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A CROSS-CASE ANALYSIS OF GROWTH MODEL PROGRAMS

IN THREE STATES

by

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ABSTRACT OF THE DISSERTATION

A Cross Case Analysis of Growth Model Programs in Three States

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Dr. William Firestone

Signed into Law on January 8, 2002, the 1,180 page No Child Left Behind Act (NCLB) shifted the course of public education in America. For the first time accountability was firmly placed at the center of school operations by requiring a systematic approach to achieving reform and improving all areas of school life (Wanker & Christie, 2005).

As plans were quickly implemented to meet deadlines, strong opposition was voiced to the unfair way the primary requirement of Adequate Yearly Progress (AYP), was to be measured. Using a status model, success was measured by using a snapshot of educational progress compared to a predetermined goal or dissimilar group of students. Credit could not be earned for progress of non-proficient students. In response, educational researchers have introduced growth modeling as a way to give credit to schools and districts when students make progress on standardized tests yet remain below the proficient mark (Andrejki, 2004; Callender, 2004; Hull, 2008). In December 2005, the United States Department of Education opened a pilot project allowing states to apply to use growth modeling in NCLB accountability plans (United States Department of Education, 2005).

This dissertation research examines the implementation of a growth model program in three states: Delaware, Iowa and North Carolina. These states were chosen for their differences on a multitude of factors to provide a rich description of growth model implementation. Using qualitative research techniques the decisions, implementation, data use, and statistical considerations were examined.

The findings reveal substantial information on the growth model implementation process with three significant themes emerging from the data. Stakeholders played a significant role in each step of the process at varying degrees in each state. The involvement of stakeholders was found to be important when making decisions and also to garner support for each program. Reporting results to stakeholders was a central piece of each state plan. Lastly, in all three states policy makers and technology efforts saw the benefit of working together to ensure that business rules were possible to implement and the results understandable.

The research contributes a rich description of real-world growth model implementation experiences in state level NCLB accountability plans to three important bodies of academic literature: No Child Left Behind, Growth Modeling, and Policy Implementation. Additionally, the discoveries start a guide for educational leaders to evaluate when deciding to add the statistical procedures into NCLB accountability plans.

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In 1995 I started at the Graduate School of Education as a non-matriculated student hoping to find a permanent place in a master's program. I took my first class, Statistics I, with Dr. Douglas Penfield. Now, 18 years later, he sits as a member on my dissertation committee. Dr. Penfield has provided me with invaluable guidance and support when I returned to Rutgers for my PhD in 2006 and throughout my entire doctoral program. I am honored that mine will be one of the last dissertations he reads as he retires from the University.

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I am grateful to my father, Dr. Francis Gardella, who set a shining example for me in many areas of life including academia. It has been my honor to follow in Dad's academic footsteps as an undergraduate attending Fordham University and then pursuing my doctoral work at Rutgers. And to my mother Gail who made sure I was independent, wise in the world, could stand on my own and accomplish anything I put my mind to. She is also the support behind my father's success and deserves credit all around. To my brother Derek, sister-in-law Laura, and niece Paige, I am so grateful to have them in my life. Nothing is more important than the love of family and I am so blessed to have you surrounding me at this time in my life.

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And to my daughters, who are each a shining example of strong young woman I am honored to have in my life. Simply by your existence you inspire me daily. May you find your own happiness and great success in whatever path you choose to take and know that I support you as you chart your own course in life. And, as I promised you years ago when I started on my doctoral journey, yes, it's finally time to get the puppy.

Dedication

I dedicate my dissertation to my three daughters, Allison, Victoria, and Stephanie.

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Introduction

Signed into Law on January 8, 2002, the 1,180 page No Child Left Behind Act (NCLB) shifted the course of public education in America. For the first time, accountability was firmly placed at the center of school operations by requiring a systematic approach to achieving reform and improvement in all areas of school life (Wanker & Christie, 2005).

Written with the intention of ensuring that all children are reached by America's public schools, NCLB is the federal government's mandate that all students are to be proficient in reading and mathematics by 2014. The accountability directives of NCLB are not new. Since the early 1960's, the federal government has passed various laws (e.g. the Elementary and Secondary Education Act of 1965 known as ESEA) mandating that states make sweeping changes to educational policy in order to increase student achievement. However, the states' implementation was sporadic and half-hearted. Policy makers at the federal level became frustrated with the lack of compliance, and in 2002 Congress and President Bush reauthorized ESEA as the No Child Left Behind act. NCLB mandated compliance by requiring states to impose harsh sanctions on failing schools (Goertz, 2005).

As plans were quickly implemented to meet NCLB deadlines, strong opposition was voiced over the act's primary requirement, Adequate Yearly Progress (AYP). Using results from state administered standardized test scores, schools are required to demonstrate annual academic achievement. Under the AYP guidelines, success is to be measured by using a snapshot of educational progress (ie: the number of students proficient at a particular time). This number is compared to a predetermined goal (called

an Annual Measurable Objective, AMO) or the results of a group of similar students (when using the accountability model). Educators view this process as unfair due to differences between cohorts of students (comparing students to their counterparts of the previous year), credit is not given for individual student growth, and credit is not given to students who make progress but are still not proficient (Linn, Baker & Betebenner, 2002).

With years of NCLB experience, educational professionals at the national, state, and local levels continue to struggle to create, enact, and implement legislation to track academic progress. In addition to meeting these requirements, educators and researchers have spent considerable time developing and lobbying for a fairer way to measure academic progress. Early on in that debate, growth modeling was brought to the educational accountability discussions and has emerged as a viable option for developing an accountability system that fairly measures student progress.

Borrowed from the field of agriculture, growth model analysis uses standardized test scores to longitudinally measure an individual student's academic progress and growth. Depending upon state guidelines, the results from growth model analysis can give schools credit for student progress even though an individual student may still be below the proficient level on the state-administered standardized test.

In December 2005, the United States Department of Education instituted a pilot project allowing states to apply to use growth modeling in NCLB accountability plans (United States Department of Education, 2005). Nine states were the first participants. In December 2007 the pilot program was expanded to allow all states the opportunity to apply to use growth models in NCLB accountability plans. Fourteen additional states

applied and are in various stages of the approval and implementation process. Each state has a unique methodology for implementing a growth model and using the data (Linn, 2005). To date, little research has been conducted on the implementation or results obtained in the pilot program states. Firsthand knowledge of their experiences (planning, implementation, data use) provides valuable information to educational leaders in other states when considering adopting a growth model into their own NCLB accountability plans.

This dissertation research builds on a pilot project conducted by this author which investigated the implementation of growth models in the state of Delaware. In Delaware, all decisions, implementation, calculations, and school labels are determined at the state level function and results are handed down to the districts. This dissertation research expands upon that initial study in scope and compared the growth model implementation in the three states of Delaware, Iowa, and North Carolina.

The following research questions guided the research study:

- 1) How did each state decide to apply for the growth model program?
- 2) How was the particular model selected?
- 3) How was the procedure implemented?
- 4) How are the data being utilized?
- 5) What is the relationship between policy and statistical/technical expertise?

As this research is a first step in examining how growth models operate at the state level, it will make three major contributions to the literature, the work of other researchers, and state education officials.

First, while there are three bodies of literature (NCLB, Growth Models, and Policy Implementation) which contribute to the understanding of growth models working at the state level, currently there is a gap in the literature specifically addressing the implementation of growth models.

Second, the research provides a description of how the growth model techniques are actually used by states to those who wish to develop more sophisticated models. Having an explanation of the factors explored is critical for researchers to understand the real-world experience.

Third, the study starts to develop a first-hand body of knowledge for other states to use when incorporating a growth model into NCLB accountability plans. Policy makers exploring growth models will be able to learn from the data and analysis presented in this research, including issues of model selection, how policy and statistics blend in the process, how a growth model fits with existing accountability plans, and how the data are utilized. With the recent federal educational initiative Race to the Top, many states have indicated they have plans to add a longitudinal measure to existing NCLB accountability plans and those efforts will greatly benefit from the descriptions in this work.

The first chapter of findings in this dissertation is presented as an introduction to each of the state accountability programs, framed within the expected and exhibited culture by each department of education during the process. The next three chapters are each dedicated to the questions of model selection, implementation, and data use. The fifth research question regarding the working relationship between policy and statistical expertise is answered within Chapter 5 on Implementation.

CHAPTER I. LITERATURE REVIEW

This dissertation is related to several bodies of literature. First, academic research related to the interpretation and understanding of the No Child Left Behind Legislation is reviewed. Then, important details of growth modeling and how it has been introduced into educational accountability is highlighted. Literature on state policy development is then examined.

No Child Left Behind

Historically, most decisions regarding public education have been left to the states. Since the early 1960's, the federal government has put forth various pieces of legislation (e.g. the Elementary and Secondary Education Act of 1965 known as ESEA) mandating that states make sweeping changes to educational policy in order to increase student achievement. These directives were acknowledged by the states with half-hearted implementations of some requirements. Policy makers became frustrated with the lack of compliance, and in 2002 reauthorized ESEA as the No Child Left Behind act. This legislation, a heavy layer of federal oversight, mandates that states develop a tiered system of harsh sanctions for non-compliance and failing schools (Goertz, 2005; Sundernman & Kim, 2007).

Legislators in Washington believed the previous attempts at federal accountability requirements were loosely followed or even ignored. To gain compliance, the federal government required that each state receiving Title 1 funding develop adopt assessments and procedures to evaluate the annual performance of schools. These policies were to be made at the state level, for a variety of educational indicators, the most important of which are academic (Henderson-Montero, et.al, 2003). While perceived as a new

initiative, the requirements of NCLB are extensions of Title I and ESEA. However, unlike previous legislation, NCLB attempts to give more direction on requirements and expectations, the legislation outlines stricter guidelines on required measures, assessments, implementation, Adequate Yearly Progress (AYP), and sanctions for failure to demonstrate academic progress (Wanker & Christie, 2005; Peyser & Costrell, 2004).

Additionally, compliance requires states to develop and map curriculum standards to state level assessments; have a clear way of identifying failing schools; and all plans must end in 2013-2014 with 100% of students proficient in both language arts and math (Sunderman & Kim, 2007; Wanker & Christie, 2005; Linn, 2003).

Adequate Yearly Progress

Adequate Yearly Progress (AYP) is the umbrella measure by which schools are judged on several academic indicators. The NCLB law is very specific yet at the same time very vague on what AYP is and how it can be measured. While it does detail that all states must have a single statewide accountability system applied to all public schools for measuring AYP, it leaves the specific planning to the states and does not give examples of its requirements. With no single way to measure AYP each state has different systems and requirements for academic content standards, the rigor of their tests, and the stringency of their performance standards (Linn, 2005).

The Status Model. As the original law was written, all states are required to use a Status Model to measure AYP. The status model is simply a snapshot, a count of the number of students proficient on the standardized test at a given point in time. There are two types of status models. The first compares the number of proficient students to a predetermined Annual Measurable Objective (AMO) or level of proficiency that the state

expects for the school or subgroup to meet (Dougherty, 2008, Goldschmidt & Choi, 2007; Blank & Cavell, 2005). If the school or subgroup has exceeded the goal, then AYP has been met.

An improvement model is another type of status model. Here, the number of students proficient in a particular cohort (typically grade level of students in a particular school), is compared to a similar group of students from the previous year. As an example, the results of this year's 5th would be compared with the results of last year's 5th graders to determine if progress has been made (Blank & Cavell, 2005).

Problems with the Status Model. Since the status model is a snapshot, it does not take into account the growth a particular student or group of students may be making even if they are still below the proficient level. Schools are only given credit for the students who have reached the proficient level. When a student makes progress but is still below the proficient level, AYP is not attained. It has been well documented that schools spend substantial time and great expense with below-proficient students to make even the smallest incremental step towards proficiency. Educators feel they deserve to be rewarded for this improvement (Hull, 2008; Dougherty, 2008).

A second issue with the status model is that it compares dissimilar groups of students; this year's 5th graders and last year's 5th graders are two different cohorts of students. Each group has different characteristics and while separated by only one year, due to district factors, they may not be comparable (Blank & Cavell, 2005).

To solve the problem of fairness, growth modeling, a statistical process that longitudinally measures student achievement, has been brought to the discussion of educational accountability.

Growth Models

Growth modeling is a statistical procedure used to measure the academic progress of an individual or cohort of students over time using standardized test scores. The longitudinal analysis highlights growth that has been achieved, even when a student is scoring below the proficient mark on a standardized test. This longitudinal comparison is believed to be a more accurate representation of student progress (Andrejki, 2004; Callender, 2004; Hull, 2008).

To implement a growth model, states should have in place seven basic components in their educational system to ensure the valid and reliable use of the statistical measure. First, a clear policy of intent should be written outlining the goals of the growth model which will help officials choose the right model for their intentions. Second, the testing program should document annual growth on a single-scale; measure a broad range of skills and content should be aligned with state standards. Third, state data systems must be sophisticated enough to record, store, and analyze data. Fourth, state level statistical expertise (statisticians and psychometricians) should be in place to design the appropriate systems based on the policy intentions. Fifth, leaders must be committed to providing resources to train stakeholders on the interpretation of the growth model and resulting data. Sixth, leadership must make a commitment to transparency and open communication with stakeholders to garner buy-in and understanding. Lastly, appropriate funding must be made available to implement necessary systems, develop tests, obtain expertise, and maintain data integrity (The Center for Public Education, 2007).

Two different areas of research dominate the academic literature on growth modeling. The first examines the advantages and disadvantages for growth models to be used in accountability plans, and the second examines the technical details of the models.

Potential Advantages of Growth Models. Growth models allow for the longitudinal measurement of student progress by comparing an individual student or group's test scores from year to year. Therefore, achievement can be measured, accounted for, and fairly rewarded rather than expecting a group of students to outperform an unrelated group from the previous year. Additionally, AYP credit can be given to schools for students who may be below the proficient level but making substantial progress toward reaching this goal (Duran, 2005). Growth models have shown promise as an addition to measuring student academic progress (Dougherty, 2008).

Educational accountability experts (policy makers, educators, and model creators) have discussed that growth modeling is in fact a more valid way to measure student achievement. The growth procedures are designed to quantitatively measure the learning a single student does in a year, or even over multiple years and can more accurately address the question "Did these students increase enough in what they know and can do?" Under the status model, a student may score at the proficient level on an assessment but that does not demonstrate learning if they started off that school year at the proficient mark (Gone, Peire & Dunn, 2006).

Potential Disadvantages of Growth Models. The use of growth modeling is not without problems and criticism. A high level of statistical expertise is needed to properly execute, analyze and interpret the results. Such expertise is not always available at the

state level. Additionally, some growth models require that the annual standardized test scales must be vertically equated from grade to grade. This procedure places the tests on the same scale and ensures that they measure the same constructs allowing for comparison of test scores (Braun, 2005). This process is cumbersome and often beyond the capacity of the educators at the state level. Also, growth models currently sanctioned for NCLB accountability use are designed to work with standardized test scores while there could be many other variables influencing a child's achievement. These variables include socioeconomic status (SES) and prior teacher information. So, while longitudinal growth is an important improvement over the status model, growth modeling does not have a complete picture of all that can influence student development and individual academic progress (Reckase, 2004).

There are significant costs and technical issues involved in implementing growth model analysis. Merely putting a system in place to give each student in a given state a unique student identifier can cost \$1-\$3 per student to develop. The cost of a data system capable of housing longitudinal data can exceed \$10 million to build. Beyond these initial start-up expenses, maintaining these systems is costly (Dougherty, 2008).

In spite of the limitations and costs outlined, growth models still show promise to better inform educational policy makers on the state of student achievement. There are several types of models to consider and to make an appropriate selection; one must first understand how they function.

Types of Models. State officials have a variety of models to select based on the policy intentions and technology issues. Related to those policy decisions, there can be variation in model validity and precision depending on the questions being asked of the

data and types of information. Additionally, the amount of useful information derived from the growth model varies based on what is evaluated (i.e. growth of scores or performance levels).

There are three broad categories of models approved for use by the United States Department of Education under the NCLB Growth model program: state average growth models, models that use individual student growth to predict future performance, and value tables which set growth targets for students in a table form (Goldschmidt & Choi, 2007).

Average State Growth models, also known as a trajectory models, consider a student's current year test scores as a baseline. Starting with this baseline, three consecutive annual targets are made for the student based on expected average state growth. The projections then become the required targets for students to meet AYP (Goldschmidt & Choi, 2007; Dougherty, 2008).

Individual Student Growth Models (Growth to Proficiency and Projection Models) use sequential years of student test scores and approximate a student's achievement if a typical growth pattern is maintained for future years. A predetermined growth target is then imposed on the student's projected path to guarantee proficiency is met in a certain number of years. If a student meets his/her growth target for a particular year, then this result helps the school satisfy AYP requirements (Goldschmidt & Choi, 2007; Hull, 2008; Dougherty, 2008).

Using a value table approach, policy makers develop what they consider to be acceptable levels of achievement on standardized tests and present this information in a table format. For each student, the table awards points based on where the student's test

scores fall in the table. Even when a student is below the proficient level, a school may receive points for the student's achievement. A school's status is then determined by averaging the points of all students. Individual student progress can be examined by determining if they have moved closer to proficiency (Goldschmidt & Choi, 2007; Dougherty, 2008).

Value-Added Assessments (VAA's), the most complex category of growth models, are currently not sanctioned for NCLB accountability purposes, but have been the subject of considerable research. In addition to standardized test scores, VAA's use multiple types of data to assess school level contributions to student achievement. Depending on the model structure, data on background and school level characteristics and a student's prior achievement can all be used to determine the effects of education on academic progress (Braun, 2005; Goldschmidt, et.al, 2005).

When selecting a model there two important technical challenges must be considered. If a model employees a method of comparing a student's scores from one year to the next, both scores would contain some degree of measurement error. This error may not be equal for each test and thus, lead to an inaccuracy of results. The second type of issue is scaling, and contains two parts. Grade level tests must be designed with the intention of comparing an individual student across levels from one grade to the next. The second scaling issue is the equality of an increase in scores for students at different achievement levels. At the heart of this issue is determining if a high achieving student growing by 10 points over the course of a school year is equal to a low achieving student with the same growth of 10 points (Jennings & Corcoran, 2009).

Utilization of growth model analysis. Under the NCLB pilot program, growth model analysis is actually a third step to determining if a school is going to face sanctions. The first tier evaluates if a school has met AYP under the status model. If it did, then the school is safe from sanctions. If it did not, then the second tier known as safe harbor is used. The safe harbor processes scrutinize other academic indicators to see if a school (1) has had a 10% increase in the number of students scoring below the proficient level from the year before, and (2) improvement is made on another indicator (Linn, 2005). If the school or district cannot be saved using safe harbor, the growth model analysis is employed as a third tier and the process looks to see if minimum growth targets have been met based on the comparison of multiple years of test scores for a student. If a growth target has been met then the group or individual is considered to have met the requirements of AYP.

The Pilot Program. Realizing the need for longitudinal measures, in 2005, the United States Department of Education encouraged states to explore the idea of bringing growth modeling procedures into existing accountability plans opening up the Growth Model Pilot Program (United States Department of Education (2005). Through an application process, states had to demonstrate the capacity to implement the new procedure while maintaining the status model. This Pilot Project accepted nine states. To date, academic research has not been conducted on the process or current state of these initial endeavors.

When announcing the program, guidelines were issued related to how state officials were to plan the growth model implementation as well as the types of models that were permissible under the pilot project. States officials had to write their growth

model policies so all students would be on-track to proficiency by 2013-2014 school year with annual measurable goals for all students. The models could not incorporate background characteristics of students or schools, thereby eliminating the use of Value Added Assessments (Council of Chief State School Officers, 2007). Additionally, the models permitted under the pilot program “value growth to proficiency and the maintenance of proficiency” (Dunn & Allen, 2009).

Nine states: Iowa, Ohio, North Carolina, Tennessee, Alaska, Delaware, Arkansas, Florida, and Arizona were approved for the pilot project (United States Department of Education, 2005; Olson, 2006).

In December of 2007 the pilot program was expanded to allow all states the opportunity to apply to use Growth Models in NCLB accountability plans. Each state has a unique methodology for implementing a growth model and using the data (Linn, 2005, Dougherty, 2008).

The literature has yet to publish research on any specifics related to the implementation or execution of growth models in real world educational settings. However, there is a wealth of information in policy implementation literature which can help frame the current study.

State Educational Policy Implementation

Educational policies are born at the state level and the directives are disseminated to schools through a district system. Even with federal legislation like NCLB, all mandates are for each state system to interpret and implement directly through the state’s department of education. However, growth modeling analysis for NCLB is quite different than most educational policies because the legislation is enacted and systems

maintained at the state level. While most educational policy research examines the policy process as laws and regulations move down from federal to state to the local level, some guiding principles from the literature can help frame the research questions which look to a process where the state implements federal policies.

Research by Darling-Hammond & Wise (1985) notes that federal laws are written with general guidelines to allow “uniform applicability” and to be “enforceable from a distance.” Federal guidelines must be specific enough so procedures and expectations are clear but written with the understanding that the implementation is going to differ from state to state based on existing programs and priorities (Darling-Hammond & Wise, 1985). It is recommended that federal mandates supply appropriate funding for professional development to train expertise, habitual monitoring and exhaustive evaluation with a commitment to solving problems (Fullan, Rolheiser, Blair & Edge, 2001; Louis, et. al. 2008).

United States Federal policy makers often write policies with very general rules, so state administrations must interpret and fill-in intentional and unintentional gaps, as well as implement the policy so it fits into the existing local context. The process of interpreting federal policy, developing a plan of action, implementing, and evaluating, varies from state to state (Fowler, 2009). However, universally, state policy making is dynamic and complex (Louis, et. al. 2008). State policies born from federal mandates are expected to be most effective when clear guidelines are given, there is sufficient time to implement, oversight is put in place to cultivate and ease the policy into place, incentives for compliance are established, and appropriate resources to carry out intentions are made available (Cohen, Moffitt & Goldin, 2007).

The key to good policy implementation can be summarized in four short sentences. Policies must be clearly written and communicated. Central to any policy implementation is expertise, including bringing necessary professional development to every level. Policies do not function independently; they are placed within an existing framework of other priorities and initiatives. Lastly, any transformation requires financial resources.

Factors. This research examined the policy development of adding growth model analysis to NCLB accountability plans. Four intertwined factors from policy implementation literature were integrated into questions and part of the coding process during data reduction. These include state political culture, the sequence of the policy making process, the actors who participate in the process and the leadership power they mobilize.

Culture. Culture is the driving force behind how a policy is implemented in any political system. Culture defines the blueprint typically followed when implementing a policy and conducting business (Fowler, 2009, Louis, et.al, 2008). Three categories of state political culture have been identified: individualistic, moralistic, and traditionalistic. Traditionalistic political systems operate with a mindset of superiority and elitism. Strong leaders, with impeccable academic pedigrees work towards maintaining the establishment, social relationships and traditions. Those systems that operate within a moralistic structure are dedicated to advancement, involvement of the masses in the process and the collective good. There are always opportunities for everyone to be involved or at a minimum to give their opinion through open discussions. An individualist culture is centered on the belief that there is to be a well-defined separation

of church and state. These political systems operate like a business with strong beliefs in loyalty and favors. Operations are smooth and efficient and always responsible to the tax payers who provide the funding (Fowler, 2009). Culture affects all aspects of policy decisions, including who is involved and the process to be used (Louis, et. al, 2008).

Policy-making process. While dictated by culture, the policy process, another factor, is “a sequence of events that occurs when a political system considers different approaches to public problems, adopts one of them, tries it out, and evaluates it. Like a game, it is complex and often disorderly” (Fowler, 2009, p. 13), and is a combination of several intertwined stages and factors. Like a game, it is played in many arenas and involves the use of power (Fowler, 2009). The complex process begins with the setting of an agenda, which starts as a “list of subjects or problems to which governmental officials, and people outside of government closely associated with those officials are paying some serious attention to at any given time” (Kingdon, 1995, p. 3).

An issue is first brought to the agenda process by an indicator, a measure used to monitor a particular activity. This monitoring can produce data (both quantitative and qualitative) which can include test scores, morale, and public opinion. The evidence gathered on the indicator is used to assess the magnitude of a problem worthy of examination. Monitoring of indicators can be done internally by government officials or externally by interest groups or researchers (Kingdon, 2005).

As the agenda items are researched, alternatives to each problem are discussed and a decision is made (by an authoritative group) as to what problems will be further investigated and eventually turned into an issue that can be addressed by government intervention (Fowler, 2009).

After consensus is reached that an issue is worthy of additional effort, each state handles the subsequent steps in a different manner, and many have no clearly defined process that is followed for every single situation. Key players are involved, and there is some time period given to soliciting opinions. Budgetary concerns are addressed, and usually the drafting of legislation is a back and forth process. There tends to be an illogical flow to the process as real world considerations and politics are accommodated (Kingdon, 2005).

With culture dictating the process, there are other factors related to this study of growth models. The first is capacity, an overarching factor that covers the system's ability to integrate the growth model analysis. Under capacity one finds issues of resources including budget and expertise. When implementing a growth model, budget may be needed to hire necessary expertise as the growth model is a complex statistical procedure. Financial resources are then needed to implement the necessary technological systems, train staff if expertise is not available on a full-time basis, and then maintain the technological and personnel components to sustain the system.

Actors. At every step of the process, actors (both individuals and groups) are critical to educational policy implementation. The starting point, usually a piece of legislation, acts as a guide. Then those guidelines are passed along through layers of actors who each put their own interpretation on the issues (Hamann & Lane, 2004). The reality that "public policy is not one single actor's brainchild" (Kingdon, 2005) makes it impossible to accurately "pinpoint" one person who may have been the impetus for an idea and is then responsible for seeing that the original idea matches the implementation.

Typically, there are a number of sources giving ideas that feed into a pipeline (Kingdon, 2005)

All actors are embedded in a system; they do not act in isolation, but in a collective environment, where policies are shaped from various opinions. There are governmental and non-governmental actors involved in the policy making process and both are equally important (Song & Miskel, 2005).

Governmental actors include elected officials, staff and political appointees (cabinet secretaries) who typically talk with large broad strokes about issues and implementation. They may add their opinions but usually do not have the necessary expertise in any one area to work out details without extensive assistance from those well-versed in the issues. This is why there are civil servants or employees of the government who have the necessary expertise, are deeply connected to the policies and programs in question, and are interested in programs moving forward (Kingdon, 2005).

Non-governmental actors are comprised mostly of interest groups, which can be formally or informally organized groups that attempt to influence public policy. They are an integral part of any policy making process (Song & Miskel, 2005). Interest groups are the largest non-governmental group that can affect policy. An interest group is an organized collection of individuals (with leadership) that looks in on government activities with a particular interest, sometimes an agenda. These groups advocate for new agenda items as well as lobbying against what is not in the best interest of their missions. Usually, interest groups are not positive forces on governmental activities and frequently get involved in matters with negative publicity surrounding their involvement or position on issues (Kingdon, 2005).

Power. Power, a factor specific to actors, encompasses access and influence.

Resources are necessary for any policy to move forward and those with access to money, information, and who have the ability to influence are powerful. The power of any actor (individual or group) is context specific so an actor may have power in certain arenas, but not in others. Power seeps through every crack and crevice of every educational system. Some types of power are inherent in any position, but actors can obtain power even if it is not traditional to the position they hold. The most influential actors at the state level are generally the Teacher's Unions, employees of the State Department of Education, School Board Associations, and the Parent-Teacher Associations (Fowler, 2009).

No Child Left Behind Policy Implementation.

As discussed, developing and implementing any educational policy is “dynamic and complex” (Louis, et.al, 2008) and No Child Left Behind has been no exception to this rule. Historically, the state has been the center of educational policy, in “setting standards and designing their own accountability systems. And some believe that NCLB acknowledges and even strengthens this role (Sunderman & Kim, 2007; Kingdon, 2005).

Meeting the demands of implementing the requirements of NLCB is an overwhelming challenge to all levels of all state accountability systems (Linn, 2003).

When NCLB was signed into Law, most states did have some standardized testing program in place at least loosely linked to grade based academic standards (Hull, 2008), but all states needed to overhaul their state accountability programs to meet the guidelines.

However, considerable time and attention had to be given to determine exactly what the Federal Government was requiring of the states. Information came slowly and

took a variety of forms including “proposed regulations, clarifying letters, official and nonofficial guidance and ultimately final regulations” (Schwartzbeck, 2003). With every new piece of information more questions emerged. This flexibility and lack of clarity was in part intentional to allow states the freedom to develop plans that fit current local systems. Therefore, the plans put in place by the states to meet the demands of NCLB were varied reflecting individual state value systems and policy decisions (Schwartzbeck, 2003).

States have a variety of decisions to make when implementing NCLB and the original law provided little guidance in making them. NCLB required all states to put a concrete accountability plan in place with detailed grade based curriculum standards linked to a standardized assessment program. This was all to be developed, administered, and evaluated at the state level. Utilizing the assessment system, the states were to provide a plan that required students to make progress and measure it against an AYP target (Hull, 2008).

There was an unprecedented breadth and depth of dissent from state level educational officials (Sunderman & Kim, 2007). The central issues included too much federal control of education, little flexibility in interpretation of vague guidelines, the law was based on punishment, costs were unspecified and there was a lack of funding. Expectations were set higher than any other previously realized increase of student achievement. Experts in all areas of education agreed that the 2013-2014 deadline for 100% student proficiency was unrealistic (Linn, 2005).

Even with the problems of interpretation and lack of clarity, all 50 states complied and submitted plans meeting timelines and requirements. But few states, only 11,

actually had plans that met all aspects of the law. The biggest hindrance to developing a full plan was capacity. Successful states had large committees of experts and advisory panels, adequate financing, and collaboration to complete the task at hand. However, most states did not have these resources or the capacity to build them to meet NCLB deadlines (Sunderman & Kim, 2007; Linn, 2005).

The significant implementation issue is the enormity of meeting the requirements to show academic progress outlined in NCLB legislation. With little assistance in planning and implementing, states, districts and schools had only a short time to prepare. Because administrators had the many details outlined above to address, in order to meet the first round of deadlines decisions were hastily made, plans submitted, and implementation began without adequate review (Linn, 2005).

However, just as original plans were put in place, educators at all levels started to grumble that student achievement should be tracked (and credit given) using longitudinal measures at the student, class, school, and district levels (Duran, 2005).

Theoretical Framework

No one particular theoretical framework can be used as a guide to this research since it is related to many moving parts from three distinct fields of educational research as shown in the literature review. This dissertation takes form and direction from other research conducted on state level policy implementation and the assertion that federal policy is passed down to state departments of education. This research is based on the work of Fullan, Rolheiser, Blair, & Edge (2001) and Furney, Hasazi, & Destefano (1997) who characterize how policies of this magnitude have been previously implemented. Educational assessment and accountability policies are federally mandated to be

implemented by state level departments of education. Growth model programs fit into this framework as all decisions and systems are made and maintained at the state level. Specifically, as growth modeling is an addition to the NCLB legislation, direction is taken from examinations of how states have chosen to measure student achievement for accountability purposes

State level educational policy implementation is a complex process. Evaluating how a program or policy was implemented across multiple years and levels of government requires a multifaceted and systematic approach. This literature review demonstrated the complexities but also broke the interconnected parts into understandable pieces and provides a framework in which to house this dissertation research.

CHAPTER II. THE EVALUATION METHOD

To answer the research questions, the growth model programs in the three states of Delaware, Iowa, and North Carolina were each examined utilizing qualitative and quantitative data. Detailed analysis was conducted on all documents related to growth model programs and interviews were conducted with educational officials in each state to gain first hand experiences and opinion related to the growth model programs. The data was gathered using case study methodology, treating each state as an individual bounded case and cross case analysis was conducted to compare and contrast significant actors, factors and model parameters. The end product is a rich description of the growth model approach to accountability.

The research questions organized the entire project through analyses. These questions are “how” in nature, and so a qualitative case study design was the preferred method. Analysis began treating each state as an individual cases and then comparing the programs for differences and similarities in an embedded multiple case study design. Within each case multiple units of analysis were analyzed (actors, factors, and models) (Yin, 2009; Creswell, 2007).

However, while the qualitative data is critical, this examination is of a statistical procedure. Therefore, quantitative results from the growth model were evaluated. This quantitative aspect of the study shed light on the data use of the model and helped determine if adding a growth model to NCLB accountability plans was a fairer way to measure student academic progress.

While case study design does not have a specific set of guidelines, directions or even common themes to follow (Yin, 2009), this research had methodological

predecessors with case study designs in researching policy implementation at the state level. These studies acted as guides in looking both internally and comparatively at State Level policy implementation.

In 1997, Furney, Hasazi, and DeStefano examined the implementation of federally mandated transition services for youths with disabilities in three states. A case was constructed for each state and cross case analysis was used to compare policies and practices across states. Interviews and documents were examined at each site. Reading policy was examined across 8 states by Song & Miskel (2005). Structured interviews, guided by open-ended questions, were conducted in-person and via telephone. The sampling procedure included snowball sampling to “ensure adequate coverage of the policy domain.” This piece of literature provided support to examining a state level implementation of a federally mandated policy with case study methodology as it is similar to this dissertation research. Furney (1997) was instrumental in framing this current work given similar goal of looking at a federally mandated policy at the state level (and specifically in three states) and thus provided a methodology to follow.

Data Collection

Data collection began in January, 2011 and continued through July, 2011. Following the advice of Yin (2009) and demonstrated in Furney, Hasazi, & DeStefano (1997), the three major principals of data collection were employed. First, multiple sources of evidence were gathered as the “major strength of case study data collection is the opportunity to use many different sources of evidence” (Yin, 2009, p 99). Interview data, document analysis, and quantitative data of the growth models were included. Second, a case study data base was developed in AtlasTI including documents and

transcriptions and summaries of interviews. Lastly, a research journal was maintained to increase reliability and allowed the researcher to create a path from questions to conclusions showing each step of the research process.

Sampling: The States. Only nine states were part of the original growth model pilot program through the United States Department of Education, and therefore were the only states (the population) with significant longevity in using growth model analysis. This longevity is important as the research questions could only be answered by looking in states with significant experience implementing the growth model.

The goal of this research was to elicit the experience of a variety of participants in dissimilar states to fully understand how a growth model is implemented and operates as part of state level NCLB procedures. Based on the advice of qualitative research experts, a maximum variation of experience was obtained (Creswell, 2007) to fully address each line of inquiry through a contrast of results (Yin, 2009). The researcher took an in-depth look at state level education factors of the nine pilot program states to select those for participation. Several factors related to growth model analysis were included: type of model used, length of time employing the model, if the growth modeling is required through legislation, and if the growth model is applied to all students. Political culture was considered, as was location, total and average enrollment and the number of districts in each state. A summary of the characteristics considered can be found in Appendix A. This sampling procedure was purposeful, not random, as the researcher has selected states thought to best answer the research questions (Creswell, 2007). As a result of this analysis, Delaware, Iowa and North Carolina were selected. These States provided the

greatest variation of all characteristics with directory information (size and location) as well as typical political culture and type of growth model employed.

Sampling: Participants. Based on advice from Fowler (2009), a list of the top educational officials (governmental and non-governmental) most connected to state level educational policy implementation and accountability were asked to participate. The list of potential interviewees for each state included: individual state legislators involved in drafting growth model legislation, the chief state school officer, the state accountability officer, statisticians, programmers, educational interest group leaders, the governor (or staff education aide), the heads of the state boards of education and the state's teachers unions, and any outside experts who participated during the growth model implementation process.

While the list of potential participants was quite lengthy, the response rate was disappointing as highlighted in Table 2.1. Many individuals felt that since the growth model did not fall directly in their line of responsibilities, they lacked sufficient knowledge of the growth model program to be helpful with this study. When declining, all deflected the invitation to the chief accountability officer.

Table 2.1
Interview participation statistics

	Delaware	Iowa	North Carolina
Potential interviewees	19	18	17
Declined	7	11	3
Did Not respond	8	5	10
Interviewed	4	2	6

Interviews. Participants were recruited via email which gave succinct information regarding the study, a set of interview questions and a request for a time for

the researcher to make contact. Each interview was conducted over the phone and varied in length but averaged a half hour. Interviews started with the process of informed consent as required by the Rutgers IRB process, and then a semi-structured interview protocol guided the conversation (Yin, 2009). All interviews had a standard open-ended format (Patton, 1990) as Marshall and Rossman (1999) recommended, which gave a degree of systemization to allow for comparison of responses.

Approximately half of all interviews were originally transcribed by a third party vendor but due to quality issues, the researcher discontinued that relationship and personally transcribed the remaining. All transcriptions were proofread and summarized.

Member Checking. As a substantial amount of the evidence used to answer the research questions came from analysis of the participant's statements the accuracy of those interpretations was critical. Therefore, member checking was used to increase the validity of the conclusions.

Member checking is the process of soliciting feedback on the transcription of a participant's interview, researcher interpretation of remarks, and final conclusions drawn from that information. The goal of the process is to ensure that any conclusions drawn from the data are a true representation of their participants' expressed views and an accurate account of transpired events (Creswell, 2007).

After each interview was transcribed the researcher summarized the main points and drew conclusions from the comments. The full transcription and summary document were sent to each participant for review. Participants had minor additions and corrections to the transcriptions and documents. The corrections engendered some back and forth dialogue to ensure participant thoughts were correctly represented in the documents and

understood. Once approved by participants, the researcher downloaded the finalized transcriptions and summary documents into Atlas TI.

Documents. An exhaustive search was conducted to guarantee that all relevant growth model documents were collected for each state. This included documentation provided on the websites for each of the departments of education. Additionally, during interviews all participants were asked to recommend or provide any documentation they felt might be helpful to this research. Documents included the individual state report cards, growth model applications, summary reports of testing programs, and historical accounts of state level accountability programs.

Utilizing world-newspapers.com, an exhaustive search was conducted with all newspapers (state-wide and local) published in all three states. In total, 13, 78, and 78 newspapers were evaluated in Delaware, Iowa, and North Carolina respectively. Each newspaper was searched on keywords related to the growth model and educational accountability including: No Child Left Behind, Growth Model (both separately and together), Accountability, and Department of Education.

All documents were evaluated using a standard Document Analysis Sheet. In addition to space for the directory information on the document (Title, author, location), the researcher was able to take detailed notes on the importance of the document to the research and record additional questions arising from the information.

AtlasTi was used to house all data collected in one Hermeneutic Unit. Documents, articles, and all interview transcriptions were downloaded into the software.

Collection of Quantitative Data. Qualitative data provided a more in-depth understanding of the results of the growth model analysis (Miles & Huberman, 1994).

Since growth modeling is a statistical procedure, a descriptive look at the quantitative results of the number of schools assisted by the growth model procedures helped the researcher understand the use and importance of the data.

Analysis

The goal of analysis was to wring out the data to ensure that every comment and written word about growth modeling in Delaware, Iowa, and North Carolina was evaluated. Analysis was started with the first interview and document read, as the researcher continually took organized notes for future analysis.

As specific case study data analysis processes have not been well-defined (Yin, 2009) data analysis followed the general three step process: data reduction, data display and finally drawing conclusions (Miles & Huberman, 1994). While each step was a separate undertaking, they were recursive in that the process required circling back to prior steps.

Data Reduction. As anticipated, the final raw data file is a massive collection of documents. The researcher spent considerable time reading and rereading all information for global understanding of key concepts (Maxwell, 2005).

A list of main codes was developed from this general reading, the literature review, and the research questions. The researcher took a systematic approach, first through a deductive coding scheme, labeling data pieces with 10 main codes including: culture, process, actors, factors (capacity, process, expertise, and personnel), models, model choice, implementation, data use, statistics, conflict and collaboration.

Through a second read of the file it was clear that all codes needed to be clarified for each state. So the researcher recoded each based on state affiliation. As an example,

the code “Model Selection” was too broad to cover all three states. So the data was recoded with a Model Selection code for each state. Then, during the last pass through the data file the researcher looked for related data that had not yet been labeled. This was inductive in nature and allowed codes to emerge that the researcher did not anticipate in the ten listed above. This allowed the data to tell the parts of the story not anticipated by the researcher and provide greater insight into the research questions (Maxwell, 2005). The final list of codes, sorted by research question, can be found in Appendix B.

Data Display. Data displays were created in AtlasTi. First, using the query tool, each code was selected and corresponding passages printed into Microsoft Word documents. These printouts were sorted by state and enabled the researcher to garner a detailed understanding of the implementation process in each state as a separate case.

Within each state, data was then sorted and summarized by research question. This enabled the researcher to analyze each question and start to compare and contrast results. Charts, based on each research question were developed and continually revised with key information. This allowed for easy comparison and helped the major themes emerge. A continual and extensive back and forth process was used between data charts and the original data to ensure that every piece of data was considered.

Conclusion Drawing and Verification

Summaries of data and corresponding charts were utilized to draw general conclusions. Each conclusion was then organized with supporting data and grouped both by state and research question.

Once major conclusions were drawn, the researcher revisited the original data file. It was reread with the intension of uncovering contradictory evidence or rival theories but this process did not yield any discrepancies.

Validity

A cornerstone of any good research endeavor is ensuring validity, or the ability to know that conclusions from analysis are accurate representations of the experiences of participants in the particular context.

Several recommended procedures were used to ensure that validity is achieved, based on the approach recommended by Maxwell (2005) and Yin (2009). An intense interview process with subjects was conducted; a thick, rich, detailed and varied data base was created; respondents validated their comments and researcher's summaries through the member checking process. Multiple sources of data were collected from a diverse group of individuals. The researcher took the time necessary to conduct a search for discrepant evidence. A full investigation for rival theories was conducted but none were found (Yin, 2009).

Triangulation was used to ensure validity of findings. The process of triangulation involves collecting multiple sources of data using multiple methods to enhance confidence in findings. A variety of sources were used including interviews with multiple stakeholders, documents, and quantitative data (Maxwell, 2005, Creswell, 2007). Conclusions were based on multiple sources and therefore, more credible (Maxwell, 2005).

As a result of these procedures, a high degree of construct validity, as outlined in Yin, (2009) was achieved. This was accomplished as the researcher kept the focus on

constructs outlined by the research questions using multiple sources of evidence.

Additionally, key informants participated in member checks to ensure that thoughts are correctly represented.

Throughout the process, the researcher maintained a high commitment to reliability. It is difficult in qualitative research to precisely duplicate the research in an attempt to reproduce the results. However, the researcher documented and standardized all work (such as through an interview protocol) and developed a very rich data base assuring that the highest level of reliability was obtained.

Given the small population, (only 9 states total) the sample was selected to represent certain traits as discussed above. The states were not selected randomly, and therefore, this study, as most case studies, will not have external validity. These results cannot be generalized beyond the states included.

There are threats to the validity of this study as are commonly found in most qualitative research studies with small sample sizes and a lack of random selection (Maxwell, 2005). However, every precaution has been taken to minimize these threats through the data analysis procedures including an attempt to identify any alternatives to conclusions (Maxwell, 2005).

There are two main threats to the validity of this research: researcher bias and reactivity (Maxwell, 2005). Researcher bias is analyzing the evidence with preconceived notions about what the answers to the questions should or would look like. This researcher has taken several classes (both qualitative and quantitative) where drawing conclusions from the evidence is emphasized. This awareness of bias, whether it be fitting the data to a preconceived notion or looking at the data through a preconceived

lens was a concern, but every effort was made to let the data tell the story. Additionally, while a specific coding scheme guided the initial data reduction process, the researcher did not have any preconceived notions of how the questions were going to be answered.

The second validity threat in qualitative research is reactivity, or “the influence of the researcher on the setting, or individuals studied” (Maxwell, 2005). As the researcher was not placed in the setting the opportunity for this threat did not exist. However, for this project, the researcher could have had influence over participant responses, but was very careful not to ask leading questions or influence the outcomes.

CHAPTER III. STATE GROWTH MODEL PROGRAMS FRAMED WITHIN THE CONTEXT OF CULTURE

Culture is the driving force behind how a policy is implemented in any political system. Cultural characteristics are the blueprint or typical pattern of behavior followed when conducting business (Fowler, 2009; Louis, Thomas, Gordon, & Febey, 2008). Culture can include many facets of an organization's behavior, "political culture is a collective way of thinking about politics that includes beliefs about the political process, its proper goals, and appropriate behavior for politicians" (Fowler, 2009, p. 93).

Two areas of political culture literature are important to understanding the implementation of state growth models within the context of state culture. The first is the work related to labeling of states based on traditionally found cultural characteristics. The second line of research that suggests that state level implementation of national policy directives can alter the traditional labels.

Three significant pieces of research have identified and explained the distinct categories of culture that typify state operations: individualistic, moralistic, and traditionalistic. Elazar (1994) was the first researcher to identify the categories. This work was based on his lifelong academic study of American Politics and not specific to the educational context. Those categories were confirmed in the realm of educational policy by Wirt, Mitchell & Marshall (1998), with the study education codes in Wisconsin and Illinois. The work of Fowler (2009) used the Elazar (1994) categories as a springboard to broadly introduce the general categories into the context of educational policy.

Explanations of State Cultures

Traditionalist. Traditionalistic political systems operate with a mindset of superiority and elitism. These cultures are typically found in the regions of the southern United States. These cultures contain strong leaders with impeccable academic pedigrees who work towards maintaining the establishment, building social relationships and preserving traditions. These leaders are seen as the “established elite which should provide political leadership” (Fowler, 2009, p. 93). The elite may take on different forms from a ‘good ol’ boys network’ (Fowler, 2009, p 93) to political and business experts. In traditionalistic settings “kinship, social connections, and personal relationships are extremely important” (Fowler, 2009, p. 93). One must be invited to join the membership elite in the political process. Those operating in a traditionalist culture do not like change. Rather they want to maintain order. If change must occur, it is to be done with “minimal disruption” (Fowler, 2009, p. 93).

Moralistic. Systems which operate within a moralistic structure are dedicated to advancement, involvement of the masses in the process and the collective good. This culture is prevalent in the New England area and up through the mid and northwest. Moralistic policymakers are interested in advancing for the good of public interest. Individuals are given multiple opportunities to be involved or at a minimum to give their opinion through open discussions. Town hall meetings, collections of ideas, and fierce debate are common characteristics. Political leaders are expected to maintain the public trust as a sacred entity and corruption is not tolerated. The downfall of the moralistic culture is naïve idealism without regard for reality or practical maneuvering within a real-world political system.

Individualist. An individualist culture is centered on the belief of a well-defined separation of church and state. These political systems operate in the Mid Atlantic and lower Midwest states. They function like a business with strong beliefs in loyalty and favors. Operations are smooth and efficient and always responsible to the tax payers who provide the funding (Fowler, 2009). Much like the traditionalist culture, favors to maintain and enhance close relationships are a strong mechanism in the working system. Politics is a business into which individuals and corporations can buy (i.e.: through campaign contributions) as a way to have influence on issues. Because of these attributes, the individualist cultures are most prone to developing into corrupt structures. But, these cultures are characterized as “smooth, efficient businesslike” (Fowler, 2009, p. 96) operations.

According to the writing of Elazar (1994), North Carolina has traditionalistic culture, Iowa a Moralistic, and Delaware an individualist political culture.

In their work, Marshall, Mitchell, and Wirt (1989) studied educational policy making within a cultural framework. Six states were included in their study (two from each of the traditional cultures). This work brought forth significant findings related to political culture which may have influence on policy implementation in a state structure. For state initiated (more localized) educational policy implementation, the stereotypical characteristics of the three classifications will take hold. Traditionalist states focused on elitism, a select few who maintain power; moralistic states put attention to developing programs to enhance school facilities and agencies and programs for special needs students. States operating with an individualist framework often balance policy with cost-saving measures (Fowler, 2009).

A second body of cultural research claims that even in the presence of a state deeply entrenched in its culture, “powerful national policy movements can overwhelm the importance of political culture in state level policy making,” (Marshall et al, 1989). This work examined national movements of school desegregation, bilingual education, and special education in the 1980’s demonstrated that these types of national movements cause the state political culture to recede and allow a national policy or movement to take precedent and move into the state educational system in a rather unc customary way (Fowler, 2009).

Both bodies of research are important for this current work as the addition of a growth model program to state NCLB accountability procedures is an optional federally controlled policy for states. The United States Department of Education has specific requirements for state level officials to bring the program into NCLB procedures. But, unlike other policies, it is the decision of the officials in the individual state departments of education to participate.

This dissertation uncovered support for both lines of research. First, the states exhibited some characteristics of the cultures within which they typically operate. However, findings also concluded that when implementing a growth model into NCLB accountability plans, state cultures did exhibit uncommon characteristics. Thus, this is in line with the conclusion that different cultural characteristics are exhibited when a state is implementing a national policy. However, the addition of a growth model is an opt-in trend and not mandatory like previously federal mandates. The federal government has conditions a state must meet in order to use a growth model, but the decision to enter is

done at the state level. So since the growth model is that hybrid situation, it is not surprising to find support for both lines of research.

This chapter now examines the first research question, “how did each state decide to apply for the growth model program,” and it is unpacked using the lens of political culture.

Delaware

Most of the general characteristics of Delaware state culture with regard to the growth model uncovered in this research do not support the individualistic label that Elazar (1994) reported. Given the label, I would have expected to uncover a growth model implementation based on loyalty, favoritism, smooth and efficient businesslike operations demonstrating a great sense of responsibility to tax payers. However, in contrast, descriptors such as cutting edge technology, involvement of others, and transparency were found. Additionally, it was clear that leaders put great emphasis on the value of the state being small with multiple references to groups able to meet centrally and collaborate without the problems of distance.

Since the early 1990’s the Delaware Department of Education (DDOE) has put substantial effort into initiating school reform and increasing student achievement. With a significant number of students not meeting standards, a three pronged reform process was initiated: “developing academic content standards; implementing a statewide testing program; and establishing school accountability regulations” (Delaware Department of Education, 2010b, p. 13). With the curriculum in place and the tests developed, the accountability prong was legislated at the student and district level by the state assembly in 1997. These statutes required “business rules for producing accountability scores and

allocating school accountability ratings, rewards, and consequences. By including all students, schools, and districts, this new comprehensive accountability system focused on rewarding continuous improvement” (Delaware Department of Education, 2010b, p. 13).

As explained in the Delaware Growth Model Application:

“For more than a decade, Delaware’s education agenda had included an increased focus on accountability and the Department of Education officials have initiated significant advancements to support educational progress. Standards for student learning have been developed in at least seventeen content areas. Statewide achievement standards have been in place for the content areas of English/language arts (assessed by separate reading and writing tests) and mathematics in grades 3, 5, 8 and 10 through the use of the Delaware Student Testing Program (DSTP) since 1999.” (Delaware Department of Education, 2006, p 1).

With the passage of NCLB in 2002, Education officials undertook a significant overhaul of the Delaware accountability system. A stakeholders group called the Partnership Council was convened to make recommendations on how to proceed with all facets of the new legislation. This group was comprised of “teachers, building level administrators, representatives from the administrators’ association, special education coordinators, Title I coordinators, curriculum directors, local chief school officers, State Board of Education, parents, business community, advocacy groups, and local boards of education members” (Delaware Department of Education, 2006, p. 8). The DDOE formed the committee as a way to gain widespread consensus from various groups of stakeholders, and to “preserve aspects from the old accountability system while meeting new requirements of NCLB” (Delaware Department of Education, 2004, p. 4). “The group added many additional elements to the state’s accountability system, the most significant of which were the consequences/sanctions for failure to meet standards and subgroup reporting. In analyzing the results produced by the new accountability system

developed in response to NCLB, 56.4% of schools and 17 out of 19 school districts missed AYP targets. The accountability program was redesigned and added a confidence interval and provisions for students with disabilities to ease the burden on failing schools” (Delaware Department of Education, 2010b, p. 20).

The Delaware Student Testing Program (DSTP) is a standardized test coordinated by an independent testing contractor. Delaware teachers are involved in writing questions for many parts of the tests and are brought in to review and edit test questions. The test consists of multiple choice item that are electronically scored. Human scorers are hired by the test developer to score open ended questions (Delaware Department of Education, 2008).

The decision to apply for the growth model program was initiated among the top officials within the DDOE. The “drivers of change are the higher ups in the Department of Education and [they] are driven by the governor’s agenda” stated a member of the accountability team. Further explanation was given by a former DDOE accountability officer who reported, “our cabinet, which includes our associate secretaries, secretaries, and deputy, discussed some of the issues, but then our deputy for assessment and accountability actually had responsibility for implementation [of the growth model].”

There were already necessary elements for implementing a growth model into the statewide accountability program in place in the educational system of Delaware. “On the technical side, DOE officials knew that they had all of the essential pieces in place to successfully implement a growth model, data systems and infrastructure, assessments for multiple years in the areas of reading and math in contiguous grades” (Delaware Department of Education, 2006, p. 8). Delaware already had in place the cutting edge

technology needed to implement the program. This included a statewide system of unique student identifiers, the ability to track students longitudinally, and a state system to assess data integrity and quality.

Delaware State Department of Education officials were very interested in getting ahead of the mandates and wanted to prepare for future authorizations. As explained by a member of the DDOE accountability team, “they (officials) believe that during the next reauthorization of NCLB (2012-2013) the feds might be inclined to allow for growth or even require a growth component in NCLB calculations. If it is going to be allowed or even mandated, they wanted to get their systems in place.”

These last two interrelated contextual features both point to wanting to be prepared. When DDOE officials entered the growth model program they had the necessary pieces in place. Additionally they wanted to start the process of putting a growth model in place to be ahead of any future mandates. This preparedness is a cultural characteristic that has not been previously documented related to the individualist culture.

Regardless of participant or document, all collected evidence indicates that DDOE officials were committed to including and informing others clearly seen through the importance of the stakeholders group. This was surprising given the culture of the state. The involvement of stakeholders groups is not in keeping with smooth and efficient operations. In fact, involving parents, teachers, principals, and politicians added a multitude of diverse opinions to the process that then had to be considered and organized.

With the decision made to implement a growth model program, the DDOE top brass turned once again to the Partnership Council. It was appropriate to reconvene the group to support DDOE officials in developing a growth model plan that would integrate with existing accountability systems (Delaware Department of Education, 2010b). Once again using the Partnership Council was significant as it allowed many different levels of stakeholders to be included in the process. At this point the committee also accepted volunteers and recruited additional members to make sure all stakeholders groups were sufficiently represented. As one DDOE official explained:

“Obviously, the state association wanted to make sure that they had teachers well represented on these committees and then in the additional discussions of what should be the composition of each piece of the committees. We wanted to make sure that there was a very large majority of teachers who are currently practicing, some administrators, some specialist of departments of ed. and some outside facilitators who’s mission was to simply keep the process moving along towards what the secretary wants which is a recommendation which needs the committees to define student growth and the metrics to use to define that growth.”

While a seemingly daunting task to convene this group on a regular basis, Delaware has the advantage of being a small state. As explained by DDOE official, “we’re playing on our size. We’re small enough where we can have representatives from all the districts and most of the charter schools in the same room at the same time. Clearly there is an advantage to being a small state.”

In addition to the stakeholders group, DDOE officials also worked extensively with a consultant at each stage of the process:

“We contracted with one consultant who used to be a state assessment practitioner and they have had the ability to focus on helping us get all of the documentation together in a planful way. They did the planning that goes around making sure that everything is addressed so that as we go through peer review approval we can make sure that all of that is checked off. And we continue to work with that contractor and that’s been a real resource.”

Consultants were also brought in on the technology side “to understand regulations and get our data in shape. The consultant helped us look at business rules and how to help turn that policy into the technical requirements into mathematical statements, lay it all out and get it all organized” explained a member of the technology team.

Educational leaders placed top priority providing significant transparency to stakeholders with regard to the results of growth modeling. There was a commitment to inform all individuals and groups of the results generated and how data were being utilized. A multitude of reports are made available online, including School Score reports, state summary reports, district score reports, and selected group reports. Parents are sent printed reports of their students’ achievement. Teachers, administrators and other district level officials have access to data online from the student to state specific level. This access allows education officials the ability to drill down to the student level to analyze results. They have access to check results and were trained on procedures to double check calculations.

This transparency also allowed for the state level educators to make expectations very clear to districts and individual school officials. Both the transparency and the stated desire to make expectations clear are cultural characteristics not previously stated by those researching culture.

Generally, this research did not uncover evidence that the individualist cultural characteristics were part of the growth model implementation process in Delaware. Rather, a new set of characteristics was uncovered. The department showed a commitment to being prepared with data systems before even deciding to implement a growth model. With every decision the DDOE involved all levels of stakeholders to

garner support and have wide input part of the process. This input was complemented by a commitment to transparency of results.

Iowa

Based on the work of Elazar (1984), Iowa was categorized as having a moralistic culture. As such, we would have expected to see idea sharing, debate, and naive idealism. States with these cultures demonstrate the belief that “participation in politics should be as widespread as possible,” (Fowler, 2009, p 95). Yet, evidence was found to the contrary.

Iowa has a long tradition and history of standardized testing. But, this tradition as not mandated at the state level, as the IDOE did not implement a state-wide testing program. All districts were using the Iowa Tests of Basic Skills which were developed by the University of Iowa. The IDOE had no input into these tests; rather it allowed the University of Iowa to establish appropriate testing standards. Since all districts were using the Iowa tests, there was no reason for the IDOE to mandate statewide testing. Therefore, Iowa was one of the last states to mandate accountability testing.

Despite the unique history of state testing, educational officials did have a strong belief in growth. As explained by one member of the IDOE:

“there was a long held conviction that Iowa schools and districts should be committed to overall improvement and individual student growth. The growth model proposed allows us to better identify and focus improvement resources on those schools most in need while recognizing those schools where students achieve significant growth. We know that some of our schools have student achievement levels that are below proficiency targets but are making great strides in educating their low-achieving students toward proficiency. The growth model will pinpoint such schools so that they can be studied to learn what strategies they are implementing so that we can share those practices with other less successful schools.”

Legislated before NCLB, Iowa public schools were required to establish annual improvement goals. Districts were required to report, on an annual basis, student academic progress and improvement plans if they had not met goals.

Based on research of state culture, we would expect to find stakeholders in fierce debate over issues. However, the decision to enter the growth model pilot program was made by a few individuals and kept purposely small. It was initiated when the US Department of Education put out a notice in the federal register and announced the growth model pilot program. The accountability officer explained how the process developed once the decision to apply for the pilot was made:

Well our director had assigned it to our division administrator and she called me up and she goes well you know since I had chaired the assessment team that did the work on the initial accountability plan, she thought then you can do the growth model. Through lots of collaborative relationships going to meetings and things like that to learn about what the feds wanted and talking to a couple of people in Iowa City and the Iowa Testing Program we built our growth model and [submitted it] to the fed and then we got it approved.

Further evidence was found regarding the small scope of the growth model program and caution in moving too quickly. As explained by one educational stakeholder outside of the department of education:

“The one thing I want to share with you is that in Iowa, we are really going slow on this. We want to get that data base put in the right way, we know the student identifier. But how we allow outside entities to use that is really what we have been cautious about. Our fear is that someone might come in and try to manipulate that to a political agenda, that isn’t meaningful for the improvement of education in Iowa. So I think that is why we have gone slow. To make sure that when we do avail this to outside entities, that we got safeguards so you can’t manipulate it in an unfair or not meaningful way.”

There was some evidence that discussions occurred leading up to the application the IDOE officials submitted when applying for the growth model program. Even though

the growth model program was implemented without much fanfare, the IDOE did benefit from some consensus among educators across the state.

“The opportunity for the state of Iowa to submit this proposal to include student growth in AYP determinations is a welcome flexibility, with growing consensus and approval across the state among educational leaders. They are willing to be held accountable for the achievement of all of their students, including those students who are not yet proficient, but who are “on track to be proficient.”

The explanation for why the growth model was implemented was that the IDOE officials saw it as an opportunity to give a more complete picture of AYP than the original NCLB legislation and because it did not show progress below the proficient mark (Iowa Department of Education, 2007). “Iowa’s schools, districts, and the state as a whole have a better chance of reaching the goals of NCLB, as long as our teachers continue to provide services to kids at all levels of non-proficiency,” stated a top educational official inside the IDOE. This speaks to the desire of advancement in states with moralistic cultures.

In further consultation with others in the department, IDOE officials felt that the department was ready to start measuring growth for AYP purposes. On the testing side, annual requirements and goals were in place for all districts. The tests were vertically scaled for all grades and in grades 3-8 and 11 all students had been tested in the last two consecutive years. On the technical side, Iowa had a three year history of having a unique student identifier, as required for growth modeling and the ability to monitor the movement of students. Lastly, Iowa districts were interested in looking at growth and some had some history with the idea on a rudimentary level to look at student progress (Iowa Department of Education, 2007). As in Delaware, readiness was found as an

important characteristic of the culture during the growth model implementation but not recognized in previous cultural research.

During the decision making process, desire for advancement was seen with importance of having more detailed information on academic performance for every child. From the popular press: "Iowa officials want teachers and parents to have growth data readily available for every student. The goal for each child is to see them show at least a year's growth between grades." "The former Iowa secretary of education, Judy Jeffery has been quoted saying that 'the new method will give more information about how students are progressing'" (Neises, 2007). "We've talked so many times about our major concern being, 'How do we help each child grow?'" Fowler said. "It's a much kinder model for children to say, 'We're going to support you in your growth,' instead of saying here's the bar - reach it or fail, Fowler said" (State Will Track Students Over Academic Careers, 2007, p. 10B).

In the growth model application, IDOE officials placed great importance on the goal of putting a fair system in place that "maintains fidelity to having 100% of the students at proficiency by 2013-2014. If schools are truly helping the lowest achieving students move towards proficiency at the rate set by the growth standards, they should be acknowledged for doing so. It rewards growth towards proficiency and staying proficient. (Iowa Department of Education, 2007). And speaking to this fairness is the goal of ensuring a more valid and reliable accountability systems so schools are correctly identified.

The most surprising discovery in terms of this moralistic culture was the small number of individuals involved in making decisions. While some evidence of discussion

was uncovered, it was more to garner support for the program and out of a commitment to reaching out to ensure educational leaders understood the program. There were several times, as mentioned above, that the moralistic cultural characteristic of advancement was prevalent during this process. This was seen in the commitment to advancing education and individual student progress. Additionally, the data showed that IDOE officials felt ready for the addition of the growth model and looked to increase fairness for schools and districts working with below proficient students.

North Carolina

Based on Elazar's work (1994), North Carolina is categorized as having a traditionalist culture. This includes overarching feelings of superiority, elitism, strong leadership, long-standing traditions, and many social relationships. As evidenced through many pieces of information uncovered, the previously stated characteristics of the culture of the state were prevalent during the implementation of the growth model program.

North Carolina houses the entire accountability operation under a program titled "The ABC's of Public Education" which includes a growth model. The "A" stands for Accountability, the "B" refers to a focus on the Basics with high standards, and the "C" means Control at the local level. The ABCs program has a long history as it was implemented in 1995, years before the United States Department of Education allowed states to implement a growth model program. In 2005 when states were invited to participate in the Growth Model pilot project (United States Department of Education, 2005), North Carolina Department of Public Instruction (NCPDI) had nine years of experience operating a growth model as part of its ABC's educational program. So

understanding how the model operates in the state requires not only an examination of decisions made through the Growth Model Pilot Program, but also how decisions were made and implemented since the late 1990's as the two are intertwined (Fabrizio, 2006).

With a long history of educational accountability policy, by 1993, "the concept of accountability was pretty well established" in North Carolina before the ABCs were implemented (Fabrizio, 2006, p54). However, ABCs dramatically improved previous efforts:

"The ABCs of Public Education began in the 1996-97 school year as North Carolina's primary school improvement program and was, for that time, a major step forward in improving schools, providing the state's first school-level accountability system and generating information that has allowed North Carolina to better target school improvement efforts." (North Carolina Department of Public Instruction / Accountability Services, 2010, p. 1).

At the time, the ABC's seemed "cutting edge" (Fabrizio, 2006, p. 58). While it has changed over time, the growth model piece has stayed as the centerpiece of the ABC's program. (North Carolina Department of Public Instruction / Accountability Services, 2006). The experience with the ABC program was an enormous help when NCDPI officials had to plan for NCLB requirements:

"Well, I'm just thankful we have an ABCs program because if we didn't, we would be so far behind like many other states are that don't already have a statewide testing program that's well established. I hate that they [USED] won't let us use our [growth] model instead of the one advocated by NCLB as that one snapshot in time because I think this [ABCs] is a much better way to chart the growth of students. But we tried to press that point on them and haven't yet made any impact" (Fabrizio, 2006, p 81).

A cornerstone of the ABC program was a system for awarding staff financial incentives based on student academic achievement using growth data calculated from standardized test scores. The program awarded teachers and school staff with bonuses of up to \$1,500 when students met annual growth targets. There were two levels of

incentives. The first was for schools that demonstrate exemplary growth and the other for meeting expected growth targets. However, the bonus system was eventually eliminated due to budget shortfalls at the state level. With tight fiscal conditions, the legislators made the decision to fund the permanent salary structures (and thereby teachers pensions) rather than continue the bonuses based on growth (Robinson, 2008).

The ABC's educational initiative, and included growth model, had extensive input from all state stakeholders. Through the process, leadership was exhibited by then Governor Hunt and Dr. Jay Robinson of the NCDPI, and the North Carolina Association of Educators (NCAE). Additionally, members of the business community were important players as well (Fabrizio, 2006). This strong leadership would be expected given the traditionalistic type culture the state has displayed in the past.

The State Board drove the initial effort to gather perceptions of all stakeholder groups. This clearly demonstrates leadership and desire to establish relationships with diverse stakeholders to garner support based on participation in the process. "The State Board conducted an in-depth study involving public hearings, surveys and interviews; reviewed current mandates and operating procedures; and undertook a major organizational analysis to relate all education operations to the mission" of the ABC's program (North Carolina Department of Public Instruction/Accountability Services, 2010, p. 1).

As a result of that in-depth analysis, the State Board of Education created the Compliance Commission for Accountability in July of 1996. The purpose was to advise the State Board of Education on issues related to school accountability and improvement. The commission, appointed by the State Superintendent, was composed of two members

from each of educational districts and six at-large members to represent parents, business, and the community (North Carolina Department of Public Instruction/Accountability Services, 2010). As explained by a NCDPI accountability officer, the commission and involvement of stakeholders in decisions was a positive step:

“That’s one of the things that I really feel, the department and the State Board really did a wise thing. When the ABC’s was legislated, one of the decisions that was made was to constitute what they called a Compliance Commission for Accountability. That Compliance Commission for Accountability really saved us in terms of our ability to do what we did. You know, it was a group of people that represented principals, teachers, parents, higher Ed, business leaders, I mean, the full gambit. There was also a Technical Advisory Committee which allowed us to have folks from different universities and different test companies to come in and advise us periodically when we need that kind of assistance.”

From the beginning the ABCs program, and the included growth model, was seen by many as yet another fix to the myriad of problems in the state educational system and an effort to stop a revolving door of ineffective educational initiatives. Previous initiatives were referred to as the “flavor of the year or the flavor of the day...we were chasing every yellow brick road that came down the path...we literally tried every good and dumb idea that came down the pike in the ’80s” (Fabrizio, 2006, p. 123). Therefore, when the ABC’s were being developed, there was a desire for a different type of system:

“The ABCs of Public Education began in the 1996-97 school year as North Carolina’s primary school improvement program and was, for that time, a major step forward in improving schools, providing the state’s first school-level accountability system and generating information that has allowed North Carolina to better target school improvement efforts. (Public Schools of North Carolina, 2010, p. 1).

The growth model uses data from the North Carolina Testing Program which is a an effort coordinated through NCDPI, a private contractor, UNC-Chapel Hill, and Technical Outreach for Public Schools (TOPS). NCDPI Accountability Services/Testing

Section is responsible for the coordination. The tests are a combination of multiple choice and open-ended questions.

When applying to the Growth Model Pilot Program, a goal of officials at the NCDPI was to bring each student to proficiency within four years of their baseline year (the first year in which they are tested). This was viewed as reasonable given the available data and it could be mathematically predicted that students could be proficient in 4 years (there was acknowledgement that the necessary achievement strides were greatly accelerated compared to actual observed performance in over nine years) (North Carolina Department of Public Instruction/Accountability Services, 2006).

A final goal was to decrease the number of schools inappropriately identified as being in need of improvement. These identifications were a drain on the limited resources available and diluted the effectiveness of interventions in the schools that were correctly identified as being in need of improvement (North Carolina Department of Public Instruction/Accountability Services, 2006).

It was fortunate that data collection enabled a nearly 20 year retrospective to the beginning of the growth model program. In those formative years it was clear that the state held to its traditional cultural expectations. Fabrizio (2006) claimed the strong leadership at the top of the educational system drove the ship and assembled groups of experts to help with different facets of the decision making process. However, the state broke from traditional norms by involving stakeholder groups. This was critical to gain support and since the state was under pressure to fix problems, was seen as a way to garner buy-in by those who would be affected by the growth model implementation.

Cross-Case Analysis of State Decisions

Two components of state decisions are presented in this analysis. The first is a comparison of state experiences when making decisions to implement a growth model. The second is an evaluation of how the expected and actual cultural norms played out in each state when implementing the growth model program into state level NCLB accountability plans.

A common theme to emerge across all state experiences was the involvement of multiple stakeholders in the process. Officials in both Delaware and North Carolina enlisted widespread support by formally commissioning committees to help with the work. In Delaware, the Partnership Council was comprised of stakeholders from all levels of the educational system. The group was charged with making recommendations on all decisions related to the growth model. North Carolina created a Compliance Commission for Accountability, which was also a representative group. The group's mission was to handle issues and make recommendations to the State Board of Education. Iowa involved educational leaders from across the state in collaborative relationships not to gain input but to secure buy-in for the growth model program. A formal group was never convened. In all three states it was clear the implementation involved others in some capacity.

Delaware and Iowa first entertained the idea of a growth model as a result of the invitation by the USDOE to add it to accountability procedures. The education system in North Carolina already had a growth model in place as part of a strong and thorough accountability system. All educational leaders were very clear that they looked at the opportunity as a way to take a more holistic approach to measuring student achievement and to move the state accountability system forward. Since they had the essential pieces

in place (like data systems and assessments), it was also an opportunity to prepare for anticipated future authorizations. Finally, officials in all three states pointed to the fairness of measuring student achievement using a growth model program.

Unlike Delaware and North Carolina, the way in which officials at the IDOE decided to enter the growth model program was small in scope with only a few individuals involved. With systems in place (tests and technology), the IDOE officials made initial decisions internally and coordination was handled by one member of the staff. Iowa was the smallest program involving very few individuals in the decision making process.

The data revealed that there were many different goals the state officials had in mind when implementing the growth model to state level accountability plans. The goals were fairness, increasing student achievement, and recognizing growth below proficiency.

With regard to whether the states acted on the opportunity to pilot growth models in ways characteristic of their political culture as defined by Elazar (1994), the data indicate consistently that the states deviated from their predicted cultural paths. Delaware, an individualist culture, showed dedication to cutting edge technology, involvement of others, and transparency of data and results. However, we would have expected growth model implementation to be built on loyalty, favors and maximizing efficiency of operations.

Iowa, with its moralistic culture, was the most surprising. In examining document and interview data, characteristics of a decision making and implementation effort small in scope, controlled by few educational leaders at the state department level were

uncovered. And, while the decisions were made by a few, they were respected by many because the procedure was well positioned as a tool which could only provide assistance to schools and districts. Since the growth model did not contain any punitive measures, educators did not display any concerns. In fact, these stakeholders appreciated that the effort was small, not harmful to schools, and proceeded slowly. There was great emphasis and attention placed on educating stakeholders about the growth model process and that work was appreciated.

Based on the descriptions of Fowler (2009), we would have expected Delaware to have a much smaller circle of input around the growth model decisions and the Iowa process taking on characteristics of large numbers of people involved in fierce debates. However, these two states seemed to have switched roles. Delaware had a massive system for stakeholder input while Iowa made a small, slow and deliberate effort.

North Carolina, a state system that has historically demonstrated a sense of elitism, superiority, and had strong leaders and deep traditions did display those characteristics. With a lengthy history using the growth model program, it was clear that decisions were made by those very high up in the political arena acting within their power to implement the program they wanted. Housed in a larger educational initiative, the growth model was part of significant political maneuvering to fix an educational system plagued by constant change with few results.

In summary, the research suggests that the states did not act in strict adherence to previously described cultures. While some predicted characteristics were exhibited, new ones came to light when examining the implementation and initial use of the growth model program. This research did find support for the work of Marshall, et al (1989)

which indicated that in the presence of a national initiative, states deviate from their traditional culture.

The support for the work of Marshall, et al(1989) is not surprising. Traditionally, state culture has been examined within the context of large mandatory national movements. While the growth model pilot project was spearheaded by the United States Department of Education, and carried with it a set of guidelines (for instance the types of models that could be used), it is not mandatory. States had the option of implementing a growth model into NCLB accountability plans. This optional piece may be the difference accounting for the deviations from traditional culture. The study of policy implementation has not been done within the context of a statistical procedure and therefore may have yielded divergent results given the expertise needed at the state level. Additionally, the study of state culture when implementing a mandatory national program has been with programs requiring substantial change at the school and even classroom level. While school and district personnel certainly need training on growth model data, there no impact to their day-to-day activities.

CHAPTER IV. MODEL SELECTION

Once the decision to put a Growth Model into state level No Child Left Behind accountability plans had been made, educational leaders were faced with the complicated process of selecting the mathematical model that will work best for their state goals and available resources.

The findings of this chapter are first presented in Table 4.1. Immediately following the summary is a detailed examination of how state level policy makers in Delaware, Iowa, and North Carolina went about the enormous task of selecting a model to employ. This examination describes factors considered, the model that was chosen, details of the process used to select minimum growth targets, and how the growth model program fit into the state NCLB accountability plans for making AYP.

Table 4.1.
Summary of Findings, Model Selection

	Delaware	Iowa	North Carolina
Factors that contributed to model selection	<p>Measured longitudinal growth</p> <p>Credit given for moving a student toward proficiency</p> <p>Simple model, easy to understand</p> <p>Transparent</p> <p>Communicated values to educators</p> <p>Realistic model to work with current testing program</p>	<p>Valued growth below proficiency</p> <p>Gave credit to non-proficient students making progress</p> <p>Mapped a plan to proficiency within four years.</p> <p>Fit with current testing program</p> <p>Worked with Iowa Testing Program, at the University of Iowa</p>	<p>Measured longitudinal growth of students</p> <p>Moved non-proficient students to proficiency within four years.</p> <p>Did not include demographics</p> <p>Worked with University of North Carolina at Chapel Hill.</p>
Model Selected	Value Table Model	Transition Matrix model	Trajectory Growth

How were the growth targets negotiated?	<p>Standards setting process</p> <p>Simulations produced impact data which was evaluated to see what was reasonable.</p> <p>Placed value on reaching proficiency</p>	Area below proficiency divided into three categories.	Individually set for each student. No universal amount a student must grow each year
How does the model work?	<p>Current scores are compared to table values for each level</p> <p>Points awarded to students based on level achieved.</p> <p>.</p>	<p>Baseline score in first year</p> <p>Individual student trajectories are set so a student passes through a higher level of achievement each year and proficiency is reached in year four.</p>	<p>The difference between the first year and proficiency is calculated.</p> <p>Starting with the baseline year, students must reduce distance to proficiency by 25% each year reaching proficiency in year four or by 8th grade.</p>
How does the model fit with NCLB procedures?	<p>Growth model and status model calculated simultaneously.</p> <p>If minimum growth is not met, then the Original Model (OM) is used.</p> <p>Other academic indicators are considered.</p> <p>Growth or OM can count for AYP.</p> <p>Results of whichever looks better are then</p>	<p>Annual Measurable Objective (AMO) achievement rates for each grade in each school are calculated.</p> <p>Confidence Interval and Safe Harbor are applied.</p> <p>For students not at proficiency, growth model process is used.</p> <p>Those students meeting growth are added to status</p>	<p>Status model is used first.</p> <p>Growth is then evaluated for all non-proficient students.</p> <p>Students meeting growth are then added to status results.</p>

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What factors contributed to the selection of the model?

Delaware. Officials in the Delaware Department of Education (DDOE) considered many factors when evaluating possible growth models. In writings, they communicated that they were interested in selecting a model that would value longitudinal individual student growth, give credit to schools for moving students toward proficiency, and placed value on growth below the proficient level (Delaware Department of Education, 2007). Additionally, an education official explained that there was a desire to start with a simple model, “I’m glad that we started with that because it’s inevitable that we are going to do an individual student model.” It was assumed that growth models were going to be mandated by the federal government relatively soon and therefore DDOE officials wanted to take a first step and ease themselves into the change.

Officials at the DDOE also commented that the Partnership Council put great emphasis on finding a model that was easy to understand both in calculations and data published. This strong desire for transparency was also found in writing, as evidence by the statement “this value table approach, in addition to several conceptual advantages (e.g., it is not based on vertically scaled scores), is an important advance because it is quite transparent for school leaders to understand how changes in student performance are translated into changes in school accountability scores” (Delaware Department of Education, 2006, p. 9). Officials had a sincere interest in ensuring that the model, especially the results produced, was transparent to educational officials and stakeholders at all levels of the state level educational system. The interest to have transparency was found through the simplicity of the model selected since “educational leaders can

calculate their progress scores – as well as what they need to do to meet state goals with a hand calculator” (Delaware Department of Education, 2006, p. 9).

This transparency also allows policy makers to make expectations and values very obvious by the points to be awarded for student progress. Policy makers in Delaware were able to display state values and educational expectations in a clear and concise manner right in the tables. For instance, schools were rewarded with more points when students made progress, but were still below the proficient level. Yet, students who were already proficient received the same number of points regardless of any improvement they may have made. This decision sent a clear message to teachers, schools and districts that students below proficient should be a priority (Delaware Department of Education, 2006).

A third factor was finding a realistic model to work with the existing standardized testing program. As explained by an accountability professional, “So we really had a lot of conversations and brought all that information to the table. We were trying to see what would be a realistic model at that time. We did alignment and impact studies and saw that the Value Table Model worked for us.”

From both interviews and documents it was clear that the Delaware officials were interested in easing into the growth model process. Delaware wanted a growth model that would highlight the longitudinal growth of students, and give credit to schools for moving students forward who were below the proficient mark. Additionally, this research uncovered that DDOE officials wanted a model that was easy to understand, provided transparency to policy makers, and worked within the existing testing structure.

Iowa. The entire implementation process for the Iowa Growth Model program intentionally engaged a relatively small number of individuals during the planning and implementation stages, especially in comparison to both Delaware and North Carolina. As previously mentioned, a few key educational officials were involved in the process and the goal was to implement a program that could only help students, schools and districts meet the requirements of AYP. Since little was known about growth modeling they were interested in starting slowly and evaluating for future viability. While small, these officials were very interested in making sure that the model fit within the current testing system, could only help schools, gave credit for students who made progress even when still not proficient, and mapped a plan for students to reach proficiency in four years time.

Iowa's education officials consulted with the experts at Iowa testing service to select a model that would fit with the testing program in place and not be cumbersome or a burden on existing procedures. Since this program was first discussed by a few key stakeholders who adopted a wait and see approach, fitting it into the existing structures was a logical choice. The planning process was explained by a member of the accountability team:

“we built collaborative relationships going to meetings and things like that to learn about what the FED's wanted and talking to a couple of people in Iowa City and the Iowa Testing Program we built our growth model and submitted to the FED and then we got it approved.”

The notion that IDOE officials only wanted to help schools went hand-in-hand with the desire to find a growth model that would recognize educators helping students to make academic strides even if they who were still below the proficient level (Deeter, 2009). This sentiment was also evidenced in the Growth Model Application:

“Evidence indicates that while very low performing students might have more room to grow, they might have a more difficult time achieving a growth target. For them, it may take longer to grow a given amount than it does a high achieving student. Statistically determining expected growth purposes of this proposal, the decision was made to use the *a priori* proficiency levels as starting points, with growth being defined as movement across levels or regions.”(Iowa Department of Education, 2007, p. 12).

Another important factor to the few officials at the IDOE responsible for the growth model selected was that it had to include a path to proficiency over a four year period. The area below proficiency was divided into three regions with cut scores delineating them one from one another. If a student was not proficient for the baseline year, their standardized test score placed them in one of the regions. A projected path is then drawn so the student will pass through one level each year. The last goal, to be obtained no later than the fourth year is proficiency (Iowa Department of Education, 2007).

It was clear that even though this program was internally viewed as a pilot project, it was selected with a spirit of wanting to help schools, give credit for growth below the proficient mark, and map out a plan to have all students proficient within four years.

North Carolina. When examining the many factors that contributed to the selection of the growth model, North Carolina presents an interesting case since it went through an extensive process when first implementing a growth model as part of a larger educational initiative, the ABC program. While officials had experience with the model since 1997, changes had to be made as it applied for the Growth Model Pilot program in 2006.

Back when planning for the ABC program, the state leaders did not feel that a traditional status model was fair to schools. A member of the accountability team explained that:

“The status model (based on absolute performance) was not fair for schools with fewer resources and higher percentages of economically-disadvantaged students. They would have a difficult time showing growth. So one important factor in the development of the ABC’s accountability model was to provide financial incentives to schools that would be based not just on absolute performance but at how much improvement occurs in those schools. A second was to find a model that measures students longitudinally. When the ABC’s came along, one of the rationales for it was drilling down deeper and looking at school-based performance as opposed to just strict performance.”

Additionally, those in charge did not want a growth model that considered any demographic factors:

“After eight years using the same growth formulas as originally developed, North Carolina went through the tremendous task of reviewing the results of these formulas to determine areas where the process could be improved. The outcome of this review is a process in which individual growth targets are based on a student’s prior achievement without regard to any demographic factors” (North Carolina Department of Public Instruction, 2006, p. 1).

As in Iowa, North Carolina officials were interested in making sure there were plans to move non-proficient students to proficiency in a set number of years. “The data are available to support the use of this model, and this model carries a student into proficiency within a reasonable length of time (although somewhat accelerated compared to student performance observed over the past nine years of North Carolina data)” (North Carolina Department of Public Instruction / Accountability Services, 2006).

Of the three states, North Carolina had the unique circumstance of the state legislature stepping in and mandating by law that students’ performance was to be measured longitudinally. The North Carolina Growth Model Application explained the changes necessary to accomplish this:

“During the 2004-05 school year, a legislatively mandated review of the growth standards was completed. The review prompted a change to a Standardized Scale Approach (SSA) to growth which uses the normative distribution of student performance in the standardized setting year of any test edition as a common basis to build a scale. This approach is useful for measuring the growth in student performance from one year to the next and also adapts well to the changes in curriculum and subsequent changes in test editions” (p. 9).

When applying for the USDOE growth model pilot program, a substantial change had to be made from the original model in the ABC’s program. The NCDPI had been using the growth model to study the achievement of all students, and the pilot program specifically stated that the presented growth model must be directed at students who had not achieved proficiency. As explained by an NCDPI official:

“Because when it was time for us to present our growth model to the U.S. Department of Education and we found out what the regulations were, we knew that what we were doing wasn’t going to fly. Because one of their regulations was that you could implement that growth model to get students to proficiency. And so, we immediately knew that what we were going to then be proposing to the Feds was going to be different than how we really operated our growth model as part of our state accountability since we did it for everybody. And so, we had to modify it to say that you only apply the growth model to those kids that had not yet scored proficient, and we projected out at what point in time they would be or how we could set milestones for proficiency within three years of that first year that they’re tested.”

In deciding what model to use, officials in North Carolina took advantage of the close relationship with the faculty at University of North Carolina at Chapel Hill. Dr. David Thissen, now retired, was responsible for making the recommendation on which model to use.

North Carolina officials had a clear set of factors guiding the decision to enter the growth model program which started from the belief that the status model was not fairly recognizing student achievement. The state legislature also mandated the measuring of longitudinal growth so it had to be implemented. Officials were interested in developing

a plan to move students to proficiency in a set number of years and measure the longitudinal growth of students.

All three states shared the common goal of finding a model that would measure longitudinal growth of students and gives schools and districts credit for students making progress but still not reaching the proficient mark. Two states, Iowa and North Carolina worked closely with university staff on both selection and feasibility of the growth model. Each state department of education had a unique set of considerations in selecting a growth model. It was important to Delaware officials that the model was simple and results transparent so educators could understand how results were calculated. The officials were interested in making expectations very clear to educators and the model had to work with the current standardized testing program. Like Delaware, Iowa wanted a model to fit the current testing system, but also wanted to move non-proficient students to proficiency within four years.

What model was chosen?

Delaware, Iowa, and North Carolina were selected for this research to provide a variation of experience in implementing a growth model program. One of the factors considered was the type of model selected by each state. Each state department of education employed a different model based on their particular needs and goals.

Delaware. After the lengthy process, the DDOE officials selected a Value Table Model as their growth model. Developed by the Center for Assessment, the approach is a simple model only considering a change of score from year one to year two. The Value Table Growth model is driven by preset tables rather than an actual formula. Students earn points for moving up through the table. Simply put, “points are awarded to the

school based on a change in students' performance across vertically-articulated achievement standards" (Delaware Department of Education, 2006, p. 1). Every student is awarded points based on where he/she scores on the end of year standardized test.

The value table approach for capturing student progress is based on the theory that accountability can best motivate behavior on the part of school personnel if the expectations are very transparent to the educators. This transparency was very important to those making decisions in Delaware. The expectations are very transparent to educational leaders because the tables are clear and easy to understand. Unlike many complex models, educational leaders can calculate their progress scores as well as what they need to do to meet the state goals-with a hand calculator (Delaware Department of Education, 2006).

Table 4.2.
Final Value Table
(Delaware Department of Education, 2006)

Year 1 Level	Year 2 Level				
	Level 1A	Level 1B	Level 2A	Level 2B	Proficient
Level 1A	0	150	225	250	300
Level 1B	0	0	175	225	300
Level 2A	0	0	0	200	300
Level 2B	0	0	0	0	300
Proficient	0	0	0	0	300

Table 4.2 provides an example of the Value Table approach. In the table it is clear how many points a student will earn based on the level achieved by their

performance on the standardized test. The stakeholder group that developed the table clearly gave most weight to students who are proficient since it assigned the most points to that category. Additionally it acknowledged that while students far below the proficient mark were unlikely to make the complete jump to proficient in a short amount of time, the table gives them the opportunity to receive credit while making progress.

Delaware's model plan includes students in grades 3 through 10. Unlike Iowa and North Carolina, DDOE officials did not set a limit on the number of years a student has to stay in the growth model program before reaching proficiency (O'Mally, 2009).

Iowa. Iowa's growth model is a type of transition matrix model and is used for students in grades three through eight. Third grade scores are used as baseline scores, with growth being calculated for the first time for a student in 4th grade (United States Department of Education, 2010b).

The transition matrix model measures student growth as compared to categories of achievement. The model starts with the student's baseline testing year of third grade (or when the student enters the system). The current model contains two categories of proficiency (Intermediate and High). The region below proficiency is divided into three achievement levels to label non-proficient students: Weak, Lo Marginal, and Hi Marginal.

In their growth model application to the United States Department of Education, IDOE officials decided to label the meeting of growth expectations as Adequate Yearly Growth (AYG). Adequate Yearly Growth is defined as the score improvement that non-proficient students are expected to make from one year to the next. Using baseline scores, growth projections are calculated for all non-proficient students. A student's

growth trajectory must cross into a new category each year to keep the student on track to proficiency mapping out a plan of growth expectations. Non-proficient students can still make Adequate Yearly Growth (AYG) if their standardized test scores move them into a higher category each year reaching proficiency within four years of the first year tested (United States Department of Education, 2010b; O'Malley, 2009).

Once set, a student's growth trajectory could not be changed based on performance, student demographics or school characteristics. And, after the growth trajectory is set, each student is expected to stay on his/her projected path and continually grow each year. Once a student starts to move along their predetermined trajectory, backward movement is not allowed. Additionally, if a student moves up several levels, they do not get any extra credit (United States Department of Education, 2010b).

This procedure is not compensatory. Only students who are not proficient in year 1 are eligible for the growth determination in year 2. A student who was proficient in year 1 but not in year 2 is not eligible for the growth model. While higher achieving students might be expected to improve (from Iowa's school improvement standpoint), for NCLB accountability purposes, they would not be eligible for a growth determination to help with the proficiency count at a school or district level for AYP purposes because they already count as proficient (Iowa Department of Education, 2007)

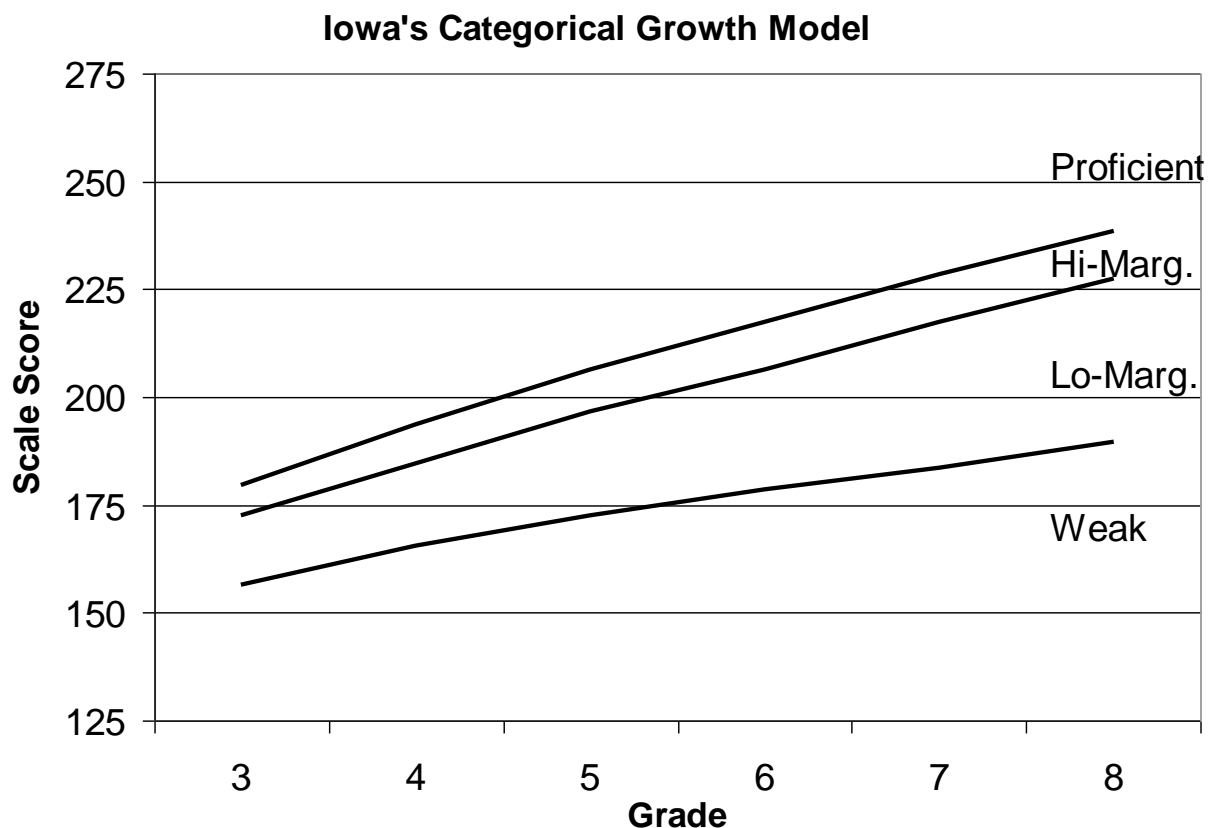


Figure 4.1. Iowa's Categorical Growth Model
(Iowa Department of Education, 2007, p. 2)

Figure 5.1 is an example of scaled scores that must be obtained to qualify for each of the categories. Starting in third grade or the baseline year, a student's projected and then actual trajectory must demonstrate significant yearly process by moving to a new category each year and bring the student to the proficient mark by year four. As explained in the Iowa growth model application, (Iowa Department of Education, 2007), "this plot shows the category boundaries for non-proficient students across grades. A student's growth trajectory must cross a category boundary in order to be considered for Adequate Yearly Growth" (p. 2).

North Carolina. As previously mentioned NCDPI officials had changed the growth model used and the calculations over the years and did so again to comply with the guidelines for the growth model pilot program:

“In 1996-97, the first year of implementation of the ABCs, the formula for calculating growth was based primarily on the statewide average growth in the years prior to 1996. As time passed and various changes were made to curricula and tests, the only way to continue having an accountability model that compared current results with prior years’ results was through special linking activities. The viability of these links began to fray over time, and in the 2004 legislative session, the General Assembly directed an evaluation of the ABCs accountability system. This evaluation resulted in the development of new formulas based on more recent growth rates and on the lessons learned from a decade of experience with the ABCs accountability model. These new formulas were used for the first time in the 2005-06 school year. Also in that year, the State Board of Education increased the proficiency standards on the new Mathematics EOG assessments to correspond with the state’s revised mathematics curriculum. In the 2007-08 school year, the proficiency standards for the Reading EOG assessments also increased in response to revisions to the state’s English Language Arts curriculum” (Public Schools of North Carolina, 2010, p. 4).

At the time that this research was conducted, North Carolina was employing a trajectory growth model. The base year (third grade or the first year a student is tested) is used to build a trajectory for each non-proficient student mapping out a course to proficiency within four years. In year one they must close the gap by 25%, in year two, 50% of the original gap must be closed; in year three, 75% of the original gap must be traversed. In year four the student must be proficient. For students who enter in subsequent grades, the first year is the baseline, so 33% of the gap must be closed in year one, 66% in year two, and then the student must be proficient by year four. Table 5.2 highlights how the gap between the level (score) a student obtains with the first test administration, and then, based on the grade level at that time, how many years a student has to be proficient (United States Department of Education, 2010a).

Table 4.3. *Grades and Tests Used For Trajectory Growth And The Percent Of Closing Expected Per Year*

(United States Department of Education, 2010b)

Grade Of First Enrollment	Test Used As The Basis For Prediction	Test Used As Target For Proficiency	Years To Proficiency	Percent Of Difference Closed Per Step	Steps To Proficiency
3	3 rd grade pretest	6 th grade EOG	4	25%	4
4	4 th grade EOG	7 th grade EOG	4	33%	3
5	5 th grade EOG	8 th grade EOG	4	33%	3
6	6 th grade EOG	Algebra I or English I EOC	4	33%	3
7	7 th grade EOG	Algebra I or English I EOC	4	50%	2
8	8 th grade EOG	Algebra I or English I EOC	3	100%	1

How were minimum growth targets negotiated?

Once the model was selected, the state officials had to determine growth targets. Minimum growth targets are the smallest amount of growth a student must realize in one school year in order to be considered meeting growth. The child may still be below the proficient mark, but if they made the minimum amount of required growth, they count for AYP purposes. Each state had a different procedure for setting the minimums. As presented, these minimums were set based on the model selected and also goals set by state officials.

Delaware. Since a value-table approach was selected, growth targets were actual standardized test scores delineating cells in the Value Table. As explained by the application submitted by DDOE officials when they applied for the growth model

program, “using a standards setting process, the group was charged with setting all actual values for the value tables at each grade level thereby setting the growth determinants needed to show sufficient growth from year to year for an individual student” (Delaware Department of Education, 2006, p. 12).

To set the minimum standardized test scores, the stakeholders group relied on “impact data.” Model simulations were generated using previous student standardized test scores which forecasted results based on different target values in the value table considering different policy decision rules. Final decisions were made by what policy rules were deemed fairest to the greatest number of schools. “Every cell in the value table was completed through this type of deliberation and discussion. The discussion was informed, but not dictated, by consideration of the current statewide transitions between achievement levels (Delaware Department of Education, 2010a, p. 44).

Additionally, final assigned table cell values place great emphasis on proficiency reflecting the goal of the process. While movement toward proficiency is valued, it is reaching proficiency that receives the most points. “Proficiency is the goal and reaps the greatest benefit (most points awarded for that level). But, once you reach proficiency (level 3), you achieve the same number of points even if you advance to level 5” (Delaware Department of Education, 2006, p11).

The process Delaware used was quite prudent. They evaluated different scenarios based on possible outcomes to develop the fairest systems. Value was placed on students reaching proficiency and credit given for moving towards that goal.

Iowa. With a different model, Iowa had a different process of setting minimum growth targets:

“The rationale is this: evidence indicates that while very low performing students might have more room to grow, they might have a more difficult time achieving a growth target. For them, it may take longer to grow a given amount than it does a high achieving student. Statistically determining expected growth might yield results that would not enable some students to achieve the proficient level. For purposes of this proposal, the decision was made to use the *a priori* proficiency levels as starting points, with growth being defined as movement across levels or regions” (Iowa Department of Education, 2007, p 12).

Iowa set its targets based on discussions with the experts at the Iowa testing service. It was decided that the area below proficient would be divided into three equal sections delineated by test scores. The test scores, or minimum for each section were negotiated so that the required growth had to be greater than what the students were expected to do based on past performance. This would ensure students would make significant progress and move toward proficiency. Movement from the Weak level to the Hi Marginal region counts the same as growth from Weak to Lo Marginal or from Lo Marginal to the Hi Marginal region. Once proficiency is reached, a student is not eligible to enter the growth model program again.

North Carolina. Educational leaders in North Carolina did not use a process for determining universal minimum growth targets. Rather, these targets are individually set for every child. “Students who are not proficient are expected to lower by 25% each year the difference between the first test and the proficiency standard four years later” (North Carolina Department of Public Instruction / Accountability Services, 2006, p 9). This decision was made because the NCDPI wanted students to reach proficiency within four years. Considered a growth trajectory, they place students on the path to proficiency within that four year period regardless of previous scores. This is a bit unusual because some students had a very small amount of ground to cover to reach proficiency and those

far below proficiency had a substantial distance. Yet, the same amount of time, four years, is given to each student.

In negotiating minimum growth targets each state had very different decisions to make due to the models selected and factors officials deemed important (such as the number of years each student had to reach proficiency). Delaware had values to place in a table and used actual data to determine how different decisions would affect outcome. Iowa challenged students to make significant progress each year with the requirement that they had to move up a full category to be considered for AYP. In North Carolina officials gave teachers four years to move students to proficiency regardless of how far of a distance they were from the goal.

How the growth model program was integrated with existing NCLB accountability structures

Another set of decisions that state educational leaders had to make is where the growth model fits into the structure of NCLB accountability procedures. Under the original NCLB requirements, states used a sequence of steps in determining AYP using a status model with the option of using a confidence interval, and then determining if schools qualify for safety under safe harbor conditions. The growth model analysis can fit in anywhere from the first step to the last of the state level accountability procedures.

Delaware. For Delaware, the growth model and the status model (also called the Original Model) are concurrently run for each student in the state. If minimum growth targets are not met, then the Original Model (OM), is used to report a student for AYP. (Delaware Department of Education, 2007).

A very detailed explanation of the process was found in the Delaware Department of Education Proposal for a Growth Model, (2006):

“Delaware will calculate AYP based on status and safe harbor for all schools and subgroups that meet the minimum n requirement of 40, herein called the “traditional model”. Delaware will also calculate AYP for proficiency based on the following growth model methodology for all schools and subgroups that meet the minimum requirement of 40. The participation rate, other academic indicators, and sanctions from the traditional model will remain the same and will carry over to the growth model. By calculating proficiency both ways, Delaware will have information that will be useful in analyzing how this growth model actually works and how the results compare to the AYP traditional model. A school that makes AYP based on the traditional model or the growth model will be deemed as meeting AYP” (p. 8).

And educational leader explained the policy in layman’s terms during an interview:

“So, basically what we do is we do the participation, the other academic indicators and then we run both growth model and the original model and whichever one is better we use. If both of them fail it defaults to growth in this program.”

The first step in calculating growth is to take all qualifying students and assigned values from the table based on their current year achievement on the state wide standardized test. These points are averaged (dividing the number of points by the number of students), to obtain the average growth value. The growth value is then compared to growth target for the group.

“If the growth value for the subgroup is equal to or greater than the established growth target, then the subgroup is said to be above the target. If the subgroup met the target through the use of the confidence interval, then the subgroup is said to be meeting the target. If the subgroup does not meet the target after the use of the confidence interval, the subgroup is said to be below the target” (Delaware Department of Education, 2006, p. 19)

If these sets of conditions are met, Delaware uses the Original Model, (AYP status and safe harbor). A school that makes AYP based on the traditional model or the

growth model will be deemed as meeting AYP. Because they calculate proficiency both ways, they have data to look at schools not making AYP and meeting growth standards and determine what supports can be put in place (Delaware Department of Education, 2006).

Iowa. Iowa uses the traditional method for calculating AYP first and then looks to the growth model for non proficient students. As a first step, the state determines Annual Measurable Objective (AMO) achievement rates for each grade in each school using a proficiency index. To do this, the percentage proficient in a specific grade (for a specific school) is calculated. Next, a weighting constant (WC) is calculated for each grade level which is the proportion of Full Academic Year (FAY) students in that grade divided by total number of FAY students in a school. The grade level WC is multiplied by the grade level AMO for each grade, and then a composite of those products are summed for the school to determine the proficiency index. Ideally, this proficiency index should be equal to or greater than zero. If it is not, a confidence interval is applied. If the new Proficiency Index is greater than or equal to zero, then the school meets AYP (United States Department of Education, 2010a).

Should a school not meet AYP through this process, then a traditional safe harbor procedure applies. In these cases, IDOE gives credit if a school has decreased the number of non-proficient students by ten percent (Iowa Department of Education, 2007)

“If students are deemed proficient using traditional scoring methods, great. (To be considered proficient in Iowa, students overall and in certain subgroups of students must score at or above the 41st percentile on math and reading tests.) For students below the proficiency bar, the new (growth) model kicks in” (Andino, 2008).

Iowa considers its growth process to be a very individual “student-by-student” analysis for all non-proficient students. A student’s one year growth is compared to his/her predetermined growth trajectory evaluating the current position. If substantial growth has been made and the student is now in a higher category than the previous year, the student is counted as “on target to proficient” and therefore as meeting AYP (Iowa Department of Education, 2007).

A bit more information is needed to fully explain the process. As previously mentioned, Iowa officials elected to divide student achievement into five levels. Four levels were below proficiency: Low Weak, High Weak, Low Marginal, and High Marginal. The intermediate level is for students who are proficient and a High designation labels the advanced proficient range. Acceptable growth for a non-proficient student is movement from one level to the next in one year. This minimum has been labeled as “Adequate Yearly Growth” and if satisfied, the student is considered proficient for AYP purposes. “Students will have four consecutive years to attain proficient status, beginning with their initial participation in the statewide assessment (Iowa Department of Education, 2007, p. 1). As explained by an official in the IDE, “students have to be at a higher level that they weren't at ever before.”

Final AYP determinations are made by adding the number of students who were proficient under the status model, combined with students who were not proficient but made AYG. This composite is then turned into a percentage of the students making AYP and compared against the preset target determined by the state for all AYP decisions. “A school/district that met the Proficiency Index through the combination of AYP status Proficiency and AYG would make AYP” (Iowa Department of Education, 2007, p. 1).

North Carolina. State officials have been using growth model techniques for years in North Carolina as part of the ABC initiative. At the state level the regular AYP status model is run then safe harbor procedures are applied. Then the process evaluates the growth of previously non-proficient students:

“For reporting groups not meeting their AMO by status or safe-harbor, the number of non-proficient students who are on-track to proficiency per the growth model is added to the number of proficient students in the group. A group that reaches the state’s AMO with the inclusion of “on-track” students is considered to have met the AMO by growth and the school as a whole is classified as having met AYP by growth” (United States Department of Education, 2010b, p. 33).

The students who remain on their trajectory in the current year would then be added to the proficient students for purposes of calculating proficiency against the Annual Measurable Objectives (AMO) (North Carolina Department of Public Instruction / Accountability Services, 2006).

When using the growth model to determine AYP for NCLB, an array of options may be employed for success. Delaware runs the growth model with the status model from the beginning of the process. Iowa and North Carolina both use the status model first and then turn to the growth model to analyze progress for non-proficient students.

Cross-Case Analysis of Model Selection

When selecting a growth model, several factors were cited by states as having importance in that process. Officials in all three states looked for a model that could measure longitudinal growth of students who are below the proficient level. The data generated would have to give credit to schools for helping these students make significant progress even though they had yet to reach the proficient mark. The schools and districts could benefit from the model since progress could count towards AYP. Data from Delaware and Iowa indicated that the planning process included the imperative to ensure

that the growth model could work with data generated from the testing program already in place. Officials did not want to overhaul the testing program to fit a growth model plan since it was only a pilot procedure. Both Iowa and North Carolina's growth model programs were built around the idea that students should move to proficiency within a set number of years. For both states, the maximum number of years in which a student has to become proficient is four. DDOE officials do not require that a student reach proficiency in a set number of years. Additionally the DDOE officials intentionally sought a simple model. Officials at the DDOE wanted to ensure that the data was transparent and easy to understand for all stakeholders. North Carolina officials had the unique desire of specifically not wanting to employ a model that would use any demographic factors.

When selecting the model, both North Carolina and Iowa had substantial help from the academic community. Since Iowa was already contracted with the Iowa tests, developed by the University of Iowa, planners turned to those experts. NCDPI officials turned to a professor at the University of North Carolina for assistance. Delaware was the only state that did not receive any assistance from the academic community but did have the assistance of consultants.

Minimum growth targets were negotiated differently in each state. Members of Delaware's Compliance Commission had the task of selecting values that accurately reflected progress for the different levels below proficiency. Using different values, they had simulations run to see how different decisions would impact results and what situation would be fair to schools without lowering standards. Iowa divided the area below proficiency into sections. The expectation is that students climb to a new level

annually reaching proficiency within four years. North Carolina divides the area between a student's baseline score and the proficiency level into four equal parts. Students are expected to climb 25% closer to proficiency each year.

Each state program incorporated the growth model into NCLB accountability plans differently. In Delaware, the growth and status models are run simultaneously for students with the best results used for AYP purposes. Iowa and North Carolina both use the status model first and then default to the growth model for all non-proficient students.

In conclusion, many intricate details are involved in selecting a growth model to add to NCLB accountability plans. State level education officials need to consider what is in place for their current accountability program and the goals associated with measuring growth. This research uncovered factors that states dealt with when selecting a growth model and then working it into NCLB accountability plans. Officials in all three states echoed the sentiment that they wanted to find a model and system to reward schools when students who are below the proficient mark, but make significant progress towards proficiency.

CHAPTER V. IMPLEMENTATION

The first issue addressed in this chapter is the fifth research question on the interplay between policy decisions and the technology required to implement them.

While technology professionals, including statisticians and computer programmers, may be involved in discussions, the decision rules come down from the policy makers for implementation, and the technology experts (those who handle the data, programming, statistical analysis, and reporting) are responsible to “get it done” as one member of the team in North Carolina explained. The chapter then examines the findings on factors that hindered and facilitated implementation.

Table 5.1.
Summary of Findings, Implementation

	Delaware	Iowa	North Carolina
How do policy decisions and technological expertise work together?	<p>Frequent conversations between policy makers and technology experts</p> <p>New business rules (policies) that need to be implemented and checked.</p> <p>Policy makers sometimes want the impossible.</p>	<p>Conversations on the best way to proceed with model and implementation</p>	<p>Frequent back and forth conversations.</p> <p>Sometimes initiated by policy makers and sometimes by the accountability team.</p> <p>Sometimes policy makers want data that is not possible to generate.</p>
What factors hindered implementation?	<p>Decisions were made by staff that were no longer with the department.</p> <p>Implementation meant different things to different people.</p>	<p>Individuals who contributed to the planning were no longer working in the department</p>	<p>Too many recent initiatives</p> <p>Appearance of a lack of direction</p>

	<p>Interconnectedness of positions had to be addressed.</p> <p>Answering question about the generated data was difficult</p>		
What factors helped implementation?	<p>Integrity of data systems</p> <p>Commitment to expertise</p> <p>Small state</p>	<p>Committed to proceeding slowly.</p> <p>No significant hindrances</p> <p>Viewed as promising</p> <p>General workforce had longevity</p>	<p>No significant hindrances</p> <p>Viewed as promising.</p> <p>Widespread support from key stakeholders</p> <p>Commitment to informing constituent groups</p> <p>Incentive program</p> <p>Compliance Committee for Accountability</p>

How did policy makers work with technology experts during implementation?

As a member of the Delaware accountability team stated, “nothing can happen until the policy happens,” since decisions are handed down from policy makers to the technology experts for implementation. In all three states there was evidence of a back and forth process when decisions were being made between policy makers and those who would implement the decisions. But, all realized that the policy makers are really the ones who are the drivers of change.

Delaware. A member of the accountability team explained that when policy makers are interested in making changes to accountability structures, there are “lots of conversations between policy people and technology people.” But sometimes, the policy makers would like decisions implemented that are actually not possible. A technology expert explained the hesitation when new decisions are handed down, “I would say we, the technology folks, are always a little leery when policy begins to change only because Delaware has been very forward thinking in that it tries to implement as much technology as it possibly can.” This can be overwhelming to the system and then problematic since explaining the technology is often challenging. This technology includes computer systems and data enhancements.

As an example, great time and care was spent exploring the uncharted territory of the individuals responsible for the technical aspects of the implementation. As explained by one of the DDOE technology experts:

“implementation and the semantics of implementation means something different to me than it does to the policy makers, so the implementation of the growth model from a technical standpoint is reliant upon and heavily dependent upon the amount of data and the integrity of the data that we have to support the growth tables. But policy makers are often not thinking about that when decisions are being made so those on the technical side had to champion for their needs. And when making decisions and changing the rules, policy makers need to effectively communicate that to the individuals who must implement it.”

Once the decisions are made, the task of getting the model to calculate results is left to the technology experts. As one member of the accountability team explained:

“I think the one issue that crosses those boundaries in implementation is that every year there seems to be a new business rule that needs to be implemented from a technology standpoint. This means that the policy people have to tell us what that business rule is, it has to be translated into geek speak, and then implemented. Then the results have to be validated to determine if it was correctly implemented for 200 + schools across the state. Dependent upon

whether or not the business rule is at the student level or at the school level, depends upon how difficult that may be.”

The verification process is an important step to ensure that the data generated is in fact what the policy makers wanted. The process starts with a computer program written based on the policy, “the decision tree just coldly takes the numbers and applies the decision across all schools and students.” It is not possible for that process to determine if the data requested was actually produced and/or accurate. Therefore, detailed analysis must be done to validate the results.

Iowa. All decisions and then the actual implementation of the Iowa growth model were completed on a very small scale. Only a few IDOE policy makers were involved when implementing a growth model. Officials consulted with experts at the University of Iowa who develops the tests and generates the data as to the best way to proceed with the process. Experts from the university worked with the IDOE officials to find the best solution for the first round of growth model implementation, and therefore they did not experience any discord.

North Carolina. The growth model program in North Carolina has evolved over time, and throughout that history, policy makers and the statistical/technology experts have worked together to execute necessary changes. When policy makers are interested in making adjustments, they seek out the advice of the accountability experts. Sometimes, a statistician is involved in making recommendations that are sent back through the accountability officer. These go up the chain of command and a presentation is made to those who must make the decisions. Once a decision is made it is handed down from the accountability team to the technology implementers and it is their job to

make it happen. In his own words, one the technology officers explained, “I am responsible to emulate, to try to put the process in place....I’m the one to get it done.”

While there are usually few problems during the implementation, unintended consequences can surface once new data is generated:

“Well, I think, the way I always approach those kinds of things is, everyone always starts out with the best of intentions in terms of what gets proposed and what gets implemented. And unfortunately, it’s not until after you’ve implemented something for a year or two years that you then start to quickly see what we, you know, refer to as those unintended consequences. So, that was one of those instances where whatever model gets put in place, whatever model gets implemented, you have to wait to see what kinds of weird thing start to happen.”

What happens when policy makers want to implement ideas that are not possible?

As explained by a NCDPI officer, “sometimes they want to do stuff which is not there. They need data that doesn’t exist. Or, after the fact, they decided they needed to have it and we don’t have it.” That becomes a back and forth process understanding the policy concern at hand and the statistical limitations. As explained, “I would say it is a blend of the two.”

In all three states it was the back and forth conversations between policy makers and technology experts that led to realistic decisions and valid results. Before ideas are developed into formal business rules and policies, the available data and technology needs to be considered.

Hindrances and Facilitators

When a new policy is handed down, such as the decision to add a growth model program to state level NCLB plans, the technology experts sit centrally during the initial implementation. However, as previously mentioned, the implementation affects many

other facets of the state department of education and stakeholders throughout the state are involved.

What hindered implementation?

Delaware. The officials at the DDOE considered implementation successful, because in the end, the growth model program was in place and they were pleased with the results generated. However, while the goal of implementation was achieved, there were challenges faced when putting the growth model plans into place.

When they began implementing the growth model program it was hard for members of the DDOE to work with the accountability plans. The initial decisions were made by staff members who were no longer working within the department. The initial decision to apply to become a pilot state was made by a DDOE administration with all planning coordinated through The Associate Secretary for Education. Just as the growth model implementation started, that position turned over and there was a new DDOE administration in place. This caused the continuity of planning to be broken. The decision was made to continue, the turnover caused problems. Time had to be spent understanding why certain decisions were made and how to put them into motion. During this process the implementers also had to determine if those were, in fact, still the best decisions.

Considerable time was spent preparing for implementation. The preparation process meant different things to people depending upon what positions they held. Those different roles had to be managed in a coordinated way evaluating cross-over of any work responsibilities, expertise, support, and general interactions. To do this, considerable time was spent determining responsibilities and how different positions were going to

interact. As explained by one DDOE official, “So considerable time was spent to ensure those positions were not only working on their pieces of the process, but also making sure that the inter-connectedness of all responsibilities was being used and productive. This took time.”

Being able to pinpoint how data would be generated at first was a problem. From both the technology and policy making sides, even though implementation was completed from a process stand point, it bled into the next step of being able to answer questions for stake holders with different background levels and interests in the results of the growth model. As explained:

“its not just getting the results out, but being able to answer questions as to how you got the answers that you got. In 2006, 2007, 2008 in my opinion while we got the results out, we were not very good at answering questions, because the data model was not very good at telling us how we obtained the final results.”

As a result the technical staff revisited the original data, the decision rules, and the model. Shortcomings were uncovered and necessary changes made to the data structure and the model. These changes increased the integrity of the system and made the process easier to understand and more transparent to stakeholders. Consequently, it became much easier to answer questions about results.

The hindrances for DDOE officials during implementation were trying to work with the decisions that had been made by others, the arduous task of making sure staff from different departments were all working together, and working through data issues ensuring that results were correct and explainable.

Iowa. A department official at the IDOE echoed the same sentiment as those expressed in Delaware, with regards to staff turnover. “Many of the individuals who originally contributed to the decisions surrounding this growth piece are actually gone,

retired or moved on to other jobs.” This included two members of the three person team who wrote the Iowa Department of Education No Child Left Behind Pilot Program Proposal (2007). The director of the IDOE retired and the administrator moved within the IDOE before implementation began. This required a reevaluation of what had been committed to, the rationale for what was decided, and even a pause to determine how the decisions affected the overall accountability program.

Several passes through the interview data and all documentation did not reveal any other hindrances to the implementation process for officials in Iowa. It was explained several times that the growth model program was implemented with a commitment to slowly proceeding, so there were no other initial obstacles or road blocks. Additionally, a common thread throughout all the documents and interview transcripts was the notion that while the program was related to NCLB, it could only help schools and districts with AYP requirements. Additionally the growth model implementation did not require tremendous resources so it was not viewed as draining precious financial resources from the educational system.

North Carolina. The implementation of the growth model was monumental for North Carolina. It was part of the ABC’s program, which was a sweeping reform for the state educational system. Given the enormity of the reform, it was peculiar that there were not a multitude of hindrances to the implementation, especially given that it included a new way to measure academic achievement.

The only issue of consequence facing NCDPI officials was a prevalent feeling in the state that “there were ever changing education initiatives by the legislature” (Fabrizio, 2006, p. 66). This problem was mentioned even by those in the higher ranks of the state

education system who referred to the ABC program as the “flavor of the year.” The ABC’s was an all encompassing program, and developed with widespread input, yet still was not taken seriously at first (Fabrizio, 2006). The perception that the ABC’s would not last long and be discarded, stemmed from the multitude of programs which had been attempted in the past, giving the appearance of a lack of direction and expertise. As a consequence there was tremendous tension between all facets of the educational system. This occurred both within the NCD CPI and those who supported it, including individuals and entire departments from the Office of the Governor to the DDOE, to the State Board of Education and even individual legislators. A wait and see approach was taken as educational officials were determined to improve their reputation and implement an educational reform movement appropriately. That was accomplished with the ABCs and it still sits in place more than twenty years later (Fabrizio, 2006).

Beyond the tension caused by the previous lack of direction, analysis of all data did not find any other significant resistance to growth model implementation. An accountability officer believed that this because NCDPI officials put significant time making sure “that people understood how the model worked.”

Delaware and Iowa clearly had the same issue of decisions made by previous staff being implemented by others. Delaware officials additionally mentioned needing time for the extensive coordination of systems, and then the cumbersome task of making sure that the data was correct. North Carolina had the unique (and only issue) of a prevalent feeling around the state that the implementation of the growth model program was yet just another educational overhaul that was not going to last.

What helped implementation?

State educational leaders cited a variety of factors that helped with the implementation of the growth model program. However, no one state had a similar set or even overlapping factors.

Delaware.

Interview transcripts from DDOE and available documentation pointed to the integrity of data systems, a commitment to bringing in necessary expertise, and the small size of their state as factors which contributed to a successful implementation of their growth model.

DDOE officials pride themselves on the integrity of their data systems and their commitment to maintaining them. These systems were an important contributor to the ease of implementation. As explained by a member of the accountability team:

“The data has got to be clean and it has got to be right the first time and this has implications for both in publishing correct reports the first time and meeting all federally mandated timelines. The data is not only clean, but also a robust student system [was] in place when we started the growth model. They started assigning student id numbers in the late 90’s and built it up from there so we are very fortunate to have inherited both the system and the commitment to maintain it.”

Delaware is a small state and success was due in large part to being able to “play off of our size. If necessary, everyone can meet in Dover for lunch” explained a DDOE accountability team member. Representatives from all districts can meet regionally, but also come together as easily without it taking a lot of time. Proximity, especially when implementing a new accountability program, allowed for face to face meetings and interactions that were critical to answering questions and also garnering input and support. And, the small size of the state also allowed representatives from all stakeholder groups, including teachers and parents, to regularly join in face-to-face interactions. This

not only added important and diverse input to the discourse, but eased concerns from constituents since all were very well represented.

At all levels of the educational landscape in Delaware, there was a consistent message of a commitment to expertise which is to be expected given the individualistic culture of the state political landscape. Department members felt that they had the support to acquire help if necessary and that security was beneficial to implementation. As discussed, this included officials committed to making sure that internal expertise was made available if needed. Additionally, third party consultants were hired for both their “status” within the industry to help organize plans as well as for the “statistical power” of working through technical issues. A member of the DDOE accountability team who worked closely with the consultants commented that, “we provide them with the data and they help us validate what we are doing and what it is that we need to do.” There was also the opportunity to join professional organizations for support. “We were given permission this year to join the Council of Chief State School Officers (CCSSO), and it’s just amazing how the people who are already doing these types of models have formed such a good sharing group,” explained an accountability officer.

DDOE officials cited integrity of data systems, the small size of the state, and a commitment to bringing in necessary expertise as major contributors to the success of the growth model program.

Iowa. For officials in Iowa, first and foremost the fact that there were no significant hindrances to implementation was a great benefit to the process. Additionally, there was no resistance to implementation as it was viewed as a procedure that could only help districts meet AYP. As explained by a NCDPI official:

“If a school meets growth it could count it as proficient so it would help add to proficiency numbers [and] that helps schools or districts meet AYP. It didn't cost a whole lot and it helped districts so nobody really put up a fight about it. It doesn't over burden the districts and they don't really worry about what happens at the state level.”

When examining coverage of the growth model program in the popular press, specifically newspapers, this sentiment was expressed at the district levels with guardedly optimistic views about the news that a growth model would be implemented. “It has promise,” said Dave Markward, Cedar Rapids schools' superintendent. “We'll have to look at the details and determine how we'll approach it. I think the notion is good.” “Cedar Rapids Harrison Elementary School's principal, Joyce Fowler, said the change would benefit children. Measuring students' actual growth could call for louder celebrations in the future” (State Will Track Students Over Academic Careers, 2007). “We've talked so many times about our major concern being, ‘How do we help each child grow?’” Fowler said. “It's a much kinder model for children to say, ‘We're going to support you in your growth,’ instead of saying ‘here's the bar’ reach it or fail” (State Will Track Students Over Academic Careers, 2007). “The growth model recognizes each child's progress and developmental differences, said Elaine Watkins-Miller, communications consultant for the Iowa Department of Education. ‘The new model acknowledges the work (special education and other) teachers are doing because their students may make great academic strides but still lag behind their peers developmentally,’ she added.” (State Will Track Students Over Academic Careers, 2007).

While it was stated before that turnover was a problem at the decision maker level, there was significant longevity in the workforce in the IDOE. This longevity was

seen as very important in helping to gain support for implementation. As explained by an IDEO official:

“we are fortunate too, [because] we have continuity in Iowa. People come to work for the associations and the department and they stay for a long time. We aren’t turning over a majority of our staff every six or seven years like some states do. That helps with relationships so our knowledge base has been around for a while. And I’ve watched some other states where everyone is new every third year and that I think [that] causes tension and uneasiness.”

In summary, the factors that were cited as contributing to the success of the Iowa growth model implementation were that there were very few hindrances, a general outlook that it had promise and could do no harm, and continuity of staff throughout the Iowa Department of Education.

North Carolina. In North Carolina, implementing the ABC’s program, which included the growth model, was an enormous undertaking that was successful for a several reasons. A lack of resistance certainly helped the process.

The first factor helping with implementation was that the program had widespread support and leadership from key stakeholders. Leaders knew that change was needed and were ready to get that job done. There was bipartisan support from state level politicians from the governor’s office and state assembly. The North Carolina Association of Educators (NCAE) was deeply involved in the decision making and therefore teachers were very comfortable and supportive of the initiative (Fabrizio, 2006). As explained by a member of the accountability team:

“We also did a very good job of holding periodic meetings with different constituent groups, talking about the model and how it was going to be used, why it was going to be beneficial. And schools that were identified as low-performing were eligible to be assigned a State Assistance Team.”

A second factor that helped with implementation was the deliberate effort to “make sure everyone understood the plan and so they were on the same page, singing the same song” (Fabrizio, 2006, p 59). When the time came to put the plans in place, pieces and people came together in support of the effort. The logic of the marketing approach to sell the program was built on the idea that it was not punitive; there was no intention of punishment. As explained by a NCDPI accountability officer, “It was, hey we’re doing it to identify those schools that need the most help, and then we’ll take on that responsibility of working with those schools.”

Part of the commitment to understanding was having key people available to explain details and answer questions. NCDPI officials placed six regional employees around the state giving districts local access to experts. They were available to handle questions from LEA’s.

For North Carolina officials, garnering support from the teachers was eased with the help of a financial incentive program based on the growth model data. Teaching staff could earn up to \$1,800 for achieving growth. This amount was variable based on what level of growth was achieved and if AYP goals were met for the school (Public Schools of North Carolina, 2010). A representative from the teachers association explained why they supported the incentive system:

“What caused us to be on board about the ABC’s bonus monies was that it was exactly that, bonus money and that it was not going to create a new salary schedule, you were not going to be taking away from one teacher to pay another teacher better. So it was a bonus. The other piece that really helped us to be able to be supportive was that it was every member educator in every school received the bonus so it was a total school bonus. It did not pit teacher against teacher in terms of ‘I need to do better with my scores so that I can get more money than you get.’ It in many ways supported collaboration within schools realizing that we are all in this together and also recognizing the impact that every teacher whether they are in a testing subject or not, has kids being able to be successful. I

can make a case that it may be the physical education teacher in that school that is the one that that kid connects to and keeps that kid motivated. So guidance counselors, teacher assistants, everyone who was supporting the education of the children in that school received the ABC bonus.”

Additionally, NCDPI officials felt a great help to implementation was the creation of the Compliance Commission for Accountability. This group was assembled and included stakeholders from many levels, in an attempt to create broad inclusion of diverse stakeholders and handle issues that were best suited for a representative group. This way, when decisions were made, they could be announced from the standpoint that many were involved. This increased buy-in and reduced anticipated resistance. The advantages of widespread participation in the process was explained by one education official:

“it really saved us in terms of our ability to do what we did. It was a group of people that represented principals, teachers, parents, higher Ed, business leaders, the full gambit of those involved in the educational system. The group was used as a sounding board to resolve all the nit-picky decisions that had to be made to implement this program. Initially, the policy was that they were to meet monthly. There were always issues that kept coming up. I mean, it was just amazing how many issues.”

For North Carolina documents and interview data revealed that, like Iowa, the lack of resistance was a contributing factor to success. Additionally, the educational leaders put significant time and attention on talking with stakeholders and answering questions. This inclusion was seen as a contributing factor to success.

Cross-case analysis of Growth Model Implementation

The relationship between policy makers and technology experts

Policy is the driving force for what the technology department does during implementation. As the technology expert in Delaware stated, “nothing can happen until policy happens.” When new policy decisions are made, it is imperative that they are

properly communicated to those who have to produce the necessary data. Problems can arise when the policy makers would like to implement data rules that are not possible. That requires back and forth communication so realistic plans can be put into place. This communication is critical so expectations were properly communicated from stakeholders and realistic scenarios explained. Technology experts in Delaware and North Carolina both commented that the policy makers sometimes hand down policy decisions requiring data to be generated but execution is not possible. Discussions are then necessary to explain limitations and develop new plans.

Hinderances

Officials in both Delaware and Iowa stated that there was significant staff turnover as implementation began. In both states, key leaders in the planning process exited the department. This was problematic as new personnel wanted to know why certain decisions were made and steps had to be taken to understand the planning which had been done. North Carolina did not experience this problem since the driving force behind implementation was a group of policy makers who remained in place during the planning and through implementation.

An examination of interview transcriptions conducted with Delaware's officials brought to light that during implementation the process meant different things to different people depending on their positions within the DDOE. Significant time had to be taken to explore and coordinate how implementation was going to affect departments and how best each could work together. Iowa didn't experience this issue because implementing the growth model was a function of the test developer and did not require expertise or assistance from other departments within the IDOE. Additionally, North Carolina did not

experience this difficulty since the planning of the growth model was done within the umbrella of the ABCs program. Detailed plans for how the growth model was going to be implemented were worked out during the planning process.

For implementers in Delaware, answering questions about the data during the first few cycles of using the growth model was initially difficult. While results were generated, it was unclear as to how to answer questions regarding the process. The team had to go back to the model, make changes where they found ambiguities, and then reformat the process for the following year. This issue did not surface for Iowa or North Carolina.

North Carolina had the unique circumstance of too many previous educational initiatives. They were caught in a continuous cycle of implementing new programs and then abandoning them for the “flavor of the year” (Fabrizio, 2006, p. 50). Due to the revolving door of initiatives, the NCDPI was branded lacking direction. Delaware and Iowa did not experience this phenomenon because the departments did not have a string of educational initiatives preceding implementation of the growth model.

In Iowa and North Carolina, the hindrances were viewed as minimal and not impeding on implementation. In Delaware, where officials expressed that implementation was difficult, the obstacles were a challenge, but they did not overwhelm the process.

Facilitators

Officials in Iowa and North Carolina both expressed that the lack of major obstacles was a great advantage to implementation. As previously stated, Delaware

officials had a longer list of challenges to overcome and so they did not share this experiment.

As expressed several times already, Delaware officials took great pride in the existing integrity of their data systems. A robust data system was in place. This was of great benefit saving time and money. The housing and analysis of Iowa's data is handled by a third party vendor. This, coupled with the fact that Iowa was starting with a small growth model program, data integrity did not surface as an issue.

Accountability officials in Delaware expressed that professionally, it was a great help to have the commitment from department officials to hire consultants and join organizations dedicated to help states implement a growth model program. This factor did not materialize in Iowa or North Carolina. Iowa proceeded so slowly and with a very small program that it only needed the expertise of the third party vendor, the experts at the Iowa Tests. North Carolina had the expertise on staff to help and so outside assistance was not needed.

Iowa officials commented that the way they framed the growth model program to stakeholders, as promising and only a procedure that could help, was instrumental during implementation. This goes hand-in-hand with North Carolina's commitment to ensuring that all stakeholders were informed about the growth model and understood the details of the growth model program.

North Carolina had two additional factors which helped during implementation of the growth model program. The first, the teacher incentive program, garnered support from the instructional staff. It was perceived that the growth model program would not only reward them professionally for the work they were doing but also was going to

recognize the effort with a financial reward. This played a significant role in garnering teacher buy-in. The second fact that emerged from the North Carolina data was the creation of the Compliance Committee for Accountability. This group, comprised of a variety of stakeholders, was able to evaluate issues and make recommendations to the State Board of Education. It was helpful to have a sounding board for issues and recommendations from a collaborative group representing all stakeholders who could independently manage different opinions.

While the educational leaders in each state had different experiences with implementation, some common themes emerged. Staff turnover was seen as a problem when those who left had made decisions that others then had to implement. North Carolina had the very unique but notable problem of the growth model being seen as yet another in a long series of educational initiatives that would soon go away, replaced by the next one. But these hindrances were easy to overcome. Universally, all three states shared the same sentiment that support from leadership and the ability to bring in necessary expertise was a great benefit to implementation of the growth model program.

CHAPTER VI. DATA USE

When analyzing interview data and documents for factors related to data use, it was evident that in all three states the primary intended use of the growth model data was for NCLB reporting purposes. Schools spend significant financial and personnel resources on instructional time to help those students who have not reached the proficient mark. Even with that effort, for students who start out significantly below proficient, the goal cannot be achieved in one year. Rather than continually penalize the schools for the low performing students, using growth model data, schools can earn credit for students who are making substantial progress towards proficiency. In addition to the important AYP use, educational officials are using the growth model data to track achievement, communicate educational progress to stakeholders, and gauge effectiveness of instruction.

Table 6.1
Summary of Findings, Data Use

	Delaware	Iowa	North Carolina
How are state officials using the data?	<p>Determine AYP</p> <p>Determine if students are making progress towards goal</p> <p>Inform stakeholders of state of educational system</p> <p>Answer the question are academic assistance programs making a difference?</p>	<p>Determine AYP</p> <p>Inform stakeholders of the state of the educational system</p> <p>Determine effectiveness of instruction</p>	<p>Determine AYP</p> <p>Determine if students are making progress towards goal</p> <p>Inform stakeholders of state of the educational system</p> <p>Originally used for the teacher incentive program</p>

Delaware

Through interviews and document analysis, several uses for the growth model data were uncovered. As expected, growth model data is used for AYP reporting to meet the requirements of NCLB. It is also used to track student achievement and inform multiple levels of stakeholders of student progress. In Delaware evidence was found that higher levels of government officials use the data to determine if academic assistance programs are improving achievement.

In Delaware, education officials at the DDOE and various stakeholders use the data from the growth model in a myriad of different ways depending upon their position within the educational landscape. The growth model data is first used to determine annual school ratings for AYP and the State Progress Determination (SPD):

“The state progress measure is based on the extent to which each school improved the performance of students across all performance levels and all core content areas (i.e., reading, math, science, and social studies). Schools will be given a state progress determination based on whether they perform above state performance targets, meet state performance targets, or score below state performance targets. The state progress determination (SPD) will not mitigate AYP (i.e., a school that scores below the target for AYP for two consecutive years in the same content area/other indicator will be identified as under improvement) but will allow for more valid and reliable accountability determination and distinctions in performance for schools who are making significant progress in improving student achievement in addition to AYP.” (Delaware Department of Education, 2003).

Each school’s AYP and state progress determinations will be combined to result in an overall accountability determination. Then AYP and SPD are used to form a composite score with accountability history to determine school rating. Data is used to determine the school rating system in conjunction with State Progress Determination and accountability history. Schools are rated into 7 categories: Superior, Commendable,

Academic review, Academic Progress, Academic Progress Under Improvement, Academic Watch, and Academic Watch Under Improvement (Delaware Department of Education, 2007). Schools in the latter three categories are placed on different tracks to receive assistance with the sole purpose of raising the level of student achievement.

When constructing the Delaware Testing Program, a top priority of DDOE officials was to measure “if students are making progress on meeting standards and help the state know how schools and districts are ensuring that students are being taught the standards” (Delaware State Department of Education, 2010a). The growth model data, which allows for a close examination of student achievement, plays a significant role in meeting this goal. The DDOE officials designed the value tables so this finer grain analysis of student achievement could be conducted. “This is especially helpful for evaluating schools with diverse populations and high need youngsters.” (Delaware Department of Education, 2010a, p. 4). The analysis helps to magnify movement of students, subgroups, schools and districts who are operating below the proficient mark.

The growth model data also adds a rich layer of information that can be disseminated to all stakeholders of the educational system. Numerous stakeholder groups including internal DDOE officials, school districts, and school employees, have access to the Delaware Student Testing Program – Online Reporting) (DSTPOR) system. Using this online system, reports can be generated easily for the individual student, school, district and state level as well as selected groups based on interest of user. A paper report is sent to parents of students in grades 3-10 detailing achievement of their individual student. Through the Delaware Department of Education website, the general public has

access to summary reports for the state, sub groups, districts and schools (Delaware Department of Education, 2010a).

In Delaware, the data is also used to determine if academic assistance programs are actually making a difference in student achievement. As explained by a highly placed individual in state government system of Delaware:

“We use it at a secondary level in terms of anything the department is doing. For example, identifying our lowest achieving schools and partnerships in schools (to increase achievement). I think that going forward there is going to be more of a connection.”

But, the DDOE officials are also realistic about how beneficial the growth model data has been to the educational system:

“I don’t think we’ve seen it be as beneficial as we might have liked. I think that is one of the reasons that we are now moving towards a different assessment system where we will be able to have different assessments during the year to have a much more sophisticated growth analysis.”

After using growth model data as a fairer way to measure AYP, officials in Delaware utilize the information for several other purposes. For individual students, analysis can be done to see if academic goals are being met, reporting to stakeholders is enhanced with the additional data, and determinations can be made on the value of academic assistance programs.

Iowa

Iowa approaches the uses of the data in the same way it operates with the growth model program in general with a slow conservative start to building appropriate systems. In addition to the NCLB reporting requirements (including identifying schools in need of improvement), the department uses the data for both internal and external purposes

including to help gauge effectiveness of instruction, reporting to stakeholder groups, and as part of informal conversations centered around student achievement.

Internally, IDOE officials use the data to gauge the effectiveness of instruction and monitor schools. Results are received from the Iowa Testing and entered into a program to evaluate the data against proficiency cut points. Schools are monitored for decreases in proficiency (using a 10 percent or more decrease in proficiency as a red flag) and for failing to achieve adequate annual growth which places them on the schools in need of improvement list.

The data are used to communicate student results to districts. All AYP results, including the growth model data, are posted on the IDOE website so superintendents can gain password protected access to it. This data warehouse includes detailed results (down to the student level). According to an IDOE official “School districts find out what percent proficient they have, and what the targets are, and if they meet the targets and if not what happens.” Detailed information is available to help non-mathematically minded individuals interpret the results on individual students so that it is digestible enough to share with parents (Iowa Department of Education, 2007).

The results are also communicated in reports that are published, including the state report card and The Condition of Education report. Additional communication pieces include press releases when the schools in need of assistance and districts in need of assistance lists are released. Parents receive detailed reports of student progress and aggregate information is available for the school, district and state levels.

Outside the IDOE the data are informally released through meetings and conversations. An individual from the IDOE explains some of the more informal means of communication about growth model results:

“we talk to folks. The bureau chief goes out to meetings that he talks about results and we have intermediate service agencies they are called AEA’s, Area Education Agencies and a lot of those folks communicate with the superintendents in their area. We have an informal network across the states called the Iowa Assessment Network and it’s a bunch of people that are data geeks interested in measurement, evaluation, research and things like that and we meet about two or three maybe four times a year. Most AEA’s have to send a person there then the information usually gets back to their AEA.”

While small in scale, the data from the growth model is used for several purposes. As shown, these include, NLCB requirements, measuring student achievement within the educational system, and formally and informally reporting to stake-holders about student achievement.

North Carolina

In addition to NCLB purposes, NCDPI officials use the data as an enhancement to NCLB requirements through the federal government, the statewide ABC’s program, communicating with stakeholders, and (until 2 years ago, but still of interest), the teacher incentive program.

The ABC’s Program, implemented in 1996 was a widespread effort to bring greater oversight of the North Carolina public schools. As previously discussed, a cornerstone of that program is the growth model which allows for better tracking of schools. It allowed the NCDPI to evaluate educational achievement in a multitude of ways. As an example explained by one education official:

“we would look at the performance from the past, say if someone felt that the growth standards for say, reading in fourth grade was too high and their school or

schools couldn't make those standards, we would go in and we'd look at the data and see, well just how many schools did meet that part of the standard and how many of them were schools like this particular school that's making the claim."

Given the longevity of the ABC's program, the state has enjoyed the ability to better communicate with all stakeholders. After the standardized assessment, parents receive an Individual Student Report, which details how the student performed, compares to their previous achievement, and highlights growth the student has accomplished over the course of the year (State of North Carolina, 2010).

The data also plays a role in communicating with the public through the media. The NCDPI conducted media briefings across the state so that members of the media can have an opportunity to better understand NCLB and various components of the entire accountability system (State of North Carolina, 2010).

One of the most notable uses of the data is the teacher incentive program, a cornerstone of the ABC's program. For schools that met expected growth, licensed personnel were awarded up to \$1,800 for meeting growth. Award amounts varied based on the amount of growth achieved (expected or high growth) and if AYP was achieved (Public Schools of North Carolina, 2010).

The bonus structure was very welcome as explained by a former NCDPI who has also held positions at all levels of education in the state:

"I think that the fact that it was based on growth was better than it being based on proficiency. I liked the fact that the bonuses were given to everyone in the school. I feel strongly that everyone contributes to student achievement. Any way that we can increase teacher compensation I'm in favor of that. I think that teacher compensation needs to be tied to student growth, growth needs to be a factor in evaluation and compensation but it should not be the only factor. At the end of the day I liked the fact that we were doing something to demonstrate that we valued results. I think it was a good thing."

Unfortunately, the incentive structure was eliminated due to budgetary constraints. “The current state budget does not provide for ABCs incentive awards to be given in 2010 due to the state’s budget difficulties. This is the second year that funds have been unavailable for incentive awards (Public Schools of North Carolina, 2010):

“When teachers across North Carolina saw their annual performance bonus cut this year, most didn't know it was coming. Even lobbyists and advocates close to the political negotiations didn't anticipate the reduction. They don't want it to happen again. Only weeks into the school year and months away from the next legislative session, teachers statewide have called and e-mailed state lawmakers and contacted the state's largest teachers group, the North Carolina Association of Educators. Hundreds have contacted Democratic Sen. Steve Goss, a former teacher, persuading him to work on legislation to restore the 30-percent cut taken from 2007-08 bonuses” (Robinson, 2008)

The cuts were eventually understood from all levels. From the perspective of an official in the state department of education, “teachers read the newspapers, they know what’s happening in the economy. So I don’t think it was a real big shock when the general assembly made the decision that they were just not going to be able to fund it.”

As with the other states, and keeping in line with the primary purpose of implementing a growth model, North Carolina uses the data as a way to help schools and districts when working with non-proficient students making progress toward achievement goals. The growth model data are also used for further analysis on student progress within the confines of the ABC’s program. Educational officials also use the data as a way of communicating with stakeholders. Until recently, and only due to budgetary constraints, the data were used for a teacher incentive program based on student academic success.

Are schools being saved from placement on the schools in need of improvement list?

When discussing how data are being used from a growth model program, educational leaders and documentation showed that the primary purposes is for No Child Left Behind accountability purposes. The goal is to give schools credit for students who may be below the proficient mark but making progress towards meeting standards. While there may be multiple reasons why the three states have implemented growth model programs and how they are using the data, at the heart of the pilot project is to save schools from being placed on “Schools in Need of Improvement” (SINOI) lists and avoid sanctions when they are in fact making progress with the hardest to reach students who are still below the proficiency mark.

Reports from the 2006-2007 school year indicate that out of 185 schools in Delaware, 62 schools did not make AYP (via status or safe harbor). Out of those 62, 5 met growth expectations and therefore were not placed on the schools in need of improvement list. This represents 8% of the schools not making AYP and increases the number of schools making AYP by 4%.

In Iowa, there were 1104 schools in 2006-2007, and 168 did not make AYP through status or safe harbor. Of the 168, 116, or 69% of the schools met growth expectations and increased the number of schools making AYP by 12%.

In North Carolina, out of 2207 schools, 1238 schools did not make AYP, and only 12 total schools met growth. So, less than 1% of schools not making traditional AYP were saved. This information is present below in Table 6.2.

Table 6.2

Percentage Increase in Number of Schools That Made AYP Due to Growth, and Percentage Decrease in Number of Schools That Did Not Make AYP Due to Growth, by State, 2006-07

(Evaluation of Schools Interim Report on the Evaluation of the Growth Model Pilot Project, p 35).

State	Number of Schools	Number of Schools Making AYP by Status or Safe-Harbor	Number of Schools Not Making AYP by Status or Safe-Harbor	Number of Schools Not Making AYP by Status or Safe-Harbor That Met by Growth	Percentage Increase in Schools Making AYP Due to Growth
Delaware	185	123	62	5	3%
Iowa	1104	936	168	116	11%
North Carolina	2207	969	1238	12	<1%

These data are particularly interesting when comparing it to the way each state measures growth. In Delaware, students earn more points for their school based on where their scores fall below the proficient mark with no limit on the number of years a student has to become proficient. In Iowa, the area below the proficient mark is divided into three regions, and a student must cross into the next region each year in order to be counted as achieving growth. For each non-proficient student in North Carolina, the distance between their baseline score and the proficient mark is divided into four equal parts (regardless of how far that distance may be). A student must move to a higher quarter each year to achieve growth with four years to achieve proficiency. This synopsis shows that Iowa has the strictest rule for making growth. Students must cover the entire

non-proficient distance within four years regardless of where they began in their baseline year. Yet, out of the three states, the greatest percentage of schools are benefitting from the growth model being in place in Iowa. This warrants further investigation and is discussed in the conclusions chapter.

The data presented shows some schools are making growth and therefore making AYP. These schools should be given credit for the work that they do with students below the proficient mark. While implementing a growth model program may be a tremendous effort for state departments of education, the recognition it can help provide to struggling students and teachers who put a priority into helping them is beneficial.

Cross-Case analysis of Data Use

Officials in all three states first use the growth model data for NCLB purposes. While the states operate differently, they each go through a process of evaluating student standardized test results using both status and growth processes. Schools are put into categories, and then the current year categorical assignment is compared to how the schools performed in prior years. That history determines their placement on a watch list (for poor performance) and could result in sanctions if they have not improved in several years. Final results are reported to comply with the NCLB legislation.

In all three states, the data is also part of the substantial reporting out constituent groups. This includes publishing of mandatory report cards at the school, district, and state level. These report cards are made public, and are available online to the general public. Scope and ease of access to further information is dependent upon the stakeholder group. All three states make student level information available to district officials online and reports can be generated by classroom for teachers. Parents are given

individual reports on their own children which highlight growth and allow for deeper discussion with teachers. All three states also report out the information in a variety of meetings.

Officials in Delaware and Iowa both pointed to using the data as a way to gauge effectiveness of programs. The data provides a way to see if assistance, both from inside and outside the educational system is making a difference. For instance, the governor's office may provide money for an after school tutoring program and the growth model data then allows a very close examination of the improvement of involved students' achievement scores.

The growth model data is also used by educators to conduct a finer grain analysis of student achievement and magnify problems when students do not reach proficiency. Rather than just have a 'meets standards' or 'does not meet standards' designation, the growth model data highlights any growth that was achieved, and how much further individual students are from the proficient mark. It can highlight which non-proficient students made significant progress and then research can be done to uncover the reasons. Analysis of aggregate data can help to see if certain groups are making progress and then that information can be linked to possible curricular or staff interventions that were put in place to raise student achievement.

States implemented growth model programs for several reasons and goals. When it came to examining interview transcriptions and documents it was clear that the major use of the data was for NCLB purposes. With that in mind, it is worth an examination of data to see if the tremendous effort of implementing a growth model program is actually helping schools make AYP when students are making progress but are still achieving

below the proficient mark. Given the sanctions that are on the line when schools fail, the growth model data are important even in a state like North Carolina where so few schools are actually saved from being placed on the SINOI list. It is important to reward the work teachers and administrators are putting into the students below the proficient mark.

CHAPTER VII. SUMMARY AND CONCLUSIONS

The United States Department of Education has attempted to hold states accountable for student achievement since the 1960's. However, it wasn't until the No Child Left Behind legislation that strict sanctions were put in place for failure to demonstrate success. Even with almost 10 years of experience with NCLB, state accountability systems are still in a stage of infancy as states still struggle to find the fairest way to meet requirements.

The problem, as discussed by educators and researchers alike, is the fair measurement of student progress on standardized measures of academic achievement. The original NCLB legislation required that states measure progress using a status model. When using a status model, results of one class are measured against a group of students from the previous year (ie: this year's fourth graders are compared to last year's fourth graders) or a predetermined Annual Measurable Objective. This is not a fair comparison because the two cohorts being compared may be very different. Additionally, schools are punished when students are below the proficient mark even if those pupils are making significant progress towards proficiency (Linn, Baker & Betebrenner, 2002).

As a result, the educational community began to discuss using the idea of growth modeling to measure student progress. While there are a multitude of actual growth models that can be used, they universally share the characteristic of measuring a student longitudinally. This way, a student's individual progress can be tracked over several years. By meeting annual growth targets, a student may still be below the proficient level, but making annual progress toward that goal and thus, demonstrating growth. This progress can then satisfy the AYP requirement and therefore the school is not penalized

for the student still below the proficient mark (Andrejki, 2004; Callender, 2004, Hull, 2008).

In 2006, United States Education Secretary Margaret Spellings initiated a pilot program allowing states to use growth modeling as part of calculating AYP. After an extensive application process including rigorous peer review, 9 states were allowed to start using a growth modeling procedure in their NCLB accountability plans.

While there has been extensive research conducted on the types of growth models that can be used to measure academic progress for NCLB, the literature is devoid of research holistically explaining how state departments of education came to the decision to start using a growth model and the implementation process which ensued.

The purpose of this current dissertation research was to fill that gap adding to the growth model literature an account of the experiences of the three pilot program states during the implementation process. Additionally, the data were examined to describe the growth model implementation process and comparisons were made based on previously cited cultural norms for each state.

State level educational officials in Delaware, Iowa, and North Carolina were interviewed for this research. Existing published reports, documents, and newspaper articles were also examined. A thorough analysis of all data was conducted to answer the following research study:

- 1) How did each state decide to apply for the growth model program?
- 2) How was the particular model selected?
- 3) How was the procedure implemented?
- 4) How is the data being utilized?
- 5) What is the relationship between policy and statistical/technical expertise?

First, this conclusion will focus on highlighting the four general themes which emerged from the data: culture, participation of stakeholders, commitment to communication to garner support, and the reporting of results. Then, a summary of findings by research question is presented.

Culture

Previous research had suggested that each state had a particular set of cultural characteristics when implementing policy and conducting business. This research suggests that Delaware and Iowa each maintained certain characteristics of their documented culture but also showed other qualities not previously mentioned. In contrast, North Carolina stayed true to its traditional cultural characteristics.

Delaware, an individualistic culture (Elazar, 1984) has previously exhibited loyalty, favoritism, smooth and efficient businesslike operations, all with great responsibility to the tax payers. But this research uncovered that the growth model implementation process was characterized by cutting edge technology, involvement of others, and a commitment to transparency. Iowa has previously been labeled a moralistic culture (Elazar, 1984) exhibiting idea sharing, debate, and naïve idealism. However, when it came to implementing a growth model, it was found that decisions were made by a few individuals who were committed to being ready for anticipated policy changes and wanting to bring fairness to educational accountability. Elazar's research (1984) had identified placed North Carolina as a traditionalistic culture, and this held true during growth model implementation. A culture of superiority, elitism, strong leadership, long-standing traditions, and many social relationships was uncovered.

The findings from this research do not support the characteristics typically found in state cultures. While some were uncovered, new ones emerged from the data. Therefore, the work of Marshall, Mitchell & Wirt (1989) is supported as this current research demonstrated that when implementing a new federal policy, states do not follow typical cultural norms. One possible explanation for this result is that growth model implementation is an opt-in state level function with very little impact trickling down to the district and school levels. Traditionally studied state policy implementation has evaluated the culture of a state as it has implemented a mandatory policy with responsibilities to each level of the educational system. An alternative hypothesis is that previous research did not examine a highly technical statistical procedure implemented at the state level. Given that growth modeling is different in nature than previously studied implementation, findings may have actually been dependent upon the fact that a different type of policy was implemented.

Commitment to involving stakeholders

The data findings suggest that at each stage of the process, from decision making to data use, there was a commitment in all three states to ensuring that stakeholders were involved in the process. Involvement was operationalized in two ways: by seeking assistance making decisions and relaying information to garner support for the program. Delaware and North Carolina had very formal mechanisms for participation. State education officials in Delaware formed the Partnership Council, a representative group of stakeholders charged with making recommendations on all facets of the growth model program. This group was responsible for model selection, selecting growth targets, and then deciding how the model would work into NCLB accountability plans. In North

Carolina, officials created the Compliance Commission on Accountability a group charged with handling specific issues requiring stakeholder input. This group was of critical importance when issues arose and NCDPI officials wanted broader input on solutions believing that if handled by a stakeholders group, the decisions would be more accepted by a variety of stakeholders. Iowa did not empower a group of stakeholders to help with decisions.

This was observed when officials in the department of education wanted to ensure that stakeholders understood the model. In Delaware, the search for a simple and transparent model was fueled by a desire on the part of educational officials to communicate clearly with stakeholders.

In all three states, stakeholders were informed of the growth model program with a myriad of discussions, both formal and informal to explain the growth model program in great detail. Essential to garnering support from stakeholders was the clear message that the growth model data would be used only with the intent of helping rather than punishing schools. Schools and districts could finally receive credit for students making progress below the proficient mark.

Reporting of Results

Working hand-in-hand with a commitment to obtaining stakeholder input during the process is the reporting of the results when growth model analysis is complete.

All three states had elaborate systems for reporting of results to stakeholder groups, some of which are required by the NCLB legislation. States have online systems which house the State Report Cards, and provide the user with a very friendly interface to

navigate results. Additional reports are generated for a variety of stakeholders groups and made available online through the department of education websites.

Model Selection

There are several factors that states have to consider when attempting to go through the process of model selection. As this research demonstrated, there needs to be preliminary evaluation of current testing structures and technology work so the model can be selected in the context of current systems. Transparency and the ability of stakeholders to understand how data were produced were both very important for Delaware and North Carolina. To the educational leaders in these states it was essential that results be understandable and also expectations easy to communicate through the use of the model.

When evaluating a potential growth model there are many options. Simplicity was important to Delaware. An educational leader expressed that they wanted to start using a simple model not wanting one that was too big or cumbersome for their systems. Iowa and North Carolina selected more complex models, but neither found the complexity to be a burden.

Once a model is selected, leaders must next decide what will constitute growth. If the goal is to give schools credit for students who are making progress before reaching the proficient mark, annual incremental targets must be set that can lead eventually to proficiency. In keeping with the simplicity of its model, Delaware put actual standardized test score values into its tables to show benchmarks that must be met each year. These targets were determined by using impact data and a realistic view of what could be reasonably accomplished. Educational leaders in Iowa and North Carolina had

similar approaches. In Iowa, the space below proficiency is divided into two levels. A student must pass through at least one level each year. In North Carolina, a student's score in a baseline year (first year tested) and the proficiency level was divided into four equal levels. A student must move into the next level each year to meet annual growth and reach proficient by the fourth. While Delaware did not specify how many years a student had to reach the proficient mark, both Iowa and North Carolina require that a non-proficient student achieve success within four years of first being tested.

States also have to decide how the growth model is going to fit into the current NCLB accountability procedures. Delaware uses the growth model first on all students, then goes through the status measures for AYP. Iowa and North Carolina do the exact opposite, first looking at status AYP results and then using the growth model for non-proficient students.

Policy and statistical expertise, perfect together?

Technical expertise, related to both statistics and electronic technology, takes on an interesting role when a state department of education is implementing a growth model. While policy makers are the driving forces of business and policy decisions, the statistical expertise required to implement and generate the correct data can be at odds with what is requested. In Delaware, Iowa, and North Carolina, educational officials had frequent conversations, often back and forth, with the technology experts when decisions were being explored.

The statistical expert on the Delaware accountability team explained that the policy makers are in charge of the process. Explaining his role, "as the tail on this dog we wait until we've been told to wag." The technology implementer in North Carolina

shared those same feelings. Leery when new policies rules come down for implementation, the technology experts know that if the data or systems are not in place, they have the support to go to the policy makers for further discussions. Acknowledging this back and forth work, was the technology expert from North Carolina who explained “what’s steering the ship? Is it policy concerns or is it statistical issues? I would say the blend of the two at this stage.”

Implementation

The questions in the area of implementation were designed to ascertain what hindered and what helped educational leaders implement the growth mode into state educational accountability plans. A variety of factors were uncovered.

Educational leaders pointed to robust data systems that were already in place and a commitment to cutting edge technology (as discussed in the chapter three). It was stated that the programs did not cost much to implement and were designed to help schools and districts so that lack of resistance was positive. Leadership committed to securing necessary expertise was very beneficial. Leadership in each state worked hard to involve stakeholders at all levels in the process and/or then took substantial time to make sure all interested parties understood the new procedure and data as it was produced. Delaware and North Carolina each had a state specific factor that helped implementation. In Delaware, officials were able to capitalize on their size to bring people together. In North Carolina, the growth model program was part of a larger educational initiative that included a teacher incentive program based on data. This small financial reward was a great help in teacher buy-in since they could receive an incentive for students still below the proficient mark but making progress.

Data Use

Across all three states, the primary use of the growth model data was to meet requirements of NCLB. This finding was not surprising since the purpose of the growth model is to give statistical assistance to schools, districts, and states in making AYP, the primary requirement of NCLB. All three states also used the data to inform stakeholders of academic progress. This is accomplished through a variety of reporting structures, some of which are mandated by the NCLB legislation. Delaware and North Carolina use the data to determine if students are making progress towards academic goals. Both Delaware and Iowa analyze results to see if instruction is effective.

Preliminary reports from 2007 showed that while in some cases very small, the growth model data were in fact helping schools. In Iowa, there was an 11% increase in schools making AYP due to growth which translates to 116 schools. Rather than these schools facing sanctions and punishment, they are cautiously rewarded with more time to help students toward proficiency.

The primary purpose of the growth model data is to help schools district and states my AYP. As discussed, students making significant progress, meeting growth targets, but still below proficient can be counted for AYP. With this addition, a school does not end up on the schools in need of improvement list. This research showed, through the analysis with the number of schools making AYP due to growth that the procedure is in fact saving schools.

Limitations

While these findings do bring the research on growth models forward, there are limitations to its scope that warrant discussion.

The first limitations are a result of the process used to select states for participation in the study. The total population available for this study was nine states. Delaware, Iowa and North Carolina were selected for participation. These states were selected to provide maximum variation of experience with decisions made on a set of previously described factors. Since the participants were not randomly selected, there is a lack of generalizability. Therefore, the findings are only valid for the participating states and cannot be used to predict what could be a typical experience of another state department of education implementing a growth model program.

Additionally, there were a limited number of subjects available to interview. While every effort was made to contact all individuals connected with the growth model program, most deferred to the accountability team. Therefore, the perceptions gathered and reflected in the findings are those who had direct involvement and knowledge of the growth model program. A fuller richer description would have been obtained if the research project included those a few steps away from the central growth model operation.

Future Research

Future lines of research first should including taking this procedure and researching the experiences of the educational leaders of other states that have implemented a growth model. This will give the most complete picture of growth model implementation.

As the states gain more experience with the growth models the longevity would be interesting to study. They may decide to change growth models and start using the data in different ways. As these policies and procedures take shape and inform teacher

retention and promotion decisions and start to inform instruction in different ways, it will be critical to document the process, reaction, and decisions as they unfold and are put into practice. While many in the educational research community are conducting research to develop more sophisticated models, how they unfold in real world practice must go hand-in-hand with that work.

The data for this dissertation were collected in early 2011. Some of the data, specifically the information on schools making AYP due to the growth model, needs to be updated and examined to see how the models have helped in subsequent years. The Schools in Need of Improvement Lists (SINOI) and table, like table 6.2, should be updated. Then, an up-to-date account of how schools were helped by the growth model data could be examined. It would also be interesting to examine the schools that are saved as a result of the growth model program for common characteristics. Additionally, there was an anomaly when examining the number of schools saved in Iowa, which has the hardest growth targets but also had the greatest percentage of schools saved when applying the growth data. That inconsistency should be examined.

Lastly, value added assessments (VAA's) are not currently included on the list of permitted growth models for states to use in the measurement of AYP. However, VAA's are employed by states and individual school districts, most notably in the area of teacher evaluations. In future reauthorizations of ESEA, VAA's may be added to the list of growth models permitted to be used to measure AYP. Before that step is taken, an evaluation should be conducted of the VAA's currently used in practice. That process would extend this research uncovering the differences and extra steps that must be taken with the more complex statistical procedure.

Implications for Policy and Practice

This evaluation of the growth model programs in Delaware, Iowa, and North Carolina can be used to help staff in additional state departments of education start exploring the idea of adding a growth model to NCLB accountability procedures. Presented here are the many factors that should be considered in initial planning. Stakeholders, those both in and outside of the educational community need to be involved, consulted, or at a minimum informed so they feel included and support the program. Those conducting the evaluation need to understand the models. Policy makers can see the way that stakeholders were involved and then informed during the decision and selection processes. They can assess how the factors that were both hindrances and facilitators to the sample states could translate to their own states. Policy makers can also see the importance of working hand-in-hand with the technology experts to explore options and ensure that decisions are possible to implement. Additionally, educators can explore a multitude of options for data use possibly gaining insight into evaluating future growth model data in their own state.

Using the data presented in table 6.2, policy makers should study the effects of implementing a growth model. The results reported indicate that in certain circumstances the implementation of growth model analysis did not help a large quantity of schools. This could be problematic if states consider the implementation to be cumbersome and expect a considerable number of schools to receive assistance in meeting AYP.

When looking at implementing a new policy or procedure, policy makers and implementers may not be familiar with traditional cultural labels they do understand the way business is usually conducted in the state. Given this research, when preparing to

implement a growth model, they may need to prepare for the inevitable bending of the traditional norms. For instance, if state leaders traditionally do not involve others in making decisions, they should see the tremendous benefit of buy-in by involving stakeholders at every level of decision making and implementation.

Conclusion

As states are required to account for student academic achievement, it is critical to find the fairest way to give schools, districts, and states credit for working effectively with those students who are below the proficient mark but making progress. The goal, is to have these students realize success but that often takes tremendous resources and time to accomplish. With the availability of growth models to measure academic progress, state level educational leaders have the ability to take an important step forward by adding the statistical procedure to state level accountability plans. Growth modeling appears to add a fair layer to state level accountability giving schools, districts and states credit for students making progress even when they have not yet reached the proficient mark. As documented here, how the leadership of a state makes the decision to implement a growth model, goes through the process of selecting a model and related decisions, handles implementation, and uses the data can greatly vary.

This dissertation fills a void in the current educational literature giving insight, and the beginning of a blue print for educational leaders in other states when they are starting to plan for the implementation of a growth model program. Additional statistical procedures like the implementation of a growth model can fairly reward schools for making progress with the lowest achieving students. However, it does not diminish the fact that a particular pupil is still below the proficient mark. Therefore, while statistical

procedures can help bridge the gap for a period of time and allow a school to work with a student towards success and receive credit for doing so, it does not replace the hard academic work that must be done with these students.

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APPENDIX A: STATE FACTORS CHART

State	Iowa (a)	Ohio (b)	North Carolina (c)	Tennessee (d)	Alaska (e)	Delaware (f)	Arkansas (g)	Florida (h)	Arizona (i)
Enrollment (2008-2009)	477,019	1,752,185	1,445,628	930,525	128,380	125,430	465,801	2,628,754	1,078,697
No. of Districts	385	619	116	136	56	18	264	65	15
Average Enrollment/Di strict	1239	2831	12,462	6842	2293	6968	1764	40442	71913
Political Culture	Moralistic	Individua list	Traditionali stic	Traditionali stic	Individuali stic	Individuali stic	Traditionali stic	Traditionali stic	Traditionali stic
Type of Model	Growth to Proficiency	Projectio n	Proficiency Growth Trajectory Model	Growth to Proficiency Model	Growth to Proficiency Model	Value Table	Growth to Proficiency	Growth To Proficiency	Growth to Proficiency
Year started with Growth Model	07-08	07-08	05-06	05-06	07-08	06-07	06-07	06-07	06-07
All students?	3,8,11	4-8	Non- proficient	All 4-8	Non proficient	All	4-8 non proficient	All	All non- proficient

APPENDIX B: RESEARCH QUESTIONS AND CORRESPONDING CODES

1. How did each state decide to apply for the pilot program?

AP-DE
 AP-DE-Goals
 AP-DE-WHO
 AP-IA
 AP-IA-Goals
 AP-IA-WHO
 AP-Leadership-DE
 AP-Leadership-IA
 AP-Leadership-NC
 AP-NC
 AP-NC-Goals
 AP-NC-WHO
 AP - DE
 Application Process – General
 Culture
 Culture-DE
 Culture-IA
 Culture-NC
 Decision to Apply
 Goal of growth model
 History
 History-DE
 History-IA
 History-NC
 Leadership
 Leadership - DE
 Leadership - IA
 Leadership - NC
 sanctions
 Sanctions - DE
 Sanctions - IA
 Sanctions - NC
 State History

2. How was the particular model selected?

Model-NCLB-DE
 Model-NCLB-IA
 Model-NCLB-NC
 Model Selection
 Model Selection-DE
 Model Selection-IA
 Model Selection-NC

3. How was the procedure implemented?
 - Impl&NCLB - DE
 - Impl&NCLB - NC
 - Imple&NCLB - IA
 - Implementation
 - Implementation - DE
 - Implementation - IA
 - Implementation - NC

4. How is the data used?
 - Data-IA
 - Data-NC
 - Data - DE
 - Data Use
 - Data Use - DE
 - Data Use - IA
 - Data Use - NC
 - NC - Incentives Cut
 - Results
 - Results-NC
 - Results - DE
 - Results - IA

5. What is the relationship between policy and statistics/technological expertise?
 - How do policy actors work with statistical experts at each stage of the process (decisions, implementation, and use).
 - Leadership
 - Leadership - DE
 - Leadership - IA
 - Leadership - NC
 - Pol-Stat Issues - IA
 - Pol - Stat Issues - DE
 - Pol - Stat Issues - NC
 - Policy-Stat Issues General
 - Policy/Stat Relationship
 - Technology-DE
 - Technology-IA
 - Technology-NC