EXPERIMENTAL RESEARCH IN CULTURALLY BASED EDUCATION: AN ASSESSMENT OF FEASIBILITY

FINAL PAPER

June 2004

Submitted to:

Institute of Education Sciences
U.S. Department of Education

Submitted by:



Northwest Regional Educational Laboratory
101 SW Main Street, Suite 500
Portland, Oregon 97204
(503) 275-9500

Kim O. Yap, Ph.D.
Project Director

Originally prepared under the title *Preliminary Study for Experimental Research on Culturally Based Education for American Indian/Alaska Native Students : Task 2: Assess Feasibility* for the Institute of Education Sciences, June 2004.

This publication is a product of work sponsored by the U.S. Department of Education under contract number ED-01-CO-0038/0002. The publication's authors are responsible for its content, and the views expressed herein are not necessarily those of the department or any other agency of the U.S. Government.

TABLE OF CONTENTS

Page

List of Tables ii

List of Figures iv

Acknowledgments v

Introduction 1

Background 2

Review of CBE Research 7

Existing Experimental Research 7

Validity of Existing Research 11

Survey of CBE Programs 12

Survey Sample 12

Survey Results 15

Conclusions and Recommendations 19

References 27

Appendix A: Feasibility Questionnaire 29

Appendix B: Summary of CBE Survey Results 44

Appendix C: Potential CBE Study Sites 63

List of Tables

Page

Table 1. Culturally Based Education Survey Sample 14

Table 2. Feasibility Ratings From Potential Study Sites 16

Table 3. Summary of CBE Program Characteristics of Potential Study Sites 18

Table 4. Possible Sample Sizes at Eight Potential Study Sites 19

Table 5. Statistical Power and Sample Sizes for CBE Experimental Research 26

Table 6. Grade Levels Served by CBE Programs 45

Table 7. Types of CBE Programs 45

Table 8. Use of Native Language in Instruction 46

Table 9. Inclusion of Native History, Culture, and Values in the CBE Curriculum 46

Table 10. Native-Related Resources Used for Teaching and Learning 47

Table 11. Involvement of Native Community Members in CBE Programs 47

Table 12. Teaching and Learning Styles in CBE Programs 50

Table 13. Degree of Implementation of CBE Curricula or Programs 51

Table 14. Degree of Ease or Difficulty for Other Schools To Implement the CBE Program 51

Table 15. Percentage of Teaching Staff Who Returned in 2003–2004 54

Table 16. Percentage of Students Who Remained at the Same School Between Fall 2002 and Spring 2003 55

List of Tables (continued)

Page

Table 17. Number of Years the Current CBE Program Has Been in Place....55

Table 18. Frequency of Testing To Assess the Academic Progress of Native American Students in Reading, Mathematics, and Language Arts....61

List of Figures

Page

Figure 1. Culturally Based Education (CBE) Logic Model.....5

Figure 2. Use of Native Community Members as Teaching Resources..48

Figure 3. Activities of Native Spirituality in CBE Programs 49

Figure 4. Length of Time Current Principal Has Served in School.....53

Figure 5. Length of Time Previous Principal Had Served in School.....54

Figure 6. Feasibility of Participating in a Study That Randomly Assigns Students to a Classroom With CBE Program or to One Without a CBE Program 56

Figure 7. Feasibility of Randomly Placing Students on a Waiting List..57

Figure 8. Parent Willingness To Have Students Randomly Assigned to Either a Program List or a Waiting List.....58

Figure 9. Feasibility of Participating in a Study That Compares Students in Classrooms Receiving the CBE Program to Similar Students in Other Classrooms Not Receiving the CBE Program 59

Figure 10. Feasibility of Participating in a Study That Compares a Schoolwide CBE Program to a Nearby School With Similar Characteristics but Not Using a CBE Program.....60

Acknowledgments

This draft report was prepared by the following members of the Northwest Regional Educational Laboratory's study team: Kim Yap, John Towner, David Beaulieu, Jim Kushman, William Demmert, and Roland Tharp.

The study team is grateful for the assistance and guidance of Ray Valdivieso and Edith McArthur of the U.S. Department of Education in securing clearance from the Office of Management and Budget for the conduct of the national survey of culturally based education programs.

We benefited significantly from the comments and suggestions from Sherri Lauver of the National Center for Education Evaluation at IES and Beth Franklin of the Policy Program Studies Services in the Office of the Under Secretary. Beth Franklin also reviewed the survey instrument and the rest of the OMB package. Along with Ray Valdivieso, they provided input that helped us to substantially improve the contents and the organization of this report. We deeply appreciate their thorough and insightful feedback.

A special note of appreciation is extended to the following external project advisers who reviewed and provided input on earlier drafts of the literature review and reports on the feasibility study: Diane August, Center for Applied Linguistics; David Grissmer, RAND; Lee Sechrest, University of Arizona; John Tipperconnic, Pennsylvania State University; and Joseph Trimble, Western Washington University. Their comments and suggestions contributed greatly to the quality and relevance of the draft documents.

We wish to thank the National Indian Education Association (NIEA) and the National Indian School Board Association (NISBA) for the supportive role they played in the conduct of the national survey of CBE programs. NISBA provided invaluable assistance in making follow-up calls to CBE programs to enhance the survey response rate.

Needless to say, without the cooperation of the CBE programs participating in the survey, this critical part of the study would not have been possible. We are thankful that the survey respondents took time to share their perspectives on culturally based education and the feasibility of conducting experimental research on such programs.

At the Laboratory, we wish to thank Annie Woo and Ann Rader for their assistance in coding and analyzing the survey data. Rhonda Barton made follow-up phone calls to the potential study sites and prepared a description of each site. Eugenia Cooper Potter provided editorial assistance.

Introduction

Executive Order 13096 seeks to improve the educational achievement and academic progress of American Indian and Alaska Native students. Section F of the Order requires the U.S. Department of Education to develop and implement a research agenda for that purpose. Among other things, the research agenda is to include an evaluation of "the role of Native language and culture in the development of educational strategies." The purposes of this task order are to review the literature on theories and empirical evidence related to Native language and culture in education; to assess the feasibility of conducting experiments in multiple locations to determine the effectiveness of programs or interventions incorporating Native language and/or culture in education; and, if such experiments are feasible, to produce a preliminary experimental design.

This report describes activities conducted by the Northwest Regional Educational Laboratory (NWREL) under this task order to assess the feasibility of conducting experimental research in culturally based education (CBE). Two data sources were used to write this report. First, the research team conducted a review of extant research on the impact of culturally based education on the school performance of American Indian, Alaska Native, and Native Hawaiian students. The intent was to identify research studies in which the researcher has some *control over the assignment of subjects* to treatment conditions, using experimental or quasi-experimental designs. Random assignment of subjects to treatment conditions is difficult in applied settings for a number of practical reasons. However, experimental research provides valid and reliable evidence that allows us to draw cause-and-effect conclusions on CBE interventions. The purpose of the review of CBE research was twofold: (1) to determine the strength of evidence concerning the effectiveness of CBE and (2) to assess the extent to which previous research indicates that experimental research on CBE is feasible.

Second, a national survey of CBE programs was conducted to uncover existing culturally based education interventions to determine the feasibility of developing experimental or quasi-experimental research designs among existing programs. These interventions exhibit significant variability with respect to their purpose, quality of program and staff, the context in which they are implemented, and student characteristics. The purpose of the survey was to reveal the number of similar interventions implemented in different locations that allow the random assignment of students required in experimental or quasi-experimental research.

The literature review identified six studies examining the effects of some aspects of CBE programs or interventions that involved random assignment of subjects to treatments. Results of the national survey suggest that random assignment of students to treatment and control conditions is likely to be feasible in a sizable number of the CBE programs. It is also likely that in cases where random assignment is not possible, arrangements can be made to identify matched comparison groups at the classroom or school level. The remaining sections of this report provide background information on culturally based education and describe in greater detail the results of the literature review and the national survey of CBE programs.

Background

The statement of work for the task order defines culturally based education (CBE) interventions as follows:

> Culturally based education incorporates native language and/or important elements of native culture. Culturally based interventions are deemed to be planned activities and materials designed to improve education and introduced within the education systems. They include broad programs that engage participants for long periods with a high degree of involvement (e.g., all-day immersion programs) and more specific interventions that entail less time and involvement (e.g., a specific language text).

An earlier review of the relevant literature (Demmert & Towner, 2003) has identified three theoretical approaches to CBE interventions: cultural compatibility, cognitive theory, and Cultural-Historical Activity Theory. These three approaches represent increasingly more elaborate iterations of the concept of congruence between the social-cultural dispositions of students and the social-cultural expectations of the school. The Cultural-Historical Activity Theory (CHAT), the most elaborate of the three theoretical approaches, provides a foundation for creating school conditions that facilitate language, cognitive, and psychological development which enhances student academic achievement:

- Rich and respectful language exchanges with more competent others—teachers and community elders
- That develop community language and the language of academic disciplines
- Over shared instructional activity
- In relationship forms that are familiar to the student (community-contextualized)
- In dialogue that allows discussion of multiple identities
- Emphasizing academic goals and their relevance to the lives of students and their families

Culturally based education, by expressing the values of the tribe and the community, ensures greater endorsement, involvement, and support by parents and community resources. This in turn strengthens potential associations between student experience and the academic curriculum. Thus, a CBE intervention that is congruent with community goals is maximally efficacious for student academic achievement.

Culturally based education can be considered as a broad-based schoolwide approach that seeks linguistic and social-cultural congruence of the Native student population in all

aspects of the school program but particularly in classroom instruction. Such approaches are more feasible and more likely to occur in school settings where the Native student population is in the majority. The density of a Native student population can also have an impact on the nature of a culturally based education intervention. The capacity to create social linguistic approaches that are congruent with the Native student population is maximized in schools where Native students are a majority of the student population.

Based on their review of relevant research, Demmert & Towner (2003) identified six critical elements of CBE interventions as follows:

- Recognition and use of heritage languages
- Pedagogy that stresses traditional cultural characteristics and adult-child interactions as the starting place for education (mores that are currently practiced in the community and that may differ from community to community)
- Pedagogy in which teaching strategies are congruent with the traditional culture, as well as contemporary ways of knowing and learning (opportunities to observe, practice, and demonstrate skills)
- Curriculum that is based on traditional culture that recognizes the importance of Native spirituality, and places the education of young children in a contemporary context (e.g., use and understanding of the visual arts, legends, oral histories, and fundamental beliefs of the community)
- Strong Native community participation (including parents, elders, and other community resources) in educating children and in the planning and operation of school activities
- Knowledge and use of social and political mores of the community

Typically, these critical elements have different emphases and different manifestations from one CBE program to another. It is not known how and to what extent the six critical elements may contribute to program effectiveness. Moreover, the causal linkages between promising CBE interventions and student academic achievement in reading and mathematics are not always evident.

We anticipate developing a full logic model linking the six critical CBE elements to interventions, to short- and long-term outcomes and, finally, to impact on student achievement during the design phase of this task order. Represented in Figure 1 is a preliminary, partial logic model that focuses on the use of heritage language in language immersion language instruction interventions. Although teaching and learning of Native languages is the focus of these interventions, many of the other CBE critical elements are typically also incorporated in program activities. For example, these interventions often include classroom presentations by elders and experts on Native culture and values, as well as activities promoting Native spirituality. In the logic model, a "Rival

Explanations" box is added to indicate the need to rule out alternative explanations for improved student achievement through randomized controlled trials or other rigorous experimental or quasi-experimental research.

CBE Elements →	Interventions →	Short-Term Outcomes →	Long-Term Outcomes →	Impact
1. Use of Heritage Language 2. Traditional Cultural Pedagogy 3. Culturally Congruent Teaching Strategies 4. Culturally Based Curriculum 5. Native Community Participation 6. Use of Social and Political Mores	Language Immersion Language Instruction	➢ Native Language Development ➢ Sense of Community ➢ Positive Community Involvement ➢ Sense of Identity ➢ Academic and Career Aspiration	➢ Enhanced Self-Esteem (Respect for Others and Self) ➢ Improved Attendance, Retention, Attitude, and Behavior ➢ Internal Attribution ➢ Increased Student Engagement ➢ Positive Cultural Climate	Improved Academic Achievement in Reading and Mathematics

Rival Explanations
➢ Contextual and Other Conditions ➢ Regular School Program (Reading/Mathematics Instruction)

Figure 1. Culturally Based Education (CBE) Logic Model

This report provides an assessment of the feasibility of conducting experiments or quasi-experiments in multiple locations to test the effectiveness of CBE interventions on the academic achievement and other desired outcomes of Native students. Specifically, the assessment is to address the following questions:

1. What are the defining elements of the culturally based AI/AN educational interventions being considered for experimental or quasi-experimental testing?

2. Are there AI/AN culturally based educational interventions meeting this definition that have sufficient longevity and stability to warrant experimental or quasi-experimental testing—or can such interventions be introduced?

3. Is student participation of sufficient depth and duration to give promise of lasting effects?

4. Are there specific mechanisms that seem to have a positive effect on achievement, attainment, and other desired student outcomes?

5. Is random assignment of students to experimental and control groups feasible?

6. If random assignment is not feasible, are there naturally occurring groups that can provide valid comparisons?

7. Is there a reasonable expectation of getting permission for the experiments or quasi-experiments from tribes, educational jurisdictions, parents, and other relevant parties?

8. Is it feasible to obtain objective before/after measures of effectiveness (e.g., achievement data)?

In essence, the first four questions deal with the construct validity of culturally based education in experimental research. These questions are addressed by results of the literature review and the national survey of CBE programs in terms of the definition and philosophical underpinnings of culturally based education, characteristics of existing CBE programs, fidelity of program implementation, depth and duration of treatment, student participation, and community involvement, as well as school and program stability. Questions 5–7 are concerned with the likelihood of ensuring internal validity, including the feasibility of randomly assigning students to treatment and control conditions, identifying matched comparison groups where random assignment is not possible, and the willingness of parents and the community to permit random assignment of students. These questions are addressed mainly by results of the national survey. Question 8 has to do with the feasibility of obtaining valid and reliable measures of effectiveness, including student achievement, as well as issues related to statistical power and sample size. This question is addressed by results of the national survey, including the availability of a sufficiently large sample size and expected effect size of CBE interventions.

Review of CBE Research

The review was focused on research studies that included (1) some control by the researcher over assignment of subjects to treatments, (2) an independent variable that has at least some elements of CBE, and (3) outcome variables associated with school performance or achievement. We began the search by revisiting a recent comprehensive literature review on the broad topic of Native American education (Demmert & Towner, 2002) which included more than 100 citations. We then expanded the search using the following sources:

- The ERIC Clearinghouse on Rural Education and Small Schools (ERIC/CRESS)
- Digital Dissertations, DIALOG, ProQuest, and Info&Learning
- Resources from R&D organizations (e.g., Center for Applied Linguistics; the then–Office of Educational Research and Improvement; Center for Research on Education, Diversity & Excellence; Northwest Regional Educational Laboratory)
- Cambridge Scientific Abstracts, Wilson Social Sciences Index, Anthropological Abstracts, Psychological Abstracts, Social Sciences Index, Sociological Abstracts
- Research reports on bilingual programs that include non-Native students

The review indicates that the bulk of the CBE research is descriptive and non-experimental (Demmert & Towner, 2003). Very limited research exists that can provide valid and reliable evidence on the effectiveness of CBE interventions in student achievement. The search yielded only six studies that met at least two of the three inclusion criteria.

Existing Experimental Research

Tharp, R.G. (1982). The effective instruction of comprehension: Results and description of the Kamehameha Early Education Program. ***Reading Research Quarterly, 17*****(4), 503–527.**

The study examined the effects of a culturally based education program designed to improve reading comprehension for Native Hawaiian children in grades one through three. The actual report provides details of three separate studies on this population, the last of which was a true experimental study involving the randomization of first-grade students to either an experimental or control condition. For this experimental phase of the research, the program, originally developed in a laboratory school, was exported to a public school. The experimental treatment was a reading program that evolved from two major directions. First, disappointing results of an earlier decoding program led to an examination of the sociolinguistic patterns of the population that might support reading comprehension. Second, an attempt was made to align instructional procedures with

student characteristics based on ethnographic research of the Hawaiian culture. The treatment was described as having the following characteristics: active instruction in comprehension, small-group organization, high rates of praise, continuous monitoring and feedback of student progress, individualized diagnostic/prescriptive instruction, and a quality control system supporting on-task behavior (engaged time). Instruction for the control group was judged to differ from the experimental group instruction in the following ways: (1) experimental group used criterion-referenced tests more frequently than the control group, (2) experimental group used small-group formats for all instruction while the control group did not, and (3) experimental teachers devoted more time to teaching comprehension than control group teachers. Students were randomly assigned (non-volunteer) to either an experimental condition (two classes) or a control condition (two classes) in the same school. It should be noted that the sample sizes are not reported in the study, but based upon reported degrees of freedom, the total number of subjects was about 200. Outcome measures were the Gates-MacGinitie vocabulary and comprehension subtests and the Metropolitan Total Reading. On all outcome measures, the experimental group scored significantly higher than the control group. Based on the descriptive statistics reported, effect size estimates would be substantial, in excess of 2.00.

This study is important for a number of reasons. First, it demonstrates the possibility of exporting a program from a laboratory setting to a public school. Second, it is an example of randomization in an applied setting, something that is not always easy to do. Third, it shows the development of pedagogy based upon social and linguistic characteristics of the population. One problem with this research is that the dimensions of difference between the experimental and control conditions are both cultural and pedagogical. Therefore, it is difficult to say with any degree of certainty whether the observed effect is explained by cultural factors or pedagogical factors or a combination of the two. Finally, there is the question of the size of the samples. Those numbers are not reported and can only be estimated from degrees of freedom associated with an *F* test. The reported degrees of freedom are 1 and 203, indicating that total sample is 205.

Omizo, M.M., & Omizo, S.A. (1989). Art activities to improve self-esteem among Native Hawaiian children. ***Journal of Humanistic Education and Development, 27*****(4), 167–176.**

In this study, 50 Native Hawaiian children, ages eight to 11, were randomly assigned to either a control group or an experimental group. The experimental group received 10 group counseling sessions that focused on various culturally aligned art activities designed to improve self-esteem. The dependent variable was self-esteem and was measured using the Culture-Free Self-Esteem Inventory. Significant differences were found favoring the experimental group on two of the four subscales.

The study is an example of experimental research conducted within a school setting with Native populations. While it is strong from a design perspective, the study's relevance to CBE is limited by the following factors: (1) the intervention was brief—10 to 12 weeks, and (2) the dependent variable did not relate directly to academic achievement.

Clark, W.J. (1996). ***Effect of a computer assisted instruction program on Aboriginal student achievement.*** **Unpublished master's thesis. Brandon University, Manitoba, Canada. (ERIC Document Reproduction Service No. ED400777)**

The study investigated the effects of a commercially prepared computer-assisted instruction program on Native American children in grades seven to nine. Although the program itself was not specially designed to be culturally based, it was thought that the use of the program would at least not conflict with the students' culture. The experimental group consisted of 49 junior high school students in intact classes in one school. The comparison group included 28 juniors in intact classes in another school. Both schools were located on an Indian reservation in southwestern and south central Manitoba. The program lasted one year and the students were pretested in May of one year and posttested in May of the following year. The outcome measures were the Canadian Test of Basic Skills and a "General Impressions" marking system. No differences were found between the two groups on either the pretest or the posttest.

The study tells us little about the efficacy of culturally based education. Although the subjects were Native American children, the treatment did not contain the defining elements of culturally based education. Also, the use of intact classes as the assignment unit confounds interpretation of results.

Omizo, M.M., Omizo, S.A., & Kitaoka, S.K. (1998). Guided affective and cognitive imagery to enhance self-esteem among Hawaiian children. ***Journal of Multicultural Counseling and Development, 26*****(1), 52–62.**

The study investigated the effects of "guided affective cognitive imagery" on the self-esteem of Hawaiian elementary school children. It involved an experimental design in which 60 children were randomly assigned to one of two groups. The experimental group received 10 sessions of guided and cognitive imagery training that were described as culturally relevant. The control group received no sessions. Self-esteem, the dependent variable, was measured using the Culture-Free Self-Esteem Inventory. The measure was reported to have adequate reliability and validity. The authors found a statistically significant difference favoring the treatment group on two of the four subscales.

Like the 1989 study, this study's relevance to CBE is limited by the following factors: (1) the intervention was brief, and (2) the dependent variable did not relate directly to academic achievement.

Kratochwill, T.R., McDonald, L., Youngbear-Tibbitts, H., & Levin, J.R. (2001). ***Families and schools together: An experimental analysis of a parent-mediated early intervention program for at-risk American Indian children*****. Final Report. Madison, WI: University of Wisconsin.**

The authors conducted an experimental study to evaluate the effects of the FAST program (Families and Schools Together) in partnership with the Menominee Nation. The FAST program is a yearlong collaborative parent involvement program designed to increase academic performance and reduce classroom behavior problems that are correlated with school dropout. The subjects were 1,000 American Indian students from three schools that were paired and then randomly assigned to either the FAST treatment or the control condition. Previous research documenting the promising effects of the FAST program was presented by the authors. Multiple measures were used to evaluate the program, including measures of social and academic performance. Findings support the FAST program in terms of social functioning. No effects were found with regard to school achievement. The authors point out that the FAST program does not target school achievement as an outcome and suggest that improvement in academic performance may lag behind improvement in social functioning.

Although this study does not evaluate an in-school CBE program, it does provide some good evidence in support of some of its critical elements (e.g., strong Native community participation in educating children and in the planning and operation of school activities and knowledge and use of social and political mores of the community). It is a strong research design and provides evidence of a moderate effect of a systematic home-school program such as FAST on the social behaviors of young American Indian children. The link between these social behaviors and academic performance was not demonstrated in this study, however.

Lipka, J. & Adams, B. (2002). ***Improving Alaska Native rural and urban students' mathematical understanding of perimeter and area.*** **Unpublished manuscript. Alaska School Research Fund.**

The study was conducted with Yup'ik children focusing on mathematics concepts of area and perimeter. Of particular interest is the fact that curriculum materials for the unit of instruction were carefully developed to reflect the culture of the population. There were two independent variables examined in the study—treatment versus control condition and urban versus rural. Students from both rural and urban settings were assigned to either a treatment or control condition. Assignment of subjects was accomplished by randomly assigning teachers (and their intact classes) to one group or the other. The total group was 97 percent Yup'ik population from one large urban school and four smaller rural schools. From this population, four subgroups were created for the study. The four groups were five classes (109 students) in the urban/treatment group, three classes (71 students) in the urban/control group, four classes (51 students) in the rural/treatment group, and three classes (27 students) in the rural/control group. The outcome measure was a locally constructed achievement test on perimeter and area. The study found that the percentage gain score for the treatment groups, across rural and urban settings, was

significant favoring the treatment group. The authors urged caution in interpreting the results because of possible problems associated with treatment fidelity.

There are a number of strengths in the Lipka and Adams study. First, they were able to exercise some control over the formation of the control groups. Second, the mathematical concepts were constant between groups. Third, the outcome measures had face validity. Fourth, culturally based curriculum materials were created and elements of culturally based education were built into the treatment conditions in contrast to the control condition. However, the results of the study need to be interpreted with caution because of a number of factors. First, as the authors point out, treatment fidelity is an unknown factor. Also, the conversion of raw scores to percentage scores may have resulted in findings different from those based on an analysis of raw scores. Gain scores appear to have been used to compensate for the fact that there were significant differences between urban and rural groups at the outset of the study. A matching procedure would be preferred to the use of gain scores, which are typically less reliable than the separate measures used for the calculation of gain. Finally, if groups could be matched, a two-way analysis of variance on posttest raw scores would be preferred over multiple *t* tests.

Validity of Existing Research

The review of extant research is to (1) determine the strength of the evidence concerning the *effectiveness* of CBE, and (2) based on past CBE research, assess the feasibility of conducting experimental research in the future. A thorough search of the literature yielded only six studies on CBE that involved random assignment of individuals to treatment conditions. Half of these studies are unpublished and nearly all are flawed in some way. The external validity of extant research is at best moderate. Only two of the six studies involved multiple schools. The Kratochwill study was conducted with three schools and the Lipka and Adams study with five schools. The other four studies were each conducted at one school. The statistical validity of existing studies appears to range from weak to moderate. In most instances, the student performance measures are reported to be valid and reliable, and statistical analysis procedures are clearly described. While significant differences are detected between treatment and control groups, none of the six studies explicitly addresses issues related to statistical power and sample size.

Because of their flaws, the studies do not provide convincing evidence that the CBE programs were effective. On the other hand, the research does not demonstrate that CBE is ineffective. There is no convincing evidence one way or the other.

Why are there so few studies of CBE that achieve the design conditions that allow confidence in establishing efficacy? To influence student achievement, the program must be in place and operating with fidelity over a relatively long timeframe, requiring a study of substantial duration (e.g., multiple years). A longer study costs more and faces more threats to construct, statistical, internal, and external validity. It is not surprising that all six of the studies reviewed here were conducted in a timeframe of one year or less.

Research studies on CBE of a shorter duration may be easier to conduct, but the shortened time span can reduce both impact potential and relevance.

Survey of CBE Programs

A national survey of CBE programs was conducted to assess the feasibility of conducting experimental research in culturally based education. The survey questionnaire consisted of 32 questions in five areas:

- CBE program characteristics
- Feasibility of conducting scientific studies
- Achievement and other measures for tracking student outcomes
- School and program stability
- Contact information for follow-up

In addition to structured items, the survey included open-ended questions seeking perceptions and opinions from respondents. A copy of the survey is provided in Appendix A.

Survey Sample

The survey sample was drawn from the following sources:

Title VII Indian Education Programs. These grants represent a universe of locations where American Indian and Alaska Native students attend school. They also represent a universe of programs required by the Indian Education Act to provide culturally based education to positively impact the educational achievement of Native students.

Administration for Native Americans Native Language Programs. These are Native language programs funded by the Administration for Native Americans (ANA).

Other Programs. These include total, partial, and two-way Native language immersion programs.

These CBE programs reflect varying degrees of emphasis in five areas:

- Culturally Based Instruction
- Native Language Instruction
- Native Studies
- Native Cultural Enrichment
- Culturally Relevant Materials

Culturally Based Instruction (CBI). Culturally Based Instruction represents programs where the Native language is the language of instruction and/or the language of social interaction, including teaching. These include Native language immersion efforts that encompass the entire school, Head Start immersion, immersion classrooms, and summer

camp immersion programs. They include bilingual and two-way immersion efforts as well. CBI includes a range of programs that can have two distinct orientations and purposes: (a) programs that seek to create Native language fluency in a population of learners who do not know their Native language or whose Native language competence is underdeveloped when compared to fluent peers, and (b) programs that seek to provide academic content to learners through their Native language while also developing their Native first-language competence.

Native Language Instruction (NLI). Native Language Instruction differs from CBI in that Native language is the *subject* of instruction. Native students are offered language classes as an elective. Culturally relevant materials may also be used in such courses.

Native Studies Programs (NS). Native Studies represents programs offering classroom instruction in Native history and culture including contemporary events and Native civics–related subject matter, such as treaties and tribal government.

Native Cultural Enrichment (NCE). Native Cultural Enrichment represents programs that offer pow-wows, presentations by knowledgeable and respected local tribal people, arts and crafts, and culturally related special honoring. These programs bring aspects of Native culture into the school or have students experience them outside the school.

Culturally Relevant Materials (CRM). Culturally Relevant Materials comprise programs that include instructional materials that represent Native students' identity or culture within an existing course or curriculum. Typically, these include reading materials with a Native theme that are brought into a reading program.

For the survey, a stratified random sample was drawn from Title VII programs by program type and Native student density at a school. All ANA programs that offered school-based instruction were included. In addition, a purposive sample of other programs was selected to participate in the survey. For purposes of assessing feasibility, no attempt was made to achieve a nationally representative sample of CBE programs. Table 1 provides information on the selected survey sample.

Table 1
Culturally Based Education Survey Sample

Program	Sample
Title VII Indian Education	Random sample of 145 programs by program type and student density
ANA language programs	30 school-based instruction programs
Other programs	A purposive sample of 45 programs, including Native Hawaiian and other language immersion programs
Total	220 CBE programs*

*A number of addresses were erroneous and several respondents indicated that their CBE programs no longer exist. The actual survey sample consisted of 207 programs.

The survey sample included CBE programs in 24 states. A majority of them were found in the following states:

Arizona	27 (13.0%)
Alaska	26 (12.6%)
Oklahoma	26 (12.6%)
New Mexico	15 (7.2%)
Hawaii	15 (7.2%)
Minnesota	14 (6.8%)
Washington	14 (6.8%)
South Dakota	12 (5.8%)

An examination of the contents of these CBE programs showed that more than one-fourth (26.6%) of them included Native language instruction. A majority (61.8%) offered a mix of Native studies, Native cultural enrichment, culturally related materials, and culturally based instruction.

A predominant majority (85.4%) of the CBE programs were implemented in schools where at least half the student population was Native American. The density of Native students at a school can have a significant impact on the nature of a CBE intervention. With a high percentage of Native students, the school's capacity to create social linguistic approaches that are congruent with the Native student population is maximized.

Survey Results

The survey was conducted by mail in November 2003. To increase response rate, follow-up procedures (several phone calls to nonrespondents) were implemented until March 2004. A total of 105 CBE programs completed the survey questionnaire, providing a response rate of 50.7 percent. A summary of survey results is provided in Appendix B.

Survey results suggest that it is possible to conduct research at multiple CBE sites. Specifically, the following programs are likely to meet the validity requirements for conducting experimental or quasi-experimental studies:

- Blackwater Community School (AZ)
- St. Francis Indian School (SD)
- Little Singer Community School (AZ)
- Tsaile Public School (AZ)
- Turtle Mountain Middle School (ND)
- Nawahiokalani'opu'u Laboratory (HI)
- Red Lake Independent School District (MN)
- Dickson Public Schools (OK)
- Sanostee Day School (NM)

Respondents from these programs report that (1) the CBE interventions are implemented with a high degree of fidelity and can be implemented with relative ease by other schools; (2) it is feasible to assign students randomly to treatment and control conditions; or (3) it is feasible to use matched comparison groups at the classroom or school level. Table 2 summarizes the relevant ratings from survey respondents at these potential study sites.

As summarized in Table 3, these potential study sites, with the exception of Dickson Public Schools, appear to have other desired characteristics, including sufficient depth and duration of treatment, to warrant a rigorous investigation of their effects on student achievement. Specifically, these CBE programs offer language immersion or language instruction at least 45 minutes twice weekly or at least 30 minutes daily during the school year. In addition, most of these interventions also include classroom presentations by elders and experts on Native culture and values, as well as activities promoting Native spirituality.

Table 2
Feasibility Ratings From Potential Study Sites

	Blackwater	Dickson	Little Singer	Nawahiokalani 'opu'u	Red Lake	Sanostee	St. Francis	Tsaile	Turtle Mountain*
How easy or difficult would it be for other schools to implement your CBE Program?									
Very easy	✓					✓			
Somewhat easy		✓	✓	✓	✓		✓	✓	✓
Somewhat difficult									
Very difficult									
How feasible would it be for your school or program to participate in a study that randomly assigns students to either a classroom that receives your CBE program or to a classroom that does not receive your CBE program?									
Very feasible	✓	✓	✓		✓			✓	
Somewhat feasible				✓		✓	✓		
Not sure									✓
Somewhat infeasible									
Very infeasible									
Would it be feasible to randomly select students so that some are given the CBE program first and some are placed on a waiting list to receive the program at a later time?									
Very feasible	✓		✓						
Somewhat feasible		✓			✓			✓	✓
Not sure				**			**		
Somewhat infeasible									
Very infeasible						✓			

* 12 surveys were received from Turtle Mountain Middle School. For each question, the majority rating was indicated in the above table.
** No response was received for this question.

Table 2 (continued)
Feasibility Ratings From Potential Study Sites

	Blackwater	Dickson	Little Singer	Nawahiokalani 'opu'u	Red Lake	Sanostee	St. Francis	Tsaile	Turtle Mountain*
How willing would parents in your community be to have students randomly assigned to either a program list or a waiting list?									
Very willing	✓	✓	✓					✓	
Somewhat willing									✓
Not sure				**	**	✓	**		
Somewhat unwilling									
Very unwilling									
How feasible would it be for your school to participate in a study that compares students in classrooms receiving your CBE program to similar students in other classrooms not receiving the program?									
Very feasible	✓		✓			✓			
Somewhat feasible					✓		✓	✓	✓
Not sure		**		✓					
Somewhat infeasible									
Very infeasible									
How feasible would it be for your school or district to participate in a study that compares your schoolwide CBE program to students in a nearby school with similar characteristics not using your CBE program?									
Very feasible	✓		✓						
Somewhat feasible		✓			✓	✓	✓	✓	✓
Not sure				✓					
Somewhat infeasible									
Very infeasible									

* 12 surveys were received from Turtle Mountain Middle School. For each question, the majority rating was indicated in the above table.
** No response was received for this question.

Table 3
Summary of CBE Program Characteristics of Potential Study Sites

Program Site	Grade	Enrollment	Emphasis*	Depth and Duration
Blackwater Community School (AZ)	PreK–4	200	Language immersion	45 minutes twice weekly during school year
St. Francis Indian School (SD)	K–12	600	Language immersion	30/50 minutes daily during school year
Little Singer Community School (AZ)	K–8	107	Language immersion	30/60 minutes daily during school year
Tsaile Public School (AZ)	K–8	388	Language instruction	50 minutes twice weekly in "pull-out" classes during school year
Nawahiokalani'opu'u Laboratory (HI)	PreK–12	130	Language immersion	Daily (all day) during school year
Red Lake Independent School District (MN)	K–12	1,408	Language instruction	30 minutes daily during school year
Dickson Public Schools (OK)	PreK–12	1,300	Tribal traditions and institutions	Occasional presentations by elders or experts
Sanostee Day School (NM)	K–3	87	Language instruction	45 minutes daily during school year
Turtle Mountain Middle School (ND)	6–8	390	Language instruction	50 minutes daily during school year

*Most programs also include classroom presentations by elders and experts on Native culture and values, as well as activities promoting Native spirituality.

Further, sufficiently large sample sizes (Table 4) appear available to ensure an acceptable level of statistical power, particularly for grades three, five, and eight. This is certainly true if a cross-site study is conducted. Several individual sites (e.g., Red Lake and Turtle Mountain) may have sufficiently large enrollments for separate studies to be conducted with adequate statistical power.

Table 4
Possible Sample Sizes at Eight Potential Study Sites

Program Site	Grade 3	Grade 5	Grade 8	Total
Blackwater*	40	NA	NA	40
St. Francis*	40	40	40	120
Little Singer*	10	10	10	30
N. Lab*	10	10	10	30
Tsaile**	40	40	40	120
Red Lake**	100	100	100	300
Sanostee**	20	NA	NA	20
Turtle Mt.**	100	100	100	300
Total	360	300	300	960

*Language immersion
**Language instruction

At seven of the nine potential study sites, a standardized achievement test (e.g., SAT, CTBS, Gates-MacGinitie) is administered to measure student academic achievement. Each of these tests has documented validity and reliability. Each provides national norms that can readily be converted to NCE scores as a common measure of the dependent variable.

The standardized achievement measures may be augmented by curriculum-based measures (CBMs) such as reading fluency and comprehension tests. The validity and reliability of some of the CBMs have also been well researched and documented. For example, the Dynamic Indicators of Basic Literacy Skills (DIBELS) is widely used in the evaluation of reading programs funded by the U.S. Department of Education, including Reading Excellence Act and Reading First programs.

A brief profile of each of the potential study sites is provided in Appendix C.

Conclusions and Recommendations

Five of the six existing studies involved random assignment of students, teachers, or classes, making it possible to causally infer treatment effects. While they are limited in scope and duration in most cases and they do not fully address all validity considerations, these studies nonetheless demonstrate that experimental research on culturally based education is feasible in at least some situations.

Results of the national survey suggest that in a sizable number of the CBE programs, school administrators believe that random assignment of students to treatment and control conditions is feasible. In the opinion of school administrators, it is also likely that in cases where random assignment is not possible, arrangements can be made to identify matched comparison groups at the classroom or school level. Thus, from a technical standpoint, the evidence is encouraging that experimental research can be conducted with CBE interventions in various settings and locations.

More challenging, however, are issues relating to construct validity and recruitment of study sites. For example, our literature review has identified six critical elements of CBE programs. These elements are theory-based and would constitute an ideal CBE intervention. However, the extent to which existing CBE programs have incorporated these elements is an open question. Moreover, the causal linkages between promising CBE interventions and student academic achievement in reading and mathematics are not always evident. This construct validity issue is likely to require continued inquiry and refinement.

Site Selection Criteria

The survey results suggest that potential study sites exist for which school administrators reported characteristics conducive to the conduct of experimental research. These characteristics include a high-fidelity implementation of the intervention, adequate depth and duration of the intervention, willingness of parents and the community to allow randomized assignment of students to treatment and control conditions, and availability of student achievement measures in such areas as reading and mathematics. However, potential areas of difficulty remain:

First, it is important to note that the conditions conducive to the conduct of experimental research are reported by school or program administrators in a survey. Conditions that actually exist on the ground may differ to some degree from what is reported. For example, a majority of the CBE programs, including those identified as potential study sites, are schoolwide interventions. While randomized assignment is reported to be feasible or somewhat feasible at the potential study sites, doing so in a schoolwide CBE program would mean that half the students would not participate in the program. The extent to which this is feasible will need to be verified through on-site discussions with the stakeholders.

Second, we believe that a fair test of culturally based education should be conducted with a sample of high-quality CBE interventions. Anecdotal evidence suggests that the promising interventions are likely to be schoolwide programs where randomized assignment would mean denying CBE services to half the student population. Conversely, randomized assignment may be more feasible in programs of limited size and scope that are implemented in selected classrooms or with selected student groups. These programs, however, may not provide a sound basis for the conduct of a fair test of culturally based education.

Third, while the potential study sites reported a high-fidelity implementation of their CBE programs, the extent to which each intervention has incorporated the six critical CBE elements identified from our literature review is largely unknown. We believe that the extent to which these elements are implemented will determine the extent to which the intervention is likely to lead to the desired outcomes, including improved academic achievement in core subject areas. It is therefore critical that only CBE programs that have incorporated these elements to a significant extent be included in the proposed study.

To address these potential difficulties, we recommend a multi-step site selection and recruitment process.

First, we recommend the development and use of a set of rigorous rubrics to help determine the strongest candidates for experimental or quasi-experimental research. The research team will visit potential study sites. A primary purpose of such visits is to determine the extent to which the respective CBE programs have incorporated the six critical CBE elements. Only those CBE interventions that have implemented the critical elements to a significant extent will be included in the study.

Second, the potential sites will be clustered by program type in terms of pertinent characteristics (e.g., relative emphasis on the critical CBE elements), as well as curriculum and pedagogy. Based on survey results, two dominant program types are programs for which language immersion is the driving intervention; and programs in which language instruction is of varying intensities, with cultural, curricular, or community involvement activities as the driving variables. Other program types may emerge as we complete the site selection and recruitment process. Separate experiments or quasi-experiments may be conducted for each program type, depending on sample size and estimates of statistical power.

Third, depending on the outcomes of the site selection and recruitment process, a decision will be made on the conduct of experiments or quasi-experiments with each study site. Where they are feasible, randomized controlled trials will be conducted. When randomized assignment is not feasible, we will use a matched comparison group design to conduct the research.

Fourth, survey results strongly suggest that to make experimental research feasible at CBE sites, community involvement is critical and needs to take place early. Not only would the research need support and approval from various community agencies, its design and implementation would also require extensive input from stakeholders. Of particular importance is support and buy-in from tribal councils, school boards, and parents. To that end, we recommend that the process of site selection, as well as designing experimental research on CBE, include ample opportunities for Native community input and dialogue.

Potential Study Sites

Based on survey results, we have identified a set of CBE programs where conditions conducive to the conduct of experimental research seem to exist. These are sites most likely to meet requirements relating to construct and internal validity. The potential study sites include:

- Blackwater Community School (AZ)
- St. Francis Indian School (SD)
- Little Singer Community School (AZ)
- Tsaile Public School (AZ)
- Turtle Mountain Middle School (ND)
- Nawahiokalani'opu'u Laboratory (HI)
- Red Lake Independent School District (MN)
- Dickson Public Schools (OK)
- Sanostee Day School (MN)

The study team has begun follow-up contacts with these sites to obtain more information on their respective CBE interventions. The additional information has generally confirmed the existence of conditions that render experimental research feasible.

Since the conclusion of our survey of CBE programs, additional "promising" CBE interventions have come to the attention of the study team. We intend to obtain more information on these programs to determine the appropriateness of including them as additional potential study sites. Two such CBE interventions are particularly noteworthy:

Creating Sacred Places for Children (CSPC), a comprehensive school reform process developed by the National Indian School Board Association (NISBA), is founded on effective schools research and incorporates enhancements specific to culturally based education. Among other things, this intervention uses instruction and materials that are (a) based on Native American literature and culturally relevant to Native students, (b) linked to state and national content standards, and (c) integral to research-based pedagogy for Native American students. In addition, it incorporates tribal values into school board, administrative, school, and classroom activities. These values are reviewed regularly to assess the degree to which they are modeled by school and community leadership and exercised by school and community members. This CBE intervention is being implemented in 14 school sites in six states, including Little Singer Community School and Turtle Mountain Middle School which participated in the national survey.

The Piegan Institute operates community-based projects on the Blackfeet Indian Reservation in northwest Montana, using a multi-generational approach to teaching students. The Nizipuhwahsin Center, for example, offers a full day Blackfeet language immersion program for kindergarten through the eighth grade. The Institute produces written, audio, and video materials on Blackfeet language and history.

Design Options

Considering the validity issues related to experimental and quasi-experimental research and the survey results, we believe that several design options are worth exploring. We recommend four such options for further consideration.

Option A: Randomized Controlled Trials

This design option will include randomized controlled trials with two clusters of CBE interventions: Language immersion programs and language instruction classes. At the potential study sites we have identified, each cluster of CBE interventions is implemented in four schools. Survey respondents from the potential study sites indicate that it is at least somewhat feasible to randomly assign students to treatment and control groups, particularly at the kindergarten level where a lack of Native speakers makes it impossible to serve all students. In such cases, randomized controlled trials appear feasible.

An advantage of this option is the use of randomized assignment to support causal inferences of intervention efficacy. A disadvantage is the potential difficulty in securing the consent of parents and the community to allow randomized assignment of students to treatment and control conditions.

This option is likely to result in multiple, smaller-scale studies involving randomized assignment of students (or classrooms) to treatment and control conditions at selected schools. We recommend that following the completion of these separate studies, a meta-analysis be conducted to assess the overall efficacy of each cluster of CBE interventions across different school contexts.

Option B: Purpose-Built Intervention Study

An earlier review of extant literature (Demmert & Towner, 2003) has identified six critical CBE elements. It is unlikely that any one intervention has maximized the simultaneous operation of all six elements. This design option would involve designing an intervention, built to the purpose of maximizing all six critical CBE elements. Such an approach has been used in the past, including studies conducted by the Center for Research on Education, Diversity & Excellence (Doherty, Hilberg, Epaloose, & Tharp, 2002). Results from our survey indicate that there are sufficient schools willing to randomly assign students to intervention and control groups, or to randomly assign students to a waiting list, making this approach feasible.

In this option, students in each selected CBE school will be assigned randomly to teachers within each grade level. Student outcome measures will be analyzed relative to teacher fidelity-of-intervention scores, measured by a rubric representing the six critical CBE elements. While some of the six elements are schoolwide so that no class-level variance should be present, others will display variance of fidelity, as teachers vary in their development and use of the specific CBE techniques.

We recognize that this design option may be beyond the intended scope of the present initiative. For example, the necessary professional development of teachers and administrators in this option would require more years than a study of existing programs. A distinct advantage of this approach, however, is that it would test the potential efficacy of CBE most incisively.

Option C: Matched Comparison Groups

This option will use schools as the unit of analysis. In this quasi-experimental design, aggregate measures of academic achievement (e.g., NCE scores on standardized tests by grade level or percent of students meeting state benchmarks by grade level) will serve as the dependent variable. A key requirement of this option is to identify, for each of the selected CBE schools, a comparison school that does not offer any CBE interventions. The comparison school would have demographic characteristics similar to those of the CBE school, including, in particular, poverty indicators and percent of Native student enrollment. Thus, a set of matched comparison schools will be identified for purposes of comparing academic achievement status against the CBE schools. To further strengthen this design, the independent variable (CBE as defined by the six critical elements) can be measured by a rubric in both treatment and non-treatment schools to address internal validity issues such as contamination of the matched comparison schools. Many of the survey respondents indicate that this is a viable option. On the negative side, this being a quasi-experimental design, there are limitations on the extent to which we can establish causal links between the dependent and independent variables.

Option D: Implementation-Impact Correlational Analysis

In this option, we will use a CBE implementation measure as the independent variable instead of the usual treatment-control dichotomy. The CBE treatment will be defined as a continuum to be measured by implementation rubrics based on critical elements of CBE identified earlier (Demmert & Towner, 2003). In this option, no random assignment of students will be necessary. For example, the language immersion programs and language instruction classes at the eight potential study sites can be included as the study sample, using classrooms as the unit of analysis.

This option has the advantage of being the least intrusive and therefore the most feasible. Depending on the validity and specificity of the implementation rubrics, the results of the study, while correlational in nature, can be very instructive for both program development and improvement purposes. On the negative side, this option will require us to address issues related to internal validity, as well as the validity of the implementation rubrics (Cook & Poole, 1982; Mark, 1983; Doherty et al., 2002). Essentially a correlational study, it places limitations on our ability to make causal inferences regarding the efficacy of CBE interventions.

Technical Considerations

For each of the design options, we recommend the use of a longitudinal growth curve model to track academic achievement in reading and mathematics for three years, using data collected at three time points each year. Reading achievement can be assessed by standardized tests already in use at the study sites, as well as curriculum-based measures (CBMs) such as the Dynamic Indicators of Basic Early Literacy Skills (DIBELS). If needed or desired, curriculum-based measures in Native languages can be developed, tested, and validated for the proposed study. In assessing achievement, students may be tested in both the Native language and in English. They will be closely monitored for progress in each language relative to control students or matched comparison students attending schools in nearby locations that do not offer CBE programs.

In addition, there may be an opportunity to use the National Assessment of Educational Progress (NAEP) data for grades four, eight, and 12 as a measure of student achievement. This will allow comparisons of students participating in schoolwide culturally based education programs with their counterparts attending schools not offering such programs.

Inasmuch as the primary research question has to do with whether, or the extent to which, CBE interventions contribute to higher academic achievement of Native students, it seems appropriate to compare students in treatment and control groups (or matched comparison groups) using a *t*-test or analysis of variance (ANOVA). The use of a longitudinal growth curve model with repeated measures is likely to increase statistical power to detect the effect of CBE. Given a sufficiently large sample size for teachers or schools, a hierarchical linear modeling (HLM) approach may be appropriate to account for teacher and school-level effects.

With respect to statistical significance, it seems reasonable to use the traditional alpha level of .05. For a one-tailed test, the alpha may be relaxed to .10 to further increase statistical power for detecting the effect of CBE interventions.

The survey of CBE programs indicates that standardized norm-referenced tests (e.g., SAT and CTBS) are widely used in such programs. It therefore appears feasible to use a norm-referenced test (NRT) as a measure of student academic achievement (e.g., in reading and mathematics). An advantage of using an NRT is the availability of a score scale with known population mean and standard deviation. Specifically, normal curve equivalents (NCEs)—a score scale derivable from percentiles—have a national mean of 50 and a standard deviation of 21.06. A difference of 7 NCEs converts to an effect size of .30.

Assuming a two-tailed *t*-test or ANOVA with an alpha level of .05, Table 5 specifies sample sizes that will be needed to attain two levels of statistical power and effect size.

Table 5
Statistical Power and Sample Sizes for CBE Experimental Research

Statistical Power = .80		Statistical Power = .90	
Effect Size = .30	Effect Size = .40	Effect Size = .30	Effect Size = .40
180	100	250	135

Cohen (1977, 1988) has suggested .80 as a desirable minimum for statistical power. Given this minimum and the median effect size of .40 of treatment effectiveness research (Lipsey, 1990), a sample size of 100 will be needed for treatment and control groups at each study site. For a cross-site study (with samples drawn from multiple schools), a much larger sample size (e.g., a total sample of 600 students) will be needed to account for teacher or other contextual factors.

Next Steps

Although this is the final report on the feasibility study, the study team is prepared to address any additional concerns and issues that may surface. Should we undertake the optional task of designing the study under this task order, each of the recommended design options will be explored in greater detail. We will work closely with the U.S. Department of Education and fellow researchers to select a design option for further development. It is also likely that a combination of design options may be possible and appropriate.

References

Clark, W.J. (1996). *Effect of a computer assisted instruction program on Aboriginal student achievement.* Unpublished master's thesis. Brandon University, Manitoba, Canada. (ERIC Document Reproduction Service No. ED400777)

Cohen, J. (1977). *Statistical power analysis for the behavioral sciences* (rev. ed.). New York: Academic Press.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum.

Cook, T.J., & Poole, W.K. (1982). Treatment implementation and statistical power. *Evaluation Review*, *6*, 425–430.

Demmert, W.G., Jr., & Towner, J.C. (2002). *Improving academic performance among Native American students, A review and analysis of the research literature*. (Unpublished report as part of a RAND project to assess whether Native American students have improved their mathematics and reading scores as presented by the National Assessment of Educational Progress data.)

Demmert, W.G., Jr., & Towner, J.C. (2003). *A review of the research literature on the influences of culturally based education on the academic performance of Native American students*. Portland, OR: Northwest Regional Educational Laboratory. Retrieved 2/25/04 from http://www.nwrel.org/indianed/cbe.pdf

Doherty, R.W., Hilberg, R.S., Epaloose, G., & Tharp, R.G. (2002). Standards Performance Continuum: Development and validation of a measure of effective pedagogy. *The Journal of Educational Research*, *96*(2), 78–89.

Kratochwill, T.R., McDonald, L., Youngbear-Tibbitts, H., & Levin, J.R. (2001). *Families and schools together: An experimental analysis of a parent-mediated early intervention program for at-risk American Indian children*. Final Report. Madison, WI: University of Wisconsin.

Lipka, J., & Adams, B. (2002). *Improving Alaska Native rural and urban students' mathematical understanding of perimeter and area.* Unpublished manuscript. Alaska School Research Fund.

Lipsey, M.W. (1990). *Design sensitivity: Statistical power for experimental research*. Newbury Park, CA: SAGE Publications.

Mark, M.M. (1983). Treatment implementation, statistical power, and internal validity. *Evaluation Review*, *4*, 543–549.

Omizo, M.M., & Omizo, S.A. (1989). Art activities to improve self-esteem among Native Hawaiian children. *Journal of Humanistic Education and Development, 27*(4), 167–176.

Omizo, M.M., Omizo, S.A., & Kitaoka, S.K. (1998). Guided affective and cognitive imagery to enhance self-esteem among Hawaiian children. *Journal of Multicultural Counseling and Development, 26*(1), 52–62.

Tharp, R.G. (1982). The effective instruction of comprehension: Results and description of the Kamehameha Early Education Program. *Reading Research Quarterly, 17*(4), 503–527.

Appendix A

Feasibility Questionnaire

FEASIBILITY QUESTIONNAIRE

This questionnaire asks about the Native American culturally based education (CBE) A program in your school or community. Your responses will help determine the A feasibility of conducting rigorous, scientific studies of CBE programs serving American A Indian, Alaska Native, and Native Hawaiian students in order to determine if such A programs have positive effects on academic achievement and other educational A outcomes. A

A

The questions are organized into five areas: A

A

I.A CBE Program Characteristics A

II.A Feasibility of Conducting Scientific Studies A

III. Achievement and Other Measures for Tracking Student Outcomes A

IV.A School and Program Stability A

V.A Contact Information for Follow-Up A

A

Please read each question carefully and answer as accurately as you can for your A program or school. Some questions ask for information while others ask for your A judgment or opinion. The questionnaire is best completed by the individual who is A most knowledgeable about the CBE program in your school, such as a program director, A school principal, curriculum specialist, or superintendent. However, the respondent A may need to gather information from others to answer all questions completely. Please A seek input from knowledgeable colleagues if you feel that will provide more accurate or A well-informed answers. A

A

We ask for your contact information at the end because we anticipate conducting a A telephone interview with a small sample of respondents in order to gather more detailed A information about their programs. A

All information you provide will be confidential. The study will report statistical A summary data and will not identify the responses of individual schools or programs by A name. A

Thank you for your participation. A A A A A 

A

A

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this information collection is **1850-0787**. The time required to complete this information collection is estimated to average 1 hour per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection. **If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to:** U.S. Department of Education, Washington, D.C. 20202-4651. **If you have comments or concerns regarding the status of your individual submission of this form, write directly to:** National Center for Education Statistics, Feasibility Questionnaire, U.S. Department of Education, 1990 K Street, N.W., Room 9115, Washington, D.C. 20006.

Part I: Culturally Based Education Program Characteristics

Culturally based education or **CBE** is defined generally as education that A incorporates Native language and/or important elements of Native culture in A planned activities, materials, or teaching methods that are designed to improve A educational outcomes for Native American students—including American A Indian, Alaska Native, or Native Hawaiian groups. A

A

SCHOOL N ME: _____

A

A CBE PROGRAM NAME (if applicable): _____ A

A

A GRADES SERVED BY YOUR CBE PROGRAM: _____ A

A

1. AWho does your CBE program serve? A
   - □ All students in the school (schoolwide) A
   - □ ATargeted classrooms only (classroom based) A
   - □ ATargeted students only A
   - □ AOther; briefly describe: _____ A

A

2. AHow is instruction in a Native language used in your CBE program? Check A all that apply. A
   - □ AWith the purpose of teaching the language only A
   - □ AWith the purpose of using the Native language to teach content A
   - □ As an immersion program in which Native language is the subject of A instruction A
   - □ As an immersion program in which Native language is the language of A instruction A
   - □ AOther; briefly describe: _____ A

A

3. AHow does the curriculum of your CBE program include subjects or courses to A teach Native history, culture, and/or values? Check all that apply. A
   - □ As occasional classroom presentations by elders or experts A
   - □ As a single course or subject A
   - □ As several courses or subjects adapted to the Native perspective A
   - □ AOther; briefly describe: _____ A

A

4. AIn your CBE program, what Native-related resources are used for teaching A and learning? Check all that apply. A
   - □ Local environment A
   - □ Tribal traditions A
   - □ ALocal or tribal institutions A
   - □ ASpecial community or regional events (for example, pow-wows, fairs, A rodeos, community feasts, etc.) A
   - □ AOther; briefly describe: _____ A

A

5. AIn what ways are Native community members (parents, elders, others) A involved in your CBE program? Check all that apply. A
   - □ ADesigning and modifying the program A
   - □ APlanning the activities of the program A
   - □ Evaluating the program A
   - □ APlaying active roles in operating or delivering the program A
   - □ APlaying active roles in supporting education in the home A
   - □ AOther; briefly describe: _____ A

A

6. AHow often are elders, parents, or community members with knowledge of A Native culture and language used as teaching resources? A
   - □ Daily A
   - □ Weekly A
   - □ Monthly A
   - □ ASeveral times throughout the school year A
   - □ ARarely or not at all A

A

7. AHow often does your CBE program include activities of Native spirituality? A (For example, prayers, chants, ceremonies, and/or traditional teaching stories? A
   - □ Daily A
   - □ Weekly A
   - □ Monthly A
   - □ ASeveral times throughout the school year A
   - □ ARarely or not at all A

A

8. ATo what extent does your CBE program emphasize the following styles of A teaching and learning? For each style a–e, pick one answer that best describes A the emphasis placed on this style. A

A A A A A **This style is:**				
A A A **TEACHING/LEARNING STYLES**	A Required as A an integral A part of our A CBE programA A	A Strongly A encouraged A as a good A teaching tool A	A Sometimes A discussed A as a good A teaching tool A	Left up to the A individual A teacher to use
a. Teachers and students A working closely together A (one-on-one or small A groups) A A	□ A	□ A	□ A	□ A
b. Teaching through A demonstration and A observational learning A A	□ A	□ A	□ A	□ A
c. Using projects or activities A that are meaningful to A students A A	□ A	□ A	□ A	□ A
d. Giving students choices A about activities or learning A styles A A	□ A	□ A	□ A	□ A A
e.A Student-to-student A teaching A A	□ A	□ A	□ A	□ A

A

9. ADo you use an externally developed CBE program; that is, one that was A developed outside your school or district? A

□ Yes A

□ No A

A

If Yes, please indicate: A

Name of Program: _____ A

Developer: _____ A

Other places using the program (if known): _____ A

_____ A

10. AConsidering your CBE curriculum and program as a whole, how would you A rate the implementation of your program in your school? A

□ AThe program is being well implemented for most or all of the targeted A students. A

□ AMost of the CBE components are being well implemented; and/or most A of the targeted students are being served. A

□ ASome of the CBE components are well implemented; and/or some A targeted students are being served. A

□ AFew components are well implemented; and/or few targeted students A are being served. A

A

11. AHow easy or difficult would it be for other schools to implement your CBE A program? A

□ AVery difficult—this program is specific to our setting A

□ ASomewhat difficult—the structure could be used, but the content A would need to be changed to the new setting A

□ ASomewhat easy—some changes would have to be made, but it could A be adapted to other settings A

□ AVery easy—it can be used in other settings more or less as is A

A

12.A Please list any other places where your CBE program is being implemented A (if known):_____ A

_____ A

_____ A

A

13. APlease indicate the CBE component or aspect of your program that you A believe has been the most successful. In what ways has it been a success? A

A

_____

_____ A

_____ A

_____ A

_____ A

_____ A

A

14. APlease indicate the CBE component or aspect of your program that has been A the most challenging to implement. What are some of the barriers to A successful implementation? A

A

_____

_____ A

_____ A

_____ A

_____ A

_____ A

_____

Attach additional sheets if you need more space to answer questions 13 A and 14.A

Part II: Feasibility of Conducting Scientific Studies

The questions in this section ask about the feasibility of scientific studies of CBE A interventions in your school, program, or community. You are encouraged to A seek the input of other knowledgeable people in your school or community to A judge feasibility. A

A

15. AHas your program, school, or district participated in any research or A evaluation studies during the past five years in which students involved in A your CBE program were compared to students *not* involved in your CBE A program? A
    - □ Yes
    - □ No
    - □ Don't know A

    A

    If Yes, please answer parts a to d below (if known): A

    A

    a. ATitle of study: _____ A

    A

    b. Author: _____ A

    A

    c. ADate completed (or "Current"): _____ A

    A

    d. APublished by/available from: _____ A

    A

    A

16. AHow feasible would it be for your school or program to participate in a A study that *randomly assigns* students to either a classroom that receives your A CBE program or to a classroom that does not receive your CBE program? A
    - □ Very feasible A
    - □ Somewhat feasible
    - □ Not sure
    - □ Somewhat infeasible A
    - □ Very infeasible A

17. AIn your school or district, are there more students who are in need of your A CBE program than can be served at any one time? A

- □ Yes
- □ No

A

If Yes, please answer parts a and b below: A

A

a.A Would it be feasible to randomly select students so that some are given A the CBE program first and some are placed on a waiting list to receive A the program at a later time?A

- □ Very feasible A
- □ Somewhat feasible
- □ Not sure
- □ Somewhat infeasible A
- □ Very infeasible A

b. How willing would parents in your community be to have students A randomly assigned to either a program list or a waiting list? A

- □ Very willing A
- □ Somewhat willing
- □ Not sure
- □ Somewhat unwilling A
- □ Very unwilling A

A

18. ABriefly list and describe any conditions that would have to be met to A conduct a study in which students are *randomly assigned* to either a CBE A program or a non-program control group:A

_____ A

_____ A

_____ A

_____ A

_____ A

_____ A

A

19. AHow feasible would it be for your school to participate in a study that A compares students in classrooms receiving your CBE program to similar A students in other classrooms *not* receiving the program? A
    - □ Very feasible A
    - □ Somewhat feasible
    - □ Not sure
    - □ Somewhat infeasible A
    - □ Very infeasible
    - □ Not applicable, our CBE program is not classroom based

20. AHow feasible would it be for your school or district to participate in a study A that compares your schoolwide CBE program to students in a nearby school A with similar characteristics *not* using your CBE program? A
    - □ Very feasible A
    - □ Somewhat feasible
    - □ Not sure
    - □ Somewhat infeasible A
    - □ Very infeasible
    - □ Not applicable; our CBE program is not schoolwide

21. AIn designing and conducting research studies, what policies or issues in A your school, tribe, or community should be considered? Briefly describe A any key issues, policies, or constraints regarding research on students. A

A

_____ A

_____ A

_____ A

_____ A

_____ A

_____ A

_____ A

_____ A

Part III: Achievement and Other Measures for Tracking Student Outcomes

22. APlease list all tests that are used in your school to assess the academic A progress of Native American students in Reading, Mathematics, and A Language Arts. For each test, include the grade levels tested, and indicate if A results are disaggregated for Native American students and how often the A test is given. A

A

Name of Test	Grade Levels Tested	Results Disaggregated To Show Native American Student Scores	Frequency of Testing
1.		□ Yes A □ No A	□ Less than Aonce per year A □ Once per year A □ Twice per year A □ More than twice per year A
2.		□ Yes A □ No A	□ Less than once per year A □ Once per year A □ Twice per year A □ More than twice per year A
3.		□ Yes A □ No A	□ Less than once per year A □ Once per year A □ Twice per year A □ More than twice per year A
4.		□ Yes A □ No A	□ Less than once per year A □ Once per year A □ Twice per year A □ More than twice per year A
5.		□ Yes A □ No A	□ Less than once per year A □ Once per year A □ Twice per year A □ More than twice per year A

A

23. Are any of the tests listed above used to track individual students over A time from grade to grade or year to year? A

□ Yes

□ No

A

If Yes, list the tests that are used to track individual students over time: A

_____ A

_____ A

A

24. AIs the high school completion rate of Native American students tracked in A your school or district? A
    - □ Yes
    - □ No
    - □ Not sure/not applicable A

A

25. AIs the percentage of Native American high school graduates who go on to A postsecondary education tracked in your school or district? A
    - □ Yes A
    - □ No A
    - □ Not sure/not applicable A

A

26. ABeyond the assessments described above, are there any other measures A used to track student attitudes, student behaviors, or school climate that are A desired outcomes of your CBE intervention? Please list and briefly describe A these measures. A

A

1. A A A A
2. A A A A
3. A A A A
4. A A A A
5. A A A A

A

Part IV: School and Program Stability

27. AHow long has the *current* principal served in this school? A
    - □ Less than 1 year A
    - □ 1 year A
    - □ 2 to 3 years A
    - □ 4 to 5 years A
    - □ More than 5 years A

A

28. AHow long did the *previous* principal serve in this school? A
    - □ Less than 1 year A
    - □ 1 year A
    - □ 2 to 3 years A
    - □ 4 to 5 years A
    - □ More than 5 years

29. Approximately what percentage of your school's teaching staff who taught A during the 2002–2003 school year returned to teach at your school at the A start of the 2003–2004 school year? A
    - □ 90–100 percent A
    - □ 80–89 percent A
    - □ 70–79 percent A
    - □ 60–69 percent A
    - □ 50–59 percent
    - □ Less than 50 percent

A

Is this rate: A
- □ Higher than average for recent years A
- □ About average for recent years
- □ Lower than average for recent years

A

30. Approximately what percentage of students who started at your school in A fall 2002 were still enrolled at the end of the school year in spring 2003? A
    - □ 90–100 percent A
    - □ 80–89 percent A
    - □ 70–79 percent A
    - □ 60–69 percent A
    - □ 50–59 percent
    - □ Less than 50 percent

A

Is this rate: A
- □ Higher than average for recent years A
- □ About average for recent years A
- □ Lower than average for recent years A

A

31. AHow many years has your current academic program, including CBE, been A in place at this school? A
    - □ 5 or more years A
    - □ 3 to 4 years A
    - □ 1 to 2 years A
    - □ Less than 1 year

Part V: Contact Information

32. Please provide contact information for the main respondent to the questionnaire. We may want to conduct a telephone interview with a small sample of respondents in order to gather more information about their CBE programs. This information will *not* be shared with anyone outside the research staff.

Respondent's Name: _____

Title: _____

Area Code/Phone: _____

Area Code/Fax: _____

E-mail address: _____

You may use the space below to add any additional comments that you feel will help us better understand your CBE program and its potential for rigorous, scientific study. Thank you for completing this questionnaire.

Appendix B

Summary of CBE Survey Results

Characteristics of Existing Programs

Results of the survey with CBE programs indicate that these programs served students in pre-kindergarten through postsecondary education. A majority enrolled students in grades one through eight (Table 6).

Table 6
Grade Levels Served by CBE Programs

(*N* = 105)

Grades	Percent (*n*)
PreK	20.0% (21)
Kindergarten	65.7% (69)
Grade 1	68.6% (72)
Grade 2	69.5% (73)
Grade 3	70.5% (74)
Grade 4	66.7% (70)
Grade 5	65.7% (69)
Grade 6	61.9% (65)
Grade 7	61.9% (65)
Grade 8	61.9% (65)
Grade 9	52.4% (55)
Grade 10	54.3% (57)
Grade 11	53.3% (56)
Grade 12	53.3% (56)
Postsecondary	4.8% (5)

About two-thirds (66.7%) of the CBE programs were schoolwide programs. Some served targeted classrooms (19.0%) or targeted students only (17.1%) (Table 7).

Table 7
Types of CBE Programs

(*N* = 105)

Constituents	Percent (*n*)
All students in the school (schoolwide)	66.7% (70)
Targeted classrooms only (classroom-based)	19.0% (20)
Targeted students only	17.1% (18)
Other	18.1% (19)

*More than one response could be chosen.

About half (47.6%) of the CBE programs were focused on teaching a Native language (Table 8). Some respondents indicated that their programs used a Native language to teach content (30.5%). This included immersion programs in which a Native language was the *subject* of instruction (19.0%), as well as those in which a Native language was the *language* of instruction (21.9%). The other category (38.1%) consisted of history,

culture, or language lessons; character education; as well as English and sign language classes.

Table 8
Use of Native Language in Instruction

(*N* = 105)

Use of Native Language	Percent (*n*)
Teaching the language only	47.6% (50)
Using the Native language to teach content	30.5% (32)
As an immersion program in which Native language is the subject of instruction	19.0% (20)
As an immersion program in which Native language is the language of instruction	21.9% (23)
Other	38.1% (40)

*More than one response could be chosen.

A majority (62.9%) of the respondents indicated that the teaching of Native history, culture, and values included "occasional classroom presentations by elders or experts" (Table 9). Others said that the CBE curriculum was offered as a single course (41.9%) or as multiple courses (50.5%). Other methods of teaching Native history, culture, or values included use of local experts, curriculum development, cultural workshops, Native dance classes, field trips, after-school programs, homework clubs, and cultural expressions or arts curriculum strands.

Table 9
Inclusion of Native History, Culture, and Values in the CBE Curriculum

(*N* = 105)

Types of Inclusion	Percent (*n*)
As occasional classroom presentations by elders or experts	62.9% (66)
As a single course or subject	41.9% (44)
As several courses or subjects adapted to the Native perspective	50.5% (53)
Other	35.2% (37)

*More than one response could be chosen.

Most respondents reported using tribal traditions (85.7%), local environment (80.0%), and special community or regional events (82.9%) as Native-related resources for teaching and learning (Table 10). Other resources included Native authors, culture/language specialists, tutors and liaisons from various tribes, culture and language departments, books, magazines, newspapers, traditional skills (carving, skin sewing,

beading, weaving), sign language, story telling, field trips, as well as teacher-developed culturally relevant curriculum, videos, and language tapes.

Table 10
Native-Related Resources Used for Teaching and Learning

(*N* = 105)

Resources	Percent (*n*)
Local environment	80.0% (84)
Tribal traditions	85.7% (90)
Local or tribal institutions	67.6% (71)
Special community or regional events (for example, pow-wows, fairs, rodeos, community feasts, etc.)	82.9% (87)
Other	33.3% (35)

*More than one response could be chosen.

In many cases, Native community members (parents, elders, others) were heavily involved with the CBE program (Table 11). Such involvement included evaluating the program (50.5%), playing active roles in operating or delivering the program (66.7%), planning the activities (60.0%), playing active roles in supporting education in the home (53.3%), and designing and modifying the program (57.1%). Some respondents reported that community members attended weekly language classes, participated in curriculum or parent advisory committees, family education programs, and public hearings, as well as assessments and surveys. Others acted as resource experts, interpreting language and culture, assisting in teacher-developed culturally relevant curriculum, serving as tutors, and sponsoring school organizations and competitions.

Table 11
Involvement of Native Community Members in CBE Programs

(*N* = 105)

Involvement	Percent (*n*)
Designing and modifying the program	57.1% (60)
Planning the activities of the program	60.0% (63)
Evaluating the program	50.5% (53)
Playing active roles in operating or delivering the program	66.7% (70)
Playing active roles in supporting education in the home	53.3% (56)
Other	23.8% (25)

*More than one response could be chosen.

A significant proportion (35.7%) of the respondents reported that elders, parents, or community members with knowledge of Native culture and language were used several

times through the school year as teaching resources (Figure 2). About one-fifth (22.4%) said that elders, parents, or community members were used daily.

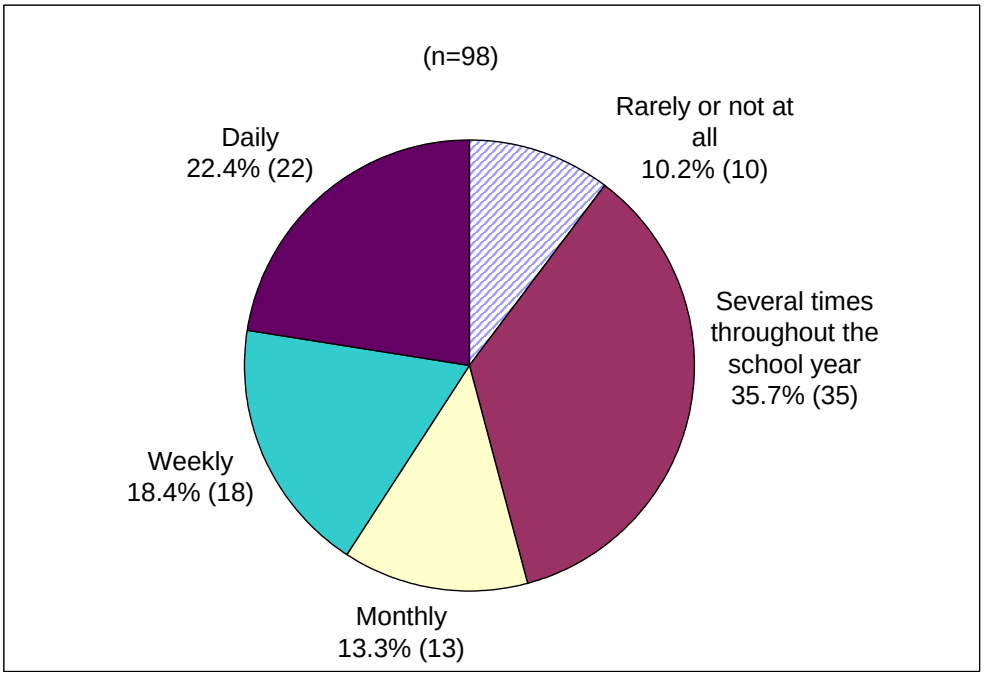


Figure 2. Use of Native Community Members as Teaching Resources

Almost one-third (31.3%) of the respondents indicated that their CBE program included activities of Native spirituality—prayers, chants, ceremonies, and traditional stories—several times throughout the school year (Figure 3). In other cases, such activities occurred daily (22.2%), weekly (14.1%), or monthly (9.1%).

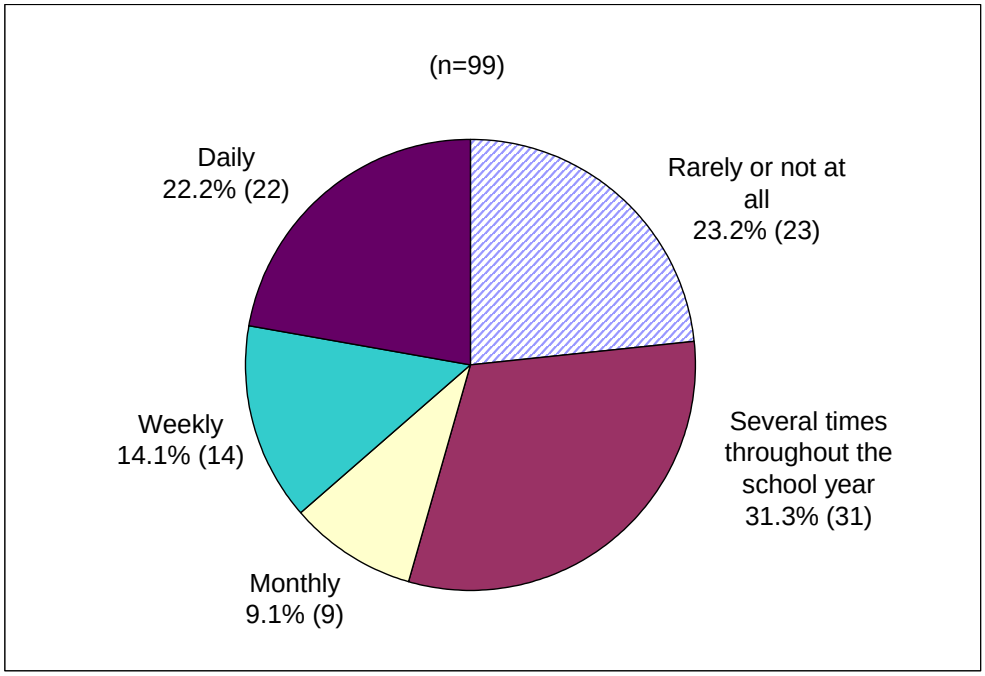


Figure 3. Activities of Native Spirituality in CBE Programs

Respondents were asked about the level of emphasis their CBE program placed on different styles of teaching and learning (Table 12). Most (88.5%) respondents reported that their teachers worked closely with students one-on-one or in small groups. A large majority indicated that teaching through demonstration and observational learning (82.7%), and using projects or activities that are meaningful to students (91.5%) were required as an integral part of the CBE program or strongly encouraged as a good teaching tool. Other respondents reported that giving students choices about activities or learning (64.7%) and student-to-student teaching (54.8%) were required or strongly encouraged.

Table 12
Teaching and Learning Styles in CBE Programs

Ways of Involvement	Required as an Integral Part of the CBE Program	Strongly Encouraged as a Good Teaching Tool	Sometimes Discussed as a Good Teaching Tool	Left Up to Individual Teacher To Use
Teachers and students working closely together (one-on-one or small groups) ***(n = 104)***	42.3% (44)	46.2% (48)	1.9% (2)	9.6% (10)
Teaching through demonstration and observational learning ***(n = 104)***	38.5% (40)	44.2% (46)	6.7% (7)	10.6% (11)
Using projects or activities that are meaningful to students ***(n = 105)***	42.9% (45)	48.6% (51)	2.9% (3)	5.7% (6)
Giving students choices about activities or learning styles ***(n = 105)***	19.0% (20)	45.7% (48)	15.2% (16)	20.0% (21)
Student-to-student teaching ***(n = 104)***	12.5% (13)	42.3% (44)	13.5% (14)	31.7% (33)

A predominant majority (85.3%) of the respondents reported that their CBE programs were locally developed. Only 14.7 percent implemented an externally developed program.

More than one-third (38.4%) of the respondents indicated that their CBE program was well implemented for most or all of the targeted students (Table 13). About 30.3 percent said that most of the CBE components were well implemented. Less than one-third (28.3%) reported that some of the CBE components were well implemented.

Table 13
Degree of Implementation of CBE Curricula or Programs

(*N* = 99)

Degree of Implementation	Percent (*n*)
The program is being **well implemented** for most or all of the targeted students.	38.4% (38)
Most of the CBE components are being well implemented; and/or most of the targeted students are being served.	30.3% (30)
Some of the CBE components are well implemented; and/or some targeted students are being served.	28.3% (28)
Few components are well implemented; and/or few targeted students are being served.	3.0% (3)

The respondents were divided on the degree of ease or difficulty for other schools to implement their CBE program (Table 14). About half (49.5%) said it would be "very difficult" or "somewhat difficult" for other schools to implement their program. However, the other half (50.5%) felt that it would be "somewhat easy" or "very easy." Examples of conditions that make implementation difficult include:

- A shortage of native speakers of a Native language who are also certified teachers
- The high level of staff development needed
- The language/culture program being tribal specific

Table 14
Degree of Ease or Difficulty for Other Schools To Implement the CBE Program

(*N* = 99)

Degree of Difficulty or Ease	Percent (*n*)
Very easy—it can be used in other settings more or less as is.	9.1% (9)
Somewhat easy—some changes would have to be made, but it could be adapted to other settings.	41.4% (41)
Somewhat difficult—the structure could be used, but the content would need to be changed to a new setting.	33.3% (33)
Very difficult—this program is specific to our setting.	16.2% (16)

The respondents identified numerous program components that they believe have been successful, including:

- Teaching Native languages
- Language immersion camps
- Bringing elders into classrooms as special guests
- After-school song and dance club
- Elders/parents/community members working closely with students

The respondents identified a range of CBE components that have been most challenging to implement or that have been barriers to successful implementation. Examples include:

- Native language instruction
- Finding materials and curriculum in Native languages
- Lack of fluent Native speakers
- Implementing a full-immersion curriculum
- Lack of teacher training in Native languages

School and Program Stability

More than one-fifth (22.6%) of the respondents said that their current principal has served in their school for more than five years (Figure 4). Another 15.6 percent said their principal has served from four to five years. About one-fifth (21.4%) said their current principal has served less than one year.

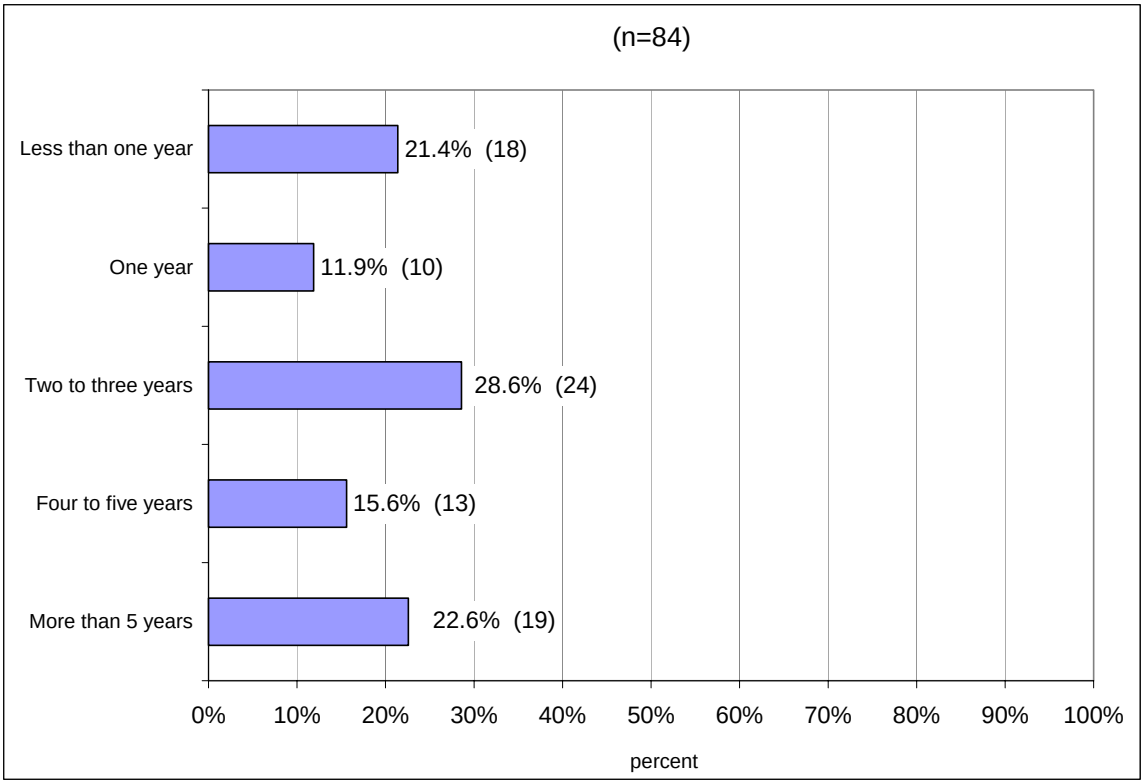


Figure 4. Length of Time Current Principal Has Served in School

Twenty-five percent of the respondents said that their previous principal served more than five years in their school (Figure 5). Another 39.5 percent indicated that the previous principal served two to three years. Only 10.5 percent reported that the previous principal served less than one year.

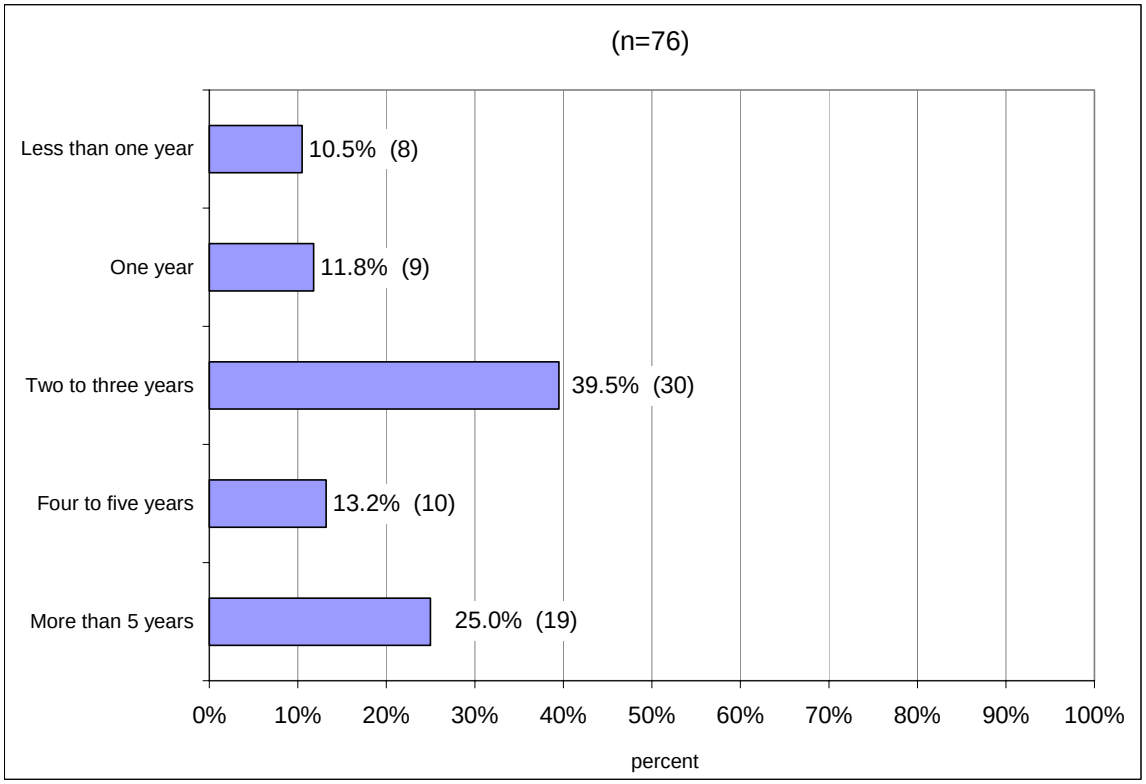


Figure 5. Length of Time Previous Principal Had Served in School

More than half (56.8%) the respondents indicated that 90–100 percent of their school's teaching staff members who taught during the 2002–2003 school year returned to teach at their school at the start of the 2003–2004 school year (Table 15). Only 2.3 percent said that less than 50 percent of the staff members returned to the same school.

Table 15
Percentage of Teaching Staff Who Returned in 2003–2004

(*N* = 88)

Return Rate	Percent (*n*)
90 to 100 percent	56.8% (50)
80 to 89 percent	18.2% (16)
70 to 79 percent	12.5% (11)
60 to 69 percent	8.0% (7)
50 to 59 percent	2.3% (2)
Less than 50 percent	2.3% (2)

According to a majority of the respondents (69.8%), the return rates were "about average" for recent years.

More than half the respondents (51.8%) reported that 90–100 percent of students who started at their school in fall 2002 were still enrolled at the end of the school year in spring 2003 (Table 16). Another 30.6 percent indicated that 80–89 percent of the students remained at the same school.

Table 16
Percentage of Students Who Remained at the Same School Between Fall 2002 and Spring 2003

(*N* = 85)

Return Rate	Percent (*n*)
90 to 100 percent	51.8% (44)
80 to 89 percent	30.6% (26)
70 to 79 percent	11.8% (10)
60 to 69 percent	2.4% (2)
50 to 59 percent	2.4% (2)
Less than 50 percent	1.2% (1)

According to most respondents (81.9%), the student retention rates were "about average" for recent years.

A majority (57.3%) of the respondents reported that their current academic program has been in place for five or more years (Table 17). Another 27 percent indicated that their program has been established for three to four years. Other respondents said that their program has been in place for one to two years (11.2%) or less than one year (4.5%).

Table 17
Number of Years the Current CBE Program Has Been in Place

(*N* = 89)

Number of Years	Percent (*n*)
5 or more years	57.3% (51)
3 to 4 years	27.0% (24)
1 to 2 years	11.2% (10)
Less than 1 year	4.5% (4)

Survey Ratings on Feasibility

Only 13.7 percent of the respondents reported that they have participated in a research or evaluation study during the past five years in which students involved in their CBE program were compared to students not involved in their CBE program. Some of the studies were sponsored by the U.S. Department of Education. Others were conducted by external evaluators, using standardized achievement tests.

Approximately 44 percent of the respondents were not sure about the feasibility of their school or program participating in a study that would randomly assign students to a classroom that received the CBE program (Figure 6). About one-fifth of the respondents (18.4%) said that it was "very feasible" or "somewhat feasible" to participate in such a study. More than one-third (37.8%) said that it was "very infeasible" or "somewhat infeasible."

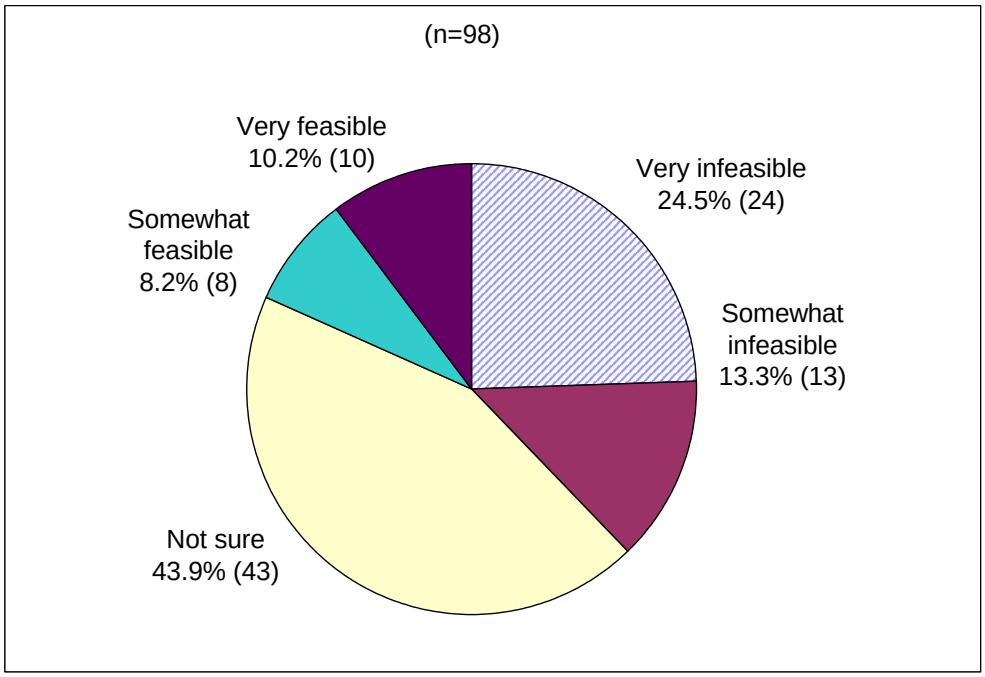


Figure 6. Feasibility of Participating in a Study That Randomly Assigns Students to a Classroom With CBE Program or to One Without a CBE Program

Some respondents indicated that random assignment is not feasible because the language class is a required course. Others believed that random assignment would defeat the mission of perpetuating Native languages. As one respondent put it:

> We do not want any of our students to be denied experiencing culture and language at the base of their education.

About half the respondents (49.5%) reported that there were more students in need of their CBE program than could be served at any one time.

In particular, tutoring or kindergarten programs tend to have a waiting list. In other cases, the waiting list is a result of the small number of elders who can teach the Native language.

According to 36.9 percent of the respondents, it would be "very feasible" or "somewhat feasible" to randomly select students so that some are given the CBE program first and some are placed on a waiting list to receive the program at a later time (Figure 7). Almost half (43.8%) said that it would be "somewhat infeasible" or "very infeasible" to do so. About one-fifth (19.3%) of the respondents were not sure how feasible it would be.

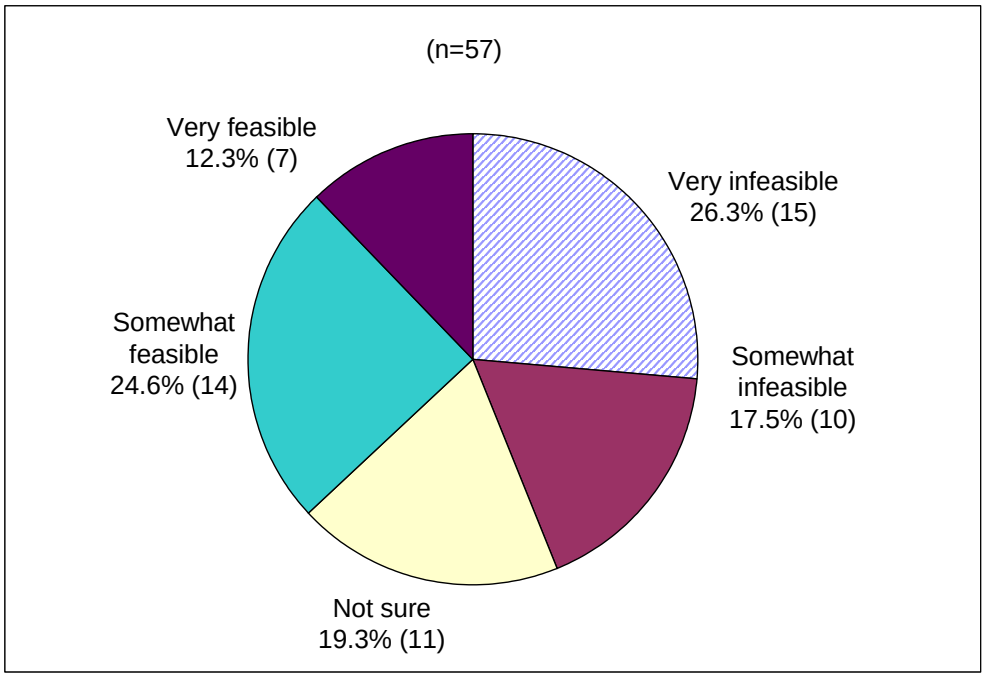


Figure 7. Feasibility of Randomly Placing Students on a Waiting List

Less than one-third (28.1%) of the respondents indicated that parents in their community would be willing to have students randomly assigned to either a program list or a waiting list (Figure 8). According to 36.8 percent of the respondents, the parents would be unwilling to do so. More than one-third (35.1%) said that they were not sure whether the parents would be willing.

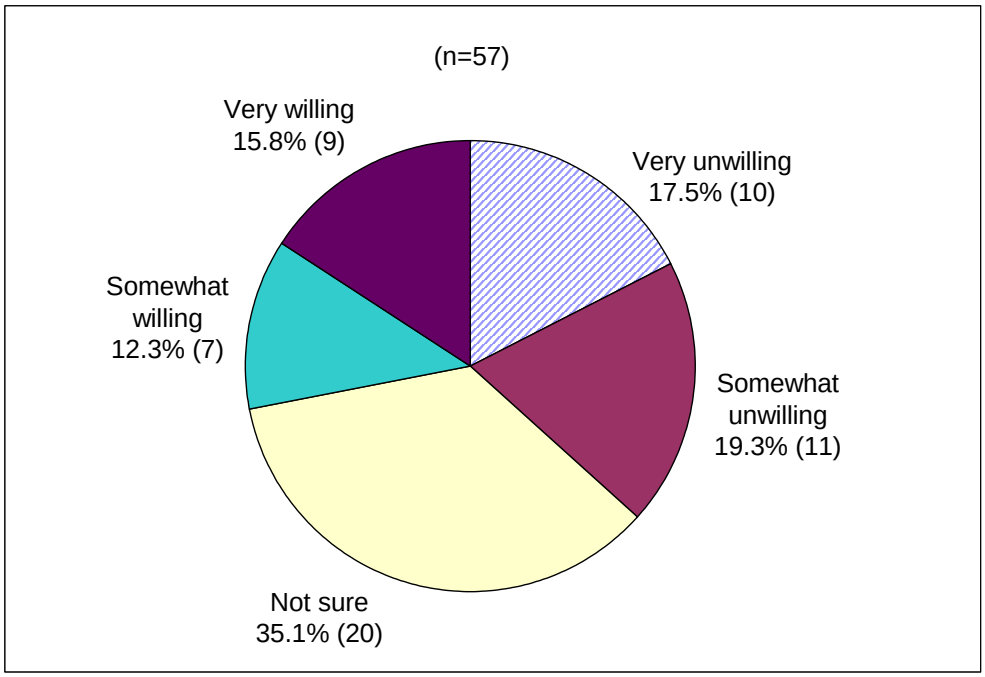


Figure 8. Parent Willingness To Have Students Randomly Assigned to Either a Program List or a Waiting List

Some respondents pointed out that parents are already upset if their child has to wait for service and that most parents prefer "equal treatment." Others indicated that bilingual/bicultural classes are an integral part of their instruction and a high priority in the community.

The respondents identified a list of conditions that would have to be met to conduct a study involving random assignment of students. Of particular importance will be approval and support from local boards of education and tribal governments, as well as support and buy-in from parents, teachers, principals, and district staff members.

Some respondents indicated that any study would be too disruptive for them. They would not want to pull students out of the program for the purpose of conducting a study.

About 34.9 percent of the respondents indicated that it would be feasible for their school to participate in a study that compares students in classrooms receiving the CBE program to similar students in other classrooms not receiving the program (Figure 9). A quarter (25.0%) said that it would be infeasible to do so. Others (18.4%) were not sure about the feasibility.

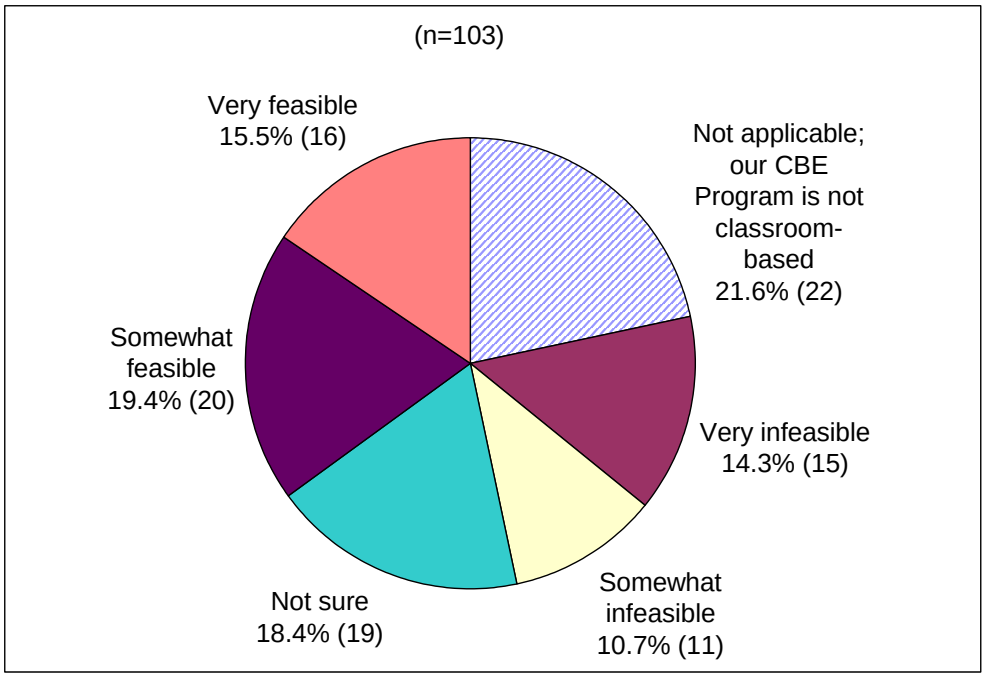


Figure 9. Feasibility of Participating in a Study That Compares Students in Classrooms Receiving the CBE Program to Similar Students in Other Classrooms Not Receiving the CBE Program

According to 42 percent of the respondents, it would be feasible for their school or district to participate in a study that compares their schoolwide CBE program to students in a nearby school with similar characteristics but not using their CBE program (Figure 10). About 15 percent said that it would be infeasible to do so. Others (28.0%) were not sure about the feasibility.

Some respondents were concerned about whether such comparisons would be fair. For example, one respondent felt that not enough time was allotted to language/culture instruction to conduct a fair comparison.

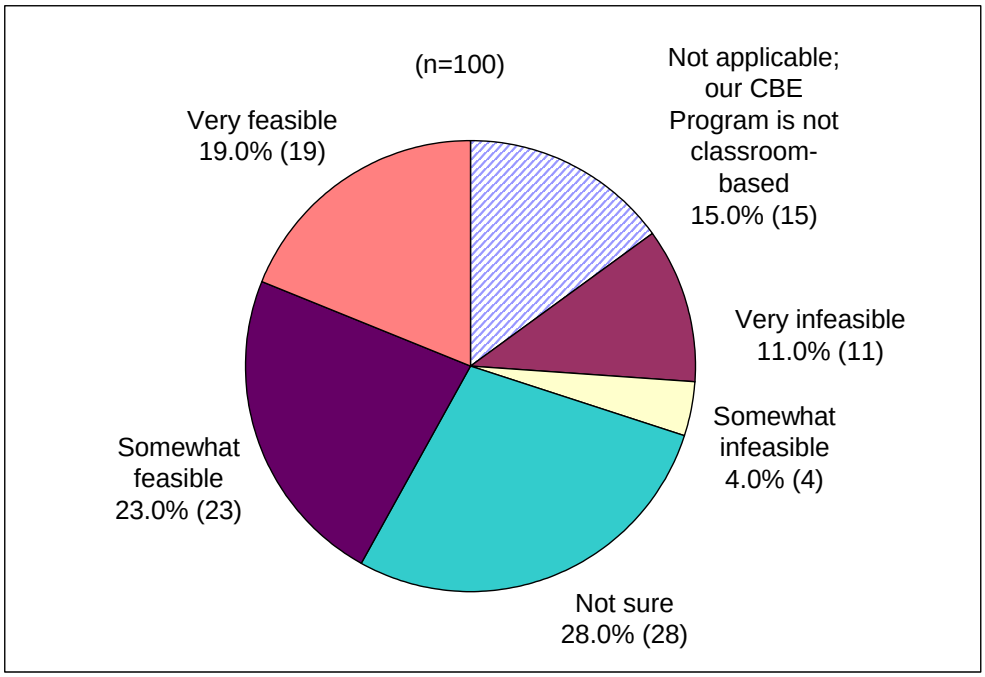


Figure 10. Feasibility of Participating in a Study That Compares a Schoolwide CBE Program to a Nearby School with Similar Characteristics but Not Using a CBE Program

The respondents identified a range of issues that should be considered in designing and conducting CBE research. For example, approval by the school board or tribal council and buy-in by school staff members and the community are critical. Issues relating to the protection of human subjects should be addressed, and consent from parents must be obtained. In addition, on-site meetings may be necessary to inform the community, including the school board and the tribal council, and to develop partnerships.

Several respondents indicated that the Native community, including tribal council members and parents, is generally not supportive of research studies. One respondent felt that most research on Indian students starts off from a wrong or skewed perspective derived from "public education." Another said that such research is viewed skeptically when it is not clear how it will benefit students. One respondent reported that the community is very private and skeptical of "outsiders."

Measurement of Student Achievement

Survey respondents were asked to list all tests used in their school to asses the academic progress of Native American students in reading, mathematics, and language arts.

In most instances, respondents reported the use of standardized tests to measure student progress, including:

- Stanford Achievement Test
- California Achievement Test
- Woodcock Reading Mastery Test
- Terra Nova
- Iowa Test of Basic Skills

In some cases, state-developed tests are used, including the Idaho Reading Indicator tests, Washington Assessment of Student Learning, Alaska benchmark tests, and Alaska High School Qualifying Exam.

The respondents were also asked about the frequency of testing and if the test results were disaggregated (Table 18). Most respondents reported that testing was conducted once a year (73.5%) and that the test results were disaggregated for Native students (69.2%).

Table 18
Frequency of Testing To Assess the Academic Progress of Native American Students in Reading, Mathematics, and Language Arts

Native American Scores Disaggregated (*n* = 78) Percent (*n*)		**Frequency of Testing (*n* = 83) Percent (*n*)**			
YES	**NO**	**Less than once a year**	**Once a Year**	**Twice a Year**	**More than Twice a Year**
69.2% (54)	30.8% (24)	2.4% (2)	73.5% (61)	13.3% (11)	10.8% (9)

According to a majority of the respondents (75.0%), the tests used to assess student progress are also used to track individual students over time from grade to grade or year to year.

In addition, a majority (67.7%) indicated that their school or district tracked the high school completion rate of Native American students.

Less than half (41.8%) the respondents indicated that their school or district tracked the percentage of Native American high school graduates who went on to postsecondary education.

Some respondents reported using other measures of nonacademic outcomes, including:

- Parent and community involvement
- School attendance
- Discipline referrals
- Dropout rates
- Student behavior for health risk
- School climate
- Student attitude toward school
- Drug and alcohol use
- Suspension and expulsion reports

Appendix C

Potential CBE Study Sites

Blackwater Community School (AZ)

Located 40 miles southeast of Phoenix in Coolidge, Arizona, Blackwater Community School serves 200 children in the midst of the Gila River Indian Community. Founded in 1939, Blackwater operates a Bureau of Indian Affairs school for students in pre-K through second grade, and a charter school for third- and fourth-graders. The student body is made up almost entirely of Pima and Maricopa tribal members. Blackwater proudly proclaims as its mission "quality education begins here."

Program Characteristics

All of Blackwater's students participate in an internally developed CBE program that comprises several courses or subjects adapted to the Native perspective, as well as occasional classroom presentations by elders and experts. The school offers an Ootham language immersion program in which a cultural specialist instructs all students (pre-K through fourth grade) twice weekly for 45 minutes throughout the school year. The school also holds weekly evening language classes for the community and a number of parents attend with their children. The language program has been under development for the past two and a half years, but this is the first full year of implementation.

The local environment, tribal traditions and institutions, and special community or regional events are used as CBE resources. Native community members participate in designing CBE programs, planning activities, actively operating or delivering programs, evaluating programs, and supporting education in the home. Elders, parents, and community members with knowledge of Native culture and language are used as teaching resources several times throughout the year. Spiritual activities such as prayers, chants, and ceremonies are part of the CBE program on a weekly basis.

Staff members are strongly encouraged to instruct through demonstration and observational learning, use projects or activities that are meaningful to students, give students choices about activities or learning styles, and employ student-to-student teaching methods. The use of small group or one-on-one teacher and student instruction is at the discretion of the individual teacher.

According to Superintendent Jacquelyn Power, Blackwater's CBE program is well implemented for most or all of the targeted students, and other schools could easily adopt it for their own purposes. The program's most successful components include hands-on activities, games, and active learning procedures that tap into the senses of touch, taste, hearing, and seeing. The most challenging aspects of the program are a lack of fluent speakers and insufficient funding or time for language instruction.

Feasibility of Conducting Scientific Studies

Blackwater Community School is currently partnering with the University of Arizona to evaluate its program using students who receive the CBE program as well as a control

group. School officials report that there are more students who need CBE than can be served at any one time. They believe it is "very feasible" to participate in a study that:

- Randomly assigns students to a classroom that receives the school's CBE program and one that does not
- Provides the CBE program to some students first and places other students on a waiting list to receive such instruction at a later time
- Compares students in classrooms receiving the school's CBE program with similar students who do not receive the program
- Compares students participating in a schoolwide CBE program with students in a nearby school with similar characteristics who are not using the CBE program

The superintendent notes that permission for research studies must be obtained from the Tribal Council, school board, parents, and the community at large with a discussion of issues and constraints. However, she believes that parents would be "very willing" to have students randomly assigned to either a CBE program or a waiting list.

Measures for Tracking Student Outcomes

The Blackwater Community School uses AIMS to test third-graders on an annual basis. The Stanford-9 test is administered each year to students in grades one through four and is used to track individual students over time. Results are disaggregated to show Native American student scores.

School and Program Stability

The Blackwater Community School is a stable institution with a current principal who has served four to five years and a past principal who served more than five years. Approximately 90–100 percent of the teaching staff members who taught in 2002–2003 returned for the current school year, which is about average for recent years. Approximately 90–100 percent of the students who started in fall 2002 were still enrolled in spring 2003. The school's current academic program, including CBE instruction, has been in place five or more years.

St. Francis Indian School (SD)

St. Francis Indian School, on the Rosebud Sioux Indian Reservation in South Dakota, has a long and distinguished history. Lakota leader Sinte Gleska (or Spotted Tail) first asked the "Black Robes" to teach his tribe's children in 1877. Almost a decade later, the Jesuits founded their mission and completed the school. In 1980, the Jesuits transferred control of the school to Sicangu Oyate Ho, a completely independent corporation, and today St. Francis operates as a Bureau of Indian Affairs contract school chartered to the Rosebud Sioux. The K–12 school has approximately 600 students and states as its mission: "to facilitate the best academic and cultural education with the highest expectations for our students and their families using a well-trained supportive staff in a safe and healthy environment."

Program Characteristics

All of St. Francis's students are served by the school's CBE program, which employs several courses or subjects adapted to the Native perspective along with language immersion and occasional classroom presentations by elders or experts. The level of Lakota language and cultural instruction varies with the grade. In the 300-student elementary school, second- and third-graders have full-time language immersion, with Lakota instruction every day, all day, throughout the school year; K–1 students and fourth-/fifth-grade students have one 30-minute language/culture class per day, throughout the year. The 120 students in middle school and the 200 high school students each have one 50-minute period of Lakota language/culture per day throughout the year.

Superintendent Larry Gauer says all instructors are required to have lesson plans with cultural activities. He says, "Our culture is taught on a daily basis. It's not just a shot in the dark." Throughout the year, the school sponsors cultural activities including two major pow-wows and dance demonstrations.

The school draws on the local environment, tribal traditions, tribal institutions, and special community or regional events as resources for its CBE program. Native community members—including parents and elders—help design and modify the program and play active roles in operating it, as well as actively supporting education in the home. Elders, parents, and community members with knowledge of Native culture and language are used as teaching resources several times throughout the school year. Prayers, chants, ceremonies, and other forms of Native spirituality are a daily part of the CBE program.

Integral parts of the CBE program are teaching through demonstration and observational learning, and teachers and students working closely together in small groups or one-on-one. Staff members are strongly encouraged to use projects or activities that are meaningful to students and to give students choices about activities or learning styles. Student-to-student teaching is sometimes discussed as a good teaching tool.

Superintendent Gauer believes most of the CBE components are being well implemented. He thinks that it would be "somewhat easy" for other schools to adopt St. Francis's CBE program with only a few changes. According to Gauer, the most successful aspects of the school's program are "teaching Lakota culture and values (and helping) students know more about their past." The greatest challenge is the difficulty of learning and speaking the indigenous language.

Feasibility of Conducting Scientific Studies

According to the superintendent, it would be "somewhat feasible" for St. Francis Indian School to participate in a study that randomly assigns students to either a classroom that receives CBE instruction or one that does not. In order to conduct such a study, additional classroom space would be needed. It would also be "somewhat feasible" to conduct studies that compare students receiving CBE with those who do not, and to contrast students receiving a schoolwide CBE program with similar students at another school that is not using the CBE program. Key issues to be considered in conducting research activities include attendance policies and curriculum differences.

Measures for Tracking Student Outcomes

St. Francis Indian School uses an extensive battery of tests to assess academic progress and to track individual students over time. The SAT 10/STEP and bilingual screening are administered once a year to all first- through 12th-grade students (kindergarten students also receive bilingual screening). Internal pre- and posttests are given to K–12 students twice a year. Students in K–2 undergo testing with Gesell, Lollipop, YOPP, YOPP-Singer, and KPAT while pupils in grades 3–12 take STAR reading tests more than twice a year. Learning Record tests are administered beginning in kindergarten and continuing through high school. In addition to those tests, the school administers student needs surveys and drug and alcohol surveys, as necessary.

School and Program Stability

St. Francis's teaching staff has been stable, although there has been turnover within the top administration. The current principal has served less than one year, as did the previous principal. However, 90–100 percent of the current teaching staff members taught during the 2002–2003 school year. Approximately 80–89 percent of the students who started at St. Francis in fall 2002 were still enrolled at the end of the school year. The current academic program, including CBE, has been in place five or more years.

Little Singer Community School (AZ)

Little Singer Community School comprises a K–6 Bureau of Indian Affairs elementary school and a charter school with seventh- and eighth-grade students. It is located in Winslow, 60 miles northeast of Flagstaff, Arizona, in the Navajo Nation. Founded in 1978, the school was named in memory of a Navajo medicine man who wanted to instill in children the values of Native culture and perpetuate that culture. Because Navajo medicine men were singers, the school's name honors that tradition. Approximately 107 children attend classes in a half-dozen hogans and buildings located on the Little Colorado River.

Program Characteristics

All students at Little Singer participate in the school's own bilingual and bicultural CBE program. An immersion program is used to teach content and to build and support character development. Navajo language instruction is offered 30 minutes to an hour each day throughout the year for all grades. The CBE program also features occasional classroom presentations by elders or experts, initiated by individual teachers. The local environment, tribal traditions, local institutions, and special community or regional events are all used as CBE resources.

Knowledgeable Native community members are active in every aspect of the program on a weekly basis—from designing and planning activities to evaluating and delivering the program. Parents, elders, and other community members also play a role in supporting education in the home. Activities promoting Native spirituality are included on a monthly basis.

A number of teaching/learning styles are required as an integral part of Little Singer's CBE program. These include teachers and students working closely together; teaching through demonstration and observational learning; using projects or activities that are meaningful to students; and providing students with choices about activities or learning styles. Student-to-student teaching is strongly encouraged as a good teaching tool.

Principal Lucinda Godinez believes most of the CBE components are well implemented and most of the targeted students are served. She also thinks it would be "somewhat easy" for other schools to modify and use Little Singer's program. Godinez cites the school's cultural peace-making sessions as its biggest success. She says, "These reduce student incidents and increase self-esteem, which both affect student academic achievement." The most challenging aspect of the CBE program has been to establish a continuous program of story-telling by elders and other community members.

Feasibility of Conducting Scientific Studies

Little Singer rates its participation in all types of scientific studies as "very feasible" and says parents would be "very willing" to have students randomly assigned to either a CBE program list or a waiting list for such a program. It would also be "very feasible" to

conduct studies comparing students in classrooms receiving CBE to those in non-CBE classrooms or comparing Little Singer's schoolwide program to a similar, nearby school not using the CBE program. In all cases, parental and board approval would be needed to carry out such research. Issues of student confidentiality would also have to be addressed.

Measures for Tracking Student Outcomes

Little Singer administers the Stanford-9 test on an annual basis to K–8 students, disaggregating results to show Native American student scores. The Learning Record test is given to K–6 students less than once a year; Running Record is used for pre-K pupils; and third-, fifth-, and eighth-grade students take the AIMS test annually. The Stanford-9, Learning Record, and Running Record tests are all used to track individual student progress over time. In addition, the school uses the Circle of Life, Creating Sacred Places surveys, and peacemaking session records as measures of student attitudes and behaviors.

School and Program Stability

Little Singer Community School boasts a record of stability with the current principal and previous principal each serving more than five years. Approximately 70–79 percent of last school year's teaching staff members returned this school year, a rate that is lower than average for recent years. About 80–89 percent of students who started in fall 2002 were still enrolled at the end of last school year. The current academic program, including CBE, has been in place five or more years.

Tsaile Public School (AZ)

Tsaile Public School lies in the heart of the Navajo Nation, in the Four Corners region of Arizona. Nestled in the high desert at the mouth of the famed Canyon de Chelly National Monument, Tsaile serves 388 students in grades K–8. It prides itself on integrating state and Navajo standards, as well as upholding the requirements of the federal No Child Left Behind Act. As part of the Chinle Unified School District, Tsaile adheres to a policy of "No Excuses" and "believes everyone in the chain is accountable for furthering the goal of providing quality education to the children of this district."

Program Characteristics

All students at Tsaile take part in a CBE program that includes Navajo language instruction, culture classes, experts from the community, seasonal ceremonies, cultural nights, tribal traditions, and local institutions. Throughout the school year, students in K–8 go to "pull-out" classes twice a week, for 50 minutes at a time, for Navajo language instruction that is primarily oral. Also twice weekly, students attend cultural classes. This program has been in effect for 22 years.

Elders, parents, and community members with knowledge of Native culture and language are used as teaching resources on a daily basis, and also play an active role in designing, planning, delivering, and evaluating the CBE program. In addition, these individuals also actively promote education in the home. Several times throughout the year, the school holds seasonal ceremonies that are imbued with Native spirituality.

An integral part of the CBE program is teachers and students working closely together in small groups or one-on-one. Teaching through demonstration or observational learning is strongly encouraged, as is using projects or activities that are meaningful to students. Student-to-student teaching and giving students a choice about activities or learning styles are sometimes discussed as good teaching tools.

Principal Gloria Grant reports that "some CBE components are being well-implemented" and the school's curriculum center produces materials that are used throughout the seven-school district as well as nationally. It would be "somewhat easy" for other schools to implement Tsaile's CBE program with modest changes.

Grant credits the involvement of parents and community members for making the CBE program a success. "They promote the language and value teaching (culture), which makes it easier to support within the schools," she states. Consistency in CBE remains a challenge: Grant notes that teachers need to be constantly reminded and shown how to bridge state standards with Navajo content.

Feasibility of Conducting Scientific Studies

Grant believes it is "very feasible" for Tsaile to participate in a study that randomly assigns students to either a classroom that receives the CBE program or one that does not. It would be "somewhat feasible" to randomly select some students for the CBE program first and place others on a waiting list to receive the program at a later date. Grant says parents would be "very willing" to have students participate in such a random study, though parental permission and support from the superintendent, board, and principal would be needed before proceeding. Grant is "not sure" if it would be feasible to compare students in classrooms receiving CBE with similar students in classrooms not receiving the program. Also, she thinks it is "somewhat feasible" to compare Tsaile's CBE program with similar students at a nearby school that does not use the program.

Grant cautions that a number of community issues and policies should be addressed in designing research studies: religious matters; sacred songs and ceremonial purposes; situations of student abuse at home; medication of students; and background on medicine men and women.

Measures for Tracking Student Outcomes

Tsaile uses a number of tests to track student achievement and the progress of students over time. For K–8 students, these include the Stanford-9, AIMS, Renaissance Reading, and Renaissance Math. For K–3 students, Wright Reading, and Zoophonics tests are employed.

School and Program Stability

The school's teaching staff has demonstrated greater stability than Tsaile's leadership. The current principal has occupied her position for one year, succeeding a principal who served less than a year. Approximately 90–100 percent of the teaching staff members who taught during the 2002–2003 school year returned this year, which is a higher than average rate for recent years. Approximately 90–100 percent of students who started at the school in fall 2002 were still enrolled in spring 2003. Tsaile's academic program, including CBE, has been in place five or more years.

Nawahiokalani'opu'u Laboratory (HI)

Nawahiokalani'opu'u Laboratory School is a model pre-K through 12th-grade program located in Keaau on the island of Hawaii. The school is made up of three different institutions that share a campus: the pre-kindergarten program is operated as a private nonprofit with branches across the state; the K–6 is a charter school; and the 7–12 high school is part of Hilo High School. The school is controlled by the Aha Punana Leo organization but co-administered with the Hawaii State Department of Education and the lab school program of the University of Hawaii College of Hawaiian Language. The school's teaching is based on the Kumu Honua Mauli Ola educational philosophy that is rooted in indigenous Hawaiian traditions and learning styles. This methodology uses English as a second language and incorporates Hawaiian culture to a greater degree than possible within a standard public school. Nawahiokalani'opu'u' serves a total of 130 children.

Program Characteristics

All students in the school (pre-K through 12th grade) are served by the CBE program which incorporates Hawaiian language immersion, based on the Maori model of language "nests." In fact, the founding organization, Aha Punana Leo, translates to "nest of voices." All classroom instruction (all day, every day, throughout the school year) is in Hawaiian Native language beginning in pre–K. From fifth grade through 12th grade, an hour of instruction in English is added.

Native history, culture, and values are integrated into the entire curriculum. The local environment, special community or regional events, and the Leoki Hawaiian medium computer/Internet system are all used as resources for teaching and learning. Native community members are involved in all aspects of the CBE program goals and strategies that focus on the full use of the Hawaiian language and culture as the basis for developing a global world view. Elders, parents, and community members with Native knowledge are used as resources on a daily basis, and activities involving Native spirituality are also incorporated into each school day. The CBE program has been in effect since the school's founding in 1984.

Using projects or activities that are meaningful to students is an integral part of the school's CBE program. The school strongly encourages student-to-student teaching; providing choices about activities or learning styles; teaching through demonstration and observational learning; and teachers and students working closely together.

Most of the CBE components are being well implemented, according to school Directors Namaka Rawlins, Kauanoe Kamana, and Mililan Hughes. They believe it would be "somewhat easy" for other schools to use the CBE program. In fact, it is being implemented in two other PK–20 laboratory schools located in Kailua, O'ahu and Kekaha, Kaua'i, plus 11 Punana Leo preschools on five other islands in the Hawaiian Archipelago.

The school's directors believe that "full use of the Hawaiian language and culture as the basis for all learning" is the root of their success. At the same time, it is also the most difficult aspect of the program. Challenges in implementing the program include dealing with "ingrained colonized attitudes of adults, including the community, parents, staff and teachers; difficulties in developing a group of people sufficiently skilled in Hawaiian language and culture (who also have) skills for a global world; and changing institutional procedures of the state's public schools, the university, and the federal government."

Feasibility of Conducting Scientific Studies

While the state has collected data on Nawahiokalani'opu'u, these have been informal studies that mainly have been reported in newspaper articles. School directors believe it is "somewhat feasible" to participate in a study that randomly assigns students to either a classroom that receives CBE or one that does not. In order to conduct such research, the school would need the cooperation of an English-language school that serves a similar set of students. "While there are such schools in the surrounding area, we have not approached them about a study," according to survey respondents.

A number of issues would need to be considered in designing a research study:

- Testing students in both Hawaiian and English in both schools (since teaching Hawaiian is part of the state school curriculum and also a part of certain private school curricula)
- Testing at appropriate grades based on the Laboratory School's curriculum and that of the control school (since the issue of when a second language is introduced is important)
- Following standard policies of the state of Hawaii
- Developing the skills of Hawaiian speakers who are being prepared to work in the school's system
- Including areas of interest to teachers in the program that have the potential to give further direction to the program and its curriculum

Measures for Tracking Student Outcomes

Nawahiokalani'opu'u administers the Reading Fluency Monitor to students in grades four and eight, and the Hawaii Competency and Performance Standards Test II to students in grades eight and 10. The He Lawai'a No Ke Kai Hohonu (a reading and comprehension test) is given to students in grades three through six. No tests are used to track individual students over time from grade to grade or year to year. All teachers include in their grades a component for students' use of the Hawaiian language and culture in reaching the course content.

School and Program Stability

The current academic program, including CBE, has been in effect since the school's founding. In addition, the school has exhibited stability with a principal who has been in office five or more years and 90–100 percent of the teachers who taught in 2002–2003 returning this school year. The same percentage of students who started school in fall 2002 was still enrolled at the close of the school year.

Red Lake Independent School District (MN)

Four schools comprise the Red Lake Independent School District, situated on the Red Lake Indian Reservation in northern Minnesota: Ponemah Elementary, Red Lake Elementary, Red Lake Middle School, and Red Lake High School. The reservation, which is home to seven clans of Ojibwe Indians, was the site of a Bureau of Indian Affairs boarding school established in 1877. In 1908, public schools were instituted with the high school founded in 1935. Today, the four institutions serve a total of 1,408 students, scattered on a reservation the size of Rhode Island.

Program Characteristics

All students in grades K–6 take part in Ojibwe language and American Indian arts and crafts classes that were instituted in 1974. In addition, the CBE program features supplemental educational software for reading, writing, and math in grades six through eight. The 160 students at Ponemah Elementary receive instruction in conversational Ojibwe every day throughout the school year for about 30 minutes a day, in addition to twice-weekly classes in Native American history and arts and crafts. The 500 students at Red Lake Elementary attend twice-weekly classes in Ojibwe (at 30 minutes/class) throughout the year, as well as Native American history and art classes three times/week for a half hour. Ojibwe is used to teach content as well as the language alone. Middle school and high school students are not served by these Office of Indian Education programs, but do receive some language instruction that is paid for by state and federal funds.

Teacher-developed culturally relevant curriculum incorporates the local environment, tribal traditions, tribal institutions, and special community or regional events. Community members, including parents and elders, have assisted in developing the curriculum as well as designing, modifying, delivering, and evaluating the overall CBE program. In addition, the community takes an active part in supporting education in the home.

Elders, parents, and community members are used as teaching resources on a daily basis. All teachers are members of the Red Lake Band of Chippewa Indians, a federally recognized tribe, and all are knowledgeable in Ojibwe culture, tradition, crafts, and language. While prayers are limited to traditional settings, each school day begins with anishinaabe prayer and traditional song. Ojibwe stories are told during the winter, the traditional story-telling time.

An integral part of Red Lake's CBE program is teachers and students working closely together; teaching through demonstration and observational learning; using projects or activities that are meaningful to students; and giving students choices about activities or learning styles. Student-to-student teaching is strongly encouraged as a good teaching tool.

Superintendent Stuart Desjarlait and ESEA Title VII Program Director Delores Cloud-Hammitt report that the CBE program is well implemented for most or all of the targeted students. Although the CBE content is specific to the Red Lake Ojibwe culture, the school's program would be "somewhat easy" to adapt for other settings. Currently, the district's Ojibwe math program is accessible on the Internet and an online version of Ojibwe science is 80 percent complete.

Desjarlait and Cloud-Hammitt count the district's Ojibwe language program as its greatest success. "(It) teaches students about their environment, clans, culture, counting/math, Hereditary Chief system, government, tribal kinship system, and tribal philosophy," they state.

Red Lake's greatest challenge is budget limitations that only allow Ojibwe language to be taught to K–6 students under Title VII; the survey respondents strongly believe that Native language programs should be expanded. The 5 percent funding cap on administrative fees is also seen as an impediment, adversely affecting Title VII Indian Education activities that support culturally relevant needs. "It (the funding cap) will eliminate Native culture," according to Desjarlait. An additional challenge is the paraprofessional requirements of the No Child Left Behind Act, which will prevent some Indian elders and community members from being part of the instructional team.

Feasibility of Conducting Scientific Studies

Desjarlait and Cloud-Hammitt believe it would be "very feasible" for Red Lake to participate in a study that randomly assigns students to either a classroom that receives CBE or one that does not. It would be "somewhat feasible" to conduct studies that compare students in classrooms receiving CBE to similar students in non-CBE classrooms or that compare Red Lake's CBE program to another school of similar students not using such a program. In designing and conducting research studies, approval must be obtained from the Board of Education and the Red Lake Band of Chippewa Indians. It is noted that "research on students is viewed skeptically: Research should benefit the students of the Red Lake Public Schools."

Measures for Tracking Student Outcomes

A variety of tests are used by the four schools within the Red Lake School District. Red Lake Elementary administers the Scott Foresman Grade Level Test (grades 2–5); Minnesota Comprehensive Assessments Reading (grades 3 and 5); Minnesota Test of Emerging Academic English (grades K–5); Success for All Reading Assessment (grade 1); accelerated math tests (grades 1–5, given after objectives have been mastered); and ATOS accelerated reading tests (pre–K to postsecondary). Ponemah Elementary also uses the Scott Foresman reading comprehension test and accelerated math tests, as well as the Teae Test for LEP identification (grades 2–5); the Minnesota-Solomon test for LEP (grades K–1); and Gates-MacGinitie reading test.

Red Lake Middle School uses the Minnesota Basic Skills Test for grade eight; the Minnesota Comprehensive Assessment for grade seven; and the Success for All Math Wings Assessment for grade six. All students (grades 6–8) take the Success for All eight-week assessment as well as tests created by teachers to cover specific subject areas. Red Lake High School administers the Minnesota State Writing Test and the Basic Skills Writing Test to all 10th-graders.

School and Program Stability

Of the district's four schools, Red Lake Elementary exhibits the most stability in leadership with a current principal who has served five or more years and a previous principal with the same tenure. Ponemah's current principal has been in office for two years and its previous principal held the position for more than five years. Red Lake Middle School and High School have current and previous principals who served in the one- to three-year range. Approximately 90–100 percent of the teaching staff members within the district who taught during the 2002–2003 school year returned this year. About 80–89 percent of students who started in fall 2002 were still enrolled at the end of the school year, though it's noted that there is considerable mobility to and from the Twin Cities area and to and from adjacent public schools. The academic program, including CBE, has been in place for five or more years.

Dickson Public Schools (OK)

The Dickson Public School system in south central Oklahoma encompasses one of the largest geographic districts in the state. Students in pre–K through 12th grade are served by four schools: a lower elementary, upper elementary, middle school, and high school. The rural setting promotes extracurricular activities in ranching and agriculture. Dickson's mission is "based upon the idea that our future depends upon the education of our youth who must accept responsibility for our society." The 1,300-member student body is about 25 percent Native American with members of the Chickasaw, Choctaw, Mississippi Choctaw, Cherokee, Seminole, Creek, and Pottawatomi tribes.

Program Characteristics

All Dickson students—Native and non-Native alike—participate in CBE which includes occasional presentations by elders or experts and a focus on tribal traditions and institutions. Twice a year, the school district organizes schoolwide cultural celebrations that last about one hour. This practice has been going on for at least the last four years.

The Native community plays an active role in operating or delivering the CBE program and members of the community—including elders and parents—are used as teaching resources several times throughout the school year. However, the community is *not* involved in designing, planning, or evaluating the CBE program. It is also rare for the CBE program to include activities of Native spirituality.

Using projects or activities that are meaningful to students is considered an integral part of the CBE program. Teachers are strongly urged to work closely with their students in small groups or one-on-one, to instruct through demonstration and observational learning, and to encourage student-to-student teaching. Giving students choices about activities or learning styles is sometimes discussed as a good teaching tool.

According to Indian Education Director Teresa Bolin, the CBE program is "well implemented" for most or all of the targeted students and it would be "somewhat easy" to adapt Dickson's program to other settings. The pride of Dickson's program is the Oklahoma Fancy Dancers who perform for the entire student body and the community. "It allows everyone to experience Native American culture who otherwise would not have this experience," says Bolin. She did not indicate any challenging aspects of the CBE program but notes that there are more students in need of the CBE program than can be served at any one time. "All of our students are served by our program, but due to space, we have to have at least three separate programs to accommodate everyone," she says.

Bolin goes on to say that it would be "very feasible" to participate in a study that randomly places students in either a classroom that receives CBE or a control group. It would be "somewhat feasible" to randomly select some students to receive the CBE program first and place others on a waiting list for the program at a later time. Bolin

believes parents would be "very willing" to support this practice. It would be "somewhat feasible" to compare Dickson's CBE program to another, similar school without such a program. However, since Dickson's program is not classroom-based, a study comparing its students in CBE classrooms with those in non-CBE classrooms would not be feasible. There were no issues or policies to be addressed prior to instituting a research study.

Measures for Tracking Student Outcomes

Dickson Public Schools uses a criterion-referenced test for students in third, fifth, and eighth grades on an annual basis. All Native American students are tracked over time through an evaluation of Indian education programs.

School and Program Stability

Dickson Public Schools rate high in stability. The current principal and previous principal each served more than five years and 90–100 percent of the teaching staff members who taught last year returned for the current school year. Approximately 80–89 percent of the students who started in fall 2002 were still enrolled in spring 2003. Dickson's academic program, including CBE, has been in place for three to four years.

Sanostee Day School (NM)

The Sanostee Day School is a Bureau of Indian Affairs school serving the Navajo reservation in Sanostee, located in the Four Corners area of New Mexico. The school enrolls 87 students in grades K–3. The small class sizes are a great benefit to culturally based instruction.

Program Characteristics

All of Sanostee's students (K–3) are served by the CBE program, which includes language classes and classroom presentations by elders or experts on tribal history, culture, and values. One dedicated teacher provides oral instruction in the Navajo language to all students for 45 minutes a day, each day throughout the school year. This is the first year there has been one teacher filling this role, which has led to greater consistency in language instruction. In addition, foster grandparents spend 10–15 minutes each day meeting with students in small groups of five to six children. The grandparents model the indigenous language and do storytelling, singing, and dancing. After school, traditional dance classes are held and students compete in yearly contests at both the local and regional levels.

While community members play an active role in operating or delivering the program several times throughout the year, they are not involved in designing, planning, or evaluating CBE. Activities centering on Native spirituality are included several times during the school year.

Sanostee's CBE program requires teachers and students to work closely together; teaching through demonstration and observational learning; using projects or activities that are meaningful to students; giving students choices about activities or learning styles; and student-to-student teaching. The CBE program, which was developed by the school, is "well implemented" and most students are being served, according to Principal Jeanne Haskie. She believes it would be "very easy" to use the program, as is, in other schools.

The most successful aspect of the program, says Haskie, is "students learning to express themselves to others and communicate with their grandparents." Finding time to schedule language and culture classes within the daily instructional program presents a challenge.

Haskie says it is "somewhat feasible" to participate in a study that randomly assigns students to either a classroom that receives CBE or one that does not. However, she strongly feels it would *not* be feasible to randomly assign some students to a CBE classroom and place others on a waiting list for the program. Under issues or conditions, she comments, "We would like to continue our instruction without interruption with 'studies.'" However, she thinks it would be "very feasible" for Sanostee to participate in a study that compares students in classrooms receiving CBE to similar students who are

not, and it would be "somewhat feasible" to contrast Sanostee students in a schoolwide program with another, similar school that does not use the program.

Measures for Tracking Student Outcomes

All K–3 students undergo Terra Nova-CTBS tests and the Education Evaluation System once a year, as well as the Northwest New Mexico Assessment twice yearly. In addition, K–1 students take the Brigance test biannually. Terra Nova scores are used to track individual students over time.

School and Program Stability

Sanostee Day School's current principal has held that position for more than five years and the previous principal served for two to three years. Approximately 90–100 percent of the teaching staff members who taught during the 2002–2003 school year returned this school year, which is a higher than average rate for recent years. About 70–79 percent of the students who started at the school in fall 2002 were still enrolled the following spring. The school's academic program, including CBE, has been in place five or more years.

Turtle Mountain Middle School (ND)

Turtle Mountain Middle School is a Bureau of Indian Affairs day school serving residents of the Turtle Mountain Chippewa reservation in Belcourt, North Dakota. The school has 390 students in grades 6–8 and has as its goals ensuring excellence in education and respect for the local culture. In the words of Turtle Mountain's mission statement: "We believe the Great Spirit put us on Mother Earth to be kind, respecting one another and all things. We believe the Turtle Mountain Community School must reflect the peoples' past, present, and future way of life."

Program Characteristics

Turtle Mountain's CBE program serves all students (grades 6–8) and includes Native American language instruction, as well as arts activities such as beading and weaving. Chippewa history and Mitchif culture are integrated throughout the curriculum. Morning greetings are broadcast each day in both Chippewa and Mitchif. All students receive 50 minutes a day of Chippewa language instruction throughout the school year, except students who participate in band and those who are excused at the request of their parents.

The local environment, tribal traditions, and special community events are part of the CBE program. Community members play an active role in supporting education in the home, and also help deliver CBE activities in the classroom. Techniques such as teaching through demonstration, using projects that are meaningful to students, giving students choices about activities, student-to-student teaching, and one-on-one or small-group learning are largely left up to the individual teacher to use.

Some teachers use externally developed CBE material. Two specific resources are the work of Dr. Sandra Fox and Carmen Cornelius Taylor's "Creating Sacred Places." Twelve surveys were completed by the program staff. The majority of survey respondents believe "some of the CBE components are well implemented and/or some targeted students are being served." Respondents are evenly split on the question of whether it would be "somewhat difficult" or "somewhat easy" for other schools to adopt Turtle Mountain's CBE program.

The most successful component of the CBE program is the Native American Language classes: "Students remember the language from year to year," observes one teacher. Another notes, "The morning greetings seem successful since the students learn Chippewa or Mitchif Cree language in conversations and (that) builds their self-esteem in continuing their studies." The use of culturally relevant novels and the after-school song and dance club were also cited as positive parts of the CBE program.

At the same time, Turtle Mountain faces a number of challenges in implementing its program, including language classes. "The Mitchif and Chippewa languages are most difficult because not many community members speak (them) and they can't decide

which one should be the tribal language," says one teacher. Another impediment is "the reluctance of staff members to understand the importance of using Native American culture to improve the academic culture of our school."

Feasibility of Conducting Scientific Studies

About half the survey respondents thought that it would be "very" or "somewhat feasible" for Turtle Mountain to participate in a study that randomly assign students to a CBE classroom or a control group. The other half of the survey respondents were "not sure" about the feasibility of such a study. Those who believe the research would be feasible agree that parents would be "somewhat" or "very willing" to have students assigned to either a program list or a waiting list. Conditions to be met in order to conduct a study include getting parental consent; obtaining other permissions; and securing teachers, supplies, and money. It's noted that the program of CBE would have to be very specific and comprehensive: "The results would need to be shared with and comparable to reform efforts, or at least prove to be needed as an assessment of achievement."

A greater number of survey respondents believe that a study is feasible comparing a schoolwide CBE program at Turtle Mountain to a similar, nearby school not using the CBE program. Any study should address school, tribal, or community issues that include federal and state policies on measuring student academic growth and meeting the dictates of No Child Left Behind; honoring parental rights; and deciding which tribal beliefs should be taught, as the community is divided on this subject.

Measures for Tracking Student Outcomes

Students at Turtle Mountain Middle School are tested each year using the CTBS-Terra Nova Multiple Assessment. All sixth- through eighth-grade students also undergo the Middle School Authentic Assessment through a quarterly portfolio. In addition, eighth-graders take the North Dakota Supplemental Test of State Standards. These measures are used to track individual students over time. Student attitudes, behaviors, and school climate are measured through the Effective Schools Survey; Turtle Mountain students are also given a graduate preparedness and satisfaction survey upon entering the ninth grade.

School and Program Stability

Turtle Mountain Middle School exhibits a high degree of school stability, with the current and past principals each serving more than five years. In addition, 90–100 percent of the teaching staff members who taught during the 2002–2003 school year returned this year and 90–100 percent of the students who started in fall 2002 were still enrolled at the end of the school year. The academic program, including CBE, has been in place three to four years.