	0	Hardin County	11	Martin County	18	Simpson County	13
Calloway County	8	Harlan County	20	Mason County	13	Spencer County	9
Campbell County	8	Harrison County	16	McCracken County	8	Taylor County	12
Carlisle County	6	Hart County	18	McCreary County	28	Todd County	12
Carroll County	8	Henderson County	4	McLean County	20	Trigg County	10
Carter County	18	Henry County	9	Meade County	12	Trimble County	7
Casey County	16	Hickman County	7	Menifee County	18	Union County	16
Christian County	11	Hopkins County	9	Mercer County	11	Warren County	15
Clark County	9	Jackson County	23	Metcalfe County	17	Washington County	14
Clay County	24	Jefferson County Public Schools	6	Monroe County	15	Wayne County	16
Clinton County	16	Jessamine County	10	Montgomery County	12	Webster County	19
Crittenden County	12	Johnson County	18	Morgan County	23	Whitley County	19
Cumberland County	16	Kenton County	6	Muhlenberg County	10	Wolfe County	25
Daviess County	9	Knott County	23	Nelson County	12	Woodford County	9

Appendix I

Technology Readiness Survey for Teachers and Students

1. Do you currently have a computer at home?

2. Is your computer 5 years old or less?

3. Do you currently have Internet access at home?

4. What type of Internet access do you currently have at home: dial up, cable

    modem, DSL, Satellite Dish, or other?

5. What do you feel is the primary reason that you don't have Internet access at

    home: don't want it, it's too expensive, the service is not available where I live,

    or other?

6. Do you have access to PRTC's Channel 9 (local access programming) at home?

7. Do you receive, or does anyone in our household purchase, *The Booneville*

    Sentinel?

8. Do you receive One Call Now calls from the school district at home?

9. Do you currently own a tablet (device larger than a mobile phone or personal

    digital assistant, integrated into a flat touch screen and primarily operated by

    touching the screen) using one of the following operating systems: Apples's

    iOS, Google's Android, Motorola Xoom, or other?

10. Do you currently own an e-reader (Kindle, etc)?

11. Do you currently own a handheld wireless device (iPod touch, MP3, etc)?

12. Do you currently own a smartphone (Windows Mobile, iPhone, Palm Centro, Palm Pre, Blackberry, etc) – devices which provide wireless e-mail, texting, Internet access, or other online services?

Appendix J

Log of Nontraditional Instructional Time

Continuity of Learning Program 2012-2013

Effective Instructional Practice and Use of Teacher Time for Owsley County's Innovative Learning and Continuity of Learning Program 2012-2013

Complete the checklist **and attach documentation** for verification of instruction and student learning. This log must be submitted for each snow pilot day along with your monthly timesheet.

Date: _____

Teacher Name: _____

Instruction

Activity	Outcome	Time Frame
BlackBoard		
Email		
GoogleCall		
Phone Calls		
Physical Presence at School		
Voice and Video captures (JING, School Tube, etc. for student use in virtual learning)		
Feedback to students (message, announcement, grading, blog, etc.		

Best Practices

Activity	Reflection	Data
Differentiation		
Use of Technology		
Standards based Instruction		
Formative Assessment with Feedback		
Summative Assessment with Feedback		
Addressing multiple intelligences		

Appendix K

2013 Perception of Effectiveness of Alternate Snow Pilot Instruction

Perception of Effectiveness of Alternate Instruction

	slightly	moderately	very	extremely
Students	17	39	15	7
Teachers	19.6	34.8	43.5	2.2
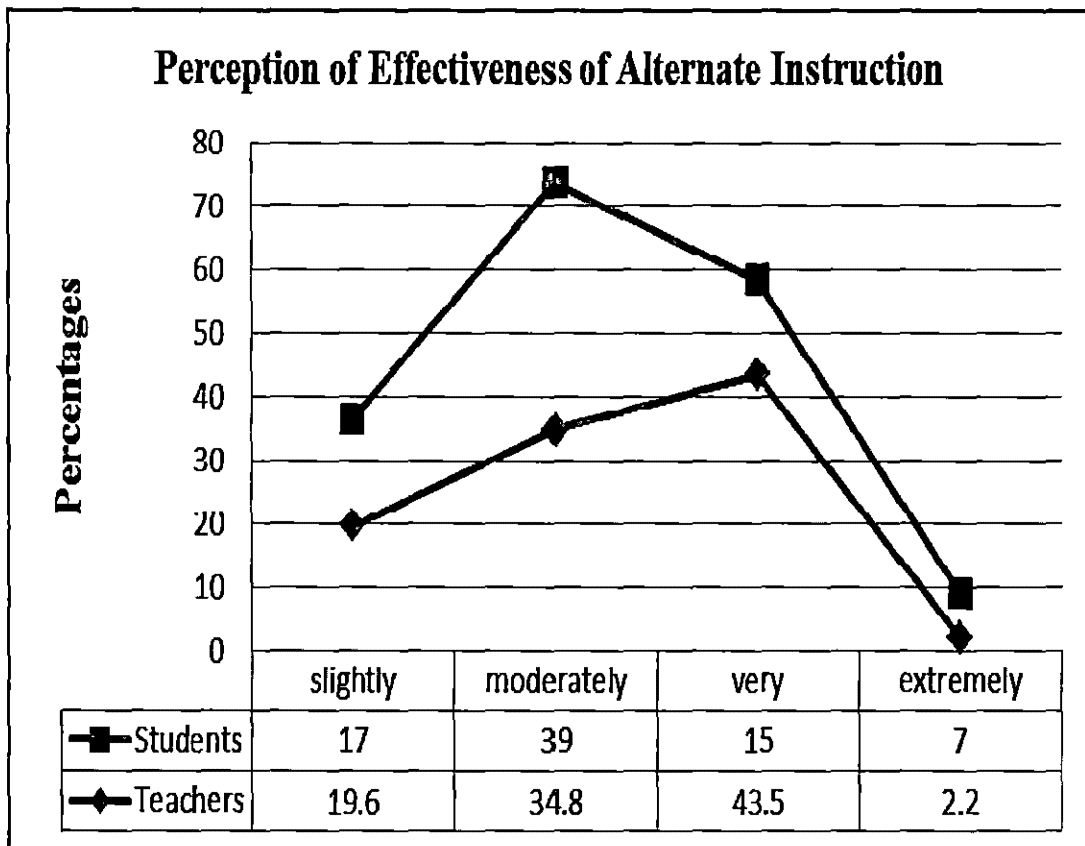
Note: Twelve percent of students gave responses other than one of the four choices.

Appendix L

2013 Perception of Snow Pilot Ease of Access

How easy is it to access snow pilot work?

	extremely	very	moderately	slightly
▪ Students	22	21	30	13
♦ Teacher	19.6	39.1	26.1	15.2
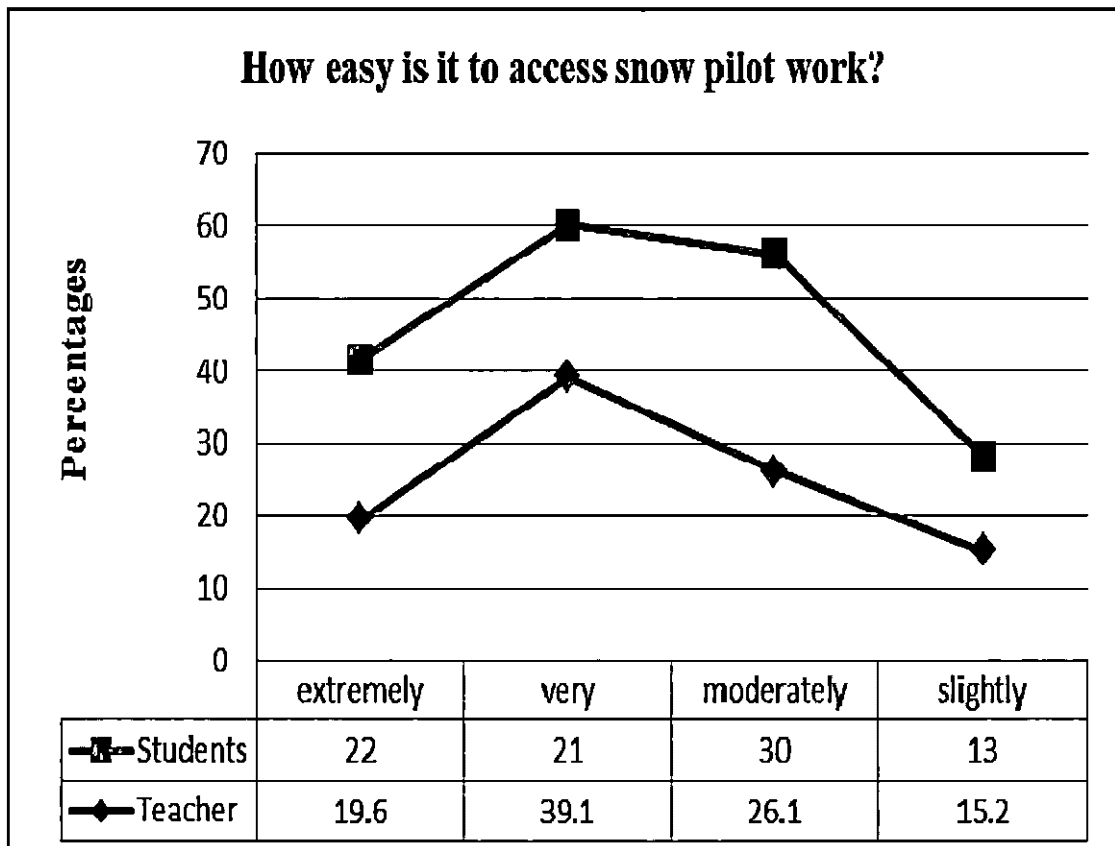
Note: Fourteen percent of students gave responses other than one of the four choices.

Appendix M

2013 How well do virtual classrooms meet educational needs?

How well do the virtual classrooms created for snow pilot meet educational needs?

	slightly	moderately	very	extremely
—◆—Teachers	10.9	45.7	37	6.5
—■—Students	24	32	19	7
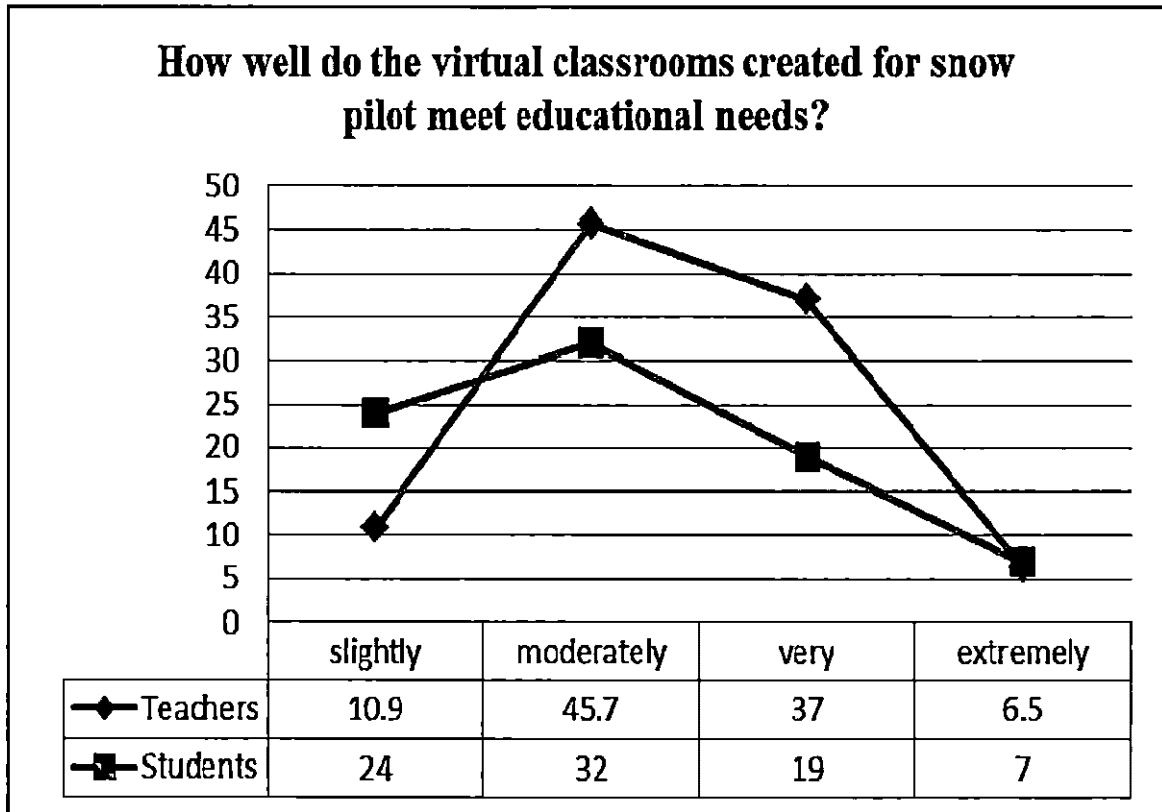
Note: Eighteen percent of students gave responses other than one of the four choices

VITA

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Place of Birth: Columbia, Kentucky

EDUCATION

May 1990   Bachelor of Arts
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