
by

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has been approved

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of the Requirements for the Degree

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ABSTRACT

The purpose of this study was to assess the effectiveness of the D.I.S.C.O.V.E.R. Process in the identification of gifted English as a Second Language Learners at Palomino School in Phoenix, Arizona.

The literature examined included explanation of Javitis Gifted and Talented Students 1994 Education grant. The history, procedures, advantages, and disadvantages of the D.I.S.C.O.V.E.R. Process are all discussed in detail. Four other Javitis Grant gifted identification methods aimed at identifying nontraditional populations of students are presented. The reader will also find the Cognitive Abilities Assessment defined because it is the chosen assessment for the Paradise Valley School District in addition to the use of the D.I.S.C.O.V.E.R. Process which is used exclusively at Palomino Elementary School.

The assessment focused primarily on analysis of the D.I.S.C.O.V.E.R. Process for Palomino School's spring 2000, second grade ESL population which consisted of one hundred fifteen children (four bilingual classrooms). The researcher was examining whether or not the national norm of three percent of the ESL children tested were identified for gifted services at Palomino School for the fall semester of 2000.
Results showed that Palomino School had identified eleven percent of its second grade ESL (Spring 2000) population for gifted services using the D.I.S.C.O.V.E.R. Process. The eleven percent is above the national percentage required for gifted identification which is three percent of the entire school population. The majority of students enrolled in gifted education at Palomino School are Hispanic children which reflects the high Hispanic enrollment throughout the school. D.I.S.C.O.V.E.R. has been a powerful assessment tool for Palomino School and will be used in future identifications of gifted students who are English as a Second Language learners. At least sixty-two English as a Second Language students are successfully attending and participating in the gifted program during the 2000 - 2001 academic year at Palomino School.
DEDICATIONS

The researcher wishes to dedicate this research project to all of the English as a Second Language students that she has taught over the last nine years.

This thesis is also dedicated to the researcher's husband, Stephen Olney, who has helped the researcher immensely. Also, it is dedicated to her daughter, Stephanie Olney, who has been very patient with her mommy as she invested many hours on her thesis project.
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CHAPTER 1
THE PROBLEM

Introduction

Congress declared in 1994 that "...gifted and talented students from economically disadvantaged families and areas, and students of limited-English proficiency are at greatest risk of being unrecognized and of not being provided adequate or appropriate educational services" (Pub. L. 20-8032). According to Ford and Harris (1999), "Projections indicate that ...by 2020, Hispanic Americans are expected to make up 25% of the nation's school-aged population. The largest groups of Hispanic Americans include Mexican Americans (62%), followed by Puerto Ricans (12%)" (p. 8). Many minority children who may be gifted or talented are overlooked in the selection process because they may be doing just average or a little above average work in the classroom (Perino and Perino 1981).

It was observed by the researcher during the 1997 - 1998 school year, that no E.S.L. students throughout the entire 1,300 kindergarten through sixth grade student body were being classified and/or serviced by gifted education at Palomino Elementary School in Phoenix, Arizona. Yet, it was observed by the researcher in her sixth grade ESL classroom, that a few of her students had obtained superior linguistic abilities by
demonstrating biliterate skills (proficiencies in reading, writing, and speaking two languages fluently) in her classroom. The researcher then began to ask the principal and district administration questions about why E.S.L. students were not identified for gifted programming. The reason given consistently was that E.S.L. students were not proficient enough in English to pass the Arizona standardized gifted test chosen by the Paradise Valley School District which was the Cognitive Abilities Test. In 1997, all Paradise Valley School District students need to score within the top 3 percent of the nationally normed school population on the Cognitive Abilities Test exam to be admitted into gifted education.

Rivera's 1981 case study of gifted bilingual children in Albuquerque, New Mexico found that often an English speaking gifted Hispanic child displayed a relatively poor vocabulary but could use English to express abstract verbal concepts. Rivera (1981) further stated that these children may have poor English language skills, not because of inherently poor verbal ability, but rather language models (parents) that have learned to speak English as a second language. He used the children's native language and nonverbal measures to test his bilingual students for gifted identification.

Ernesto Bernal (1994) professed that one does not need to speak English to be intelligent. He found that very bright children for whom English is a second language have been deprived of an appropriately challenging education until they have mastered English in the public schools in the United States. Several researchers (Bernal, 1992, Frasier, 1992; Kitano, 1991) recommend that very bright children who are limited English proficient be cultivated as bilinguals in an optional, bilingual program of studies for gifted
children. The ideal outcome of gifted identification is gifted services for every identified child (Bernal, 1994).

State legislation may be a barrier to the identification of special populations (i.e. culturally diverse families, economically disadvantaged backgrounds, or gifted students with disabilities). A 1995 study submitted by Coleman and Gallagher found that state legislative policies were not major obstacles to more comprehensive identification of gifted students.

Arizona's educational policy in regard to the identification, assessment, and classification of L.E.P. students into gifted programs is defined in Arizona Revised Statues (ARS) 15-761 and (ARS) 15-764; mandatory services for the gifted student in Arizona include a list of approved tests for determining special education assistance to gifted students. The adopted tests provide individual scores for quantitative reasoning, verbal reasoning, and nonverbal reasoning. These tests are also capable of providing reliable and valid scores at the highest ranges of the score distribution. The governing board in each Arizona school district is given the right to modify the course of study and adapt teaching methods, materials, and techniques to provide educationally for those pupils who are gifted and possess superior intellect or advanced learning ability (or both) but may have an educational disadvantage resulting from a difficulty in writing, speaking or understanding the English language due to an environmental background where a language other than English is primarily or exclusively spoken.

Services and programs for the gifted pupils, as stated in (ARS) 15-764D, may not be provided in facilities separate from the facilities used for other gifted pupils. The
Paradise Valley Unified School District is aligned with these state gifted identification policies.

**Development of the Problem**

Nationally, only 3 percent of the student populations are considered to be gifted. Most national and state gifted services begin in the third grade. For this reason, only populations of elementary grades three through six will be examined in this paper. During the 2000-2001 academic year, Palomino has a student population for grades three through six of 748 students and 441 (59%) of these students are classified as ESL learners. This is a 9.5% increase over the 1999-2000 school year of 677 students in third through sixth grade with 374 (55%) of these students being classified as ESL learners. The 3% projection of 807 students for the 2000-2001 school year should be 27 gifted students (Sassy Database, 2000).

This paper examines if Palomino is identifying both LEP and non-LEP students during the 2000-2001 school year at a 3% or higher identification rate using the Cognitive Abilities Test and the D.I.S.C.O.V.E.R. Process. Using only the Cognitive Abilities Test in 1999-2000, only 17 of the 677 students were identified and serviced by gifted education. The number of gifted students participating at Palomino by the end of the 1999-2000 school year was 11 students. This identification and participation rate (with no ESL students being identified) was only 1.6% which is under the state requirement of at least the top three percent of the student body.
Need for the Study

"A great number of minority group gifted students are alienated by their educational experiences in a non-responsive educational system than are gifted students of the dominant ethnic group. This is manifest in the high dropout rates of the minority group" (Bernal and Reyna, 1974, p. 3).

As of January, 2000, the state of Arizona has not adopted the D.I.S.C.O.V.E.R. Process as one of its state board approved identification tests because it is not a nationally normed test (Anderson, 2000). Therefore, there is a need to study its effectiveness in the identification of E.S.L. students at Palomino School. This research examines if the benefits of using the D.I.S.C.O.V.E.R. Process outweigh the disadvantage of not being a nationally normed state approved test.

Purpose of the Study

The purpose of this study was to determine the effectiveness of The D.I.S.C.O.V.E.R. Process in the identification of gifted English as a Second Language students at Palomino Elementary School in Phoenix, Arizona.

Research Question

How effective is The D.I.S.C.O.V.E.R. Process in the identification of English as a Second Language students for gifted education services at Palomino Elementary School?
Definition of Terms


Cognition: "The act or faculty of knowing, including both awareness and judgment." (Webster's, 1972, p. 160).


Convergent Thinking: "It is the ability to find the best right solution to problems...It has been estimated that 70 percent of school curriculum is made up of convergent-type tasks." Perino, S.C. and Perino, J. (1981) Parenting the Gifted - Developing the Promise. R.R. Bowker Company, New York, p. 43.

Creativity: Torrance (1966) defines creativity as "the natural human process which occurs when a person becomes aware of a problem or an informational gap. He begins to form ideas or hypotheses, then proceeds to test and revise them and finally, communicates the results." Bernal, E. Jr. and Reyna, J. (March 1974) Analysis of Giftedness in Mexican American Children and Design a Prototype Identification Instrument. Austin, Texas. ED 090 743 p. 12.
Criterion Referenced Test: "Measures a person's development of particular skills in terms of absolute levels of mastery."

Disadvantaged Child: "Being reared by poor, lower class native parents out of the cultural Mainstream."


Divergent Thinking: "Instead of focusing on the one best right answer to a problem, a person considers many alternatives. When you think divergently, you emphasize the number and variety of options."

ERIC: Educational Resources Information Center - Research done for public use by the Office of Educational Research and Improvement in Washington, D.C.


First-Order Knowledge: "Knowledge that does not engage the formal, typically written representation system that is central in schooling."

Gifted and Talented Children: "Those identified by professionally qualified persons who, by virtue of outstanding abilities, are capable of high performance. These are children who require differentiated educational programs and/or services beyond those normally provided by the regular school program in order to realize their contribution to self and society."
Informal Assessment: "Any assessment that involves collection of data by anything other than a norm-referenced (standardized) test."

Intelligence: "An inferred ability, a term or construct used to explain differences in present behavior and to predict differences in future behavior."

Intelligence-Fair Task: "Minimal language involved in the spatial and logical-mathematical tasks, and minimal spatial/logical-mathematical ability required for the verbal tasks."

Intelligence Quotient (I.Q.): "The ratio of mental age (MA) to chronological age (CA) multiplied by 100 (100 x MA/CA), one whose mental age is average for his or her chronological age group has an I.Q. of 100."

Javits Grants: Grants that are provided to "state and local education agencies, institutions of higher education, and other public and private agencies ...to meet the needs of talented and gifted students." (U.S. Department of Education, 1994, p. 1).

L.E.P.: "Limited English Proficient (In recent years, greater emphasis sometimes has been placed on English proficiency as compared with English speaking, because many students who speak English are not sufficiently proficient to succeed in school.)" Levine D. U. and Levine R.F. (1996) Society and Education. Allyn and Bacon, Boston, MA. p. 318.

Matrix: "Is merely a mathematical formula in which different elements such as test scores and teacher recommendations are weighed."

Multiple Intelligences: "Another broad approach to identifying giftedness. This one was proposed in 1983 by developmental psychologist Howard Gardner in his book, Frames of Mind. Gardner's list comprised seven categories: Linguistic (making meaning of words, Logical-mathematical (the ability to find patterns and order); spatial (the ability to perceive the world with accuracy and recreate or alter that perception); bodily-kinesthetic (moving one's body skillfully); musical; interpersonal (high social skills); and intrapersonal (the ability to understand one's own and

Nonverbal Reasoning: "...refers to a student's ability in spatio-temporal and abstract thinking. This reasoning also refers to how well students solve problems using shapes and figures.


Norm-referenced Devices: "Tests that compare an individual's performance to the performance of his or her peers."


Observers' Role in Discover Process: "The observers sit at tables with small groups of children. For each activity they have a one-page sheet for recording observations. They write what they see or hear, rather than interpretations of behavior. Observers are responsible for asking probing questions and encouraging all children to participate. Observers record student behavior through photographs, audio tapes, and video tapes. The observers should show no favoritism or preference for the products of one child over those of another. Observers should not be responsible for behavior or classroom management."


Performance Test: "Non paper-and-pencil tests that require the student to engage in some type of process, produce a product, or both."


Quantitative Reasoning: "...refers to a student's ability in understanding the elements of number theory, or the application and analysis of number problems. This reasoning also refers to how well students solve problems using numbers."


Reliability: "Consistency of measurement; the extent to which a test is consistent in measuring whatever it measures."

Sample: "The representative subset of the population."

Second-order knowledge: "Knowledge that is displayed in a formal system of representation such as written representation."

Spatial Reasoning: involves being able to understand the relationship of it and to surrounding space.

Standardized Test: "A test administered under standard conditions to extend the basis for score interpretation beyond that particular setting."

Stanford Binet: "...was designed for use with persons from age two through adulthood, and takes approximately one hour to administer..."
This test yields a Mental Age (M.A.) which indicates whether or not a child can pass or not pass tasks usually expected of an older or younger child. His test scores are commonly used to predict school performance.

Test: "A predetermined set of questions or tasks to which predetermined types of behavioral responses are sought."

Testing: "Exposing a person to a particular set of questions in order to obtain a score."

Validity: "Is traditionally defined as whether a test measures what it purports to measure." (Kubiszyn & Borich, 1990)

Verbal Reasoning: "...refers to a student's ability in oral and written expression, reading and comprehension skills, and literal understanding and use of words. This reasoning also refers to how well students solve problems using words."
Weighted Score: "Is a score whose value may be doubled or tripled depending on the importance of the item the score represents in the matrix, such as achievement."

CHAPTER 2

LITERATURE REVIEW

Introduction


This chapter examines the D.I.S.C.O.V.E.R. Process in detail. The testing process is presented as well as background information as to how the process got started. Researched advantages and disadvantages of implementing the D.I.S.C.O.V.E.R. Processes are presented at the end of the discussion of the D.I.S.C.O.V.E.R. Process testing sequence. The chapter also highlights other researched methods (Draw-A-Man Test, W.I.S.C., Interview with Behavior Scale, and Case Study Approach) for identifying gifted E.S.L. learners. These other methods are presented so that comparisons can be made with the effectiveness of the D.I.S.C.O.V.E.R. Process.

The Office of Civil Rights has embraced the use of the D.I.S.C.O.V.E.R. Process with minority students (The University of Arizona, http://w3.arizona.edu/discover/).

The use of Javits funds included: "(2) establishment and operation of model projects and exemplary programs for serving gifted and talented students, including innovative methods for identifying and educating students who may not be served by traditional gifted and talented programs..." 8034 B2

In addition to other agencies, the Jacob K. Javits Gifted and Talented Students Education Act of 1988 was designed to provide monetary assistance to state and local educational agencies. Special emphasis is on students from economically disadvantaged families and students of limited English proficiency. One type of project funded for three years is a model project and exemplary program for the identification and education of gifted and talented students. Funding for the second and third years is contingent upon satisfactory performance during the first year of implementation and availability of funds.

Four other nontraditional testing methods that have earned a Javits Grant will be presented in this paper. They are: Raven's Progressive Matrices; System of Multicultural Pluralistic Assessment (Lewis and Mercer, 1978); Torrance Tests of
Creative Thinking (Torrance, 1977); Cartoon Conservation Scales (DeAvila, 1976).


The acronym D.I.S.C.O.V.E.R. means: Discovering Intellectual Strengths and Capabilities while Observing Varied Ethnic Responses. Project D.I.S.C.O.V.E.R. was pioneered by Professor C. June Maker in 1987. Her early research showed how adults became successful even though they had childhood disabilities that prevented a lot of school success. The results of her research encouraged Maker to redefine giftedness (Kornhaber, 1997).

Around 1991, June Maker piloted D.I.S.C.O.V.E.R. (Originally named STEP-UP because of work with Sisk) at four sites on Navajo reservations. The assessment was brought to the Tucson Unified School District because of the need to increase minority participation in gifted programs. There was a committee established by the U.S. Office for Civil Rights set up to monitor the district. An ultimatum was made by the committee that if minority recruitment was not increased by the end of the 1991-1992 school year the gifted and talented program would be eliminated.

The purpose of the D.I.S.C.O.V.E.R. Process was to provide a setting in which children can demonstrate a wide range of problem solving abilities in several areas of intelligence. The D.I.S.C.O.V.E.R. Process is modeled after H. Gardner's theory of Multiple Intelligences. To Gardner, intelligence involves the use of problem-solving skills that allow people to solve genuine problems by creating effective solutions and find or
create new problems. An intelligent person is persistent even when the problem is
difficult. Bernal (1994) mirrors Gardner's ideas because he believes giftedness involves
high levels of creativity and a special type of motivation. With this level of creativity and
motivation, one pursues complex goals even when various tries of modification and
adjustment are needed. Thus, the intelligent person seeks success far more than he or she
fears failure.

The D.I.S.C.O.V.E.R. Process has been used with a variety of minority
populations which included: African-American, Anglo-American, Navajo, Tohono
O'Odham, and Mexican-American. In addition to being utilized in Arizona,
D.I.S.C.O.V.E.R. has been adapted throughout districts in the United States which include
Alaska, Colorado, New Mexico, Wisconsin, Minnesota, North Carolina, California,
Kentucky, and Oregon. Several foreign countries such as Canada, Mexico, England,
China, and Australia have incorporated the D.I.S.C.O.V.E.R. Process. This culture-
specific approach is appealing because students of different cultures do not have to meet
dominant culture expectations to qualify for a gifted program (Maker, 1992; U.S.
Department of Education 1994).

**Procedures For The D.I.S.C.O.V.E.R. Process**

According to Maker, Niçソン, and Rogers (1995) there are a total of five activities
for the D.I.S.C.O.V.E.R. identification process. They are math pre-assessment, story
writing pre-assessment, Pablo, Tangrams, and storytelling. This paper examines what is
required for a second grade Spanish bilingual classroom day of observations. Students are
given the math and story pre-assessments by their classroom teachers before observers go
into the classroom for the three remaining activities. The pre-assessments are usually
graded, discussed, and ranked before observers enter the classroom. The observers then
record observations for Pablo, Tangram, and storytelling assessments during one school
day. Breaks are provided between each activity and observers rotate to new tables for a
new activity. At the end of each observed activity the observers debrief and evaluate what
they saw during the activities. Students are usually normed according to what happened in
their classroom. At the end of the day, all of the scores are recorded and tabulated and
potential gifted students are identified. All lists, work samples, and photos are collected to
be stored with that classroom's data folder. All information is saved for verification of the
students' entries into gifted programming.

Math Pre-Assessment

The two pretests that are given by Maker, Nielson, and Rogers' 1995 unpublished
set of instructions are traditional second-order knowledge tests. What this means is that
students are asked to write what they know in a formal system of representation-numeric
or alphabetic. The regular classroom teacher administers these assessments a few days
prior to the observers' visit.

The math pre-assessment has a sampling of seven simple operational problems
(including fractions). The three magic squares consist of 3 rows and 3 columns. Students
need to use a stated operation to solve vertical and horizontal problems. The final magic square is created by the student using whichever operation he/she chooses with the student's original numbers and answers. Students are given three numbers that are somehow part of a fact family. They have to create as many true problems using valid operations. The final part of the assessment involves writing one's own problems on the backside of the test paper. Students must think of as many problems as possible with the answer of, for example, twenty. It is common for students to request another sheet of paper to include more of their original problems. This activity is not timed.

**Story Writing Pre-Assessment**

The story writing task, however, is untraditional because of its use of an open-ended question. The students are asked to write about anything that they wish, in the language that they prefer with no time limits. Students are told that can write about something that happened to them or something that is imagined. They are informed that they should not be preoccupied with the spelling of words, and that the story will not be graded by the classroom teacher (Maker, Nielson, and Rogers 1995).

**Pablo**

There are three nontraditional activities as stated in Maker, Nielson and Rogers' unpublished set of instructions (1995) that are done in one day by trained observers. They are: Pablo, Tangrams, and Storytelling. The observers go into the children's regular
classroom where their normal teacher reads the directions for the activities to them. If needed, for example in a bilingual classroom, the teacher will read the instructions in the students' native tongue. The desks are arranged in groups of four to six students.

Butcher paper is used to cover all of the desks so that Pablo and Tangram pieces are easily visible and less likely to get lost. All students either wear a name tag or place one on top of their desks. One trained D.I.S.C.O.V.E.R. Observer will be at each table. Normally, about six team members participate in each classroom observation.

The Pablo activity is the first scheduled activity. Requirements for the activity are an understanding of the necessity of materials and time (see Table 1). The observer introduces herself to a table group of four to six students. Then she records the names of each student on a grid paper containing six activities. A seating chart is placed at the top section of the grid paper in order to be able to identify new students and maintain accurate interpersonal records.

<table>
<thead>
<tr>
<th>Table 1: Materials and Time Schedules for Pablo Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials:</td>
</tr>
<tr>
<td>120 piece Pablo set</td>
</tr>
<tr>
<td>75 connectors</td>
</tr>
<tr>
<td>tape/tape recorder</td>
</tr>
<tr>
<td>Polaroid camera</td>
</tr>
<tr>
<td>Grid recording paper</td>
</tr>
<tr>
<td>Mechanical pencil</td>
</tr>
<tr>
<td>Time:</td>
</tr>
<tr>
<td>40 minutes</td>
</tr>
</tbody>
</table>

The Pablo pieces are a variety of geometric shapes such as circles (quarter and half), trapezoids, squares, and triangles. There are freeform shapes such as wavy lines, teardrops, and lollipop-like pieces. The colors used on these pieces include: Black, white, red, yellow, orange, blue, turquoise, and grey.

Once the observer and student introduce themselves the Pablo pieces are placed on the tables without connectors. The first task is free-play (5 minutes) designed to acquaint the students with the Pablo pieces. Next the children are asked find pieces to make a design that looks similar to the shape that the observer is holding in front of them (1 minute). The children are told that they are to select one of the shapes and use two or more Pablo pieces to make the shape that is presented in a photo (3 minutes). The fourth task has the observer holding up another picture (familiar to the students' natural environment) and the children are instructed to focus on making one object from that picture (six minutes). For example, students in Arizona are shown pictures of a barrel cactus flower. In the fifth exercise students are progressing towards the open-ended tasks with the addition of connectors which allow for 3-Dimensional representation and movement representation. Each student receives a dozen connectors and are instructed to make something such as an animal (10 minutes). They are invited to tell about their creations. Finally, students are encouraged to make anything that they would like to using as many connectors and Pablo pieces as they would like (10 minutes). The observers draw each of the student's drawings on the grid paper (Maker, Nielson, and Rogers 1995).
Tangrams

The next activity is Tangrams (see table 2 for Material and Time Schedule). The observers rotate to new tables. Students count and organize shapes to make sure that they have the 21 pieces necessary to perform the activities. Students are given a demonstration of piece combinations by the classroom teacher. For example, they are shown how two small triangles can make a larger triangle. Students will practice making what the teacher demonstrated.

The observers record the time and order that the students use to complete each task. Student clues are also recorded, but are only given after five minutes of working on the tasks/page. The students are not penalized for clues that are simple reminders such as "You have enough pieces." Sometimes the observer has the student count the pieces in case one is missing and needs to be located. Other clues such as "Put this piece here" are recorded and students are penalized for needing a lot of assistance.

Table 2: Materials and Time Schedule for Tangram Activity

| Materials: | 21 basic Tangram pieces in plastic bags  
|           | (six large triangles, three medium-sized triangles, six small triangles, three parallelograms, and three squares)  
|           | Six page student activity booklet  
|           | Student challenge page  
|           | Clock with visible second hand  
|           | Grid recording sheet  
|           | Mechanical pencil |
| Time:     | 40 minutes |

Children seated next to each other receive different colored sets to reduce the chances that a child will borrow his/her neighbor's pieces. Then students are given two tasks to do.

Task 1: They are given ten minutes to make the largest square that they can using the as many as the 21 pieces as possible. They are all instructed that they may not have an empty space in the middle of the square.

Task 2: Students are given a booklet of six pages. They are given 30 minutes to complete as much of the booklet that they can. Students have to leave no shape uncovered on each page. They need to get the observer's permission to go to the next harder page. If they finish the entire booklet, there is an additional challenge page that students rarely complete (Maker, Nielson, and Rogers 1995).

**Storytelling**

The final activity is storytelling (see Table 3 for materials and time schedules). Students are given a recess break and the observers rotate to a different group of children. Storytelling works best if 4 or 5 children are in each group because of the written verbatim notes that are to be taken on what each child says.
Table 3: Materials and Time Schedule for Storytelling Activity

Materials: Plastic bag with 7 toys
           (2 people of various races, 2 animals, a vehicle, and
           2 objects)
           tape recorder
           paper and pencil (this is an option for the students)
           Grid recording paper
           Lined paper
           Pencil or pen for transcribing stories

Time: At least 1 hour

        Tucson, AZ: Unpublished set of instructions (pp. 21 and 22).

There are three tasks to this activity. Students may do these tasks in any language that they would like.

Task 1: Students had to select two toys and make oral comparisons of all the things that they can about both objects.

Task 2: Students had to choose two different toys and make oral comparisons of all the things that they can about both of them.

Task 3: Students think of a story about some or all of the toys they have. They can tell any story they want to and are told to think carefully about it. The story cannot be longer than ten minutes. The story is told to an observer who writes everything that is said, and it is tape recorded for future clarifications (Maker, Nielson, and Rogers 1995).

Scoring of the D.I.S.C.O.V.E.R. Process

The evaluation of the three activities is done by the team of observers the same day of the observations. Observers move to a quiet private place in the school and reflect on
the student performances. The evaluation of activities is usually the same order that it was
given. For example, if the order of activities were Pablo first, Tangrams second, and
Storytelling last then that is the same order of evaluation by the team.

What is unique about the D.I.S.C.O.V.E.R. Process is that the students are only
compared to their classmates for potential gifted identification. "Children and youth of
outstanding talent perform or show the potential for performing at remarkably high levels
of accomplishment when compared with others of their age, experience, or environment"
(U.S. Department of Education, 1993). In 1976 Clifford Stallings proposed a
fundamental question that gifted identification testing personnel may ask themselves. The
question is, "based on comparable opportunities of income, cultural values, and race
oppression in this society, how does one child in a group compare with the rest of the
children in that group?" (Stallings, 1976, pp. 8 & 9).

Typically, two or three students are chosen per classroom to receive gifted
services. There are a total of five scores that the students receive: story writing, math pre-
assesment, Pablo, Tangrams, and Storytelling. Activities are scored with "definitely" being
the highest indicator of strength, followed by the classification of "probably" if the
strength is consistently demonstrated. Then students receive "maybe" if the strength is
somewhat present and "unknown" is reserved for students not completing any of the
activity or a performance where the strength of the task cannot be determined. The team
of observers at Palomino School has determined that students must obtain a score of
"definitely" on three of the five activities to be considered for gifted placement.
Usually observers study their notes and try to determine any unusual strengths which would qualify the child as showing a "definite" strength. There is an open discussion of what would qualify the student with unusual strengths within a particular classroom. Students are then ranked as probable, maybe and unknown if they do not stand out from others in their classrooms. Greatest focus is given to the distinction between definite and probable classifications.

Plucker, Callahan and Tomchin (1996) suggest that those students receiving "Definite" (they named it - Extremely Evident) classification demonstrate some of these qualities during the PABLO creation of an animal of their choice: original ideas; 3-dimensional; something that stands up; symmetry with more than four pieces; moveable parts; complex design with many pieces and/or connectors; object is recognizable representational art; absorbed, excited or enthusiastic; and makes many creations. The Plucker, Callahan and Tomchin team suggests that copies and adds own details; simple design; and common objects - people, turtle, etc., receive "Probable" (named -evident). When students copy with no additions; create one shape (animal body) with four connectors for legs; and/or is 2-Dimensional receive "Maybe" (named - not evident). Possibly students who are bored, frustrated, and do not participate may receive "Unknown" as a ranking.
Advantages of Using the D.I.S.C.O.V.E.R. Process

**Intelligence Fair:** One reason that The D.I.S.C.O.V.E.R. Process has been selected by school districts over traditional gifted identification testing is that it is intelligence-fair, according to Mindy Kornhaber's dissertation assessment. She states that the D.I.S.C.O.V.E.R. assessment allows children to be identified gifted based on first-order knowledge which is informal because students are not having to use a written representational system to convey their thoughts (Kornhaber, 1997.) Not having to rely on language as a primary assessment process contributes to the intelligence-fair testing because the directions are short and simple, and children are allowed to demonstrate what they are capable of doing. Many times, students choose to speak in their home languages during the D.I.S.C.O.V.E.R. Activities which is encouraged to determine or assess actual knowledge.

**Divergent Thinking:** Another advantage of The D.I.S.C.O.V.E.R. Process assessment is that it allows for divergent thinking to be demonstrated. "... some children blossom when given the opportunity to determine the problem before they solve it." stated Rogers (1998, p. 8). Robert Sternberg, of Yale University, (1977) stated, "We should put more emphasis on having students figure out problems, rather than giving the problems to them" (Sternberg cited in Colangelo and Davis, 1997, p. 45). The examination of a finished product, such as correctly answered items on standardized, norm-referenced tests, tells little about mental processes used to arrive at a solution (Rogers, 1998).
Torrance (1977) showed that a lot can be learned about a child's potential by looking at indicators of intelligence that do not depend on prelearned solutions to problems. The Pablo, Tangram, and story telling activities are novel for the English as a Second Language students who participate. Sternberg (cited in Colangelo and Davis, 1997) further supported the notion that gifted students be challenged to demonstrate their abilities to handle non entrenched concepts (unfamiliar).

Comfortable Testing Atmosphere: The National Association for Gifted Children (NAGC, 1997) states that testing situations should not hinder students' performances. Students should feel comfortable, relaxed, and have a good rapport with the examiner. Kornhaber (1997) found that children were encouraged to do their best work. This is evidenced in a variety of ways. Kornhaber (1997) observed in the three alternative assessments, children were provided with materials that were interesting to them. The language demands of the alternative assessments also allowed English as a Second Language learners to do their best work. Directions for the activities are simple and students are encouraged to work in the language that is most familiar to them.

De Avila, Havassy, and Pascual-Leone (1976) summarized some general characteristics of Mexican-American test takers: They do better on verbal tasks on intelligence tests, learn better when the material has human content and is characterized by fantasy and humor, perform better when authority figures express confidence in their ability, and conversely, their performance is depressed when authority figures express doubt in them. Children were supported in the D.I.S.C.O.V.E.R. testing psychologically
and emotionally to do their best work because the observers fostered rapport with the children. The observers introduce themselves to the whole class and reintroduce themselves each time they rotate to a new table. Rather than being told that they are about to take a test, students are instructed that they will be participating in some fun activities with the visitors. All children remain in their comfortable classroom environments with all of their classmates. Children are told, "I know you can do it" and other encouraging words in their preferred language during the activities.

Bernal (1994) stated that there is a close functional relationship between language and intelligent behavior. Bilingual or Spanish monolingual Chicano children who demonstrate unusually high or sophisticated knowledge in their native language can be regarded as potentially gifted. Ehrlich (1986) highlights that proficiency in English tends to lag when other than familial situations are encountered. The Spanish language was used during the majority of the D.I.S.C.O.V.E.R. testing session unless the student requested to speak or write in English.

Researchers have found that Hispanic Americans value non material possessions, family bonds, real-world learning experiences, social and cooperative learning, student-centered classrooms, and active learning experiences. "Marquez (1992) developed a profile of gifted Hispanic children that included the cultural perception of the community in the identification process. Gifted Hispanic children were described by their parents as curious, motivated, creative, observant, inquisitive, able to find multiple uses for objects and to solve problems" (Marquez, cited in Gonzalez, Bauerle, and Felix-Holt, 1994, p.39).

Bernal and Reyna's (1974) interviews of Mexican-American parents in Texas indicated that sensitive adults notice a gifted Chicano's manner of speaking and range of knowledge. However, it was noted that the Mexican-American children shy away from being the center of attention and very frequently help other children in class or siblings at home. The D.I.S.C.O.V.E.R. Process allows the children to be tested in small groups. They are allowed to help other students or piggyback off of other classmate's ideas.

Culture Reduced Test: D.I.S.C.O.V.E.R. can be considered a culture reduced test because of all these characteristics that are present in the process: performance test, oral instructions, pantomimed instructions, preliminary practice items, oral responses, non language, power tests, nonverbal content, abstract reasoning, and solving novel problems. Jensen (1980) recommended the aforementioned techniques be used to make tests accessible to all culture groups. Tests that are not culture-free (reduced) will have some or all of the elements being tested not equally familiar to the child thus causing the test to be unfairly biased.

"The first essential of culture fair testing is to ensure that all persons fully understand the requirements of each type of task involved in the test," Jensen (1980, p. 640). From Kornhaber's (1997) observations she found that generally speaking the children did understand what they are being asked to do during the assessment.
Disadvantages of the D.I.S.C.O.V.E.R. Process

Norm Referenced by Classroom: The "definite" classifications given to the students are norm referenced by the performances of others in his or her classroom. After each activity, the observers discuss which criteria displayed in that particular classroom was outstanding. This outstanding criteria is used to make the determination of which students receive "definite" classifications in all five D.I.S.C.O.V.E.R. areas. There are no written rubrics or identifiers for a "definite" classification. Kornhaber (1997) stated that few criteria are used in Pablo and Tangrams in making the "definite" classification. She questioned why so much information was recorded per student if it was not going to be considered during the debriefing sessions. Storytelling debriefing is very ambiguous because the "definite" quality varies greatly per classroom. What may be considered a definite" story in one class may not receive the same rating in another classroom. For example, in one classroom a "definite" may be received if the student's story contained a beginning, middle, and ending. Whereas, in another class, students may have to demonstrate humor, dialogue, or something extra to receive the "definite" rating.

Dr. June Maker justified the use of classroom norm referencing by stating that a particular classroom of children probably has had fairly similar experiences. She felt that out of the classroom they may not have similar experiences. Maker concluded that it is more valid to evaluate children within the classroom context than to compare children who are in different classrooms (Maker cited in Kornhaber, 1997, p. 88).
Gardner's Seven Multiple Intelligences: The backbone of the theoretical approach of the D.I.S.C.O.V.E.R. Process is drawn from Gardner's work on Multiple Intelligences. These seven intelligences are: Verbal/Linguistic, Intrapersonal, Interpersonal, Logical/Mathematical, Visual/Spatial, Bodily/Kinesthetic, and Musical/Rhythmic. According to Rogers (1998), spatial intelligence is assessed through problem solving with novel construction materials; logical-mathematical and/or spatial problem solving is assessed through Tangram puzzles and constructions; linguistic intelligence is assessed through the use of a set of toys selected to stimulate comparisons, descriptions, and storytelling.

According to Kornhaber (1997), "One of the seeming contradictions about D.I.S.C.O.V.E.R. is that it is consistently described as drawing on Multiple Intelligences even though its identification efforts center on linguistic, logical-mathematical, and spatial intelligences -- the same abilities typically measured by traditional intelligence tests.

Using Plucker, Callahan, and Tomchin's 1996 research on identifying talent in ethnically diverse students one can discover that Gardner's multiple-intelligences theory can be translated into reliable assessment instruments, but that creating valid assessments is very difficult. One reason for this difficulty is that the adults who administer and score alternative assessments, such as D.I.S.C.O.V.E.R., tend to display biases toward linguistic and logical-mathematical intelligences. These biases in turn result in measures with little construct validity outside of the assessment of verbal and mathematical skills. The research team of Plucker, Callahan and Tomchin strongly advise for legal, educational, and
ethical reasons that performance assessment used for high stakes purposes (such as gifted identification) need to be reliable, valid, appropriately normed, and equally fair to students regardless of gender and ethnicity. However, the culture-specific approach is so labor- and resource-intensive that it usually requires university researchers of effective implementation (Maker, 1992).

The Problem-Solving Behaviors Checklist: The D.I.S.C.O.V.E.R. Problem-Solving Behaviors Checklist was created by the D.I.S.C.O.V.E.R. team by watching children as they solved problems, writing down what they saw, and then discussing behaviors that indicated superior problem solving ability in that activity.

The checklist has nine stapled 8.5 x 11 inch pages for each student observed. The checklist pages are organized around Gardner's intelligences: Linguistic, spatial, logical-mathematical, interpersonal, intrapersonal, bodily-kinesthetic and an additional category called "general." The lengthy checklist is to be filled out for each student after the observers discuss each of the students' performances. Ideally this would happen before the classifications for definite, probable, maybe, and unknown are assigned for each activity. For example, the D.I.S.C.O.V.E.R. checklist for the Pablo activity alone asks for the observer to look for and record any of 19 product or process characteristics. The observer is also supposed to write down comments that the child says about the work and keep track of the students' interactions with each other and herself on the Personal Interaction Sheets (K-2 unpublished set of instructions, 1995).
Appropriate training and retraining: During Mindy Kornhaber's (1997) observations of the D.I.S.C.O.V.E.R. Process, she noted that the team members have very complex roles. Team members need to observe, equally attend, and record in various media products, problem-solving processes, and interactions of several, often very busy youngsters. They also have to maintain a warm, supportive, and equally encouraging relationship with the children (Kornhaber, 1997). Many team members that Kornhaber interviewed were overwhelmed with the recording process because they felt that it was impossible to record everything significant that each student had performed. Also, one person noted that when a student was standing out, it was possible to overlook the other children who were not performing at that same high level.

The original team of eight 1997 Palomino teachers (and the Gifted and Testing Coordinator) that were trained in the springtime of 1998 went through a three day training process facilitated by Dr. Judy Rogers (one of the original developers of the D.I.S.C.O.V.E.R. Process). On the first day, they were provided a brief overview of the theoretical origins of D.I.S.C.O.V.E.R. Process. Then each of the members participated in the D.I.S.C.O.V.E.R. Assessment activities so that they would have an understanding of some of the processes, and frustrations that the children may experience. There was a discussion of slides and videos of student work after activity participation. The team members discussed what could be placed on the observation sheets.

During the second day of training, the team members went into a bilingual second grade classroom at Palomino School to do a practice session of administering the
assessment in a real classroom. Mrs. Rogers guided the team members frequently and the pace of giving the assessment was purposefully slowed down so that questions could be asked and answered. Profound debriefing discussions followed each of the activities. One of the most difficult activities for the team to learn was the story telling because many of the members chose to tape record the stories without writing them as the children were telling their stories. It took a long time to understand and transcribe the Spanish stories from the cassette tapes for the debriefing story telling discussion.

On the third day of training the team reviewed the process that was experienced on the second day. The team members worked in pairs to fill out the long checklist for each student's participation in the Pablo, Tangram, and Story Telling activities. Many observers found it difficult to remember specific details about approximately 15 (three tables of five students each) students. The team also practiced scoring the math worksheets and written stories that were administered by the classroom teachers.

Ongoing Assessment Needed: One should consider that the identification process is not finished upon the determination of a list of students to receive services. One recommendation of Richert (cited in Colangelo and Davis, 1997) is that the last stage of identification is ongoing evaluation and assessment of students' performance and interest. Students should be assessed annually, not to determine whether they are "still gifted," but to see whether they should remain in a particular program option or would be better served in another option or in the regular classroom. She also adds, "Data on student progress in a program option related to the program's curriculum objectives to develop
higher level cognitive thinking, or higher emotional and ethical potentials rather than changes in standardized test scores, should determine whether a student continues in the program each year." (Richert cited in Colangelo and Davis, 1991). Currently, reevaluation is not part of the D.I.S.C.O.V.E.R. Process.

**One instrument used:** The National Association for Gifted Children (NAGC, 1997) recommends that given the limitations of all tests, no single measure should be used to make identification and placement decisions. Therefore, a multidimensional approach is recommended for identification of gifted E.S.L students at Palomino School.

Mary Frasier (1989) recommends that schools with At-Risk populations provide counseling options to nontraditional gifted populations. They may need social and emotional support to gain confidence in their newly demonstrated abilities (Colangelo and Davis 1997; and Frasier 1989). Using data from a table of testing instruments Dr. E. Susanne Richert notes tests that are suited for disadvantaged students. These tests are: Preschool Talent Checklist; Primary Measure of Music Audiation, Progressive Matrices-Advanced and Standard; Scales for Rating Behavioral Characteristics of Superior Students, Seashore Measure of Musical Talents; The Self-concept and Motivation Inventory (SCAMIN); SOI Gifted Screening Form; SOI Learning Abilities Test; Stallings' Environmentally Based Screen; System of Multicultural Pluralistic Assessment (SOMPA); and Torrance Test of Creative Thinking (Frasier cited in Colangelo and Davis, 1991).
Raven's Progressive Matrices

The three forms of the Raven's Progressive Matrices are Standard Progressive Matrices (SPM), Colored Progressive Matrices (CPM), and Advanced Progressive Matrices (APM). These are nonverbal perceptual analogy items, based on simple geometric forms. The test questions are inductive in nature. The Raven's Progressive Matrices is one of the best known, most extensively researched culture-reduced test (Jensen, 1980).

The Raven's Coloured Progressive Matrices (CPM) assessment can be teacher administered to a large group of kindergarten to third grade students (those under ten years of age) without requiring long test-taking hours. Eberle (1991) stated that this is an untimed test that takes about 10 to 20 minutes for completion. This test does not require a verbal symbol system to measure reasoning and the ability to think logically. The testing items consist of designs that require the examined to select one of six or eight choices that is the best fit for a missing area of the major design (Kluever and Green, 1994). The test can be presented as a game or puzzle rather than as an achievement test. This instrument is less dependent on particular experiences and aims to determine fundamental abilities of the students. One of the strongest components of the CPM is that it provides abstract reasoning problems that extend beyond the capabilities of the brightest primary school child.

The reliability of the CPM to measure general intelligence has been accepted and supported by research since 1956 (Raven, cited in Kluever and Green, 1994). Eberle
(1991) found that the CPM was an excellent indicator of children capable of high math achievement. This test is an Arizona state approved gifted identification test. The CPM is the least difficult of the matrices because it asks simpler questions and is less steeply graded in difficulty.

The Raven - Standard Progressive Matrices (SPM) is the next level of testing for grades second through ninth (ages 6 through adult). It is a nonverbal instrument appropriate for discovering the underachiever or disadvantaged gifted student (Jensen, 1980; Eberle, 1991). The test instructions are so simplistic that they can be pantomimed. This test has been used with foreign language and deaf groups. This test has sixty matrix items which are grouped in five sets containing twelve questions each. Items become progressively more difficult until after the twelfth item when the test taker experiences a simple item. The test takers stay interested and may not become as easily discouraged.

To obtain a correct response to some of the Raven matrices items the test taker will have to simultaneously manipulate three or four different mental processes, which takes some time. The easier and much less time-consuming manipulation of one or two processes will lead to a selection of an error distracter - which cognitively less able subjects tend to select. The mistaken answers on the Raven are explainable in terms of cognitive processing that lead to them as are the correct answers. Administrators of the Ravens tests have discovered that giving subjects as much time as they needed to complete the test did not necessarily raise the test scores (Jensen, 1980).
According to Jensen (1980) the RPM is not a strong measure of "perceptual ability" or "spatial-visualization" ability. Instead the RPM is a strong predictor of general ability (g). The RPM has been hailed (De Avila, Havassy, and Pascual-Leone, 1976) as a higher level thinking test instead of requiring processing of rote learning and memory. The RPM requires mental manipulation, the ability to deal with complexity, information processing, and active relating and comparing of present inputs with stored past inputs. One negative aspect of using the RPM as an identification tool is that it is difficult to match the test items to the application of gifted education curriculum. Jensen (1980) recommends the RPM for screening illiterate, semiliterate, bilingual and otherwise educationally disadvantaged people because it is an excellent culture-reduced measure of general ability (g).

The CPM is related to the D.I.S.C.O.V.E.R. Process' history. Rogers (1998) chose to use two nonverbal and spatial problem solving components when she was interning with Tucson's Gifted and Talented Education program. One was the Raven's Colored Progressive Matrices which was classified as a standardized psychometric test of reasoning for young children based on visual patterns. The other assessment incorporated the use of Tangrams which was later incorporated into the D.I.S.C.O.V.E.R. Process. The CPM that was being utilized in the Tucson Unified School District did not contain quantitative and verbal tasks that the State of Arizona requires also be part of gifted identification in addition to spatial intelligence measures.
System of Multicultural Pluralistic Assessment

Another alternative testing measure is the use of System of Multicultural Pluralistic Assessment (SOMPA) which was started in 1977. This system was originally developed to prevent the mislabeling of minority children as mentally retarded (Lewis and Mercer, 1973). SOMPA has also been used in the identification of gifted minority children whose cultural differences between home and school interfere with the children's testing potential.

The instrument utilizes pluralistic norms to assess a child as normal, subnormal and supranormal, depending on how he or she scores on a test compared with scores of other children at the same age and from similar sociocultural backgrounds. Mercer and Lewis (1978) define Supranormal as performance higher than the average of the child's own sociocultural group. The comparisons yield Estimates of Learning Potential (ELP) that take into account the cultural background of the child and his or her test achievement scores.

This method uses norming adjustments for family size, family structure, socioeconomic status, and urban acculturation. Students have their scores revised, for example, on the Wechsler Intelligence Scale for Children - Revised (WISC-R). The statistics which are taken into consideration in score adjustment are obtained through Parent Interviews. The questions asked during parent interviews deal mostly with socioeconomic status, health history and family background.

One comment that arose during a case file of Belle Madison, a 9 year old black girl attending fourth grade in a large metropolitan school district was that of powerlessness.
Belle expressed that a person's fate is already predetermined at birth. She also believed that one must live for today, and that planning makes a person unhappy since plans hardly ever work out (Baldwin, Gear, and Lucito, 1986; Levine and Levine, 1996).

According to Mercer, J. and Lewis, J.(1986), the rationale for adjustment of test scores is that each child must:

1. Have had similar opportunities to learn the materials and acquire the skills covered in the test.
2. Have been similarly motivated by the significant other persons in their lives to learn this material and acquire these skills.
3. Have had similar experience with taking tests.
4. Have no emotional disturbances or anxieties interfering with test performance.
5. Have no sensorimotor disabilities interfering with prior learning or with their ability to respond in the test situation. (Mercer and Lewis cited in Baldwin, Gear and Lucito, 1986, p. 9)

Mercer and Lewis (1986) stated that controlling for sociocultural background would hold these three factors relatively constant.

Samples of tests with adjusted scores are: Physical Dexterity Tasks, the Blender Visual Motor Gestalt, Weight by Height, Visual Acuity, Auditory Acuity and the Wechsler Intelligence Scale for Children - Revised and Cartoon Conservation Scales.

De Avila and Havassy (1974) may not endorse the use of the S.O.M.P.A. because even though a compensation is being made for minority children and their deprived backgrounds; minorities will experience lower expectations which may lower the children's aspirations to succeed.
Torrance Test of Creative Thinking (Verbal and Figural):

**Verbal:** The activities involve asking questions about drawing, making guesses about the causes of the pictured event, making guesses about possible consequences of the event, producing ideas for improving a toy so that it will be more fun for children to play with, thinking of unusual uses of cardboard boxes, asking provocative questions, and thinking of the varied possible ramifications of an improbable event.

**Figural:** Picture Construction stimulates originality and elaboration. Incomplete Figures and Repeated Figures increasingly elicit greater variability in fluency, flexibility, originality, and elaboration (Bernal and Reyena, 1974, p. 23).

Perino and Perino (1981) noted that in lower class, Spanish-speaking homes, there is more control associated with language. Possibly the Spanish-speaking parent will offer a child a predetermined solution with few alternatives for consideration. This lack of choices in decision making can create a disadvantage for the Hispanic in verbal language development.

Very importantly, the Torrance Test of Creative Thinking (TTCT) permit minority children to respond "correctly" in terms of their own experience (Torrance, 1972), since diverse (and divergent) expression is the essence of each test. Torrance's tests considers a variety of creativity indicators rather than a single creative indicator.

In a study by Holtzman (1982) where monolingual English-speaking Anglo; monolingual English-speaking Mexican American; monolingual Spanish Mexican American; and fluent bilingual Spanish-English Mexican American students were given the Raven's Standard Progressive Matrices and the figural and verbal portions of the Torrance Tests of Creative Thinking (TTCT) interesting results were discovered. Results showed that Spanish monolinguals performed significantly higher on verbal fluency than the limited English and Spanish bilingual children. It was also concluded that the TTCT
divergent thinking (the ability to generate multiple solutions to problems and not to follow a rigid mental set in problem-solving) and the type of intelligence measured by the Ravens appear to be two almost totally independent tests (Holtzman, 1982). Holtzman's study provided additional support for the belief that divergent thinking is fairly independent of IQ. As the ability to speak English increased, there was an accompanying increase in the Ravens scores.

"In view of their extensive development and evaluation, and the standard administration and scoring procedures, the Torrance tests are the recommended divergent thinking battery" (Davis and Rimm 1989, p. 79). Divergent tests require students to generate as many ideas as they can for open-ended problems. Guillory and Kher-Durlabhji (1995) noted that this test has demonstrated its reliability and validity in the context of research and group assessment. One negative aspect of divergent tests is that they are very time-consuming to score.

Cartoon Conservation Scales

**DeAvila's Cartoon Conservation Scales:** In DeAvila's testing procedure, there are six examples of five tasks. The panels are presented to the students and the story line is read and elaborated upon in order to facilitate an understanding of the question. The student's task is to mark the one alternative that makes the story true. There are a total of thirty cartoon panels on the assessment (Bernal and Reyna, 1974).
Frames for DeAvila's Cartoon Conservation Scales

**First frame** an equality is established between two objects according to the dimension being studied (i.e., number, length, substance, etc.).
**Second frame** an identity transformation is depicted
**Third frame** the question of conservation of equivalence is asked.
(Bernal and Reyna, 1974, p. 22)

Bernal and Reyna (1974) state that the Cartoon Conservation Scales (CCS) were developed based on the theory that the determination of intelligence must be studied through the examination of intra-individual rather than inter-individual approaches. The goal is to discover unusually advanced thought processes or ways of dealing with the problems that have be stated. The CCS can be administered in English or Spanish (DeAvila & Havassy, 1976) and have been cross culturally validated on several ethnic groups (DeAvila & Havassy, 1974).

There are three cartoon characters who are responding to the question. The student is to pick the correct character. The Cartoon Conservation Scales (DeAvila, Pascual-Leone 1976) were designed to measure cognitive development in relation to Piagetian stage-related ideas. The scales are language independent, therefore, particularly useful for children from limited or non-English speaking backgrounds.

Other Gifted Identification Processes Recommended for Consideration

**Draw-a-man Test:** Generally, children are able to draw before they are able to write, read, and in many instances, before they can speak. "Drawing to the child, is
primarily a language, a form of expression, rather than a means of creating beauty"

Goodenough (1926) p. 12. The Draw-A-Man Test can be used in any cultural setting. This test was used to measure children's intelligence in 1921. The author of this testing method is Sir Cyril Burt. He studied many children's drawings and concluded that their drawings steadily improved with age regardless of artistic ability. He pinpointed details and complexities that were quantified along a mental-age scale. Examples of details scored are drawing body proportions, attachment of limbs and head, and some details of facial features, hands, and clothing.

Florence Goodenough (1926) decided to take Sir Cyril Burt's ideas and develop standard administration and scoring procedures. He also developed extensive norms for children's drawings of a man. Points were assigned for details that discriminated the children from others of the same age group. The score was then converted to a mental age and IQ.

The benefits of giving this assessment are:

* It is easy to administer (specific training is not highly important for this procedure - Easley 1964).
* It serves as a good ice breaker to start a testing session
* Children readily take to it
* Experts can score the child's product in a few minutes
* Teachers can use a drawing scale for evaluation several times per year.
  (Richert cited in Colangello and Davis, 1997, p. 660)

The test works best below the ages of twelve or thirteen (Murphy 1956). After age twelve, children tend to draw profiles of humans. Also, there are more cultural handicaps in the drawings as the children get older. The raw scores are almost perfectly a
linear function of age between six and twelve years of age.

Considering that not everyone in various cultures has equal exposure to pictorial representations to the human figure, this test is not culture fair (Jensen, 1980). Goodenough and Harris (cited in Jensen, 1980) pointed out that there are cultural differences that do appear to a greater or lesser extent in the children's drawings. Even though nearly all children have a high degree of exposure to clothed adults, Jensen recommends that clothing should not be factored in with the developmental characteristics of the drawings. Harris (1950) suggested that for most valid results, the points for the scales should be re-standardized for every group having distinctly different patterns of dress, ways of living, and quality or level of academic education. Goodenough also discovered that girls showed a definite superiority over boys in testing American children. Harris explained this sex difference in that girls are given greater practice with drawing or other finely coordinated work. Harris also suggested that girls pay special attention to people and clothing.

The Harris revision, called the Goodenough-Harris Drawing test (GHDT), the child is asked to draw a picture of a man, woman, and a portrait of himself. Typically, children do not get assistance from others and experience no time limit. Specific scoring criteria from Easley's 1964 study of "The Draw-A-Man Test as an Index of Reading Readiness" include: Form quality, use of color, detail, synthesis, proportion and symmetry, imagination and originality, neatness, masculine features, impression of movement, clothing, size and placement on page.
Wolff (1946) made a study of symmetry in the abstract drawings of children. One of Wolff's conclusions was that lack of symmetry in children's drawings could indicate inadequate feelings of security in the subject's emotional life. Waehner (1946) found that gifted children produced many pictures which included motion. "Analysis of drawings, furthermore, deals with what a person does rather than what he says -- a more primitive and direct form of communication" Witkin (1954) p. 235.

One Draw-A-Man test hindrance as stated by Avila and Havassy (1974) is levels of aspiration. The child who produces the more detailed figure has a better chance of receiving a high score. There is an assumption that all pupils will produce as many responses as they are able.

**Interview With Behavior Scale**

"Each culture tends to define giftedness to meet its own needs and values" Gallagher and Gallagher (1994) p.32. In March of 1974, Ernest Bernal Jr. and Josephine Reyna decided to research the ways that gifted Hispanic children were identified in Latin American countries. They had hoped to use some of the strategies on Spanish-speaking Hispanic students in the United States. They were disappointed to discover that the Spanish-speaking countries had not developed a culturally based definition of giftedness, nor had they developed their own mental tests. Instead, these countries were using translations or adaptations of verbal or nonverbal tests of intelligence and creativity.
developed in the United States. Examples of these tests included: Prueba de Inteligencia de Wechsler, the Goodenough Draw-A-Man, the Stanford-Binet, and the Torrance Tests of Creative Thinking (Bernal and Reyna, 1974, p. 16).

Bernal and Reyna (1974) decided to do original research by developing an interview of who Hispanics perceive as gifted or talented children. Interviewees were also asked questions of what they consider gifted and/or talented to signify. They took the research one step further by actually interviewing Mexican-American adults in three Texas cities. Often it was impossible for the field specialists to find parents at home or able to devote their full attention to responding. The questions were asked in Spanish and were designed for open responses. The first few questions asked were to get specific traits and characteristics useful in defining talent or giftedness in Mexican Americans. Another set of questions sought behavioral statements useful in designing a behavioral checklist. Other questions pinpointed the child being male or female, Mexican-American or Anglo, and having light or dark skin.

Some of the results from the interviews revealed that Mexican Americans believe giftedness requires verve and style as well as intelligence; and that the gifted display traits such as using imagination freely, being more active and aware, and associating more with adults. Here are some sample statements obtained from interview research that parents ranked almost always, usually, only sometimes and never on the experimental instrument:

Accepts what parents tell him/her without question or without talking back when he/she is being corrected for doing something wrong.

Understands and remembers detailed instructions when given the first time; doesn't need them repeated.

Can carry on conversations with older children and adults and keeps them interested in what he/she is saying.
Figures out things or works out problems and finds solutions which other kids probably are unable to do.

Will do required schoolwork or household chores without having to be told. (Bernal and Reyna, 1974, p. 53)

The Mexican-Americans interview in this sample did not make clear-cut distinctions between gifted and talented individuals. Their gifted distinctions were based on habits, interest, and people with whom they interacted. In addition to being intelligent, a child must also be vivo, listo. In short, those who were interviewed thought that gifted children must possess verve, style.

The "Behavior Rating Scale" and "Adjectival Scale" that were derived from the interviews were used to determine which children would receive further testing for gifted identification. These were the nontraditional tests used for identification: DeAvila's Cartoon Conservation Scales, and Torrance's Tests of Creative Thinking (Verbal and Figural). The traditional approved test used was The WISC- Verbal and Performance.

Richert (cited in Barkan and Bernal, 1991) also criticizes traditional gifted testing by stating that too often instruments measure the quality of instruction or student performance in relation to test makers' expectations, rather than gifted potential.

Case Study Approach

One recommendation from 1989-1990 (cited in Barkan and Bernal, 1991) was that of a case study. This was used by the Tucson Unified School District right before the implementation of D.I.S.C.O.V.E.R. This was a site-based program that had a high
implementation of D.I.S.C.O.V.E.R. This was a site-based program that had a high
degree of teacher input and expanded the selection of gifted students beyond the state's
narrow definition (97th percentile on a state gifted identification approved test.)

The case study procedure had these six elements:
1. group screening using Raven's Coloured Matrices Test,
2. a teacher checklist of student behaviors,
3. a parent questionnaire,
4. an abbreviated version of the *Wechsler Intelligence Scale for
   Children, Revised* (see Ortiz & Gonzalez, 1989),
5. a rating of self-esteem
6. samples of student work
(Barkan and Bernal, 1991, p. 145)

According to Rogers (2000) who was a volunteer for Dr. Miri Fleming while she
was working on her doctorate degree, the case study approach at the Tucson Unified
School District was a lot of work because all six data pieces should have been collected
for each student, and the team members for the case studies had to be called into special
meetings. Rogers stated that work samples and other data were only collected on the
students that the case study team thought was appropriate to review (Rogers, personal E-
mail, 2000). She also stated that D.I.S.C.O.V.E.R. was used instead of the W.I.S.C.

These six groupings can be listed on a matrix which gives the numerical
documentation for the identification process. Refer to the table below for an example of a
matrix:
Many consider teachers' nominations to be inadequate because teachers tend to nominate the high achieving, well-behaved classroom students. They may not nominate students who are divergent thinkers because they make leaps in logic and provide answers far beyond the particular responses sought by the teacher (Tuttle, Becker, and Sousa 1988). If teachers are provided with clear guidelines and in-service work on the characteristics and behaviors of gifted individuals, teachers will become much more accurate in their perceptions.

Information should be gathered about the individual's interests and background outside school as well as performance within the classroom. Gifted individuals can display more of the superior abilities in extracurricular activities than they do in the regular classroom. Jacobs (1971) found that parents were able to select sixty-one percent of the gifted children and showed less tendency that teachers to overestimate abilities of the children (Jacobs cited in Tuttle, Becker, and Sousa (1988) p. 59.)

<table>
<thead>
<tr>
<th>Table 5: Matrix Example - Case Study Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ravens</td>
</tr>
<tr>
<td>X</td>
</tr>
<tr>
<td>Teacher</td>
</tr>
<tr>
<td>X</td>
</tr>
<tr>
<td>Parent</td>
</tr>
<tr>
<td>X</td>
</tr>
<tr>
<td>WISC-R</td>
</tr>
<tr>
<td>X</td>
</tr>
<tr>
<td>Self Esteem</td>
</tr>
<tr>
<td>X</td>
</tr>
<tr>
<td>Work Samples</td>
</tr>
<tr>
<td>X</td>
</tr>
</tbody>
</table>

A Traditional Gifted Identification Assessment

Wechsler Intelligence Scale for Children (W.I.S.C.): The theory that is the basis for Wechsler Intelligence Scale for Children (WISC) is that intelligence is an integral facet of personality and the two cannot be separated. School psychologists uses the Wechsler Intelligence Scale for Children--Revised (WISC-R) which yields verbal and Performance (nonverbal) I.Q. scores, along with the combined full-scale I.Q. score. The nonverbal score may identify spatially or mechanically gifted students, not just the verbally gifted.

WISC Verbal and Performance Testing Subjects

Verbal: Information, Comprehension, Arithmetic, Similarities, Vocabulary, and Digit Span  
Performance: Picture Completion, Picture Arrangement, Block Design Object Assembly, Coding and Mazes. In the Bernal and Reyna study, eight of the twelve tests were used (the first and last tests of the verbal and performance groups were not administered, and the verbal and performance IQs were prorated from these scores. When necessary, the instructions for each subtest were given in Spanish. (Bernal and Reyna, 1974, p. 23)

According to the 1987 Arizona Task Force for Gifted Concerns, the WISC-R shows a lack of reliability and was last normed in the 1970's. The WISC-R is also not to be used as an index of creative potential (Guillory and Kher-Durlabhji, 1995). Also, stated by Perino and Perino in 1981, the WISC-R is inaccurate at age extremes, has difficulty in estimating the high-scoring child, and there are problems in assessing the poor and culturally different.
Current Gifted Identification Testing Methods that are Being Used in Paradise Valley School District

Most gifted identification tests have been based on or judged against the Stanford Binet test developed by Lewis M. Terman in the early 1900s. Teachers may use SAT-9 scores to recommend gifted testing for high achieving scores to the gifted instructor on campus.

The Paradise Valley School District, however, is currently using the Cognitive Abilities Test as its primary assessment of giftedness. The Cognitive Abilities Test (Cognitive Abilities Test) requires two to three hours of testing over several sessions and is curriculum based. One reason that this test was chosen over other gifted identification measures is that it assesses mental abilities rather than academic skills. Students have to use reasoning skills to solve problems and not recall of specific information. The gifted curriculum in all of the Paradise Valley Schools utilizes reasoning skills in every lesson. Therefore, the identification examination is aligned to the curriculum.

The Cognitive Abilities Test is administered to identify student abilities in the verbal, quantitative, nonverbal reasoning, and problem solving areas (Howells, 1983). This test specifically covers categorizing, next in series, choosing the best word to fit context clues, analogies of words and pictures, folding paper scenarios, comparisons of A to B using pictures and math problems, and correct operational sign with answer demonstrated in several different ways.
Linda Kreger Silverman (1986), the author of the Cognitive Abilities Test, says that school districts who do not have the resources to give individual tests choose to give the Cognitive Abilities Test because it is a group administered test. Silverman (1986) recommends that the Cognitive Abilities Test be given as a screening test to find a potential gifted pool. After the pool of candidates is identified then an individual test for final selection should be given if financial resources are available. Pleger recommends that at least some of the identification techniques should be individualized, taking into account the cultural-experiential environment of the individual (Pleger, cited in Tuttle, Becker, and Sousa, 1988, p. 61).

Silverman (1986) also recommends identification before age nine because the testing emphasis on verbal abilities may get in the way of identifying a child with a limited English verbal background. Tuttle, Becker, and Sousa (1988) support the notion that most gifted identification tests, especially after third grade, rely heavily on the printed word and standard English.

The Cognitive Abilities Test, gifted identification test, is based on over twenty-five years of experience and has incorporated research on cognitive development, information processing, and specialization of functions in the two hemispheres of the brain (Howells, 1983). One drawback for E.S.L. children on the Cognitive Abilities Test it that is has been shown (Howells, 1983) that complexity of sentence structure, or vocabulary is too difficult for a socioeconomic group, or highly specialized content can introduce a level of difficulty that interferes with individual's performance and can lead to a false picture of
that individual's cognitive development. Items have been reviewed for vocabulary level and complexity of sentence structure. Overall, the Cognitive Abilities Test individual score reflects a student's ability to discover relationships and show flexible thinking.

Results from a case study by Tyler-Wood and Carri (1991) determined that students scored significantly lower on the Cognitive Abilities Test (Verbal) than on the Cognitive Abilities Test (Nonverbal). Therefore, one needs to be careful with the test chosen for identification because cognitive ability may be tapping different types of information. Gallager suggests looking at these pieces of information to confirm gifted identification: Teacher nomination, achievement test scores, previously demonstrated accomplishments, individual intelligence test scores, and scores on tests of creativity (Gallager as cited in Tyler-Wood and Carri, 1991, p. 64.)

Another test that the Paradise School District has considered using for English as a Second Language populations is the Matrix Analogies Test-Short Form (MAT-SF). This is a nonverbal screening tool that can be individually or group administered by professionals other than the school psychologist. Prewett and Farhney (1994) warn that the MAT-SF should be interpreted by a school psychologist. The MAT-SF is a language free test that requires students to solve figural matrixes. This test is useful in identifying language-impaired and culturally diverse populations.

Studies have mostly supported that this test is a valid test of academic achievement. The MAT-SF was normed on 4,468 students between the ages of 5 and 17 during the fall of 1984. Few studies have found the MAT-SF to measure other forms of
intelligence. The results of the MAT-SF correlated significantly with the Draw-A-Person test (Prewett and Farhney 1994).

The D.I.S.C.O.V.E.R. Process identified more than the required top three percent at Palomino School during the spring 2000 second grade English as a Second Language testing. The state of Arizona's statues does state, "Students shall be served who score at or above the 97th percentile on national norms in any one of three areas - verbal, nonverbal, or quantitative reasoning - on any test from the State Board approved list. Students who score below the 97th percentile also may be served." (R7-2-406A.1.a.)

Palomino has admitted students in the Fall 2000 semester who scored at or above the 97th percentile on the Cognitive Abilities Test. If the student was close to obtaining the 97th percentile on the Cognitive Abilities Test, then another test was given called the SCAT to determine gifted placement.

The SCAT stands for the School and College Abilities Test was developed by the Educational Testing Service and most recently published by Addison Wesley in 1979. It has been used during the spring semester on students grades 3 - 12. All of the questions asked are analogies which is only one type of problem solving. There are 50 questions for the reading section and 50 questions for the math section. This test is not used frequently by the Paradise Unified School District because of old norming, and only one type of multiple choice problem solving instead of fill in the blank and categorizing.

A student who transferred during the spring semester of 2000 to Palomino had a 97th percentile or higher score on the WISC which was accepted for gifted placement.
However, the majority of students admitted to gifted education in the Fall 2000 semester were identified through the D.I.S.C.O.V.E.R. Process.

Summary

The D.I.S.C.O.V.E.R. Process uses two traditional assessments (math and writing) as well as three nontraditional testing methods (Pablo, Tangrams, and Storytelling.)

A trained team of at least six observers evaluates Pablo, Tangrams, and storytelling aspects in a classroom with a high population of English as a Second Language (E.S.L.) learners. Many times Spanish is the language used exclusively for giving directions and interacting with children if all of the students are Spanish-speaking. Each observer rotates to a different group to observe and record either Pablo, Tangrams or Storytelling.

On the same day as the D.I.S.C.O.V.E.R. testing, the observers debrief and rank the students by "Definite", "Probable", "Maybe", and "Unknown" classifications. Students are norm referenced by the performance of their other classmates. According to the spring 2000 second grade D.I.S.C.O.V.E.R. testing at Palomino School, students needed a classification of three or more "Definites" to be eligible for gifted placement at Palomino School.

Several advantages and disadvantages are listed in this research paper for the D.I.S.C.O.V.E.R. Process. The main advantage of the D.I.S.C.O.V.E.R. Process in that nontraditional students who would normally not be identified by the Arizona state approved gifted identification testing, have an opportunity to receive gifted services. The
main disadvantage is that the D.I.S.C.O.V.E.R. Process is norm referenced by each individual classroom. This type of norming is the main reason that the D.I.S.C.O.V.E.R. Process is not on Arizona's list of approved gifted placement tests.

Four other Javits grants for nontraditional population gifted education identification are presented in this chapter. The Raven's Progressive Matrices (RPM) is a nonverbal gifted identification measure. The RPM is a test of reasoning for young children which is based on visual patterns. The System of Multicultural Pluralistic Assessment (SOMPA) readjusts gifted identification test scores according to how children compare with scores of other children that are the same age and sociocultural backgrounds. The Torrance Test of Creative Thinking (TTCT) has two components: verbal and figural. The TTCT is a divergent thinking test that permits minority children to respond "correctly" in terms of their own experiences. In DeAvila's Cartoon Conservation Scales (CCS) students are presented with 30 cartoon panels and must select the one alternative that makes the story true.

Three other identification methods were presented that searched for nontraditionally identified gifted pupils and is not funded through a Javits Grant. The Draw-A-Man Test is easy to administer because it can be used in any cultural setting. A mental-age scale is assigned that pinpoints details and complexities that were present in students' drawings of men, women, and self. The interview with Behavior Scale yields authentic data because parents are asked what is considered high intelligence in their
Mexican culture. The descriptors obtained from the Spanish interviews are used to rank students by parents on whether or not they view their children as gifted learners. The Case Study Approach can be both powerful and time consuming. At least three indicators are ranked and discussed by a gifted identification committee on an individual basis to determine if the student would benefit from gifted placement.

One traditional testing method that is approved by the state of Arizona for gifted identification of all learners is the Wechsler Intelligence Scale for Children (W.I.S.C.) is presented in this paper. Arizona has approve the W.I.S.C. for use of identifying verbal and nonverbal gifted learners. This means that the Paradise Valley School District would have to look for another examination to identify the quantitative gifted learners because Arizona mandates services for verbal, quantitative, and nonverbal gifted placement.

In the final section of this chapter, the researcher describes the Cognitive Abilities Test which is the current test that the Paradise Valley Unified School District uses in its identification of gifted pupils. The Cognitive Abilities Test is on the list of Arizona's approved tests for verbal, quantitative and nonverbal gifted identification. It is easily administered to large groups for a screening device and is curriculum based. Students have to use reasoning skills to solve problems and not recall of specific information. The reason why the Cognitive Abilities Test is not successfully being used on English as a Second Language Learners is the language of the test which is aimed at middle class vocabulary and jargon. The Matrix Analogies Test-Short Form (MAT-SF) was also discussed in this paper as a possibility for E.S.L. gifted identification. The MAT-SF has not been chosen by the P.V.U.S.D. because it lacks verbal and quantitative measures.
CHAPTER 3

METHODOLOGY

Purpose

The purpose of this study was to determine the effectiveness of The D.I.S.C.O.V.E.R. Process in the identification of gifted English as a Second Language students at Palomino Elementary School in Phoenix, Arizona.

Research Design

The research design used in this study was the descriptive case study.

The case study is an intensive description and analysis of a phenomenon or social unit such as an individual, group institution, or community. In contrast to surveying a few variables across a large number of units, a case study tends to be concerned with investigating many, of not all, variables in a single unit. By concentrating upon a single phenomenon or entity ("the case") this approach seeds to uncover the interplay of significant factors that are characteristic of the phenomenon. (Merriam, 2000, p. 108)

The researcher actively participated in the D.I.S.C.O.V.E.R. training with Dr. Judy Rogers during the 1998 spring semester. The researcher was also involved with the initial implementation of the D.I.S.C.O.V.E.R. testing process during the 1998-1999 school year when Limited English Proficient (L.E.P.) children in grades two, three, and four were tested at Palomino School. During the 1999-2000 school year the researcher participated

Palomino Elementary School was selected by the researcher for a case study because of a prior teaching experience of sixth grade bilingual classes during the 1997-1998 school year. Palomino is currently the only school in the Paradise Valley District which is implementing the D.I.S.C.O.V.E.R. Process.

In addition to second, third, and fourth grade D.I.S.C.O.V.E.R. testing during the 1999 spring semester, the D.I.S.C.O.V.E.R. testing process was used to identify second grade gifted ESL students during the spring semester of the year 2000. The testing involved successful completion of one traditional math battery (addition and subtraction), and two innovative nontraditional math exercises called Pablo and Tangrams. In addition, students reading and writing skills were assessed using one traditional writing set and an innovative activity session called storytelling. The designation for successful D.I.S.C.O.V.E.R gifted identification achievement was called "definite" identified by the letter "D." Students successfully achieving in three of the five assessments were selected for gifted services.

**Population**

The Paradise Valley Unified School District, located in northeast Phoenix, has experienced a large increase in the enrollment of Limited English Proficient students. During the 1999-2000 school year Palomino was a school with 60% L.E.P. enrollment.
Therefore, Palomino is the school being presented in this thesis because it is the school with the greatest E.S.L. gifted identification need in the Paradise Valley School District and the only school that has implemented the D.I.S.C.O.V.E.R. Process.

Using the Management Information System's data base for the Paradise Valley Unified School District the data of ethnic distribution was obtained for Palomino School on September 20, 2000 (Table 5).

<table>
<thead>
<tr>
<th>Ethnic Groups</th>
<th># of students</th>
<th>% of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic</td>
<td>510</td>
<td>68%</td>
</tr>
<tr>
<td>White</td>
<td>186</td>
<td>25%</td>
</tr>
<tr>
<td>Indian</td>
<td>21</td>
<td>3%</td>
</tr>
<tr>
<td>Black</td>
<td>18</td>
<td>2%</td>
</tr>
<tr>
<td>Asian</td>
<td>13</td>
<td>2%</td>
</tr>
<tr>
<td>Totals</td>
<td>748</td>
<td>100%</td>
</tr>
</tbody>
</table>

The data shows that Hispanics are the majority of students in the Palomino student body with 68 percent enrolled. Therefore, Hispanics should be the majority of those students participating in the gifted program at Palomino School during the 2000 - 2001 school year.

Table 6 presents information indicating the number of students enrolled in the Gifted Program (69) and their percentages by ethnicity grouping. This information was obtained with permission in September of the year 2000 from the gifted education
department's data base of student participating in gifted programming in the Paradise Valley Unified School District.

<table>
<thead>
<tr>
<th>Ethnic Group</th>
<th># of students</th>
<th>% of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic</td>
<td>56</td>
<td>81%</td>
</tr>
<tr>
<td>White</td>
<td>11</td>
<td>16%</td>
</tr>
<tr>
<td>Black</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Indian</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Asian</td>
<td>2</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>69</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Most students in the gifted program in the Fall of 2000, are Hispanic. There are no students from Black and Indian decent. The numbers of students qualifying for gifted serviced also reflected the results of the three district assessments - Cognitive Abilities Test, SCAT, and the nontraditional assessment only used at Palomino School - The D.I.S.C.O.V.E.R. Process.

The primary languages spoken at Palomino during the 1997-1998 school year were (listed in greatest to least spoken order): Spanish (418), English (311), Serbian (24), Navajo (3), Arabic (2), and Romanian (1). If the native speakers of Serbian, Navajo, Arabic, and Romanian languages could be found and trained, the D.I.S.C.O.V.E.R. Process could be used to identify other E.S.L. populations in addition to the identification
of Spanish bilingual pupils.

The population involved in the D.I.S.C.O.V.E.R. Assessment Process during the spring 2000 semester came from students tested in the second grade. There were 115 tested; 52 males and 63 female. All students were Spanish-speaking Hispanics.

Assumptions and Limitations

It is assumed that all of the observers on the D.I.S.C.O.V.E.R. team are properly trained and adhere to the specified observers' roles. There is an assumption that observers are objective while making their observations and classifications of the students into groups of "definite," "probable," "maybe," and "unknown" categories. Accurate recording of observations and interactions is also assumed. It is also assumed that the students and observers are fluent in speaking, reading and writing of either English or Spanish considering that these are the two languages that the observers are recording. It is also assumed that the top three percent of each classroom will be identified for gifted services at Palomino school.

The limitations for this study is an analysis of four second grade Spanish bilingual classrooms. There were a total of six second grade classes at Palomino School during the spring semester of the year 2000. It is possible that there were other children learning English as a Second Language (who were not Spanish-speakers) in the other two second grade classrooms that were not observed.
This study is also limited to Palomino School even though other schools in the district service bilingual and English as a Second Language students.

Procedure

The D.I.S.C.O.V.E.R. testing took place on April 17th and 18th during the spring semester of the year 2000. There were 15 observers present on April 17th including the presence of the Gifted Coordinator, Laura Anderson, and the gifted education teacher who was not fluent in Spanish. On April 18th there were 11 observers present for the gifted testing (the gifted coordinator and gifted education teacher for Palomino were not present.) Normally, six or seven teachers are present for a D.I.S.C.O.V.E.R. testing session, but seven new people were being trained with the D.I.S.C.O.V.E.R. Process during April 17th and 18th. For each of these two testing session dates an experienced and properly trained D.I.S.C.O.V.E.R. team member was present at each table to correctly model the process.

The other testing dates were May 1st and 2nd. One second grade class was tested per date. There were a total of four second grade classes tested in all during the spring semester of the year 2000.

Observers helped set up the classroom into student table groups of six children. Butcher paper was taped to the desks so that it appeared as though the children were working with one big table. This large table is important because the students have to share the Pablo pieces. The butcher paper was needed so that pieces could be easily seen
and not lost. Name tags were made and placed at each of the children's seats.

Each day started with the collective grading of the math pre-assessments. Observers scored and ranked each paper according to the number of correct responses the child obtained. Afterwards, the team had a discussion of where the cutoff scores would before classifications of "definite," "probable," "maybe," and "unknown." Then observers checked over the boxes of supplies that they would be using for that day's testing to make sure the testing materials were complete and ready for use.

Next, observers carried their boxes of supplies to the classroom to be tested. The first activity conducted by the observers was Pablo. An observer chose one table at which to sit and introduced herself to the students. She then recorded students' names and placements on the grid recording sheet. The observers conducted the six Pablo activities after the teacher directions for each one were given. The six activities were: free play, design making, make one of the three shapes displayed, create objects displayed in photograph, creation of something moveable with connector pieces, and finally, creations of anything they like using connectors and Pablo pieces. Shortly after this activity, the observers debriefed the observations of second grade ESL student performances, while students took a quick bathroom break, to write any notes that would be important later on in the discussion of who will receive "definite" rankings.

The following activity was the most lengthy. This was storytelling. Observers either went into different rooms or chose a quiet place in the testing classroom to take their five to six students. The reason for this isolation was so that bilingual stories could
be clearly heard and tape recorded. The difficulty of this activity was that the noise level is rather loud because children were allowed to play with toys that they have probably never seen before. Some of the children would lose focus of the goal of the activity which was to describe one toy using as much detail as possible, compare two similar toys using as many descriptors as possible, and the creation of an original story using one or all of the toys that the students were given. Observers only worked with one student at a time and students were not allowed to trade toys with other children because each bag had two people of various races, two animals, a vehicle, and two objects. The bags were prepared this way so that all students would have the same manipulatives to work with during this lengthy activity. Students were then given a recess when they finished and observers went to a different location to write and check the accuracy of their written documentation using the tape recorded stories. After this was completed the observers usually participated in a working lunch where the Pablo and storytelling activities were ranked for "definite," "probable," "maybe," and "unknown" classifications. The majority of the stories were read aloud in Spanish to the whole observer group for consensus of classification.

After lunch, observers rotated to another new group of students for the last D.I.S.C.O.V.E.R. activity which was Tangrams. Students were handed a bag of 21 Tangram pieces and were asked to make sure that they had all of the pieces (6 large triangles, 3 medium triangles, 6 small triangles, 3 parallelograms, and 3 squares). The students were shown a square made of two large triangles by the teacher. They were
instructed in Spanish to make a square with as many of their 21 pieces that they could. They were also told that they could not leave holes in the middle of the shape. Students were given about 10 minutes to complete this part of the assessment. Then students were given a six page test booklet and told to fill all of the page without leaving any spaces open. They had to get the observer's attention and approval before being allowed to proceed to the next page. The observers had to record how much time the students took to finish the page and which, if any, clues were given. Students were given one half hour to work on the booklet and had a challenge page available if needed.

The observers met in a separate room to debrief the Tangram section of the D.I.S.C.O.V.E.R. Process. After all classifications were discussed and assigned they were recorded on a master class roster. The writing pre-assessments were passed around the table for discussion and classification. These scores were then tabulated. Finally, students who had three or more "definite" (D) classifications were recorded at the bottom of the class roster as being identified for gifted services. The observer team then put all of their documentation into the teacher's class folder which was saved by the gifted instructor for documentation of the identification process. Then all manipulatives were inventoried by the observers. Discussion was also held on what went well during the testing session, and what could have been improved.
Method of Analysis

Careful examination of percentages of second grade English as a Second Language students who qualified and those who did not qualify for gifted services at Palomino are presented. Students receiving three of five "D" scores in five categories (Pablo, Tangram, storytelling, math, and story writing) were assumed to be at a "gifted level." A comparison of the Cognitive Abilities Test identification rate before and after the implementation of the D.I.S.C.O.V.E.R. Process at Palomino School during the 1998-1999 and 1999-2000 school years is needed to determine the effectiveness of the D.I.S.C.O.V.E.R. Process' identification rate.

During the 1999-2000 school year 17 students out of a 677 third through sixth grade student body were identified by either the Cognitive Abilities Test, SCAT, or WISC. This was a .025% gifted identification rate. None of those identified students were English as a Second Language students. By the end of the academic year, using the classroom rosters to gather data, only 11 students were participating in the gifted program at Palomino School (the identification rate declined to .016% of the 677 third through sixth grade student body.)

The D.I.S.C.O.V.E.R. assessment committee along with the gifted coordinator of the Paradise Valley Unified School District decided that identification of gifted children at Palomino School at 9% level would be considered a positive determination that D.I.S.C.O.V.E.R. was indeed a valuable instrument. A gifted identification rate of the top three percent of the student body is considered an acceptable rate by the state of
Arizona. Without the D.I.S.C.O.V.E.R. Process, only .009% of the 748 students tested at Palomino would have qualified for the academic year 2000 - 2001 gifted services based on 97% or above scores on the Cognitive Abilities Test and the SCAT. Therefore, the D.I.S.C.O.V.E.R. Process identified the remaining 8% of students in the 2000 - 2001 gifted program at Palomino School. That high gifted identification level warranted continued use of the D.I.S.C.O.V.E.R. Process by the Paradise Valley Unified School District.
CHAPTER 4

PRESENTATION AND ANALYSIS OF THE DATA

Demographics

During the 2000 spring semester 115 second grade English as a Second Language students were tested using D.I.S.C.O.V.E.R.: of the 115 students, thirteen were identified as qualifying to receive academic gifted services at Palomino School. In addition, 20 third, fourth, and fifth English as a Second Language students were identified to receive services during the previous year's (spring 1999) testing. The students who were identified during 1999 did not receive services until the 2000 - 2001 school year because a bilingual teacher was needed who had gifted training who could teach the classes. Palomino School also had to receive more funding from the district to increase gifted services at Palomino from a part-time position to a full-time position. Palomino was one of the only schools in the Paradise Valley School District with a part-time gifted teacher, yet it had the highest pupil enrollment.

Findings and Results

The statistics presented in this chapter involve identifying how many "definites" students received of the five categories of the D.I.S.C.O.V.E.R. Assessment (Pablo, Tangrams, storytelling, math pre-assessment, and story writing pre-assessment.) All
second grade students who received at least three "definite" classifications out of the five assessments from the Discover Testing could be admitted to Palomino School's gifted education for the 2000 - 2001 school year. According to Anderson (September, 2000), students will most likely need a classification of three "definites" from the Discover Testing to qualify for gifted services for the 2001 - 2002 school year at Palomino Elementary.

It is important to look at the improved school wide identification rate because the D.I.S.C.O.V.E.R. Process was also used on 1999 second, third and fourth grade students. The aforementioned students tested were enrolled in grades four, five, and six during the 2000 - 2001 school year. The D.I.S.C.O.V.E.R. Process greatly increased ESL gifted enrollment school wide compared to the administration of the Cognitive Abilities Test alone as shown in Table 7. Of 52 males and 63 females 5 males and 8 females received three or more "D" classifications.

Table 7: Summary of Year 2000 School Wide Gifted Identification at Palomino

| Total Number of 3rd-6th Grade Students at Palomino School (September 2000): | 748 |
| Number of 3rd-6th Grade Students Qualifying for Gifted Education: | 69 |
| Percentage of 3rd-6th Grade Students Enrolled in Gifted Education: | 9% |

This research examines how many second grade ESL students tested during the spring 2000 semester were identified by the D.I.S.C.O.V.E.R. Process to receive gifted services at Palomino School. Table 8 presents exact numbers and percentages of second grade ESL students receiving "definite" qualification on the five D.I.S.C.O.V.E.R.
assessment activities. Students needed to receive at least three definite" qualifications to be admitted to gifted education at Palomino School. Table 8 information was obtained from the four classroom recording sheets used during the spring 2000 testing sessions.

<table>
<thead>
<tr>
<th>How Many Students Received Score</th>
<th>% of Students Tested</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Definites: 0 Second Grade Students</td>
<td>0%</td>
</tr>
<tr>
<td>4 Definites: 3 Second Grade Students</td>
<td>3%</td>
</tr>
<tr>
<td>3 Definites: 10 Second Grade Students</td>
<td>9%</td>
</tr>
<tr>
<td>2 Definites: 21 Second Grade Students</td>
<td>18%</td>
</tr>
<tr>
<td>1 Definite: 38 Second Grade Students</td>
<td>33%</td>
</tr>
<tr>
<td>0 Definites: 43 Second Grade Students</td>
<td>37%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

Total Number of Second Grade Students Tested in 2000 Were: 115
Total Number of English as a Second Language Classes Tested: 4
Total Number of Second Grade Students with 3 or 4 Definites: 13
% of DISCOVER tested 2nd grade students identified: 11%

There were a total of 200 second grade students at Palomino School during the spring 2000 semester. Therefore, 57% of the second grade population (115 students) were classified as ESL students. These ESL students were first tested using the Cognitive Abilities Test and then the D.I.S.C.O.V.E.R. Process. There were a total of six second grade classrooms at Palomino during spring 2000 - four were classified ESL and two were regular. The eleven percent identification rate of second grade ESL students is well above
the nationally used three percent identification rate.

Table 9 demonstrates how many ESL males and females were tested using the D.I.S.C.O.V.E.R. Process during the spring semester of 2000. This data was also obtained from the four classroom recording sheets used during April and May of 2000.

<table>
<thead>
<tr>
<th>Sex</th>
<th>Total Tested</th>
<th>%</th>
<th>Total Qualified</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>52 students</td>
<td>45%</td>
<td>5 students</td>
<td>38%</td>
</tr>
<tr>
<td>Female</td>
<td>63 students</td>
<td>55%</td>
<td>8 students</td>
<td>62%</td>
</tr>
</tbody>
</table>

Table 9 demonstrates that more ESL females than ESL males were tested. It is also true that more ESL females were identified than ESL males. These are powerful statistics because gifted programs tend to service more male than female students.

If the D.I.S.C.O.V.E.R. Process had not been implemented during the spring semester of the year 2000, only two second grade students out of a total of 200 tested students would have been identified by the Cognitive Abilities Test to receive gifted services at Palomino School. All second grade students were tested using the Cognitive Abilities Test regardless of bilingual or ESL status. Most ESL students, therefore, participated in the Cognitive Abilities Testing and the D.I.S.C.O.V.E.R. Process. There was only one male Caucasian student and one female Hispanic student identified by the
Cognitive Abilities Test. The percentage of second grade students identified at Palomino by the Cognitive Abilities Test was one percent. At least four other students should have been identified to meet the national three percent rate.

The D.I.S.C.O.V.E.R. Process has improved the gifted identification rate at Palomino School. During the previous 1999 - 2000 school year 17 students were enrolled in the gifted program at Palomino School. The 2000 - 2001 school year has 69 students enrolled in the program. This is a 406% increase in Palomino's gifted program enrollment between the 1999 - 2000 and 2000 - 2001 school years. The 1999 -2000 school year only identified students for gifted services by using the Cognitive Abilities Test, School and College Abilities test (SCAT), and two students transferred into the school with 97% or above scores on the Wechsler Intelligence Scale for Children - Revised (WISC-R). The SCAT test is only used as a back up test if the students scores 90% or above on the Cognitive Abilities Test. The SCAT has 50 word analogies for the verbal testing and 50 mathematical analogies for the nonverbal and quantitative testing. This is a timed test that lacks the filling in of blanks and categorizing to make it more well rounded. The SCAT has not been re-normed since 1979, therefore, the Paradise Unified School District only uses the SCAT as a back-up test. The 2000 - 2001 school year used the Cognitive Abilities Test, SCAT, and the D.I.S.C.O.V.E.R. Process to identify gifted students from ESL and non-ESL populations.
CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to determine the effectiveness of the D.I.S.C.O.V.E.R. Process in the identification of gifted English as a Second Language students at Palomino Elementary School in Phoenix, Arizona.

Most of the literature examined in chapter two addressed the D.I.S.C.O.V.E.R. Process. Specifically, background information on how the process got started, what the testing process involves for correct implementation, researched advantages and disadvantages of the D.I.S.C.O.V.E.R. Process were presented.

The Paradise Valley Unified School District in Phoenix, Arizona elected to use the D.I.S.C.O.V.E.R. Process at Palomino School to specifically identify bilingual and English as a Second Language (ESL) gifted students. Palomino Elementary School is the largest student populated school in the Paradise Valley Unified School District (PVUSD) and had the fewest gifted students identified for its program. After careful study by the district, it was determined that the majority of the school's population was ESL and/or of minority racial background, therefore, the PVUSD sought a testing model that would be appropriate and fair for its ESL population at Palomino School.
The D.I.S.C.O.V.E.R. testing model uses traditional and innovative methods to test ESL and bilingual students. There are a total of five tests administered: one traditional math battery (addition and subtraction); and two innovative nontraditional math exercises called Pablo and Tangram; one traditional writing set and an innovative activity session called storytelling.

The D.I.S.C.O.V.E.R. method is different from the Cognitive Abilities Test, which is the district's approved gifted identification test for regular student populations, in two important ways. The first is that students are allowed to use their native language, most often Spanish, during the entire testing process while they work in groups with their bilingual and ESL peers. Secondly, the ESL students assessed by the D.I.S.C.O.V.E.R. method are only compared to their classroom peers. This comparison is quite different from the nationally normed top three percent identification procedure that the Cognitive Abilities Test utilizes.

Other literature examined included four other Javitis grant recipients that were aiming to identify nontraditional populations of children for gifted services. Those methods mentioned were: The Raven's Progressive Matrices, The System of Multicultural Pluralistic Assessment, The Torrance Test of Creative Thinking, and DeAvila's Cartoon Conservation Scales.

Four other identification methods were presented that were not funded by a Javits grant. They were The Draw a Man Test, The Interview with Behavior Scale, Case Study, and Wechsler Intelligence Scale for Children-Revised. The aforementioned eight
nontraditional gifted identification methods were presented in this research so that one could readily compare these methods to the D.I.S.C.O.V.E.R. Process to assess its effectiveness. They were also presented to give alternative gifted testing choices besides the D.I.S.C.O.V.E.R. Process.

Chapter three presented the research design of the descriptive case study. Research presented was an intensive description of Palomino School's implementation of the D.I.S.C.O.V.E.R. testing process for the ESL second grade population of one hundred fifteen students during the spring semester of the year 2000. Only Palomino School was studied because it is the only school in the Paradise Unified School District using the D.I.S.C.O.V.E.R. Process in addition to the use of the Cognitive Abilities Test for gifted identification. Eleven percent of the one hundred fifteen second grade ESL students tested were identified for gifted services at Palomino School. The eleven percent identification rate is well above the nationally chosen rate of the top three percent of the entire school population throughout the nation.

Chapter four gave statistics for the spring 2000 second grade ESL testing. These statistics included percentages of sixty-two percent of ESL girls and thirty-eight percent of ESL boys identified. It also showed how many second grade students would have qualified for gifted education if just the Cognitive Abilities Test was given. All second grade students were tested with the Cognitive Abilities Test regardless of ESL and/or bilingual status. Out of 200 second grade students only two students were identified as gifted pupils through the Cognitive Abilities Test (one male student was of Caucasian
descent and the other female was of Hispanic descent). The percentage of second grade students identified using the Cognitive Abilities Test was one percent. At least four other students should have been identified to meet the national three percent rate. Chapter four also discussed school wide gifted identification for Palomino Elementary School. The identification was based on the Cognitive Abilities Test and The D.I.S.C.O.V.E.R. Process. Out of a total of 748 third through sixth grade students enrolled during September of 2000, sixty-nine students were identified for gifted services of verbal, nonverbal and quantitative classes at Palomino School. This combined test identification rate is nine percent which is six percent higher than the national gifted identification rate of three percent.

Conclusions

Even though The D.I.S.C.O.V.E.R. Process is not a nationally normed gifted identification test, the researcher believes that the D.I.S.C.O.V.E.R. Process is effective in the identification of English as a Second Language students for gifted services at Palomino School as determined by the greater than 3% identification rate of ESL students. Considering that in the fall of the year 2000, seventy percent of the school population was of Hispanic origin, better than fair representation has been achieved with eighty-one percent of students being enrolled in gifted education at Palomino School are Hispanic, eleven percent are Caucasian, and two percent are Asian pupils. The school wide identification rate of 9% (69 identified out of 748 students in grades 3-6) is well above
what the gifted coordinator and D.I.S.C.O.V.E.R. team had anticipated. The new gifted teacher at Palomino along with the gifted coordinator for the Paradise Valley Unified School District will have to determine whether or not the sixty-nine identified students are successfully participating and benefiting from gifted education classes at Palomino School.

The main advantages of using the D.I.S.C.O.V.E.R. testing method over other gifted identification methods are intelligence fair testing, divergent thinking encouraged, comfortable testing atmosphere, and culture reduced testing. Students can verbally tell answers in their native language during the three observed activities (Pablo, Tangrams, and Storytelling.) The use of the native language allows the students to share sophisticated and higher level thinking knowledge with the observers and classmates. Students often figure out and solve their own problems during the D.I.S.C.O.V.E.R. activities. Many of the responses given during the D.I.S.C.O.V.E.R. assessment are not dependent on prelearned solutions to problems. Children are encouraged to do their best work and are motivated to create and experiment with the interesting manipulatives that are provided for them. All children clearly understand the requirements of the D.I.S.C.O.V.E.R. activities. Hispanic children especially enjoy working in cooperative groups during the D.I.S.C.O.V.E.R. activities which mirrors their daily cultural practices.

**Recommendations To The Paradise Valley School District**

The main reason why the D.I.S.C.O.V.E.R. Process is not on the Arizona list of approved gifted identification tests is because D.I.S.C.O.V.E.R. is not a nationally
normed test. Instead this testing instrument is classroom normed. What if one ESL classroom has more high achieving students than another ESL classroom at the same grade level? Could this mean that some deserving pupils get left out of gifted identification while other ESL students in a different classroom are allowed entry into the gifted program at Palomino School? One way to remedy this difficult situation is to create rubrics to be used for all five of the testing procedures (Pablo, Tangram, Story telling, Math and Writing assessments). Students who are selected with three "definite" qualifications should also meet the rubric standards for the areas that they scored "definites." If they do not meet the rubric standards, then possibly another instrument will help to identify them as needing gifted services.

The D.I.S.C.O.V.E.R. testing creator claims to utilize all seven of Gardner's multiple intelligences (Verbal/Linguistic, Visual/Spatial, Bodily/Kinesthetic, Intrapersonal, Interpersonal, and Musical Rhythmic) in the D.I.S.C.O.V.E.R. assessment. One can see all of theses intelligences displayed and assessed in the nine page problem-solving behavior checklist. The state of Arizona (1993) only requires that verbal, nonverbal, and quantitative reasoning gifted pupils be serviced. The researcher suggests that those three areas should be the main focus in the D.I.S.C.O.V.E.R. identification at Palomino School and that the nine page check sheet with all of Gardner's intelligences listed should not be used in its original form. Possibly, a modified list of all the indicators that reflect verbal, nonverbal, and quantitative intelligences could be used. If, in the future, the state of Arizona chooses to use Gardner's intelligences as its criteria for gifted identification, then
the D.I.S.C.O.V.E.R. team could re-implement the usage of the original problem-solving behavior checklist. The newly formed gifted curriculum would have to match Gardner's seven intelligences as well.

It is recommended that D.I.S.C.O.V.E.R. team members all receive the proper training necessary to correctly implement the D.I.S.C.O.V.E.R. Process. Maybe, the assessment team could meet with other teams which are implementing D.I.S.C.O.V.E.R. in the state of Arizona and discuss progresses and necessary modifications to meet the needs specific populations in Arizona. Also, new D.I.S.C.O.V.E.R. team members should be trained by the originators of the testing process. It is difficult to learn and understand the whole testing process simply by watching it being implemented one time and then participating as a D.I.S.C.O.V.E.R. team member during a second testing session. There should be an advisor periodically observing the team members to make sure that they are following the D.I.S.C.O.V.E.R. testing standards. The advisor should also monitor how objective team members are as they record and classify students who participate in the D.I.S.C.O.V.E.R. Process.

An obvious recommendation is that teacher servicing students with gifted potential who are not usually identified (such as highly creative, culturally diverse, English as a Second Language, and poor students), have intensive training in meeting the special needs of these populations. The curriculum for gifted education at Palomino School should reflect the needs and cultural backgrounds of its identified students. Another recommendation is that the teacher of these students is fluent in reading, writing, and
speaking the Spanish language. This Spanish fluency will greatly assist the teacher with communications with students and parents. Many parents are not aware of these special services that their children can be receiving. The teacher should aim to give parents suggestions on what activities could be done at home to facilitate their children's giftedness.

The gifted education teacher at Palomino School should also monitor the success of each student who participates in the gifted program. It may be possible that the child may struggle with the rigorous programming. There should be a plan in place of what happens to a student who is not successfully achieving in the gifted program. Maybe, the teacher could develop an assessment to demonstrate student progress in the gifted program at Palomino School.

Most of the literature available on gifted identification states that more than one method or testing instrument should be used in making a gifted placement. It is possible that the student was not able to take the test or was having a bad day during the testing situation. If more than one measure is used, students will be given a fair chance to let their true abilities be considered for placement. Paradise Valley Unified School District should consider another instrument, in addition to the D.I.S.C.O.V.E.R. Process, to be used for identifying and verifying placement of an ESL student in the gifted program at Palomino School. Perhaps one of the eight methods mentioned in this research project could be utilized (Raven's Progressive Matrices, System of Multicultural Pluralistic Assessment, Torrance Tests of Creative Thinking, Cartoon Conservation, Draw-A-Man Test, Interview
with Behavior Scale, Case Study Approach, and Wechsler Intelligence Scale for Children-Revised). One of the easiest to implement will be the interview with behavior scale which can be filled out in English or Spanish by parents and teachers.
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BIOGRAPHICAL SKETCH

Tami Anne Olney was born Tami Anne Carpenter on October 31, 1967 in Milwaukee, Wisconsin where she was raised and attended public schools. She graduated in 1986 from West Milwaukee High School in West Milwaukee, Wisconsin. Mrs. Olney continued her education at the University of Wisconsin-La Crosse where she graduated with a Bachelor of Science in Education in December of 1991. Her undergraduate majors were Elementary Education and Spanish. During her undergraduate years she worked at various camps: Y.M.C.A. (Ingleside, IL), Wisconsin Lions Camp (Rosholt, WI), and Concordia Language Villages - El Lago del Bosque (Moorhead, MN). She was a foreign exchange student to Valladolid, Spain during the spring semester of 1990.

Tami Olney was a bilingual and E.S.L. teacher for six years in the state of Arizona. She taught eighth grade at risk students in Yuma during the 1992 - 1993 academic year. During the summer of 1993, the researcher was a lifeguard for handicapped children at Texas Lions Camp (Kerrville, TX). Later in 1993 she moved to Phoenix and taught three years of sixth grade bilingual education courses, and one year of fourth grade bilingual education in the Cartwright School District. In 1997 she moved to the Paradise Valley District and taught in an E.S.L. sixth grade classroom at Palomino School. From 1998 - 2001 Mrs. Olney has taught at Eagle Ridge Elementary School in a regular third grade classroom.