VALUE ADDED TEACHER PREPARATION ASSESSMENT
OVERVIEW OF 2006-07 STUDY

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A new study funded by the Louisiana Board of Regents has identified a method to assess the effectiveness of teacher preparation programs based upon the achievement of students taught by new teachers. Louisiana will be the first state in the nation to implement a model of this type on a statewide basis.

Funding was provided during 2003-04 and 2004-05 for Dr. George Noell, Department of Psychology, Louisiana State University and A&M College, and his research team to study the use of a Value Added Teacher Preparation Assessment Model using data from 10 school districts in Louisiana. During 2005-06 and 2006-07, the study was expanded to test the model using data from all school districts in Louisiana. The 2006-07 study included more than 285,000 students taught by more than 7,000 teachers in 1,300 schools over the 2004-05 and 2005-06 school years. This study could not have occurred without the comprehensive data system within the Louisiana Department of Educations and the collaborative relationship between the Board of Regents, Board of Elementary and Secondary Education, and the Louisiana Department of Education.

MAJOR FINDINGS OF STUDY

The two major findings of the study are:

- It is possible to implement a system that measures the effectiveness of specific teacher preparation programs based upon the achievement of students taught by new teachers who graduated from those teacher preparation programs.

- It is possible for teacher preparation programs to prepare new teachers whose students demonstrate achievement that is comparable to the achievement of students taught by experienced teachers.

LOUISIANA'S TEACHER PREPARATION PROGRAMS SURPASSING EXPECTATIONS IN OTHER STATES

As a result of 60 recommendations from a Blue Ribbon Commission for Teacher Quality in 1999-2000, Louisiana's teacher preparation programs already meet state and national expectations for teacher preparation programs.

As an example, in response to the Blue Ribbon Commission's recommendations, the Board of Elementary and Secondary Education approved new teacher certification requirements that raised expectations for all undergraduate teacher preparation programs and all alternate certification programs in Louisiana. All teacher preparation programs were required to create new programs or redesign existing programs during 2000-03 to meet the state's new

expectations. These programs had to address state/national PK-12 content standards, state standards for teachers, national accreditation standards, and Praxis examination expectations. The redesign involved the participation of Colleges of Arts/Sciences, Colleges of Education, and district/school personnel. All new and redesigned programs were evaluated by national consultants and programs were required to address all stipulations identified by the consultants before being approved by the state. On July 1, 2003, teacher preparation programs could no longer admit new pre-service teachers into grades PK-3, 1-5, 4-8, and 6-12 programs unless their programs had been redesigned and approved by the Board of Regents and Board of Elementary and Secondary Education. All teacher preparation programs implemented after July 1, 2003 are post-redesign programs. All teacher preparation programs that admitted candidates prior to July 1, 2003, are pre-redesign programs, which are being phased out.

In addition to the redesign of the teacher preparation programs, programs were expected to be accredited by the National Council for the Accreditation of Teacher Education (NCATE), and a Teacher Preparation Accountability System was implemented to assess the quality of programs based upon passage rates on the Praxis examinations for teachers, survey data from first year teachers, and the quantity of graduates from the teacher preparation programs.

All teacher preparation programs in Louisiana have successfully addressed these accountability standards as demonstrated by the following results:

- All grades PK-3, 1-5, 4-8, and 6-12 programs were successfully redesigned by July 1, 2003 and are now preparing new teachers who exit their programs classified as "highly qualified teachers" meeting all state and federal requirements for the No Child Left Behind Act.
- The state passage rate on the Praxis examinations for teacher preparation program completers has increased from 89% in 1999-2000 to 99% in 2005-06.
- All established public teacher preparation programs in Louisiana are accredited by the National Council for the Accreditation of Teacher Education (NCATE), and all established private teacher preparation programs in Louisiana are nationally accredited or pursuing national accreditation. Two new teacher preparation programs (Louisiana State University at Alexandria and Tulane University) are currently pursuing national accreditation.
- Prior to Hurricane Katrina and Hurricane Rita, Louisiana saw an increase in the number of new teachers completing teacher preparation programs and an increase in the number of teachers completing programs in teacher shortage areas. In addition, the majority of Louisiana's teacher preparation programs successfully addressed indicators (e.g., Praxis passage rates, survey data from new teachers, and quantity data) that were a part of Louisiana's Teacher Preparation Accountability System and received monetary rewards from the Board of Regents for labels of Exemplary or High Performing.
- Louisiana moved from 84.39% of teachers in public schools possessing standard teaching certificates in 2001-02 to 95.34% of teachers in public schools possessing standard teaching certificates in 2005-06.
- *Education Week* assigned Louisiana a Grade of A in Efforts to Improve Teacher Quality in the *Quality Counts Report* for 2005 and 2006, and the *U.S. Chamber of Commerce Education Report Card* assigned Louisiana a Grade of A for 21st Century Teaching Force in 2007.

Having thus laid a solid foundation, assured that Louisiana's teacher preparation programs meet or exceed national expectations, the state is now moving further beyond the input standards for teacher preparation in other states and examining outcomes that are based upon how much the students of their new graduates progressed in grades 4-9 classrooms in mathematics, science, and social studies. Louisiana's teacher preparation programs are the first in the nation to take this step to improve the effectiveness of new teachers and the learning of their students.

VALUE ADDED TEACHER PREPARATION ASSESSMENT

The Louisiana Value Added Teacher Preparation Assessment Model projects student achievement based on *predictors*; assesses actual student achievement; and identifies the extent to which expected achievement was demonstrated by students. Teacher preparation *effect estimates* are calculated by comparing the effectiveness of new teachers in helping students reach the predicted level of achievement as compared to the achievement of students taught by experienced teachers.

As an example, the predicted achievement of a student identified as gifted would be greater than the predicted achievement of a student identified as learning disabled. Both students would be expected to demonstrate growth over a one year time period, but the predicted growth of the gifted student would be greater than the predicted growth of the learning disabled student. The model examines the extent to which individual students meet their predicted achievement levels and assesses the extent to which students taught by new teachers from specific teacher preparation programs met predicted achievement levels.

The *predictors* examine student variables, teacher variables, and building variables and differ slightly based upon the content areas (e.g., mathematics, science, and social studies) being examined. Please refer to Table 1 for a listing of the *predictors.*

The teacher preparation *effect estimates* are based upon multiple new teachers in multiple schools across multiple school districts in the state. Thus, *effect estimates* for a teacher preparation program reflect a pattern of effectiveness of new teachers based on the average achievement of students taught by new teachers from that teacher preparation program. As an example, a +1.9 teacher preparation *effect estimate* would indicate that students taught by new teachers from a given teacher preparation program achieved on average a score that was +1.9 points higher than was predicted for students with the same prior achievement and demographic characteristics who were taught by experienced teachers.

New teachers in the study were defined as teachers who were in their first or second year of teaching after 1) completing their teacher preparation program leading to initial certification, 2) receiving a standard teaching certificate, 3) teaching in their area of certification, and 4) having completed a teacher preparation program within five years. The decision to define new teachers as first and second year teachers was based upon findings for the 2005-06 value added study which indicated that growth in effectiveness was demonstrated for new teachers in Louisiana during their first and second years of teaching; however, the growth was flat from their third to seventh years of teaching. *Experienced teach*ers were all other teachers who possessed a

standard teaching certificate and were teaching in their area of certification for three or more years.

The study used achievement data in the areas of mathematics, science, and social studies for students enrolled in grades 4-9 who attended public schools in Louisiana during a full school year (2004-05 and/or 2005-06). In addition, the study used data for all grades 4-9 teachers in public schools in Louisiana who taught students mathematics, science, and social studies during 2004-05 and/or 2005-06. Please see Table 1 for more specific information about the types of data used for the analysis.

A Hierarchical Linear Model (HLM) was used for the analysis. This is a layered statistical model that is designed to analyze data within natural layers or groups (e.g., students within classes within schools.) In addition, Propensity Sample Matching (PSM) was used as a pre-analysis matching strategy to match the graduates of each teacher preparation program to all teachers who taught demographically similar classes within that school year using classroom means for prior achievement and demographic variables. Simultaneous analysis across both school years was used to produce separate demographic estimates and combined university estimates.

Five performance levels were identified to group the *effect estimates* for the three content areas (mathematics, science, and social studies) and the two pathways to certification (undergraduate and alternate certification). The five performance bands were:

Level 1 – Programs for which there is evidence that new teachers are more effective than experienced teachers. Programs whose effect estimate is a standard error of measurement or more above the mean effect for experienced teachers.

Level 2 – Programs whose effect is more similar to experienced teachers than new teachers. Programs whose effect estimate is a standard error of measurement or more above the mean effect for new teachers.

Level 3 – Programs whose effect is comparable to new teachers. Programs whose effect is within a standard error of measurement of the mean effect for new teachers.

Level 4 – Programs for which there is evidence that new teachers are less effective than average new teachers, but the difference is not statistically significant. Programs whose effect estimate is a standard error of measurement or more below the mean effect for new teachers.

Level 5 – Programs that are statistically significantly less effective. Programs whose effect estimate is statistically significantly below the mean of new teachers.

RESULTS

A total of 22 teacher preparation programs exist in Louisiana. Based upon statistical analysis, a minimum of 25 new teachers who met all criteria was set as the number of new teachers necessary to permit reporting valid results for an individual teacher preparation program. Only three post-redesign teacher preparation programs had an appropriate number of teachers who met the criteria for inclusion in the initial study results (see Table 2). All three of the programs were alternate certification programs that required individuals to already possess a baccalaureate degree and pass the content Praxis examination(s) for admission into the programs. All candidates were then required to complete from 21-36 credit hours of alternate certification courses within universities (or 315-450 contact hours for a private provider) over a one to three year time period. The alternate certification programs were redesigned before the undergraduate programs and are of shorter duration, which allowed new teachers to complete the post-redesign alternate certification programs prior to new teachers completing the post-redesign undergraduate programs. It is anticipated that since admissions to pre-redesign programs had been closed since July 1, 2003, each year subsequent to this report considerably more programs will be included as they produce more post-redesign program completers.

Of the three post-redesign alternate certification programs, all three programs had first and second year teachers whose students demonstrated growth in achievement in one or more content area (e.g., science, social studies, mathematics) that was at or above the expected achievement of students taught by experienced teachers (See Table 2). The study also found that within the same teacher preparation programs, grades 4-9 students of new teachers demonstrated greater growth in some content areas (e.g., social studies) when compared to other content areas (e.g., mathematics).

As an example, Louisiana College attained a teacher preparation *effect estimate* of +5.5 in the area of social studies which placed the post-redesign alternate certification program at Level 1 (e.g., programs for which there is evidence that new teachers are more effective than experienced teachers). This indicated that on the average grades 4-9 students scored 5.5 points higher on their achievement tests in social studies than grades 4-9 students taught by experienced teachers. In the area of science, the Louisiana College post-redesign alternate certification program attained an effect estimate of +1.7 which placed them at a Level 2 (e.g., programs in which new teachers are comparable to experienced teachers). In the area of mathematics, they attained an *effect estimate* of -1.6 which placed them at a Level 3 (e.g., programs in which new teachers are comparable to new teachers). This meant that on the average grades 4-9 students taught by new teachers from Louisiana College scored 1.6 points lower on achievement tests in mathematics than students taught by experienced teachers. This *effect estimate* was not considered to be a program weakness since first and second year teachers are new teachers and still at a point of developing; however, it provides Louisiana College with valuable information about relative strengths and weaknesses within their program.

Northwestern State University's *effect estimate* of +2.7 in the area of science for their post-redesign alternate certification program placed them in the Level 1 performance level. They attained an *effect estimate* of +2.6 in mathematics and a +1.6 in social studies which placed both at a Level 2 performance level.

The New Teacher Project attained a teacher preparation *effect estimate* of +2.1 in the area of mathematics for their post-redesign alternate certification program which placed them in the Level 1 performance level. They did not yet have a sufficient number of new teachers that met the criteria to be included in the study for *effect estimates* to be calculated in the areas of science and social studies.

Data regarding teacher preparation *effect estimates* for programs composed primarily or exclusively of pre-redesign program graduates are not reported within this document. Those programs have not admitted new students since July 1, 2003, and the post-redesign programs did not have enough new teacher graduate for the evaluation years (2004-05, 2005-06) to yield a valid evaluation of effectiveness. *Effect estimates* of these pre-redesign programs have been calculated and will serve as baselines for the post-redesign programs. New *effect estimates* will be calculated for the post-redesign programs once they have the minimum number of new teachers needed to conduct an analysis of the post-redesign programs. It will then be possible to compare the *effect estimates* for the post-redesign programs to the pre-redesign programs.

NEXT STEPS

Through a grant awarded to the Board of Regents by the Carnegie Corporation of New York during June 2007, Dr. Noell and his research team will continue to develop the Value Added Teacher Preparation Assessment Model during the next two years. In addition, Dr. Jeanne Burns, Associate Commissioner for Teacher Education Initiatives - Board of Regents, has created a State Research Team that is composed of a selected researcher from every public university, private university, and private provider in the state. The State Research Team has been formed to identify questions about "why" some teacher preparation programs are attaining higher *effect estimates* in different content areas, identify the types of data needed to answer the questions, collect consistent data across teacher preparation programs in the state, and work with Dr. Noell's research team as they analyze the data to attain answers to the questions. The State Research Team will be collecting data pertaining to the preparation of new teachers and the support of new teachers during their first two years of teaching. Once factors are identified, the researchers will assist their programs in addressing the factors to prepare new teachers whose students surpass their predicted achievement each year. It is anticipated that initial factors will be identified by June 2008.

In addition to the work of the State Research Team, the Blue Ribbon Commission for Educational Excellence is developing recommendations to integrate results from the Value Added Teacher Preparation Assessment Model into Louisiana's Teacher Preparation Accountability System. At the present time, the accountability system generates a Teacher Preparation Assessment Score that is based upon an Institutional Index (e.g., Praxis passage; survey of new teachers) and a Quantity Index (e.g., number of program completers; completers in teacher shortage areas) with each index having a weight of 50%. The Blue Ribbon Commission is considering changing the formula to include the Institutional Performance Index (33%), Quantity Index (33%), and Growth of Student Learning Index (33%). The Growth of Student Learning Index would be based upon the *effect estimates*. The Value Added Teacher Preparation Assessment Model will not be a sole indicator to judge the effectiveness of Louisiana's teacher preparation programs. It will be used as one part of a more comprehensive accountability system. By April 2005, almost all teacher preparation programs had demonstrated

improvements and successfully addressed the indicators for the Teacher Preparation Accountability System to attain labels of Exemplary or High Performing. It is anticipated that teacher preparation programs will successfully address the Growth of Student Learning Index as well. Dr. Noell will be providing the Blue Ribbon Commission with recommendations during 2007-08 regarding the integration of the *effect estimates* into the formula for the Teacher Preparation Accountability System. The Board of Regents will need to approve all changes to the Teacher Preparation Accountability System before the changes are implemented. A tentative date for full integration of the *effect estimates* into the Teacher Preparation Accountability System is Spring 2010.

Last, Dr. George Noell and Dr. Jeanne Burns have been asked to work with four other states (e.g., California, Florida, New York, and Ohio) on a project that is being funded by the National Research Council to examine results of value added models. The National Research Council is part of the National Academies, which also comprise the National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. They provide science, technology, and health policy advice under a congressional charter to the federal government. Involvement with the National Research Council's project will allow Louisiana to compare its value added model with four other states that are also involved in research in this area. This project is currently at a developmental stage.

CONCLUSION

Higher education in Louisiana is aware that a student's ability to achieve in science, social studies, and mathematics is influenced by a child's home life, the principal in a child's school, a child's health, the community in which the child lives, and many other conditions. Teacher preparation programs are unlikely to impact those conditions; however, they can impact the quality of new teachers who exit their programs. They can impact new teachers possessing the knowledge/skills to help children achieve or surpass their predicted achievement. This new model will help all teacher preparation programs in Louisiana monitor the effectiveness of their programs and make adjustments when expected or desired achievement is not occurring. *The model can show that teacher preparation is important and can have a positive impact upon the success of new teachers and the success of their students.*

ADDITIONAL INFORMATION

Please contact Dr. George Noell (gnoell@lsu.edu) or Dr. Jeanne M. Burns (jeanne.burns@la.gov for additional information.

TABLE 1

VALUE ADDED TEACHER PREPARATION ASSESSMENT MODEL
BASIC ELEMENTS OF 2006-07 STUDY

Element	Description
Size of Data Base	Data for public schools, new and experienced teachers, and students in 68 school districts in Louisiana were used to calculate the *effect estimates*. Data were drawn from the 2004, 2005, and 2006 student assessments to examine the 2004-05 and 2005-06 school years. Across content areas and years approximately 163,000 to 240,000 students contributed to the analyses for each content area per year. These students were taught by approximately 5,100 to 7,300 teachers in 990 to 1300 schools per year. Data analyses for each content area were based upon 350,000 to 412,000 links connecting students to their teachers in each content area. More than 9 million data linkages were used to predict student achievement in all content areas, excluding codes for teacher preparation.
Student Inclusion Requirements for Data	To be included in the study, students had to be promoted the previous year, be taught by the same teacher(s) for the entire year, and have completed standardizes tests in grades 4-9 for mathematics and/or grades 4-8 for science and social studies.
Teacher Preparation Program Data	Title II and state data for teacher preparation program completers from 14 public universities, 6 private universities, and 2 private providers were used in the data analysis.
Content Achievement Areas	Data from the *Iowa Test of Basic Skills*, *i-LEAP*, and *LEAP-21* for student achievement in mathematics, science, and social studies were used for the analysis. Due to problems with the alignment of the tests with teaching assignments across reading and written language, the achievement data for English/language arts are not reported at this time. After further analysis separating reading and written language and another year of results, it is anticipated that English/language arts will be included in the 2007-08 study.
Pathways to Certification	Data were used for new teachers completing undergraduate teacher preparation programs and alternative certification programs for initial certification as a teacher.
Minimum Number of New Teachers for Analysis	To be included in the analysis, each teacher preparation pathway and content achievement area was required to have a minimum of 25 new teachers over a two year time period with a minimum of 10 teachers per year who had taught the students for the full academic year.
Pre-Redesign Programs & Post-Redesign Programs	Pre-redesign programs are teacher preparation programs that admitted students prior to July 1, 2003. Post-redesign programs are all state approved new or state approved redesigned programs that have been implemented since July 1, 2003.

TABLE 1

VALUE ADDED TEACHER PREPARATION ASSESSMENT MODEL
BASIC ELEMENTS OF 2006-07 STUDY (CONT'D.)

Elements	Descriptions
Predictors	***Mathematics*:** *Student Variables*: Prior year English/language arts test; Prior year Math test; Prior year Science test; Prior year Social Studies test; Emotionally Disturbed; Section 504; Mild Mental Retardation; Other Health Impaired; Speech and Language; Specific Learning Disability; Special Education – Other; Gifted; Gender (male); Free Lunch; Asian American; African American; Student Absences; Disrupted due to Hurricane Katrina. *Classroom Variables*: % Special Education; % Gifted; % Free lunch; Teacher absences; Mean prior year achievement in English/language arts; Mean prior year achievement in Math. *Building Variables*: % Section 504; Mean prior achievement in Math; Mean prior achievement in Science.
	***Science*:** *Student Variables*: Prior year English/language arts test; Prior year Math test; Prior year Science test; Prior year Social Studies test; Emotionally Disturbed; Mild Mental Retardation; Other Health Impaired; Speech and Language; Specific Learning Disability; Special Education – Other; Gifted; Section 504; Limited English Proficiency; Free lunch; Gender (male); Hispanic American; African American; Student Absences. *Classroom Variables*: % Special Education; % Gifted; % Free Lunch; % Minority; Teacher Absences; Mean prior achievement in Social Studies. *Building Variables*: % Gifted; Mean prior achievement in Science.
	***Social Studies*:** *Student Variables*: Prior year English/language arts test; Prior year Math test; Prior year Science test; Prior year Social Studies test; Emotionally Disturbed; Section 504; Mild Mental Retardation; Other Health Impaired; Speech and Language; Specific Learning Disability; Special Education – Other Gifted; Gender (male); Free lunch; Reduced price lunch; Hispanic American; Asian American; African American; Student Absences; Disrupted due to Hurricane Rita. *Classroom Variables*: % Minority; % Special Education; % Free Lunch; Teacher Absences; Mean prior achievement in English/Language Arts; Mean prior achievement in Social Studies. *Building Variables*: % Section 504; Mean prior achievement in Science.

TABLE 2
POST-REDESIGN ALTERNATE CERTIFICATION PROGRAMS
TEACHER PREPARATION EFFECT ESTIMATES
2004-05 & 2005-06 ACADEMIC YEARS

Performance Bands		Social Studies	Science	Mathematics
Level 1:	**Programs for which there is evidence that new teachers are more effective than experienced teachers.** *(Effect estimate is a standard error of measurement or more above the mean effect for experienced teachers.)*	Louisiana College *(Effect Estimate = +5.5)*	Northwestern State University (*Effect Estimate = +2.7*)	The New Teacher Project (*Effect Estimate = +2.1)*
Level 2:	**Programs whose effect is more similar to experienced teachers than new teachers.** *(Effect estimate is a standard error of measurement or more above the mean effect for new teachers.)*	Northwestern State University *(Effect Estimate = +1.6)*	Louisiana College *(Effect Estimate = +1.7)*	Northwestern State University* *(Effect Estimate = +2.6)*
Level 3:	**Programs whose effect is comparable to new teachers.** *(Effect is within a standard error of measurement of the mean effect for new teachers.)*			Louisiana College *(Effect Estimate = -1.6)*
Level 4:	**Programs for which there is evidence that new teachers are less effective than average new teachers, but the difference is not statistically significant.** *(Effect estimate is a standard error of measurement or more below the mean effect for new teachers.)*			
Level 5:	**Programs that are statistically significantly less effective.** *(Effect estimate is statistically significantly below the mean of new teachers.)*			

Note: The number in each cell is the mean adjustment to student outcome that would be expected based upon a standard deviation of 50. The minimum number of teachers per cell is 25. The mean for new teachers for social studies was -2.1; the mean for new teachers for science was -1.1; and the mean for new teachers for mathematics was -2.0.

*** The performance level for this program is one level lower than might be expected based on its estimate alone due to its wide confidence interval of -0.1 to 5.3. This results from variability in the performance of its graduates. The program meets the definition for Level 2.**