

**Work in progress**

**The Implementation  
of the Scientific Based Research  
components of the NCLB Act:  
A model to guide state action.**

**Preliminary Findings**

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## **Abstract**

The phrase “Scientifically Based Research” in the No Child Left Behind Act directs state and local educational agencies to use quantitative research based practice in all federal programs. State education agencies must implement these provisions through federally approved plans. A model was constructed examining the relationship between a state’s comprehensiveness of planned implementation, its capacity to implement, its contextual environment and its implementation strategy. A mixed methodology of survey and content analysis was used to test the model and discover the factors affecting planned implementation of SBR found in the Reading First program.

## **Introduction**

Educational research quality has been questioned since its inception. The recent shift towards favoring the scientific paradigm and evidence-based practice began in the mid 1990’s in the United Kingdom. In the U.S. this movement has resulted in a shift in legislating educational research to a more positivist focus. This is seen in the comprehensive use of the phrase “Scientifically Based Research” (SBR) in the programs of the No Child Left Behind Act (NCLB) to make educational practice more evidence based. However, there are a number of problems involved in making this fundamental shift.

The first problem is that the number of practices which comply with the rigid definition of SBR in the Act is limited in the body of research that now exists since most of the available research is grounded in qualitative methodology. Further, extensive research on all areas of teaching and learning strategies, instructional interventions, professional development and administrative models does not yet exist for all possible contexts.

Second, teachers, administrators and district personnel have traditionally used programs, curricula and strategies based on philosophical reasons. To change that to an evidence based form of practice involves a cultural revolution that will demand much time, consistent effort and intensive monitoring to implement. To be successful at the local level, the state must maximize its resources and capacity to plan such an implementation carefully for it to endure in the long term.

However, there is a third problem, many states are experiencing fiscal as well as other challenges that add to the constraint of the goals of the NCLB Act for every student to be proficient in state standards by 2014 or risk the loss of federal funding. This reduces the resources available for interventions proven by scientific evidence to raise student achievement.

Finally and unfortunately, to implement such reform initiatives, states do not yet have a clear idea of the definition of SBR and are waiting on guidance from the U. S. Department of Education (USED). According to the study conducted by the Center on Education Policy (CEP, 2003), the regulations issued for this program reiterated the definition outlined in the law without further clarification and guidance (Table 1).

**Table 1. The Definition of SBR according to the NCLB Act**

<b>The term “scientifically based research”:</b>
(A) Means research that involves the application of rigorous, systemic, and objective procedures to obtain reliable and valid knowledge relevant to education activities and programs; and
(B) Includes research that:
(i) Employs systematic, empirical methods that draw on observation or experiment;
(ii) Involves rigorous data analyses that are adequate to test the stated hypotheses and justify the general conclusions drawn;
(iii) Relies on measurements or observational methods that provide reliable and valid data across evaluators and observers, across multiple measurements and observations, and across studies by the same or different investigators;
(iv) Is evaluated using experimental or quasi-experimental designs in which individuals, entities, programs, or activities are assigned to different conditions and with appropriate controls to evaluate the effects of the condition of interest, with a preference for random-assignment experiments, or other designs to the extent that those designs contain within-condition or across-condition;
(v) Ensures that experimental studies are presented in sufficient detail and clarity to allow for replication, or, at a minimum, offer the opportunity to build systematically on their findings; and
(vi) Has been accepted by a peer-reviewed journal or approved by a panel of independent experts through a comparably rigorous, objective, and scientific review.

(Olson & Viadero, 2002, p. 14)

Therefore some states are deciding to use the guidance issued for the Reading First program which only contains four of the six criteria stated in the law and as such evaluates research used for evidence of program success to a less rigorous standard. This will result in the implementation of Title I, Part A school improvement strategies that are not compliant with the statute (CEP, 2003).

The situation remained unchanged in the Center on Education Policy’s Year 2 report released in January 2004 (CEP, 2004). The only new guidance offered by the USED was that

released by the Coalition for Evidence-Based Policy in December 2003 (USED, 2003) who provided a tool to classify research studies into either strong or possible evidence of effectiveness. In fact, the guidance specified that if an intervention was neither supported by strong nor possible evidence it was to be considered as “not supported by meaningful evidence of effectiveness” (USED, 2003) These categories limit the methodologies to random controlled trials and very closely matched comparison group studies for use in judging the effectiveness of any educational interventions to be both used by practitioners and federally funded.

Ultimately, the diverse manner of implementation each state chooses to overcome these challenges will provide the data to investigate these problems. In this article we present the results of our inquiry into the implementation of the Reading First program (Title I, B I). NAEP scores indicate that all students are not able to attain a basic level of reading by the fourth grade. This is especially acute in high-poverty schools. Hence, the Reading First program aims at helping SEAs, LEAs and schools ensure that all students can read by the third grade.

In order to attain this goal, SEAs and districts are required to provide professional development, instructional programs, and materials which focus on “the five key areas that scientifically based reading research has identified as essential components of reading instruction-phonemic awareness, phonics, vocabulary, fluency and reading comprehension”(US DOE, ‘NCLB Desktop’, 2002). Further, states are responsible for ensuring that “all teachers have the skills they need to teach scientifically based instructional programs and to effectively screen, identify and overcome reading barriers facing their students.” The Reading First program will provide funds for statewide professional development to support such an endeavor.

While these requirements are outlined in the law the Reading First program has a unique definition for SBR. The generic definition in Table 1 contains six criteria for research of which only four pertain to this program. Criteria four and five have been removed. The removal of criterion four means that sanctioned reading programs do not need to have evidence based on research using experimental design and random assignment. Similarly, by removing criterion five there is no need to ensure replication of studies that will systematically build theories. Therefore reading programs that show success in student reading by either quantitative or qualitative means that test a stated hypothesis; provide reliable and valid data using multiple means; across multiple studies and are approved by peers and experts are acceptable for federal

funding. However, this particular lower standard is only to be used in judging the effectiveness of Reading First programs (US DOE, 'NCLB Desktop', 2002).

The report by the Center on Education Policy on Year 2 of the NCLB Act implementation found that the Reading First program is at a more advanced stage than the other Title I programs with respect to SBR. In fact, they report that the Reading First applications are “extensively reviewed by panels of experts” by the USED causing states to respond seriously to the SBR requirements for the program (CEP, 2004 p. 166). The manner in which the Reading First program is described and the leeway given in the standards should provide enough variance to measure how comprehensive a state’s plan is to implement the program.

### **Purpose**

The purpose of this study is to determine the relationship between a state’s capacity to implement, its contextual environment, the implementation strategy it favors and the comprehensiveness of its planned policy implementation by examining the scientific based research (SBR) components of the Reading First program in the No Child Left Behind (NCLB) Act. Based on the results we proposed a model that will guide not only implementation of SRB but also could be helpful with implementation of other federal and state programs and regulations. The following research questions guided the study.

1. How comprehensive is each state’s Reading First plan to implement the SBR components of the NCLB Act as defined by its plans?
2. Is there a relationship between the comprehensiveness of a state’s Reading First implementation plan, the state’s capacity and its strategy to implement the SBR components of the NCLB Act?
3. Is there a relationship between the contextual factors and capacity to implement which affects a state’s planned comprehensiveness of implementation of the SBR components of the NCLB Act?
4. Can a model be established that will demonstrate the relationship of comprehensiveness of its Reading First plan, capacity, contextual factors and strategy?

The outcome of these research questions will illuminate the nature and interrelationships of the variables involved. The resulting model can then be used by a state to guide its policy implementation by optimizing those variables which are applicable to its unique situation.

## **Significance**

The study is important for several reasons. First, implementation has seldom been studied at the state level. Where it has been studied, the focus has traditionally been end of the process during the policy's evaluative stage. This study focuses on implementation as the early stages so that results can be used meaningfully to make mid course adjustments in further implementation sequences.

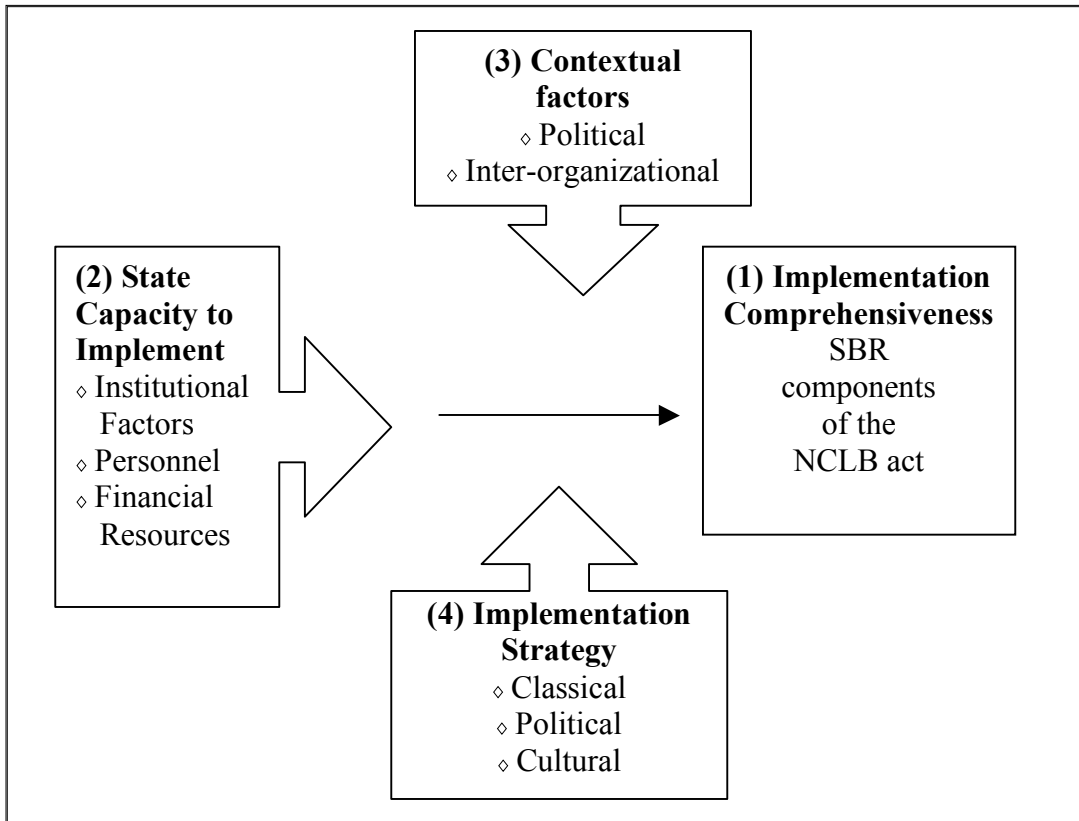
Second, the issue is important and one that will not soon go away. Since there is policy coherence between the NCLB and the ESR Acts and there are now support systems promoting Evidence Based Practice, this movement is expected to continue in the long term.

Third, since planned policy implementation has rarely been studied at the state level, the study will add to the policy literature available to scholars and practitioners.

Finally, when the study is complete it will identify the best use of state resources and strategies to move implementation along quickly and efficiently.

## **Conceptual Framework and Literature Review**

The key concepts guiding this study are grounded in three literature based models. The first is the Communications Model of Intergovernmental Policy Implementation by Goggin, M., Bowman, A., Lester J. and O'Toole, L., (1990). The second is from Allen Odden's monograph *Education Policy Implementation* (1991) while the third is by Kenneth Leithwood and Stephen Anderson (1988). The conceptual framework (illustrated in Figure1) assumes that a state's comprehensiveness of planned implementation of the SBR components of the NCLB Act (on the right hand side of the figure) will depend on the sub-factors of its capacity to implement, its context and the implementation strategy it chooses.



**Figure 1. Factors affecting the extent of a state’s planned policy implementation.**

(1) Policy Implementation Plan Comprehensiveness

The comprehensiveness of the implementation of the SBR components mandated in the NCLB act is defined in this study as the extent to which a state plans to implement all of the SBR components of the Reading First program in its state plan. The manner of planned implementation of these components must be based on the USED’s definition of scientifically based research in order to attain funding or to be approved for the grant. The NCLB Act requires that states plan the implementation of Reading First through technical assistance to schools and districts to identify instructional programs, materials and assessments grounded in SBR as well as oversee professional development programs to instruct teachers in the five essential components of reading instruction identified by SBR.

## 2) State Capacity to Implement

Implementation comprehensiveness is thought to be related to a state's capacity to implement, the implementation strategy it utilizes and the levels of support it can mobilize to implement the NCLB provisions for SBR. According to Goggin et al. (1990) organizational capacity is defined as the ability of the state government and the state agency to use structure, finances and human resources to translate a policy from a message to real outcomes. Similarly, Odden (1991) adds that within the human resources factor the number, types and level of expertise of personnel is important. Hence, implementation is enhanced when the agency involved is suitably structured with respect to institutional factors and can channel the required coordination of effort and resources through expert personnel to put a policy into effect. The state's capacity to act is influenced by institutional factors, personnel development, technical assistance, and financial resources. Therefore, in this study state capacity to implement was thought to be affected by institutional factors, personnel and technical assistance, and financial resources.

**Institutional factors.** Institutional factors means the structures such as vertical and horizontal linkages for top-down, bottom up program adoption, along with leadership and cross functional teams which impact implementation in this study. The optimum organizational structure depends on the type of policy, and the strategy of its implementation. The literature supports that a hierarchical structure that is integrated and coordinated administratively and geographically facilitates top-down approaches to implementation. This type of implementation increases with low numbers of offices and bureaus to coordinate (Pressman & Wildavsky, 1984, Stewart & Bullock, 1981, Sabatier, 1983, Bardach, 1977 and Huberman & Miles 1984).

Both Pressman and Wildavsky (1984) and Stewart and Bullock (1981) found that increasing the numbers of actors and decision makers increased delays and complexity which slowed the rate of the implementation process. Moreover, Mazmanian and Sabatier (1983) as well as Bardach (1977) overwhelmingly support that the extent to which the hierarchical structure is integrated heavily affects the success of implementation. Huberman and Miles (1984) also were able to show that top-down directed processes were more frequently successful than those that were initiated from the bottom up.

However, other findings in the literature confirm the exact opposite where a complex system of various offices can have a positive effect on implementation. In such cases, there are repeated and overlapping of functions that can serve as a second level of observers to find missed issues before a problem arises and also to provide extra expertise and alternate perspectives. This type of network supports the bottom-up approach of policy implementation and has been found to be especially useful for social and welfare policies where a large number of private and Non Governmental Organizations can be involved in the implementation process (O'Toole and Montjoy, 1984, as cited by Goggin et al. 1990).

Ultimately, Goggin et al. (1990) state that the elements that can determine which structure is most appropriate depends on the policy type and the implementation style or strategy required for the resulting outcome. Where a policy can be simply implemented as it is stated without any adaptation and does not require the technical expertise of a variety of governmental and non-governmental organizations a top-down approach that is highly structured is best.

However, where there is a need for a network of technical input and adaptive strategies to be employed to attain the policy outcomes; a bottom-up approach with a more complex structure of organizational input will succeed outcome-wise in the long term (Goggin et al., 1990). This finding has been confirmed by Marsh and Odden's (1990) study on the implementation of California mathematics and science curriculum frameworks. The success of this implementation depended on the use of an antecedent phase to build local capacity for the complex new reforms. This phase was used to develop expertise and connect teachers to technical networks in a bottom-up manner. Once this was in place the formal adoption phase began where the top-down district led processes were able to link to the bottom-up infrastructure that had been prepared. Such linkage quickly facilitated the curriculum implementation at the school level.

Implementation success also depends on horizontal linkages in the form of cross-functional teams. Anderson, Odden, Farrar, Fuhrman, Davis, Huddle, Armstrong and Flakes-Mosqueda (1987) studied the curriculum reform efforts of ten states and found that local capacity for change increased where there were collegial relationships which linked the structures between both the districts and state department. Marsh and Odden's study (1990) also illustrated that the top-down and bottom-up strategies needed cross functional teams involving teachers, department chairs, curriculum specialists and administrators at both the school and district sites to blend the two approaches to attain successful outcomes. Therefore, once the antecedent phase

had prepared teachers and district curriculum specialists to generate a professional culture from below, the adoption phase led by the state and bolstered by the bureaucratic culture from the top had the linkages and structure to implement the new state curricular frameworks. This produced a professional model based on expertise and knowledge interacting at the cross functional committees and communicating in both directions to attain the most appropriate outcome for students.

A Consortium for Policy Research in Education (CPRE) policy brief of a study dated November 2003, was entitled *The Use of Research Evidence in Instructional Improvement*. In it Corcoran describes the attempts of three urban districts to shift the paradigm and create a culture of evidence based practice. This is ultimately, what the SBR components of the NCLB Act aim to achieve. The author reports that these districts created new organizational structures by creating district wide committees involving new relationships, with tertiary institutions in one case, to choose appropriate evidence-based programs and measures to improve student achievement. In such cases there was success. However, the committees did not coordinate and vet the professional development strategies to ensure that they were based on evidence and such measures failed and stalled the overall process. Further, the committees did not display top down authority or control and hence the decentralized decision making which resulted at the school level was fragmented and not centrally coordinated to ensure that the overall goal of evidence based practice would succeed. This study illustrates the need for both bottom up coordinated with top down decision making and monitoring to ensure that old culture and familiar competing paradigms do not prevail and subsume the new one of evidence-based practice.

The importance of structure is clear for the success of the implementation of the SBR of the NCLB Act. The present study investigates the nature of the structure from the state's perspective in terms of directional control and its expectations so using an antecedent or preparatory phase to engage practioners in thinking in terms of scientifically based practice. Additionally, the use of cross functional teams involving closer ties among states, districts, practioners and researchers are examined.

**Personnel Development and Technical Assistance.** Leithwood and Anderson's framework (1988) states that the capacity to implement depends on the knowledge and skills of those managing, planning and evaluating the implementation at the state level as well as those at the

site of implementation. The goal of success then relies on the relevant knowledge and experience of what should be done combined with how and when to do it. This supports Goggin et al.'s theoretical framework which explores these areas in greater detail.

Goggin et al. (1990) relate that while the quantity of personnel in an implementing agency is important, more effective implementation is attained with higher numbers of professional staff. Corcoran (2003) verifies this as one of the downfalls causing the failure of three urban districts to implement evidence based practice. The districts tried to implement evidence based practice in too many areas and relied on one team of professional development to attend to both district staff and teacher needs. Essentially the quantity of professional development staff was insufficient to serve the amount of needs required of them by the districts. This directly impacts on the level of technical expertise available to LEAs for successful program implementation. Leithwood and Anderson's framework (1988) classifies technical assistance as one of the vital resources for successful implementation most frequently cited by studies.

In fact, three other studies directly relate the level of technical expertise at the state and local levels to the effectiveness of implementation. In 1987, Anderson et al.'s study of ten states introducing curricular and testing reforms was effective when states balanced a high level of technical assistance with pressure. Similarly, in a six state study, Fuhrman, Clune and Elmore (1988) found that increased cooperation between state and district facilitated the rate of implementation which heavily depended on the knowledge and expertise of the local educators supported by the state. Finally, Odden and Marsh's series of studies conducted by the Policy Analysis for California Education (1987) on the state's efforts towards school improvement found fast and successful implementation due to the state providing leadership, materials and technical assistance, along with monitoring and support.

Moreover, Odden's framework claims that one of the most important factors for the successful implementation of curricular reforms of the 1980s was the continuous and intensive training and technical assistance given to teachers at the classroom level. This took the form of instructional strategies and new knowledge and expertise required for implementation. Such findings have been documented since the 1970s by the Rand Corporation Change Agent Study, a four year projects covering eighteen states as well as later studies until the end of the 1980s (Odden, 1991).

The recent CPRE study on introducing evidence based practice (Corcoran, 2003) also cites the importance of the appropriate technical expertise, the lack of which can result in failure. Although districts created committees to decide which programs and strategies were evidenced based, the committee members displayed “an inadequate knowledge base, the lack of research synthesis, difficulty accessing most recent research findings” and were confused about contradictory research findings on various issues (Corcoran, 2003). Hence, they were incapable of conducting their function of vetting appropriate programs for district and school use because they lacked the necessary technical expertise of the research community.

Further, the CPRE study highlighted a similar lack of technical expertise in the professional development teams. These teams did not target the challenges of the reforms of using the research based procedures in teaching and learning since they did not share the evidence based culture the district was trying to achieve. The resulting professional development served the interest of teachers instead of the being driven by programs and strategies that had been proven effective. Additionally, there was no ongoing support and training at the classroom level to ensure that instructional strategies and curricula changes were being implemented at the classroom in order to directly affect student achievement. Hence, the power of the competing traditions of the entrenched culture of making decisions based on philosophy and the “goodness” of an option rather than on evidence prevailed. Such experience holds important considerations for the implementation of SBR components in the NCLB programs and how they will be ultimately translated at the classroom level.

Other personnel aspects at the state level are the level of competence and motivation of program managers in charge of the implementation. Goggin et al. (1990) and O’Toole (1989a, as cited by Goggin et al., 1990) have found that the rate and smoothness of implementation is directly affected by the level of commitment of the state level administrator as well as his or her level of political skill. In fact, Goggin (1987) in testing the skill of managers to implement health programs in five states found that success was seen where the administrators were more educated and experienced.

Therefore the specific sub-factors that emerge are the number of professional staff at the state level as well as the education and experience of the program manager. Further the level of expertise available at the state level is important as is a state’s plan to build this capacity at the local level in conjunction with other agencies. Such expertise and assistance will have to be

continuous and intensive to sustain its use to permeate and counter traditional approaches such as instructional strategies at the classroom level. Simultaneously, the need for professional development in recognizing SBR is essential at the decision making levels as well as professional development in teaching new programs, curricula, instructional strategies and other practices to administrators and teachers. All these sub-factors are examined from the state's perspective during this study.

**Financial Resources.** Financial resources are indispensable to implementation. Leithwood and Anderson found that this was the most frequently cited factor to influence implementation. They further, stated that the estimated amount of funds required varies “enormously depending upon who is doing the estimating and what they believe to be the intentions of the policy” (1988, p. 24).

According to Goggin et al. (1990), the literature supports the finding that increasing funding for both the implementation process and the actual program fosters a more successful implementation of a policy. Montjoy and O’Toole (1979, as cited by Goggin et al., 1990) also make this distinction and emphatically suggested that implementation researchers verify if a portion of the federal funding for a program has been provided for its implementation as well. Alternatively, it will have to come from state or local funding sources.

Further, regardless of the amount of federal funding attached to a program states may still be wary of the associated conditions in accepting to implement it. For instance, some conditions require states to attain a specific status within a short deadline that may not be feasible due to contextual factors faced by the state. Overall, state budgets will play an important part in the implementation of the SBR components of the NCLB Act. However, states have faced their worst financial crisis since World War II (“Education Law”, 2003). In fact, “according to the National Council of State Legislatures, 19 states are facing FY2004 budget shortfalls of more than ten percent of their general fund” (Rotherham, 2003). Therefore, due to the necessity of financial resources in policy implementation data on these factors will be collected and correlated against implementation comprehensiveness to exam the extent of each relationship.

### 3) State Context

The rate and extent of implementation of the Reading First program can be affected by several contextual factors. In this study, we were guided by Goggin et al. (1990) who found that the important state context variables are its ability to generate political and inter-organizational support which affects the rate and extent of implementation.

**Political context.** At every level there are a series of individuals who are interested in the problem and resolution that a policy addresses. At the state level these include a network of elected and appointed government officials, interest groups and the state agency involved with the policy's implementation. These form what Goggin et al. call the formal policy network (1990). The elements of such a network can work cooperatively and build advocacy coalitions or work on opposite sides of an issue that can obstruct a policy's implementation. The extent of the influence of an interest group is related to its level of skill, cohesiveness, and resources and their legitimacy and credibility in influencing legislative and elected officials as well as the state agency, according to Goggin et al. (1990). Such a diversity of forces varies the extent and rate of implementation in each state. According to Goggin et al. (1990) if the resulting political landscape facilitates a program's objectives, its implementation will be faster and with less adaptations than one that does not fit in that environment.

The Leithwood-Anderson (1988) framework confirms Goggin et al's (1990) model and classifies this as the socio-political context in which the political actions of the sponsoring agency affects the implementers at the local level. These actions generally relate to the financial resources for implementation followed by monitoring the extent of compliance. Moreover, Leithwood et al. also discuss the political and social environment at the local level where implementation can be affected by negative conditions emanating from: the public, the conflict of other studies, or from high levels of local autonomy. Therefore the political scene on the local level can be just as important as that at the state level.

In the CPRE study (2003) the political obstacles to successful implementation of evidence based practice appeared at various levels. The pressure from the three state accountability systems and the local, civic leaders and the school boards all created an unrealistic expectation of immediate student improvement. The superintendents were aware that full student gains would take from two to three years and redirected scarce resources to hasten the possibility

of short term gains in hopes that the benefits of the deeper reforms would be given a chance to mature and bloom. Instead, when gains were too small to convince the politicians and the public of its eventual improvement, all three superintendents were replaced by new leaders with their own agendas that did not bolster the original reform.

Political effects also interfered with the decision making of the district committees charged with compiling a list of evidence based practices. Since these committees lacked the expertise found in the research community to assess research they were at the mercy of the champions of specific reforms and advocates of preferred strategies who selectively found supporting evidence in the literature. Further the author, Corcoran, alludes to the choice of certain internally developed programs to be related to the “internal politics of the system” (2003).

Such circumstances illustrate the real problems that will be facing states and districts in the implementation of SBR. As a solution, Corcoran (2003) suggests the need to educate the political arms of the system from the state policymakers and business leaders to the civic leaders and board members about the significance of both the time and the effort required for such an investment.

The agreement and support of the state legislature, SEA, interest and professional groups is essential for the success of any policy implementation. Therefore, the political climate around the issue of SBR will be ascertained from the state educational agency’s perspective at the time of the survey and as a prediction of possible change or opposition as implementation proceeds.

**Inter-organizational support.** While implementation can be accomplished by the actions of the sponsoring agency and the implementing agents; the Goggin et al., Odden and Leithwood et al. frameworks all recognize the success of joint action. This involves the contribution of external agencies to support and accelerate the process.

Creating a supporting network among various agencies is of great importance to the implementation of the SBR components of the NCLB Act. In fact, the federal government used the Education Sciences Reform Act (2002) to create several reinforcing structures. For instance, federal funding through the USED’s Institute of Educational Sciences must be aligned with the newly established criteria of scientific research. The establishment of the What Works Clearinghouse provides a source of programs and strategies which meet the criteria and the ten

regional education laboratories are available to support states in distinguishing criteria relevant research products. Further states can use the services of research institutions and universities to develop the scientifically based research products they need. All these avenues illustrate the variety of networks that a state and district can build to support this shift to scientifically based practice.

In fact, from his study of the impediments faced by the three urban districts trying to introduce evidence based practice, Corcoran (2003) recommends that states, districts and practitioners collaborate with the research community to demand rigorous research products based on well-designed and peer reviewed studies. Further research on inter-agency linkages can help local decision makers in their choice of programs based on expert knowledge. In fact, Corcoran suggests partnerships between local research institutions and districts that can develop large clinical studies that meet their particular needs.

Hence inter-organizational support is important for those federal programs which do not have a clearly established research base that is scientifically grounded. The Reading First program, however, has the advantage of existing research that fulfills its SBR criteria. In light of this, the need for inter-organizational support for this program will be examined using questions on the survey that query the extent of technical support a state will garner from the WWC, national and regional labs, as well as state and local research and tertiary institutions.

#### 4) Implementation Strategy

The responses to the approach a state intends to use to implement the policy, be it classical, political or cultural, will be determined to see if it directly affects the planned comprehensiveness of the implementation of the Reading First program. Several different strategy models are found in the literature. The Odden framework itemizes the different modes of dealing with conflict as: “resistance and bargaining, accommodation, cooperation and strategic interaction” (1991, pg. 323). Musella (1989), however, developed a theory in which states choose either the classical model, the political model or the cultural model to implement policy.

Since NCLB is written as a mandate, it is proposed that most states will follow its tight controls and implement it exactly as it is prescribed. Such an approach would reflect the classical model. However, with the scarcity of financial resources facing many states it is possible that

some will bargain with regulators to reshape certain aspects of the policy. How many states and what concessions and tradeoffs are to be made remains to be discovered in this political model. These may vary from changes in rules to enforcement or evaluation strategies.

Finally, the cultural model suggests that the federal policymakers and state policy implementers view NCLB as a guide to implementing measures to attain similar but reduced goals. In this case that which is implemented may be very different from the original policy.

In a study on the “Interaction of State and Federal Programs” Moore, Goertz and Hartle (1983) discuss the tension of intergovernmental roles in education. These authors categorize federal policy alternatives in dealing with programs into four groups: consolidation into block grants; streamlining requirements; reformulating current designs and formulating differential treatment among states. According to the authors, states in the past have resisted too much prescriptiveness in The Vocational Education Act and the Education for All Handicapped Children Act (P.L. 94-142) and yet required greater clarification and detail in other policies. Hence there is always need for intergovernmental interaction, whether it be deregulation or removal of certain parts of a law when it is being streamlined by the federal government or when a policy is tinkered and reformulated to be more effective. These are common strategies along with requesting an increase in technical assistance that states use with the federal government in the bargaining and negotiation process towards compliance. The federal government has been known to use enforcement mechanisms such as fiscal audits for Title I and compliance reviews for P.L. 94-142 that were linked to mandates which were influential strategies in gaining state compliance (Moore et al., 1983).

Another strategy used by the federal government is differential treatment in which policies are tailored to “the different political, fiscal, economic and cultural realities” of different states (Moore et al., 1983). These authors have also cited Murphy’s findings (1981) on strategies used to attain differential treatments. These include “customized monitoring and compliance strategies, financial incentives in the form of bonuses, waivers, and bypass arrangements for unresponsive state governments, and the adjustment of federal requirements for states that either exceed or fail to meet the mandated standards of performance” (Moore et al., 1983).

Fuhrman et al.’s (1988) study of six states predicted that local districts had a choice of refusing to comply, fully complying or adapting reforms. They found that where the capacity to comply existed, districts complied with little resistance. This finding that extent of capacity

dictated the extent of compliance was also seen by Marsh and Odden in the implementation of curricula in California (1987). Moreover both studies confirmed that the reforms were more substantive than expected, not just symbolic, and produced meaningful change. In fact, some districts were engaged in strategic interaction with the state to customize the content of the policy to local needs. Furthermore, Firestone (1989) found that districts were even going beyond the state requirements and standards.

Moreover, education program implementation is more complicated than other types of reform since there is an ongoing need for technical expertise, professional development, human and material resources, the appropriate political and economic climates as well as institutional factors. Hence, attaining full and uniform compliance at all levels and especially in the classroom is rarely possible for all fifty states. For the variety of conditions affecting a program, states may choose to resist compliance or more often negotiate and bargain the terms of agreement to either reduce their responsibility or attain increased technical assistance from the federal government.

In 2002, Arizona, Alabama and West Virginia entered into compliance agreements with the federal government. The NCLB testing requirements are based on criteria stated in the Improving America School Act (1994). Since these states did not meet the original requirements they could not follow through on the subsequent criteria in the NCLB Act. Hence the federal government increased their deadline dates but bounded them by compliance agreements (Olson, 2002). Therefore, even though a state may resist compliance, it is more advantageous in the long run to engage in negotiation to reach a customized solution. Moreover, it is important to continue the bargaining conversation during the long term process which often involves the streamlining or reformulating of a policy as it evolves so that the greatest benefit is experienced by students in the classroom given the conditions under which implementation has to occur at the state, district and school levels.

The Reading First program was a new addition to the Title I programs in the NCLB Act. Therefore the approach a state would take to replace its existing reading program could vary from the classical to the political and cultural models. Some states may even go beyond the program's criteria in what can be described as a hyper-classical approach similar to that found by Firestone (1989). The model each state uses will be elicited by questions on the survey and examined in light of the comprehensiveness of its implementation plan to detect any possible

relationships. In this study we chose to characterize the state's strategy to implement the SBR provisions as either a classical, political or cultural approach to implement policy.

## **Methodology**

The design of this study is correlational with the four major variables being Planned Implementation Comprehensiveness, State Capacity, State Contextual factors and Implementation Strategy. The first, criterion, variable Planned Implementation Comprehensiveness of the SBR components, is found in the Reading First program. The remaining three predictor variables (State Capacity, State Contextual factors and Implementation Strategy) contain factors. State Capacity is composed of institutional, personnel, and financial resource factors. The State Contextual factors are political and inter-organizational while Implementation Strategies include the classical, political, and cultural approaches.

The target population consisted of the 50 state program directors for the Reading First program. The resulting purposive sample was composed of 23 State Directors who responded to the survey.

**Instrumentation.** Two types of instruments were used for this study. The first is a checklist of the SBR components the Reading First program. The components of the checklist were compared to the SBR components in each state plan to determine the percent compliance or the comprehensiveness of planned implementation per state. The resulting percent formed a measure indicating states that were below, at, or above the expected 100% level of compliance and formed the criterion variable, Percent Compliance. The checklist was validated by two experts who were trained to use the law. They used it to compare SRB provisions found in the law with the checklist. Further, reliability was assessed as each expert was asked to rate three state plans using the checklist.

The second instrument was a survey of questions relating to the categories of State Capacity, State Contextual factors and Implementation Strategy with factors grouped in Parts I to VI. The factors within Capacity were institutional, personnel, technical assistance and financial resources. Context was subdivided into the political and inter-organizational factors and Implementation Strategy contained questions assessing the classical, political, and cultural

approaches. The survey was constructed from the literature in such a way that the items could be further grouped within the aforementioned factors into sub-factors as outlined in Table 2.

**Table 2. Categorizations and Subdivisions of Variables in the Survey**

<b>CONSTRUCTS AND FACTORS</b>	<b>SUB-FACTORS</b>
<b>Capacity</b>	
Institutional Factors	Structure and communication Decision making Horizontal Linkages Vertical Linkages Cross Functional Linkages
Personnel	Amount & Knowledge Personnel needs Director’s characteristics
Technical Assistance	Technical Assistance
Financial Resources	Funding Changes Consequential Loss of Funding
<b>Contextual Factors</b>	
Political	Political Network
Interorganizational	Technical Assistance from External Agencies Partnership and Coordination
<b>Implementation Strategy</b>	
Classical, Political and Cultural	Full and Exceeding Compliance Full Compliance Deviation Negotiation & Reformulation

A Likert scale was used for the questions and a cumulative score for each of the three variables and sub-categories were calculated. The survey was validated using face validity with a state liaison from the Palm Beach County School District using a practitioner’s perspective, a professor of educational policy from a university in the United Kingdom and a leading policy analyst from the Education Commission of the States.

**Data Collection and Analysis.** Copies of the Reading First state plans were retrieved from state websites and by contacting state officials involved in the administration of the Reading First program. Each plan was then examined using content analysis and compared with the checklist to ascertain the Percent Compliance which was entered in an SPSS database.

The survey was hosted on a university based data gathering website to which state program officials were directed. Once the data was collected it was imported from its format in

*Perseus Enterprise 5.2 to Statistical Package for the Social Sciences (SPSS) version 11.5.* The data was then processed for missing data. Missing data was kept to a minimum by using a validation step during the respondent’s submission process using the Perseus software. After it was imported into SPSS the missing data was examined for each question. Zeros and ones were inserted to indicate the respondent’s “not knowing” or “not applicable” depending on the answer choices. The Percent Compliance variable was then added to this data file. At present only a subset of completed data is available as some state plans are still en-route to these authors. Hence, what follows is the treatment given to the restricted dataset with a sample size of 23 respondents resulting in preliminary findings.

A reliability analysis was conducted on the survey data which had the effect of reducing the number of sub-factors that were chosen for further analysis. Only sub-factors for which the reliability coefficient alpha approximated to 0.70 or above were chosen. The data was then analyzed using the descriptive statistics of mean, standard deviations and Z scores to detect outliers. Multiple regressions were run to produce the best fit regression line. In addition, intercorrelations and collinearity were also examined as well as tolerance levels to determine the viability of the model generated.

### **Findings**

The first research question focused on the comprehensiveness of state plans for the implementation of SBR components of the Reading First program as outlined in the Act. This resulted in the criterion variable Percent Compliance which was determined by using the rubric in Table 3 to compare each state plan with 20 mandatory and two optional components as stated in the law.

**Table 3.**  
**Component scoring on Checklist.**

<u>3</u>	if the state plan exceeds beyond that comprehensively stated in the act
<u>2</u>	if the state plan explicitly matches the act
<u>1</u>	if the state plan partially matches the act
<u>0</u>	if the state plan does not contain the component

Since the extent of compliance for each component could range from zero to three, the total Percent Compliance had a range of 0 % to 165%. The data generated exhibited the parameters found in Table 4 indicating that of the 23 state plans examined most attained a value of 95%

compliance and lay within a range of 85% - 118%. The this indicated that while some state plans did not fully comply with the law others went beyond the criteria outlined in the law.

**Table 4.**  
**Descriptive Statistics of Percent Compliance**

N	Mode	Median	Mean	Standard Deviation	Minimum	Maximum	Standard Error
23	95%	95%	97%	6.81	85%	118%	1.42

The second research question asked if there was a relationship between the state’s capacity, and strategy to implement the plan comprehensively. In order to answer this question, regressional models were run which resulted in the establishment of a model of predictor variables relating to the comprehensiveness of state plans.

The first model (I) run consisted of 12 variables (11 predictor sub-factors from the survey and the criterion, Percent Compliance). The model summary generated by SPSS generated a good model with a significance of 0.022, a standard error of estimate of 4.478 an effect size of  $R^2 = 0.78$  and an adjusted  $R^2$  value of 0.568. However, only four of the 11 predictor variables were significant: Horizontal Linkage, Cross Functional Linkages, Consequential Loss of Funding and Partnership and Coordination.

A second model (II) was run with only the above mentioned four variables. This resulted in a model in which Horizontal Linkage was not significant. As such it was removed and the model was re-run with three predictors (Cross Functional Linkages, Consequential Loss of Funding and Partnership and Coordination) to produce a good model with significance of 0.001, the parameters of which are shown in the model summary in Table 5. The  $R^2$  value can be used as a measure of effect size and indicates a large effect. The adjusted  $R^2$  value of 0.525 indicates that 52.5 percent of the variance in the criterion variable is accounted for by the predictors in this model and a standard error of the estimate is at a tolerable level.

**Table 5.**  
**Model II Summary**

$R^2$	Adjusted $R^2$	Standard Error of the Estimate
0.78	0.525	4.692

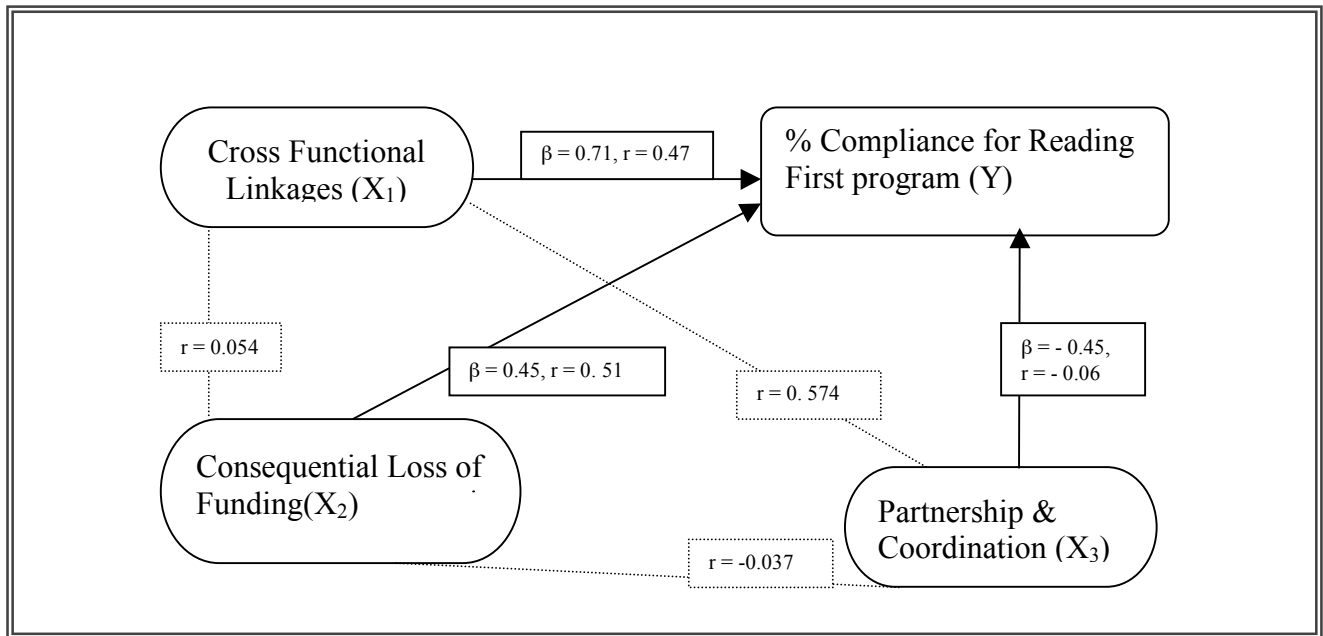
All three predictor variables Cross Functional Linkages, Consequential Loss of Funding and Partnership and Coordination had t-values which were significant at the 5% level. Moreover, the Tolerance values as well as the Variance Inflation Factor values were in the acceptable range (Table 6).

**Table 6.**  
**Model's parameters between predictors and Percent Compliance**

Variable	$\beta$	r	t- values *	VIF
Cross Functional Linkages	0.71	0.47	3.92	1.50
Consequential Loss of Funding	0.45	0.51	3.06	1.01
Partnership and Coordination	-0.45	-0.06	-2.48	1.50

\* All t-values were significant at the 5% level

When the correlation coefficients were then examined for each variable; those for Cross Functional Linkages and Consequential Loss of Funding indicated a moderate relationship with Percent Compliance. However Partnership and Coordination exhibited a weak relationship with the criterion variable. Therefore a third model was run without it. This had the effect of reducing the effect size, the adjusted R squared value and increasing the standard error of estimate. Hence it was decided to retain all three predictor variables and use Model II as the most viable model that best predicts comprehensiveness of state plans for the Reading First program (Figure 2.)



**Figure 2. Reading First Model II**

The resulting regression equation for the model is:  $Y = 0.71(X_1) + 0.52(X_2) - .45(X_3)$

From both Model II and the regression equation it can be seen that there are two Capacity sub-factors, Cross Functional Linkages and Consequential Loss of Funding, and one Contextual sub-factor, Partnership and Coordination, which appear to affect Comprehensiveness of Planned Implementation. The correlation coefficients indicate moderate relationships between the Capacity factors and Percent Compliance but a weak link between the latter and the Contextual factor. Therefore, the Capacity factors appear to have more effect on the extent of comprehensiveness of a state plan to implement. Further, the beta values indicate that Cross Functional Linkages by itself contributes to 71% of the variance in Percent Compliance. Similarly, Consequential Loss of Funding directly contributes 45% of the variance to the criterion variable. However, Partnership and Coordination indirectly contributes 45% of the variance in Percent Compliance. These values relate the importance of each variable to explain the variance in the criterion variable.

In addition, Model II suggests no apparent connection between Implementation Strategy and the extent of implementation planning. To further investigate and answer the second research question about the effect of both capacity and strategy on percent compliance; another model was run using only the capacity sub-factors and those involved in strategy. This model was not

viable and supported the finding from Model II that the comprehensiveness of planned implementation appears to be independent of the Implementation Strategy chosen by the state.

In sum, and in answer to the fourth research question, it appears that the comprehensiveness of a state's plan to implement depends mostly on its Capacity to implement, less on its Contextual factors and unrelated to the strategy it will use to implement. In other words, for the Reading First program it would seem that a state primarily considered what capacity it had in terms of internal supporting structure and the consequences of losing federal funding when it was planning the extent to which it could implement this program. A less important consideration was the type of external assistance the state could depend on for this program. Similarly, the absence of strategy for the model suggests that it was not a conscientious consideration at the time of planning.

The third research question asked if there were any contextual factors that affected a state's capacity to implement its plan comprehensively. This is also addressed in Model II. From the correlation coefficients relating the three predictors, there is a moderate correlation between Cross Functional Linkages and Partnership and Coordination indicating that states which emphasize internal cooperation also focus on partnerships with external agencies. Further, Consequential Loss of Funding appears to be unrelated to the level of external support indicated in the Partnerships and Coordination a SEA exhibits. Therefore, in answer to the third question, it appears that the Contextual factor affecting a state's Capacity (in terms of Cross Functional Linkages) to comprehensively plan implementation is Partnership and Coordination.

The answers to the last three research questions all revolve around Model II whose  $R^2$  value is 0.59 indicating a large effect size. This would indicate that the relationships seen in this program may be replicated in other federal programs as well.

### **Discussion**

This study found that for the Reading First program the comprehensiveness a state's plan to implement varied from below full compliance (85%) to exceeding full compliance (118%) with the requirements stated in the Act. Second, a model was developed indicating that a state's planned percent compliance to the Reading First program was related to its Cross Functional Linkages, the Consequences of Loss of Funding and the Partnership and Coordination sub-

factors. Third, there appears to be a moderate relationship between the internal and external support a state has in terms of Cross Functional Linkages and Partnership and Coordination.

The major finding of our study is that for the Reading First program a state's comprehensiveness of planned implementation appears to depend mainly on its capacity to implement, less on its contextual factors and unrelated to the strategic approach the state takes. More specifically, a state seems to consider its structural capacity with respect to Cross Functional Linkages and its financial capacity especially the Consequential Loss of federal Funding when deciding to what extent the Reading First program would be implemented.

The link between Cross Functional Linkages and Percent Compliance suggest that the extent of internal support existing between a SEA and its districts may affect its extent of implementation planning. Cross Functional Linkages refers to teams of administrators, practitioners and researchers at the state and district levels. From respondents' answers the level of Percent Compliance is moderately correlated with the percent of teams a SEA forms with districts as well as the number of days and level of state support and monitoring provided for SBR interventions. This follows from the findings of Anderson et al. (1987) where cross functional linkages between the state and districts levels had increased the state capacity to implement curriculum change in ten states. This relationship in our study also corroborates Marsh and Odden's (1990) findings where cross functional teams of curriculum specialists and administrators at both school and district levels facilitated the top-down and bottom-up approaches by providing connections which supported successful implementation. Therefore it appears that the more internal cross functional team support that a state can provide appears to affect how comprehensively a state plans to comply with the law.

The relationship between Consequential Loss of Funding and Percent Compliance suggest that the fear of losing federal funding may be motivating SEAs to plan more complete implementation despite the difficulty involved in fully implementing all the SBR criteria. According to the theoretical frameworks and studies of Goggin et al. (1990) and Leithwood and Anderson (1988) funding enhances the extent of implementation of the program and the process itself. Moreover, Rotherham's (2003) assessment of state budget shortfalls appears to have had an effect on SBR implementation from our study by the apparent relationship between the consequences of losing funding and percent compliance. The survey questions dealing with Consequential Loss of Funding relate to the level of difficulty a SEA faces to fully implement

the entire SBR criteria for its program and doing so within the stated deadlines to avoid federal loss of funding. It appears that the fear of the loss of funding has had a motivating effect on the level of planned Compliance since these two variables are moderately correlated even with high levels of difficulty.

Further, it appears that states also considered the need for external assistance to implement the Reading First program during the planning phase. However, states that felt they needed more external technical assistance seemed to have shown less comprehensiveness in their planning and vice versa. Those with more confidence in their ability to implement the program comprehensively developed or depended on less external partnerships. This study's Model II indicates a weak, negative relationship between Partnership and Coordination and Percent Compliance. In the literature, the contribution of external agencies to accelerate the process of implementation has been shown by Goggin et al. (1990), Leithwood and Anderson (1988) and Odden (1991). In fact, Corcoran's (2003) study indicated that relationships between districts and tertiary institutions resulted in more appropriate evidenced based programs and more comprehensive compliance. For the Reading First program our study's Model II indicates a weak relationship between Partnership and Coordination and Percent Compliance. This suggests that it is not a large factor in the extent of the Reading First program implementation planning. This may be explained by the fact that since much of the scientifically research based programs associated with Reading First already exist there is little need for external assistance from: private nonprofit agencies, consultant firms, national and regional research labs, in and out of state universities and faith based organizations. In fact, the negative or indirect relationship would suggest that states considered their need for external technical assistance in their planning phase and their high need translated into somewhat less comprehensive plans as compared with those states with less need for external partnerships.

### **Conclusions**

From the study we concluded that there was variation in the manner in which states plan to implement the Reading First program. More specifically, for the Reading First program states planned the extent of their implementation by considering their capacity for internal support, the consequences of losing federal funding and their need for external technical assistance to implement the program. Hence from a federal perspective this study suggests that for programs

like Reading First with pre-existing SBR interventions and programs, using a policy instrument in the form of a mandate with the threatened loss of funding should produce more comprehensive planning of the program's implementation. At the state level, the model suggests that states with more comprehensive Reading First plans are those which considered their context and capacity to implement. This implies that states benefit from considering and improving their internal support in terms of Cross Functional Linkages to gain greater compliance with the SBR provisions of NCLB. They should also be aware that the risk of losing federal funding as well as programmatic requirements for external assistance will affect their decisions to comply with the law during their planning phase.

### **Study Limitations**

Since the study is conducted during the early phases of the law's implementation, the content of the law from the federal government will exist in its original form, that decided by the USED without the changes that accompany implementation maturation. Therefore, during the lifetime of this study, the policy will not have been affected by feedback from states and districts. Thus, the negotiations and reformulations which often happen later in the implementation cycle would not have had time to affect the planning process.

Additionally, the study does not employ a randomized means of choosing the sample, but instead, uses a sample that is representative of expert public policy implementers in education at the state level and is not be generalizable beyond such a population.

Further limitation lies in the power and effect size parameters of this study which depend on the sample size of the number of program directors who respond to the survey. This is particularly acute since several SEAs have reported being overwhelmed with the amount of additional work required to implement the provisions of the NCLB Act with limited manpower. Additionally, the USED is concurrently conducting their own implementation evaluation to which SEAs give higher priority over the data collection of the present study.

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