Running Head: COLLABORATIVE ACTION RESEARCH FOR UNIFORM ASSESSMENT

Collaborative Action Research towards Establishing a Uniform Assessment Tool for Local Curriculum Math Classrooms in Northside Independent School District

Elizabeth Alvarado, Kimberly Luksa, and Rocklin L. Harvey

Walden University

Abstract

From its inception, the Northside Independent School District's (NISD) Local Curriculum (LC) program was created to provide secondary students with identified and documented academic learning deficits in core content areas an alternative curriculum based on ability-grade levels rather than chronological-grade levels. Relying heavily upon Bernice McCarthy's 4MAT lesson plan structure and ostensibly designed to promote uniformity of instruction for students with special needs, one important aspect of consistent practice was not fully addressed. No uniform assessment instruments were developed or adopted to provide consistent intra-district ability-level placement or on-going interim progress and/or regression determinations. A decade later, LC teachers across the district are still using a variety of assessments – some personally selected, others directed by administration. Clearly, neither continuity nor consistency exists in the program originally conceived to provide both. This investigation suggests that tests are readily available and recommends a change of methodology in student assessment that benefits the NISD LC program, its teaching staff, and more importantly – the students assigned to LC classes. For the purpose of brevity, this collaborative action research (CAR) focuses only on LC Math classes within NISD.

Collaborative Action Research towards Establishing a Uniform Assessment Tool for Local Curriculum Math Classrooms in Northside Independent School District

Introduction

According to Dr. Richard Sagor (Laureate, 2005), Collaborative Action Research is a process that should involve an area of significant concern or one which provokes considerable frustration. Additionally, it is considered to be "a disciplined process of inquiry conducted by and for those taking the action…(p.3)" for the purpose of fostering "…growth and development (p.7)" within an educational setting.

In the mid-1990s, Northside Independent School District (NISD) undertook the development of an innovative program for teaching students with learning disabilities. Concentrating on secondary instruction, the Local Curriculum (LC) program was developed in such a way as to align Texas Essential Knowledge and Skills (TEKS) with Northside ISD standards for instruction while providing on-going modifications and accommodations depending upon individual student needs. Task Force members met continuously over several years developing the LC curricula for Language Arts, Science, Social Studies, and Mathematics. A central focus for the overall program was student application in regard to real world experiences.

During developmental meetings of the NISD Local Curriculum Math program, Task Force members discussed the feasibility of adopting a single instrument for assessing students and tracking their progress. As pressure mounted for meeting publication deadlines, emphasis was placed on program development and completion. Formal assessment considerations, therefore, were put on hold. When the program was published and adopted district-wide, no such assessment had been identified. Several years of daily *Applied Math* instruction later, no uniform

instrument is in place with which to estimate grade-level ability of newly assigned students or to track the progress of students in LC classes. Furthermore, assessments being used by LC Math teachers are, for the most part, not suited for these tasks nor developed for this purpose.

Since its adoption over 5 years ago, the Local Curriculum Math Course program has had no uniform assessment tool for determining grade-level placement of students assigned to those classes. Some schools rely only on the fact that a student is assigned to the class as a basis for providing generalized instruction – *teaching to the middle*. Others have adopted one or more types of performance-skill assessment to first determine individual ability and then to track progress against goals. Some schools rely on one instrument to assess student knowledge; others on two or more. Some instruments are summative exams; some are nothing more than teacher-developed quizzes. There is no continuity between campuses or within the Local Curriculum program – even among teachers at the same campus.

This research examines the variety of assessments utilized across secondary campuses within NISD, and explores readily accessible off-the-shelf and Internet literature resources. The assumption of this collaborative action research (CAR) group is that many of the assessments currently in use do not (1) provide grade-/skill-level information, (2) take excessive time to administer and analyze, and (3) are better suited for end-of-year (summative) testing than for determining (formative) on-going ability grouping and skill-level instruction. Our hypothesis is that a test instrument does exist and that it meets the criteria for NISD LC Math teachers to quickly assess student ability level and to track progress or regression during the academic year. Based upon Sagor's (2000, p.19-22) triangulation matrix (Appendix A, Figure 1) data was collected from a variety of sources.

To guide the development of our hypothesis, we considered the following explorative interrogatives:

- Why would a quick assessment be a better instrument for on-going classroom use than a detailed analysis tool?
- Can specific student strengths and weaknesses be derived from a quick assessment?
- Can one tool be used effectively to track on-going progress against Local Curriculum Math instruction?
- Which type of assessment is better suited for students just assigned to a class when no firm data yet exists for determining appropriate placement or projected instructional goals?
- What tools are available? Are they being used in NISD? Under what circumstances?
- What do other NISD LC Math teachers use in their classrooms?
- What does research indicate about such assessment?
- How might technology be integrated into the process?

These questions were reduced a number of times in order to focus the research and better organize a decisive plan for data gathering. Figures 1 through 4, of Appendix D, trace the evolution of our thinking as we narrowed the scope of our research. The focus of this project, then, was an attempt to resolve the issue of whether a single assessment tool exists that can be used for Local Curriculum Math classes at all levels within NISD.

Any serious study, according to Dr. Sagor (2000), requires considerable focus. He has suggested “the best way to ensure a sharp focus is to draft a written problem statement detailing precisely what is to be looked at and why (p. 73).” This proposal outlines what is to be studied, its significance, and the area of specific focus. Additionally, those conducting the research

provide their own theory on the subject and how they will attempt to resolve specific questions through data collection.

Problem Statement

Northside Independent School District (NISD) Local Curriculum (LC) Mathematics classes address diverse student needs ranging from Kindergarten through eighth grade ability levels in 6^{th} through 12^{th} grade students, however it is uncertain whether a single diagnostic tool exists that will effectively provide for appropriate initial student placement as well as show progress or regression against individualized goals and objectives. The purpose of this research is to (1) determine what assessment tools are in current use, (2) explore their intended purposes and effectiveness in present practice, and (3) determine whether one or more tools exist that have the necessary characteristic qualities to provide both placement and on-going progress (or regression) data.

In the mid-1990s, Northside Independent School District (NISD), in San Antonio, Texas undertook a project designed to meet the diverse needs of students with special needs. Local Curriculum (LC) taskforce members worked on the project for over four years developing lesson plans and classroom activity schedules for communication arts, math, science, and social studies for NISD secondary schools. Using Bernice McCarthy's (1987, 1995, and 1996) *4MAT* system as its basic framework, LC programs were drafted with painstaking patience and care to ensure the highest possible quality completed end product. One aspect omitted upon publication, however was a system of evaluation that would provide consistency and continuity from one NISD LC classroom to another. While this may appear trivial at first blush, there is considerable transience between NISD campuses throughout the academic calendar year.

Although discussed at some length throughout the research, draft, and publication stages of development of the Local Curriculum program, assessment was left largely up to individual classroom teachers on the dozen and a half secondary school campuses. No definitive answer to the all-important question (How will students be evaluated?) was ever made. Some teachers created their own classroom tests and rubrics. Others adopted one or more available diagnostic inventories. Some used NISD benchmark tests. Others opted for released-TAKS (Texas Assessment of Knowledge and Skills) or released-SDAA (State-developed Alternative Assessment) tests. A half-dozen years since its inception, NISD Local Curriculum classes have yet to develop or adopt one uniform assessment that would ensure continuity between campuses. Meanwhile, more students than ever change schools throughout the year. How are they evaluated from one LC classroom to the next? What affect does changing criteria have on student placement, instructional consistency, or on-going progress determination? Currently, no one can provide a definitive response to this pervasive problem. Our research may provide NISD decision-makers with clues towards a viable solution.

Review of Literature

A quick search on any Internet *search engine* (e.g., *Google, MetaCrawler, Yahoo*) will yield numerous sources listing assessments for every need and purpose. *Brain-works*, available at http://www.brainworks.info/assess.html, provides links to tests for performance ability, intelligence, and academic achievement, Kindergarten level through adult. The Texas-based TSBVI-*Functional Academics Curriculum* Website outlines dozens of instructional resources and assessments for use by teachers of students who are visually impaired; those can be found at http://www.tsbvi.edu/Education/IAER-ASS.html. Most major universities maintain Web Page Libraries with access to unlimited numbers of assessments. The University of Illinois, for

example, provides access to its Special Education Department Resource Library. They provide over 20 pages of listed testing materials and include descriptions of their chief characteristics at http://www/ed.uiuc.edu/sped/SpEdDept.ResourceLibraryMaterials Assessments.htm. Among hundreds of options, a handful of quick assessments dominate available lists. All boast saving time while providing useful information. Some purport utility for facilitating development of performance goals and providing indications of progress or regression. Many were designed for *Home Schooling*, but most were developed for use by any educational entity to promote appropriate instruction and evaluation.

In a pamphlet, available on-line at http://www.serve.org/nche, The *National Center for Homeless Education* (2006), in accordance with policy directed by the United States Department of Education, ascribes the following importance of quick assessments in the wake of such disasters as *Hurricanes Katrina and Rita*:

> Accurate assessment of a student's current academic functioning levels can have a critical impact on school performance. Sound decisions about classroom placement can provide much-needed support and minimize potential disruptions to teachers and students… Given the large numbers of families displaced by recent disasters and the associated challenges faced by highly impacted school districts, it is important that the receiving schools develop a streamlined approach to initial student assessment…to support the best possible placement decisions as expediently as possible for busy school personnel (p.1).

On page 4 of that same pamphlet, Brigance® Comprehensive Inventory of Basic Skills – Revised (CIBS-R), is listed first among 17 diagnostic instruments identified as "Quick Assessment Tools." Among its several attributes are flexibility, low cost, and availability in Spanish.

Before going into depth on the merits of the most pervasively available quick assessment tools, perhaps we should first define or describe a few fundamental guidelines for and characteristics of assessments in general. According to Sattler (1992), an "assessment… should never focus exclusively on a test score…Each child has a range of competencies that can be evaluated by both quantitative and qualitative means...(our aim) is to assess the competencies as well as the limitations of the child (p.5)." He is quick to add that "test results are dependent on the child's cooperation and motivation (p.5)." Salvia and Ysseldyke (1998) describe screening as "the process of collecting data to decide whether more intensive assessment is necessary (p.12)." Diagnostic testing is "designed to identify specific strengths and weaknesses in skill development (p.519)." In particular, diagnostic math tests "are intended to provide sufficiently detailed information that teachers…can plan and evaluate instructional programs (p.520)." Black and Wiliam (1998) suggest that assessment includes "all activities that teachers and students undertake to get information that can be used diagnostically to alter teaching and learning (p.139-148)." Whereas annual TAKS and SDAA assessments are considered to be summative, any "diagnostic use of assessment to provide feedback to teachers and students over the course of instruction is," according to Boston (2002), "called formative assessment (p.1)."

Currently, NISD LC Math teachers choose their own means of determining student placement and progress unless directed by administration to follow certain outlined criteria. For the most part, LC teachers have considerable flexibility in meeting the individual needs of their diverse student populations. In an E-mail survey (Figure 1, Appendix B) conducted as part of this research effort, all 18 campuses surveyed responded within an hour. Some campuses reported use of only one assessment type, others listed as many as three. The results were quite startling in terms of variability for the 28 LC Math teachers responding:

- ✓ 17 % (5/28) develop their own assessment for classroom use
- ✓ 11 % (3/28) rely upon dated NISD Curriculum Development Benchmarks
- ✓ 16 % (4/28) (each of four LC Math teachers) use some other test altogether
    - o STAR Math (4% - 1/28)
    - o Math Bridge (4% - 1/28)
    - o TOMA-2 (4% - 1/28)
    - o KTEA/KTEA II (4% - 1/28)
- ✓ 28 % (8/28) use one version or an other of the Brigance® Diagnostic Inventories
- ✓ 28% (8/28) depend upon SDAA/SDAA-II (released) and released-TAKS data

Of all NISD secondary campuses 15 use one or more assessments developed by an outside source. Over a quarter of the LC Math teachers polled choose the Brigance® as convenient in terms of time and derived data. About half of the schools use more than one assessment, selecting the State Developed Alternative Assessment (SDAA/SDAA-II) as a backup source of data for Special Education ARD (Admission, Review, and Dismissal) meeting determinations and individualized education plan (IEP) development. See Figures 1 and 2, Appendix C. Over half of all respondents expressed a need for a clearly defined assessment.

STAR Math (2006) professes “fast, accurate results” for grades 1 – 12, at its on-line Website. This test “helps you determine the math level of each student, measures individual and class growth, and forecasts results on standardized tests. Students can complete the computer-adaptive assessment in less than 12 minutes, and one gets accurate, reliable, norm-referenced scores immediately (p.1).” An obvious drawback to this program, however, is the expense. STAR Math costs (p.2) 39-cents per student per year with a “one-time setup fee of *only* $1,299 per school.” Some abbreviated kits are available, according to Nastali (2001) and Muir (2004),

for as little as $499 for CD-ROM applications for grades 3-12. An obvious drawback to this option is that LC Math services students with abilities as low as Kindergarten and first grade.

Math Bridge (2005) is an online (http://www.mathbridge.org/links.html) tool for teachers that provides lesson plans, assessment tools, and "professional resources" in both mathematics and science. Validity and reliability data is unclear, as is correlation to TEKS objectives. It should be pointed out that *Math Bridge* is a product of Queen's University of Kingston, Ontario (Canada). It remains an available classroom tool, but should be viewed with caution in terms of providing an accurate assessment of student specific strengths and weaknesses.

The Test of Mathematical Abilities, 2nd Edition (TOMA-2) (1994) is considered to be effective for "grades 3 through 12" and measures math reasoning and calculation skills. Similarly, Key Math-R (Salvia & Ysseldyke, p. 523; Sattler, p. 340) provides a diagnostic inventory of math content, application, and operations for grades preschool through 12th grade. Each takes from 30 minutes to an hour to administer; usually one-on-one. Neither is directly correlated to TEKS.

The Kaufman Test of Educational Achievement (KTEA), according to Salvia and Ysseldyke (1998, p. 457) and Sattler (1992, p. 333), "is an individually administered norm-referenced multiple-skill achievement test" used with students 1st through 12th grades. Although it is intended as a placement decision-making tool, the KTEA requires several minutes ("about 30" per Sattler, p. 334) one-on-one to administer. The complete mathematics test consists of two components, each has 60 questions. One deals with real-world applications, the other with basic operations and calculations. The short form has 52 questions. Teachers using this particular instrument need to be mindful of the potential for lack of complete correspondence with any

given curriculum. It is more a measure of relative skill than display of mastery against a particular set of standards or objectives.

The State Developed Alternative Assessment (SDAA/SDAA-II) has been available on-line through the Texas Education Agency (TEA) Website for the past few years. Although these tests are completely aligned with TEKS, other than LC Math use for whole class strategy building and discussion purposes, should be used sparingly as a diagnostic tool. Both the Texas Assessment of Knowledge and Skills (TAKS) and the SDAA-II are summative assessments and not meant for the purpose of formative diagnostic screening. Several tests, both TAKS and SDAA, with corresponding answer keys and scale-score conversion charts are available. Again, students with ability levels below 3rd grade are excluded from participation.

Excel Math Placement Tests (2002) are grade-level evaluation tools for first through sixth grade. Each of six tests is considered to be review of the previous year's content. Excel publishers suggest that "you give students one or more tests depending on your knowledge of their ability level (p.1)." According to their recommendation, a sixth grade student should take all six assessments. Again, the potential expense for this diagnostic can be prohibitive: each subtest is $15 but a classroom set of 30 is only $285 with an additional 5% shipping and handling charge per order. The "shoot in the dark" approach suggested by its promoters guarantees continuing income for developers, but considerable investment of time and guesswork for teachers. Additionally, its limited scope (first through sixth grades) would require additional assessments for Kindergarten-level students and those functioning beyond sixth grade.

Not surprisingly, many diagnostic assessment packages available on-line are designed for home school programs. One such program boasts "Education for a Lifetime." The k12® Curriculum (2006) Math option "balances mastery of fundamental skills with critical thinking

and problem-solving (p. 2).” It offers a multisensory approach including on-line games and animations that “motivate students and help illustrate concepts.” Additionally, there is a k12® Texas Virtual Academy option (currently limited to the Region IV, Houston/Galveston area). Placement tests are made up of 16 assessments, one for each semester Kindergarten through Middle School. Additional tests cover students in grade levels 9 through High School. The k12® Curriculum is available as a home-based public education option. Like so many others, this package requires a series of tests (at least two, generally three or more) to determine accurate initial grade-level placement.

Some placement tests and answer keys are available on-line at no cost. One such instrument is through *SingaporeMath.com Inc* (1998). This program offers placement guides, tests, and answer keys with content and sample pages as well as scope and sequence information. Deciding which placement test level to begin with is somewhat vague. One has to guess at an *appropriate* grade level, administer the test, and then analyze the results to determine whether other assessments are needed.

Aside from tests developed by agencies or organizations outside NISD, teacher-developed assessments and district Benchmark examinations were listed as diagnostic tools employed by LC Math teachers.

Benchmark tests are developed by the district and used as summative instruments to determine progress towards TEKS mastery in preparation for TAKS testing. By their nature, Benchmark tests generally concentrate on limited aspects of curriculum. Several tests conducted during the academic year provide data in each core content area. McMillan (2000) points out that “when assessment is integrated with instruction it informs teachers about what activities and assignments will be most useful, what level of teaching is most appropriate, and how summative

assessments (can) provide diagnostic information (p.4).” This is useful information for determining how well certain aspects of curriculum instruction were received by students, and at supervisory levels, taught by instructors. During the instructional process, whether a single class period or an entire grading period, “formative assessment helps teachers know when to move on, when to ask more questions, when to give more examples, and what responses to student questions are most appropriate (p.4).” Clearly, there is a difference between formative and summative assessment instruments and practices.

It is generally thought that in order for a test to be effective it must possess reliability and validity. To effectively measure placement and/or progress, an assessment must also be aligned to certain standards. Paul La Marca (2001) states that these attributes become ever more important as “high-stakes decisions predicated on test performance are becoming increasingly common…carry significant consequences…” and become …”more visible to the public (p.4).” In discussing differences between content and construct validity, Messick (1989) argued that “validity is not a quality of a test but concerns the inferences drawn from test scores or performance (p.13).” Furthermore, he suggested that “content validity is based on professional judgments about the relevance of the test content to the content of a particular behavioral domain or interest and about the representativeness with which item or task content covers that domain (p.17).” Meanwhile, La Marca reminds us that “Federal legislation and Title I regulations recognize the importance of alignment, which…refers to the degree of match between test content and the subject area content identified through state academic standards (p.1).”

Benchmark tests are generally local constructs designed to approximate criteria set forth by curriculum standards. Considerable effort is extended to develop test items that conform to valid and reliable data aligned with TEKS and NISD curriculum standards. One obvious

drawback to such tests, however, is their limited scope usually concentrated around a single concept (e.g., fractions) or set of related concepts (e.g., ratios, fractions, decimals, and percents). For this reason, Benchmark tests are ill-suited for use as placement determinants. Arguably, they could be used to provide progress information against particular standards, and perhaps, individual IEP goals.

Less reliable still as an example of assessment alignment with established standards is the teacher-developed test. According to Ysseldyke (2001), "purpose is the first thing to think about when assessing students or evaluating systems (p.302)." Since the intended purpose of tests under consideration is to either provide approximate placement data or indicate whether or not progress is being achieved against established goals, teacher-created instruments are a poor choice – they are neither normed nor standardized. No certain decision can be made in terms of age-equivalency or grade-level ability. Any diagnostic consideration given such tests must be tempered with considerable caution, since the basic purpose of the assessment is: can the student do this problem – yes or no. Any other determination would be speculative assumption. Even performance-based assessments as described by Brualdi (1998) and Donovan (2002) are "designed to reveal a learner's understanding of a problem/task and her/his mathematical approach to it" are generally rubric-driven and devised "to determine whether a previously taught concept has been learned (p.1)." Like the Benchmark, teacher-made tests are limited as reliable indicators of overall ability or cognitive standing.

Boston (2002) insists that "formative assessment" is "diagnostic" and provides a clear picture of "how students are learning (p. 1)." She further contends that "formative assessment helps support the expectation that all children can learn to high levels and counteracts the cycle in which students attribute poor performance to lack of ability and therefore become discouraged

and unwilling to invest in further learning (p.2)." Since the "goal of formative assessment is to gain an understanding of what students know (and don't know) in order to make responsive changes in teaching and learning (p.3)," Boston agrees with Black and Wiliam (1998) that frequent short tests are better than infrequent long ones, new learning should be tested early, and the quality of test items is crucial to effective decision-making.

Dr. Diane Bryant, associate dean for teacher education and a professor in the department of special education at the University of Texas at Austin, has conducted considerable research in mathematics assessments. She (2005) cited the Brigance® Comprehensive Inventory of Basic Skills – Revised (CIBS-R) as one of the most "common assessment measures" for curriculum-based assessment. When asked about various diagnostic assessments, an NISD school psychologist, A. Katz (informal interview, May 25, 2006), stated that she does not use certain tests for determining special education eligibility and therefore, is not familiar with some of their intended purposes or how effective they might be as diagnostic tools. The Brigance® CIBS-R is one of these. L.Baldwin (personal communication, via telephone: June 18, 2006), however, stated that she and her teacher colleagues in Waldoboro, Maine use the Brigance® CIBS-R for both initial student placement and for assessing on-going progress. She remarked that teachers at her school use it in conjunction with state testing data "almost exclusively for making IEP determinations and for deciding initial student placement."

The Brigance® Comprehensive Inventory of Basic Skills – Revised (CIBS-R) is designed specifically to "identify student performance levels, set instructional goals, and report progress (1999)." Developed by a former classroom teacher, this test package of over 150 assessments contains single-page screeners designed to measure student ability levels from Kindergarten to 9th grade. Designed for classroom applications and to be administered by teachers, the *CIBS-R*

provides a complete range of data on students' skill levels, identifies both children with learning disabilities as well as those with areas of giftedness, and produces grade equivalents through criterion-referenced measurements that have been standardized and validated on children 5 to 13 years of age.

Having compared assessment options currently in use by NISD LC Math teachers and explored other readily available test instruments, our underlying question (What would be an effective diagnostic tool for classroom use in Local Curriculum Math?) appears to have a viable solution. Based upon current LC Math teacher use (28% of LC Math teachers on 43% of NISD campuses) and available research data, the Brigance® CIBS-R appears to be a good fit for the NISD LC Math program which uses three grade-levels below current academic grade as a basis for placement. K-9 diagnostics, K-12 for some applications within the new revision, matches exactly to skill levels addressed by NISD Local Curriculum programs.

Curriculum Associates (1999) have completely revised the Brigance® Comprehensive Inventory of Basic Skills (1983) to be a "consistent, on-going assessment complying with both IDEA and NCLB (p.1)." It is specifically designed to (1) identify student performance levels, (2) assist in determining instructional goals, including Individualized Education Program (IEP) goals and objectives, and (3) tracking student progress against established grade level standards. As an additional plus, The Brigance® Comprehensive Inventory of Basic Skills – Revised (2005) has been correlated to the Texas Essential Knowledge and Skills (TEKS) for Reading, Language, ESOL, and Mathematics K-8.

Whether responding to on-the-shelf availability or relying upon gut instinct, several NISD LC Math teachers have already made CIBS-R their tool of choice for determining student placement and tracking on-going performance. They are not alone. Several states have adopted

this instrument as a form of alternative assessment similar to Texas' SDAA-II testing. According to a press release in North Billerica, Massachusetts (April, 2006), "Oklahoma City Public Schools District has purchased Curriculum Associates' Brigance® assessment systems in order to enable district teachers to obtain information on the specific strengths and weaknesses of their special education students (p.1)." Similar reports indicate that Illinois, Indiana, Michigan, and New Jersey have also adopted use of this diagnostic tool. Dreyfus (2003) reports that "the New York City Department of Education, District 75…implemented the Curriculum Associates' *Brigance*® assessments across the district (p.1)."

A comprehensive study of the *Brigance*® by Central Michigan University and published in *Psychology in the Schools* (1999) concludes that …

> "the CIBS-R remains a useful and thorough criterion-referenced measure for readiness, oral language, reading, math, study skills, and written language…useful information can be obtained for planning individualized instruction. The CIBS-R is highly recommended for this purpose…the content validity of the inventory is strong…(it) continues to be a very valuable tool (p.6)"… for identifying specific strengths and weaknesses in students' academic abilities.

As Dreyfus (2003) points out in her *Today's School* article, students moving from school to school make it "very difficult to maintain consistency" from year to year or from educational provider to educational provider. "With one uniform assessment, we can compare data as a student moves form elementary school to middle and high school and as a student changes schools within the district (p.1)." When consistency exists between schools, tracking student success and maintaining meaningful goals and objectives benefits both the student and his or her educators. The student receives consistent instruction and familiar, understandable feedback

from progress checks. Teachers, likewise, are familiar with the goals and assessment models and are better able to plan worthwhile interventions. When correlation exists for instruction from one classroom to another and one campus to the next, students are assured a better quality educational opportunity. Teachers can collaborate with a common instructional and evaluative language. The Curriculum Associates' Brigance® Comprehensive Inventory of Basic Skills – Revised offers that educational advantage.

Data Collection and Methodology

Northside Independent School District (NISD) Local Curriculum (LC) Mathematics classes address diverse student needs ranging from Kindergarten through eighth grade ability levels in 6th through 12th grade students, however it was uncertain whether a single diagnostic tool exists that will effectively provide for appropriate initial student placement as well as show progress or regression against individualized goals and objectives. The purpose of this research was to (1) determine what assessment tools are in current use, (2) explore their intended purposes and effectiveness in present practice, and (3) determine whether one or more tools exist that have the necessary characteristic qualities to provide both appropriate initial placement and on-going student progress (or regression) data.

This Collaborative Action Research (CAR) group was certain that such an instrument does, in fact, exist. CAR taskforce members (CART) met to draft their initial ideas and concerns (Appendix D, Figure 1). From that first meeting, it became increasingly clear that our first impressions had to be narrowed considerably in order to have a more focused project. After a few telephone calls and several e-mail exchanges, CART agreed upon a set of "key concepts" (Appendix D, Figure 2) from which to derive a more comprehensive plan. Meanwhile, CART had formulated a "2-question survey" for NISD LC Math teachers (Appendix B, Figure 1).

CART intentions were to keep the questionnaire short and to the point in order to elicit maximum response. The month of May was rapidly coming to a close and teachers were making preparations for final days of school and summer vacations – the last thing they would want to see is *yet another survey*.

The questionnaire was sent via e-mail to each secondary campus in NISD to known LC Math teachers and their respective Special Education Campus Coordinators. To CART surprise, all 18 secondary campuses in NISD responded to the 2-Question Survey within about an hour. A quick tally of responses yielded the information displayed in Pie-Chart format as Appendix C, Figure 1. By the first week of June, additional responses had trickled in which made significant changes to our previously formulated Pie-Chart. Several campuses have more than one teacher engaged in LC Math instruction. When their input was added, a more accurate picture of current assessment trends was evident. For the purpose of completing the assignment as a requirement for PAVE II Masters in Science in Integration of Technology in the Classroom, we could easily have stayed the course with the initial data. In the interest of painting a more perfect picture of current practice and to provide a more accurate analysis, CART opted to revise the initial data (Appendix C, Figure 2).

Subsequent meetings, during May 2006, provided CART opportunity to better organize their view of the CAR project (Appendix D, Figure 3). CART was getting closer to defining the purpose and scope of their research. By the last week of school, a definitive problem statement had been finalized, the CAR project focus was reduced to three pertinent questions (Appendix D, Figure 4), and final project approval was granted by the Walden University instructor. Following the projected timeline (Appendix E, Figure 1), CART began the data collection in earnest.

As suggested by Dr. Sagor (2000), CART set out using "multiple independent sources of data to establish the truth and accuracy (p. 113)" of their hypothesis. Through Internet searches and local enquiry, following their triangulation plan (Appendix A, Figure 1), CART hoped to demonstrate that improved communication between district campuses and enhanced consistency for student placement and progress-tracking is possible through the use of a uniform assessment instrument.

CART surveyed NISD LC Math teachers (Appendix B, Figure 1) to determine what assessment tool(s) they are currently using to determine initial grade-level instruction and to conduct on-going checks for progress or regression. By limiting the survey to two questions, CART attempted to elicit maximum response participation ensuring a close approximation of present practices within district LC Math classrooms. Additionally, on-line Internet searches were conducted for (1) data relating to tests identified by the LC Math Teacher survey, and (2) information from other users outside the district. Of particular interest was assessment characteristics deemed necessary for the purpose of determining placement and tracking progress. Independent searches were made by CART, the results compared and contrasted during scheduled meetings (Appendix E, Figure 1). Informal conversations with Campus Special Education Coordinators and an interview with at least one Licensed School Specialist in Psychology (LSSP) assisted in rounding out the research. Taking advantage of the opportunity, telephone conversations with people in other areas of the country yielded additional data.

Sagor (Laureate, 2005 and 2000) stresses the importance of both *validity* and *reliability* (p.110-113) as basic requirements for any "high-quality research." Every effort was made to ensure these qualities were maintained throughout the project. Additionally, Sagor points out the existence of a third concept that enters into research discussions – *generalizability* (p.157). While

CART hoped to show that an instrument exists for effective classroom use, they did not intend to promote its use in all classrooms. Local Curriculum classrooms provide modifications and accommodations to instruction that closely parallel regular curricula but address the individual needs of students with a wide range of ability levels (Kindergarten through 9th grade, K-9). Additionally, whereas CART's intention was to show practical use for applications within LC mathematics, their research did not extend to other venues (e.g., Science, Social Studies, or Language Arts).

Another important aspect of collaborative action research (CAR), according to Dr. Sagor (2000), is a commitment "to a time line and a process for completing the work of data collection (p. 117)." Appendix E, Figure 1 outlines CART's projected sequence for collecting data, organizing and drafting the results, and submitting their finished product. Due to CART's summer work schedules and planned family vacations, they planned to complete the project a week ahead of schedule. As calendar days sped by, that self-imposed deadline resulted in long evenings and short nights. Nevertheless, CART submitted their report "on time."

Data Analysis

Survey results and on-line searches substantiates CART's contention that current practices within NISD LC Math channels lack continuity and consistency from one LC Math classroom to the next. Armed with only the results of a 2-question survey, CART can point out several inconsistencies in the current LC Math program. Across the district, NISD LC Math teachers are essentially "playing it by ear" in terms of student placement and progress tracking. Of the handful of tests mentioned by LC Math teachers, most are summative assessments ill-suited for providing the desired data.

Although no single measure should be used to make important long-term determinations (e.g. formulation of IEP goals and objectives, grade-level placement, or advancement/retention decisions), most responding classroom teachers do not clearly articulate the reason(s) for choice of instrument. Summative assessments are used at least half the time. Formative assessments may not enjoy their intended purpose. Some teachers remark that placement decisions are made on the basis of "last year's" TAKS/SDAA results. There is no indication how in-depth those results are reviewed. Math has six content standards, each of which is addressed by TAKS score sheets. CART has no means of determining this information due to the extreme limitations of its 2-question survey. It is assumed, nevertheless that in regard to TAKS/SDAA results, limited analysis is conducted, and decisions are made on less than comprehensive information.

Some teachers are simply compiling their own bank of math problems and formulating quizzes and tests based upon classroom instruction. On the surface, this may be adequate for providing report card grades and semester averages, but on closer examination may reveal a less than accurate measure of a student's actual skill or potential. As a diagnostic tool, teacher-made tests bear considerable scrutiny. Too many variables enter into the effectiveness of home-spun instruments. How experienced is the teacher at crafting effective test items? What kind of test item is it (performance-based, multiple choice, true/false)? Were all items covered during instruction? Was instruction aligned with TEKS? Is the test aligned?

At least one teacher was not at all sure what to use for assessment purposes. Her response to the survey was not used in the available data. A few teachers use on-line material almost exclusively. One prefers material from outside the country – obviously not aligned to TEKS. Some use diagnostic tools better suited for ARD decision-making than classroom instructional

placement and progress checks. Others rely on NISD Benchmark material, in whole or in part, to assess their students' skills.

A preponderance of data suggests the need for a uniform tool with which to provide accurate and timely assessments of a student's current academic functioning levels. Throughout the school year, students leave one school for another for a multitude of reasons. In view of recent weather-related catastrophic incidences (i.e. Hurricanes *Katrina* and *Rita*) the importance of having a quick assessment tool that is capable of providing valid, reliable, and consistent data is even more real necessity. Any time a new student enters a NISD classroom, some instructional interruption occurs. This disruption is magnified in LC classrooms due to the nature and mix of the student population. Maintaining instructional continuity and minimizing disruptive influences serve both the teacher and the learner. Placement decisions, made in haste or as the result of guesswork, creates more work later on. Tests used for purposes other than intended can potentially cause more long-term harm than good. Clearly, the right tool used for the right purpose is necessary.

Use of instruments not aligned with TEKS may suggest the possibility of inappropriate or misinformed IEP goals. Assessments meant as measures of cumulative or limited-focus learning may not be appropriate as a measure of grade-level ability or particular degree of skill. As seen from this rather limited research, NISD LC Math teachers currently lack a consistent yardstick with which to measure two academically important concerns; initial student placement and on-going growth or regression against established individualized goals and objectives. Northside Board Policy (FD) directs only that initial placement be made "at the grade level reached elsewhere, pending observation by the classroom teacher, guidance personnel, and the principal." Assessment guidelines (EK) are equally as vague:

"Standardized tests shall be administered at intervals…to

1. Diagnose specific skill deficiencies…
2. Provide information that can be used to plan instructional activities…
3. Provide teachers with data to use in evaluating the effectiveness of their planning and teaching…
4. Assess student achievement…and…progress…
5. Assess aspects of the instructional program…"

The current CAR indicates lack of continuity between NISD LC Math classroom practices and inconsistency of choices among LC Math teachers in terms of initial placement criteria and on-going student progress.

Action Plan

Obviously, a decision needs to be made to pursue a more thorough study into the feasibility of either (1) adopting a nationally recognized assessment package, or (2) developing a test instrument using NISD resources to align placement and progress assessments within LC Math instruction to TEKS.

This collaborative action research team suggests and recommends the uniform adoption of the Brigance® Comprehensive Inventory of Basic Skills – Revised (2005) as both an immediate and long-term fix to the problem. School departments in several parts of the country have determined that this assessment package meets or exceeds all measures of scrutiny at federal, state, and local levels. In comparisons with other instruments, CIBS-R is both economically feasible and instructionally appealing. CART recommends the Brigance® CIBS-R become available to every LC Math teacher in NISD as the standard instrument for providing

appropriate grade-level planning and placement as well as for tracking on-going growth or regression against IEP goals.

Whether used for a quick assessment for immediate instructional placement of a newly assigned student or for long-term analysis of individual student or whole class progress, the Brigance® CIBS-R meets each of this CAR's criteria: it can provide both placement and on-going progress (or regression) data quickly and accurately, it complies with I.D.E.A. and NCLB, as well as state standards, and it is criterion-referenced with normed and standardized tests. Due to its correlation to TEKS, this assessment instrument is ideal for immediate consideration as the uniform and preferred method of acquiring classroom-level determinations about student ability and performance. As such, it could additionally be considered for use by mainstream teachers as a viable identification tool for referral recommendations. Additionally, this revised version of Brigance has technology software options making it compatible with NISD technology integration practices.

This CART recommends that Special Education Coordinators (SPEDCOs) meet to discuss the merits of current LC practices and to consider adoption of some single tool for the purpose of initial student placement and on-going student progress/regression determinations. Such collaborative discourse among SPEDCOs would open the door for improved communication between campuses as well as among LC instructional levels. The adoption of a common tool would result in consistent data exchanges within a framework of continuity with a single language base. By utilizing a common measurement tool, data would be consistent and easier to interpret for both instructional purposes and special needs decision-making. The CART further recommends that NISD Central Office administrators for curriculum and instruction

conduct periodic review of Local Curriculum practices in order to provide district-wide consistency and continuity within the program.

References

Assessment and instructional resources. (2002). Austin, TX: TSBVI Functional Academics Curriculum. Retrieved May 2, 2006 from http://www.tsbvi.edu/education/IAER-ASS.html

Best practices in homeless education: Prompt and proper placement – enrolling students without records. (2006, Spring). US Department of Education: National Center for Homeless Education. Retrieved May 2, 2006 from http://www.serve.org/nche/downloads/briefs/assessment.pdf

Black, P. & Wiliam, D.(1998). *Inside the black box: Raising standards through classroom assessment.* Phi Delta Kappan, 80 (2),139-148. Retrieved May 8, 2006 from http://www.pdkint1.org/kappan/kbla9810.htm

Boston, Carol. (2002). *The concept of formative assessment.* Practical Assessment, Research & Evaluation, I (9). Retrieved May 8, 2006 from http://PAREonline.net/getvn.asp?v=8&n=9

Bradley-Johnson, S. (1999). *Test review: Brigance*. Psychology in the Schools, Vol. 36 (6). Central Michigan University: EBSCO Publishing.

Brainworks – Assessments. (2005). Carrollton, TX: Brainworks, Inc. Retrieved May 11, 2006 from http://www.brainworks.info/assess.html

Brigance, A. (1999). *Brigance® comprehensive inventory of skills – revised.* North Billerica, MA: Curriculum Associates, Inc. Retrieved May 2, 2006, from http://www.curriculumassociates.com/products/print.asp

Brualdi, A. (1998). *Implementing performance assessment in the classroom*. Practical Assessment, Research & Evaluation, 6(2). Retrieved May 5, 2006 from http://PAREonline.net/getvn.asp?v=6&n=2

Bryant, D. (2005). *Working with your child's teacher to identify and address math disabilities*. Retrieved May 2, 2006 from http://www.schwablearning.org

Curriculum Associates, Inc (2005). *Brigance® comprehensive inventory of basic skills – revised: Correlated to teks.* Retrieved May 2, 2006 from http://www.CurriculumAssociates.com

Curriculum Associates, Inc (2005). *Texas essential knowledge and skills (teks) reading/language/esol/mathematics k-8 correlated to brigance® comprehensive inventory of basic skills –revised.* Retrieved May 11, 2006 from http://www.CurriculumAssociates.com

Curriculum Associates, Inc (2005). *Brigance® inventories.* On-line brochure. Retrieved May 26, 2006 from http://www.Curriculum Associates.com

Curriculum Associates, Inc (2006). *Oklahoma city public schools choose brigance® inventories for special education assessments and interventions.* On-line Press Release: April 12, 2006. Retrieved May 26, 2006 from http://www.Curriculum Associates.com

Curriculum Associates, Inc (2006). *Cibs-r management system – Texas version Brigance diagnostic user guide.* Retrieved May 26, 2006 from http://www.Curriculum Associates.com/cibsr/demos/Texas%5Ft

Donovan, T. (2002). *Illuminating understanding: Performance assessment in mathematics*. Adventures in Assessment, Vol. 14. SABES/World Education, Boston, MA.

Dreyfus, F. (2003). *Uniform assessment for all students in alternate assessment.* Today's School: Shared Leadership in Education. Retrieved May 12, 2006 from http://www.peterli.com/archive/ts/828.shtm

Excel Math (2002). *Excel math placement tests: K-6 curriculum.* Poway, CA: AnsMar Publishers, Inc. Retrieved May 12, 2006 from http://www.excelmath.com

Kahl, S. (2003). *Issue paper: Measurement error, human error, and decisions based on a test*. Measured Progress. Dover, NH. Retrieved May 11, 2006 from http://www. Measuredprogress.org/Resources/Publications.html

k12® Curriculum (2006). *Homeschool curriculum, virtual academy schools, and distance learning programs for elementary and high school grades k-12*. Retrieved May 10, 2006 from http://www.k12.com

La Marca, P. (2001). *Alignment of standards and assessments as an accountability criterion.* Practical Assessment, Research & Evaluation, 7(21). Retrieved May 5, 2006 from http://PAREonline.net.getvn.asp?v=7&n=21

Laureate Education, Inc. (Executive Producer). (2005). *Problem formulation, part one.* Presentation software video program two: Dr. R. Sagor. Los Angeles: Author.

Laureate Education, Inc. (Executive Producer). (2005). *Problem formulation, part two.* Presentation software video program three: Dr. R. Sagor. Los Angeles: Author.

Laureate Education, Inc. (Executive Producer). (2005). *Collaborative action research.* Video Program One and Two/R. Sagor. Los Angeles: Author.

Math Bridge(2005). *Education for kids*. Retrieved May 19, 2006 from http://www.edu4kids.com/

McCarthy, B. (1987). *The 4mat system: Teaching to learning styles with right/left mode techniques*. Barrington, IL: EXCEL, Inc.

McCarthy, B. (1996). *The 4mat coursebook: Volume I, fundamental training.* Barrington, IL: EXCEL, Inc.

McCarthy, B. (1996). *The 4mat system: Volume II, intermediate training.* Barrington, IL: EXCEL, Inc.

McMillan, J. (2000). *Fundamental assessment principles for teachers and school administrators.* Practical Assessment, Research & Evaluation, 7(8). Retrieved May 5, 2006 from http://PAREonline.net/getvn.asp?v=7&n=8

Messick, S. (1989). Validity. (In R.L. Linn (Editor), *Educational Measurement (3rd Edition).* New York, NY: American Council on Education – Macmillan Publishing Company.

Mitchell, J. (2003). *Menlo park city school district mathematics program recommendations*. (Action Plan). Retrieved May 23, 2006 from http://www.mpcsd.org/pdf/mathreport.pdf

Morris, S.& McCarthy, B. (1995). *4mat in action: Sample units for grades k-6.* Barrington, IL: EXCEL, Inc.

Morris, S.& McCarthy, B. (1995). *4mat in action: Sample units for grades 7-12.* Barrington, IL: EXCEL, Inc.

Muir, M. (2004). *Mathematics: Research brief.* The Principal's Partnership, Union Pacific Foundation. Retrieved May 22, 2006 from http://www.principalspartnership.com /mathtests.pdf

Nastali, N. (2001, October). *Star math kit*. Teaching Children Mathematics, 8(2).Retrieved May 3, 2006 from http://wilsontxt.hwwilson.com/pdffull/00445/lqt9r/0sm.pdf

NISD Board Policy. (1997) *Assessment (ek – local)*. Retrieved May 23, 2006 from http://tasb.org/policy/pol/private/015915/pol_highlight.cfm?policy=EK(LOCAL).html

NISD Board Policy. (2004) *Assessment (ek – legal)*. Retrieved May 23, 2006 from http://tasb.org/policy/pol/private/015915/pol_highlight.cfm?policy=EK(LEGAL).html

NISD Board policy. (2006) *Admissions (fd – local)*. Retrieved May 23, 2006 from http://tasb.org/policy/pol/private/015915/pol_header.cfm

Sagor, R. (2000). *Guiding school improvement with action research.* Alexandria, VA: Association for Supervision and Curriculum Development.

Salvia, J. & Ysseldyke, J. (1998). *Assessment,* 7th Ed. Boston, MA: Houghton Mifflin Co.

Sattler, J. (1992). *Assessment of children: Revised and updated third edition*. San Diego, CA: Jerome M. Sattler, Publisher, Inc.

Special education resource library materials. (2005). Champaign, IL: Department of Special Education. Retrieved May, 2, 2006 from http://www/ed.uiuc.edu/sped/SpEdDept.ResourceLibraryMaterialsAssessments.htm

SingaporeMath.com Inc (1998). *Placement guides and tests*. Oregon City, OR: Singapore Mathematics. Retrieved May 10, 2006 from http://www.singaporemath.com/placement.htm

STAR Math (2006). *Star math gives you fast, accurate results!* Renaissance Learning, Inc. On-line BrochureRetrieved May 3, 2006 from http://www.renlearn.com/starmath/overview/default.htm.

USDLA Journal. (January, 2003). *Texas math diagnostic system (tmds) provides online math assessment tool*. Vol. 17, No. 1. Retrieved May 23, 2006 from http://www.usdla.org/html/journal/JAN03_Issue/techex02.html

Yssekdyke, J. (2001). *Reflections on a research career: Generalizations from 25 years of research on assessment and instructional decision making*. The Council for Exceptional Children (2001, Spring), 67(3), p. 295-309.

Appendices

A Triangulation Matrix – Information Sources

B Two-Question Survey – Addressed to Current LC Math Teachers

C Priority Pie – Assessments in Current Use

D Graphic Reconstruction – Research Focus

E Proposed Anticipated Timeline for Collaborative Action Research

Appendix A

Figure 1. Data Collection Matrix for Collaborative Action Research by Liz Alvarado, Kim Luksa, and Rocky Harvey

Research Question	Data Source #1	Data Source #2	Data Source #3
1. What assessment tools are currently being used by NISD LC Math teachers?	Short 2-question survey directed to NISD LC Math teachers.	Query campus Special Education Coordinators and/or Central Office LC Coordinator.	Compare findings with other school district assessment choices from on-line sources.
2. What differences (if any) exist between available test instruments in use currently by NISD LC Math teachers?	Question LC Math teachers using a given test for their affective feedback.	Conduct an on-line Internet Search of additional users of tests used by NISD LC Math teachers.	Conduct an on-line Internet Search of primary source material (test developers and/or promoters).
3. What characteristics are deemed important for a test used to determine both instructional level placement and on-going progress/ regression data?	Question LC Math teachers about what information they want and/or need.	Seek information from on-line sources.	Interview campus LSSP about test purposes and criteria related to reliability and validity.

Appendix B

Figure 1. **Two-Question Survey**

As a Northside Independent School District (NISD) Local Curriculum (LC) Mathematics teacher:

(1) What assessment tool(s) do you currently use to determine initial instructional placement of new students?

Why?

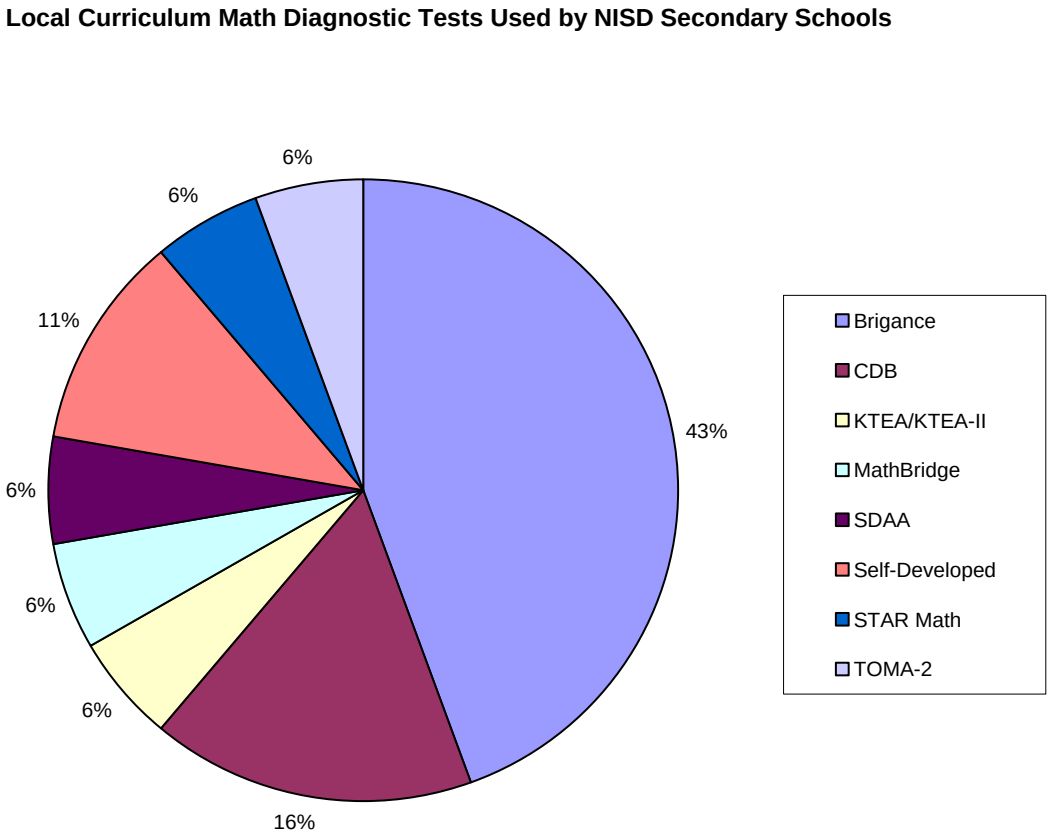
(2) What assessment tool(s) do you currently use in order to track progress or regression against goals and objectives?

Why?

[Note: This survey was e-mailed to all Local Curriculum Math teachers in NISD, May 2006]

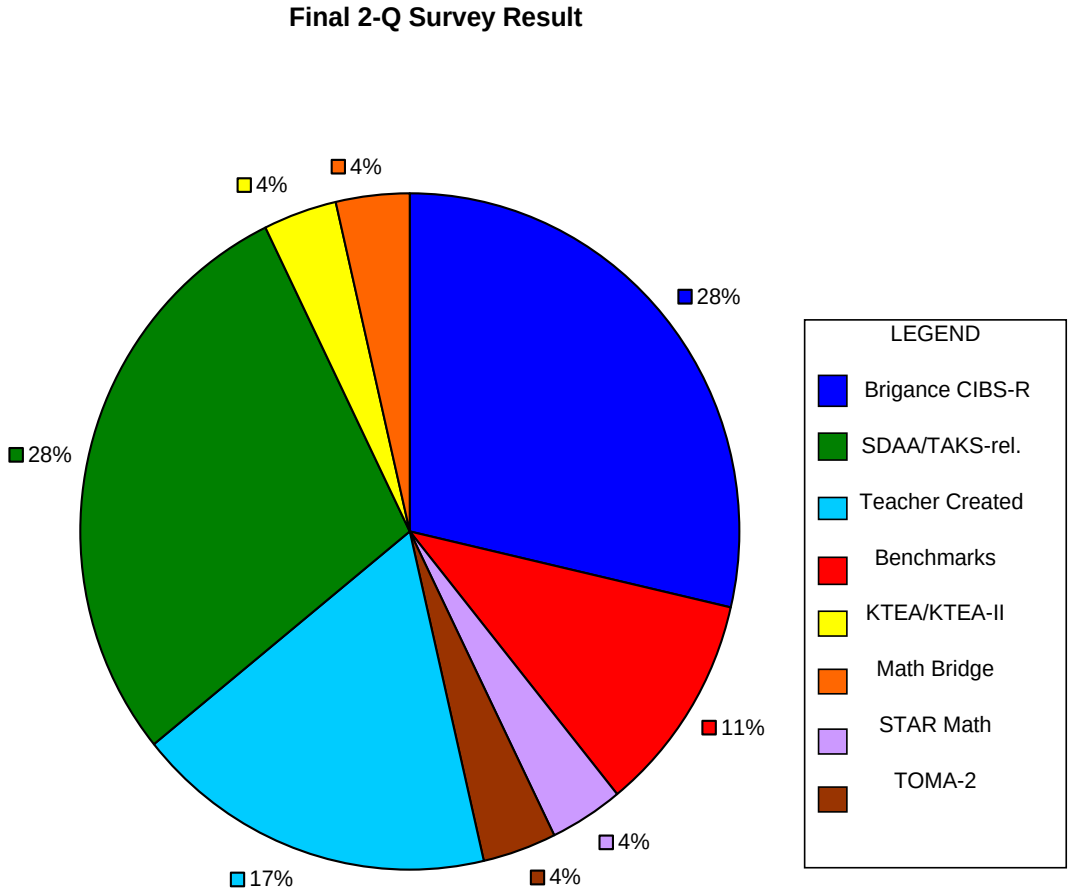
Appendix C

Figure 1. Priority Pie



[Based upon results of "2-Question Survey" May 2006]

Figure 2. Priority Pie - Revised



[Based upon final responses from NISD LC Math teachers, June 2006]

Appendix D

Figure 1. Initial Ideas Deemed Important for Research

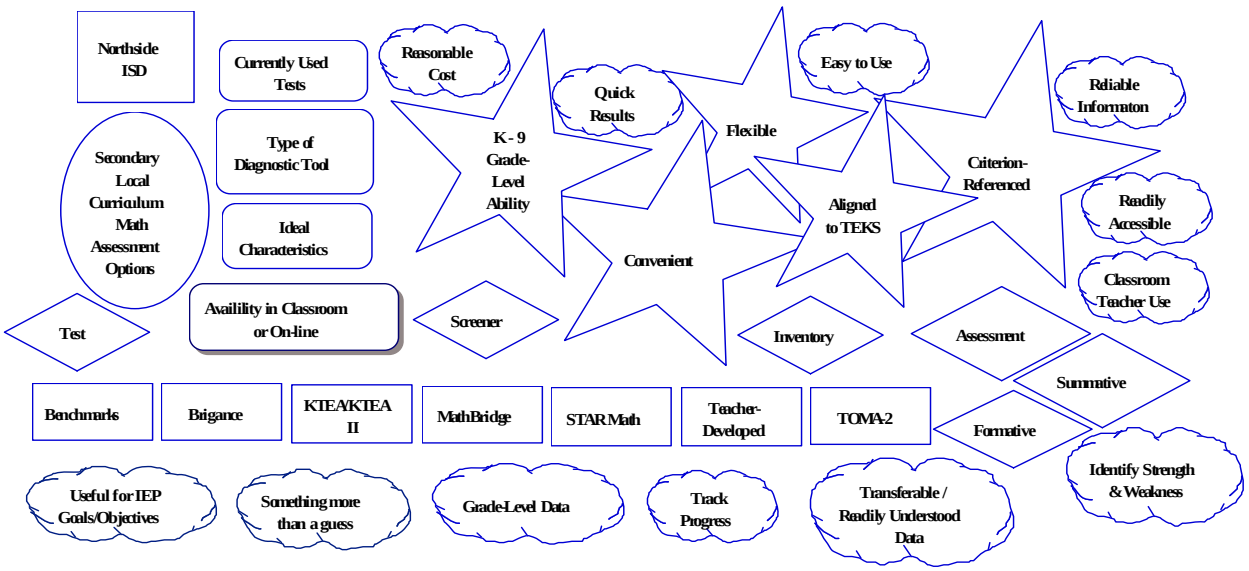


Figure 2. Key Concepts for Collaborative Action Research Project

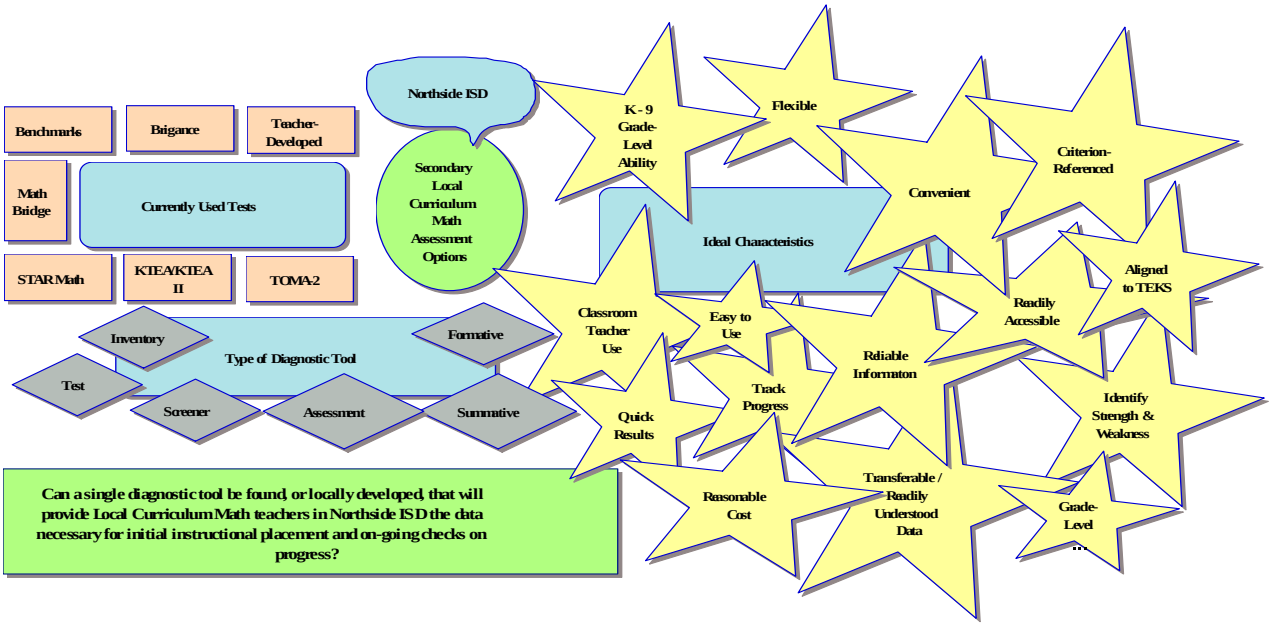


Figure 3. Data Relevant to Collaborative Action Research.

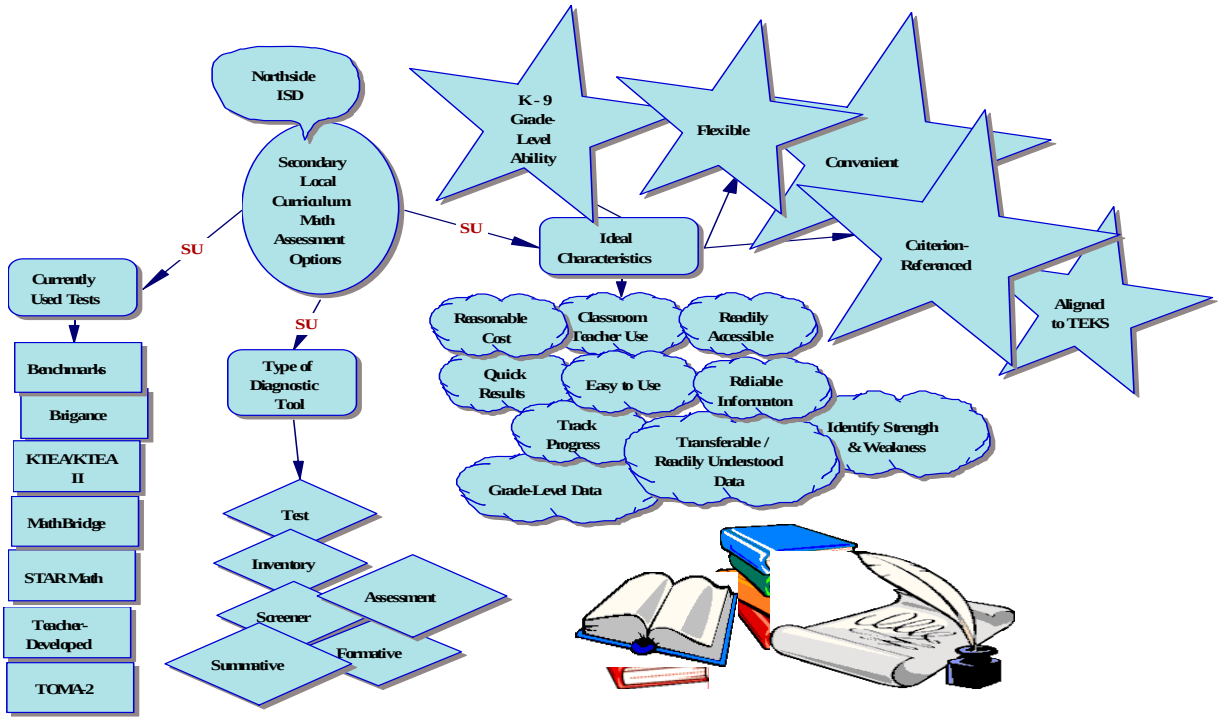
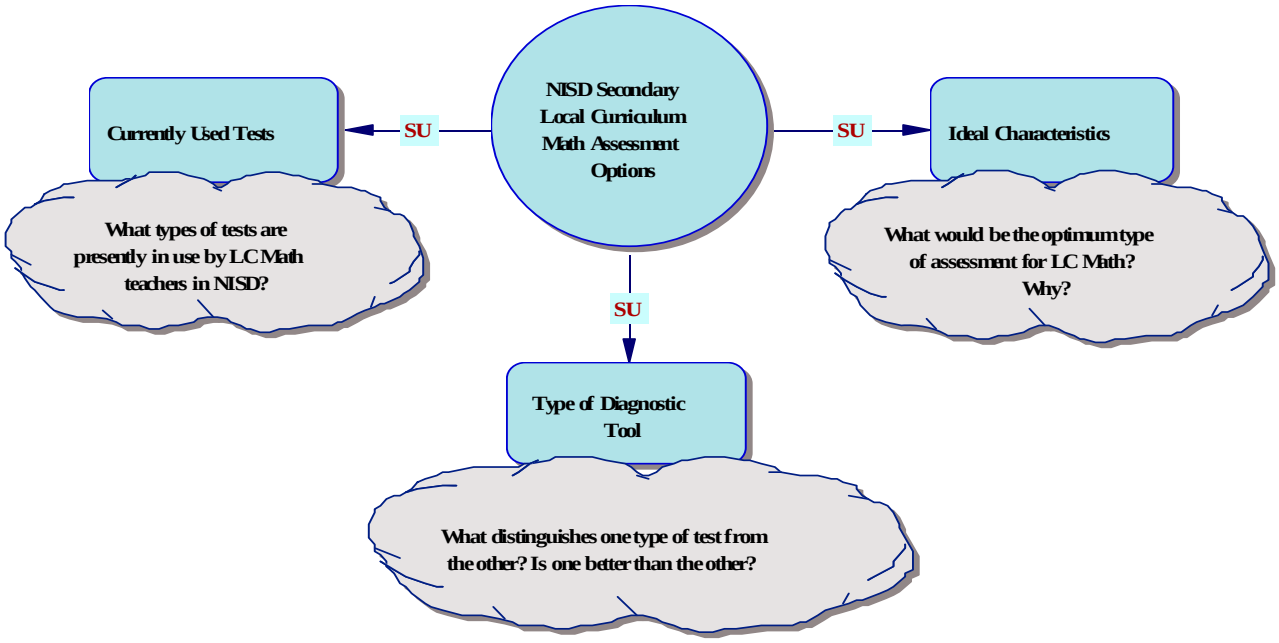


Figure 4. Key Concepts Fitting *The Two-Step Test* for Significance and Uncertainty

"3 Key Questions"



[*S* indicates significant importance; *U* suggests considerable uncertainty]

Appendix E

Figure 1. **Anticipated Data Collection Timeline For Collaborative Action Research (CAR)**

May – June 2006

Sun May 28 anticipated approval to begin in-depth research; meet with CAR group

Tue May 30 e-mail LC Math teacher survey

Wed May 31 begin organizing responses and results of survey

Thr June 1 each CAR group member perform precursory on-line search for data

Fri June 2 meet w/ CAR group to organize data and review focus of further search efforts

Sat June 3 sort through findings, e-mail CAR members with list of results

Mon June 5 through Thr June 9: Staff Development classes all week

Sat June 10 meet w/ CAR group to combine drafts into one

Mon June 12 through Thr June 15: e-mail exchanges with final ideas

Fri June 16 meet w/ CAR group to proof revision for final write

Sat June 17 CAR group e-mail final thoughts prior to submission

Sun June 18 Submit final paper with all attachments for grade