EFFECTS OF A CREATIVITY TRAINING PROGRAM ON CREATIVE ABILITIES AND SELF-CONCEPT IN MONOLINGUAL AND BILINGUAL ELEMENTARY CLASSROOMS

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Denise de Souza Fleith, Ph.D.
University of Connecticut, 1999

Educators and psychologists often emphasize the importance of developing students’ creativity. As a consequence, many programs have been developed to foster creativity in the educational environment. Differing results have been found with respect to the effects of creativity training programs on divergent thinking abilities, and little research has examined the effects of a creativity training program on affective variables. Most studies in creativity have investigated differences among individuals from similar cultural and linguistic backgrounds. Although some efforts have focused on evaluating the relationship between creativity and bilingualism, very few studies have examined the effects of creativity training programs on students in monolingual and bilingual classrooms. Therefore, the purpose of this study was to investigate the effects of a creativity training program, *New Directions in Creativity*, on students’ creative abilities and self-concept in monolingual and bilingual elementary classrooms.

A pretest-posttest control group design using a sample of eight monolingual and six bilingual classrooms from one school in New England was used in this study. The bilingual classrooms consisted of Brazilian students. Descriptive hierarchical discriminant function analyses were employed to investigate differences between
treatment and control groups with respect to creative abilities and self-concept. Qualitative procedures were used to analyze data from interviews with teachers and students who participated in the program. The quantitative findings indicated that the creativity training program, *New Directions in Creativity*, slightly improved the creative abilities of students in the treatment group. The results also indicated that the effect of the creativity training program on the self-concept of students in the treatment group was small, and the control group students experienced a substantial decline in self-concept between pretest and posttest. Placement in monolingual or bilingual classrooms was not found to affect students’ creative abilities and self-concept. Qualitative analyses generated three core categories that help explain how the creativity training program, as well as the school environment, influenced students’ creative abilities and self-concept, which are the implementation of the creativity training program, the degree of bilingualism of Brazilian students, and cultural issues.
APPROVAL PAGE

Doctor of Philosophy Dissertation

EFFECTS OF A CREATIVITY TRAINING PROGRAM ON CREATIVE ABILITIES AND SELF-CONCEPT IN MONOLINGUAL AND BILINGUAL ELEMENTARY CLASSROOMS

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1999
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CHAPTER ONE
INTRODUCTION AND OVERVIEW OF THE RESEARCH

Introduction

Interest in creativity as an area of educational research began in the second half of the 20th century. Since then, creativity research has had an impact on educational objectives, teaching strategies, and administrative practices (Torrance, 1983). Educators have emphasized the importance of promoting favorable conditions for developing the creative potential of students, and several studies have suggested ways to cultivate creativity in an educational environment (Alencar, 1993; Amabile, 1989; Daniels, 1997; Piirto, 1992; Starko, 1995; Sternberg & Williams, 1996; Timberlake, 1982; Torrance, 1983).

With current advances in the study of creativity, many misconceptions have been dismantled. For example, the idea that creativity is a gift residing within a few individuals was replaced by beliefs about creative potential being an attribute of individuals. Also, while creativity was viewed as being based exclusively on internal factors, recent studies (Amabile, 1983; Csikszentmihalyi, 1996) have shown that the environment has a strong impact on creative production. Finally, the notion that creativity can be compared to a crystallized structure has been effectively called into question by the expansion of several training programs around the world (Alencar, Fleith, Simabukuro, & Nobre, 1987; Necka, 1992; Parnes, Noller, & Biondi, 1977; Renzulli, 1973, 1986; Torrance, 1979), in which the main goal is enhancing creative abilities.
It is also posited that the creativity construct includes cognitive and affective components (Arieti, 1976; Davis, 1992; Martindale, 1989; Starko, 1995; Tardif & Sternberg, 1988; Vernon, 1989). However, clear empirical evidence is not available about the relationship between creativity and affective variables, such as self-concept (Dowd, 1989; Gilbert, 1991; Schubert & Biondi, 1977; Sexton, 1984; Williams, Poole, & Lett, 1977). Therefore, it is necessary to investigate the relationship between self-concept and creativity to better inform teachers about educational strategies that enhance both students’ creativity and self-concept. Despite the recognition of the importance for fostering students’ creative potential, teachers often give priority to the development of logical thinking that emphasizes knowledge, recall, and reproduction (De Bono, 1984; Gardner, 1991; Von Oech, 1983). In this regard, it is important for teachers to learn how to implement educational strategies that promote the development and expression of students’ creative abilities. Therefore, the purpose of this study was to investigate the effects of a creativity training program on the creative abilities and self-concept in monolingual and bilingual classrooms. The study assessed changes in creative abilities and self-concept of students in monolingual and bilingual classrooms after teachers received staff development on classroom creativity strategies and conducted creative thinking activities in their classrooms. Teachers implemented a creativity training program, entitled *New Directions in Creativity*, developed by Renzulli (1973, 1986).

**Statement of the Problem**

Past research has focused on the effects of creativity training programs on cognitive factors. Little research, however, has examined the effects of a creativity
training program on affective variables. Furthermore, few attempts have been made to investigate the effects of a creativity training program on individuals from different linguistic and cultural backgrounds (Jellen & Urban, 1988; Raina, 1993; Torrance, 1973, 1979). Thus, the problem addressed in this study was gaining a better understanding of the effects of a creativity training program, *New Directions in Creativity*, on the creative thinking abilities and self-concept in grades 3, 4, and 5 monolingual and bilingual classrooms.

**Background of the Study**

The literature review is presented in three sections: an overview of the major creativity training programs, self-concept theories, and the relationship between bilingualism and creativity.

**Creativity Training Programs**

For the past 30 years educators and psychologists have developed different techniques and instructional materials to facilitate the expression of creativity. As Rose and Lin (1984) said: “All the approaches share a common premise that training, practice, and encouragement in using creative thinking skills can increase the degree of creativity manifested by individuals” (p. 11). Although reviews of training programs have substantiated the idea that creativity can be improved, there are still dissonant opinions. Differing views about the effectiveness of creativity training programs are discussed below.
Creative Problem-Solving Program (CPS)

CPS, a creativity training program, which includes divergent and convergent thinking stages, was originally developed by Osborn (1963). The program was elaborated upon by Parnes (1967, 1981), Isaksen and Treffinger (1985), and Treffinger, Isaksen, and Dorval (1997). A recent version (Treffinger, Isaksen, & Dorval, 1997) expanded upon the work of Osborn and Parnes and categorized CPS into three major components: understanding the problem, generating ideas, and planning for action. Empirical evidence of the impact and effectiveness of CPS on creative thinking abilities has been reported in many studies (Rose & Lin, 1984; Torrance, 1972a). However, Mansfield, Busse, and Krepelka (1978) have discussed limitations in the studies that have examined the effectiveness of CPS, such as massive sample attrition and the exclusive use of CPS investigations with high school and college students rather than across the full range of young students and adults.

The Productive Thinking Program

The Productive Thinking Program is a self-instructional program for fifth and sixth grade students who develop creative problem-solving by solving detective mysteries (Covington, Crutchfield, & Davies, 1972; Covington, Crutchfield, Davies, & Olton, 1974). Rose and Lin (1984) found that the Productive Thinking Program accounted for only 1% of the variance in scores of creative thinking abilities. Mansfield et al. (1978) noted that the largest training effects were found in small studies that had serious methodological problems.
The Purdue Creative Thinking Program

Consisting of 28 audiotapes including a presentation of the principles of creative thinking, accompanied by short stories about famous American pioneers, The Purdue Creative Thinking Program also contains exercises providing practice in divergent thinking skills (Feldhusen, Treffinger, & Bahlke, 1970). Rose and Lin’s meta-analysis study (1984) concluded that the practical significance of the Purdue Creative Thinking Program is low (effect size=.329 SD). Similar results were reported by Mansfield et al. (1978).

New Directions in Creativity

Consisting of five volumes, Mark A, Mark B, Mark 1, Mark 2, and Mark 3, the New Directions in Creativity program is designed to help teachers develop the creative thinking abilities of elementary and middle-grade students. Each volume provides teachers with a systematic set of activities (verbal and figural) aimed at promoting creativity in children (Renzulli, 1973, 1986; Renzulli & Callahan, 1986). A few researchers have investigated the effectiveness of this program. Callahan (1973) investigated the effectiveness of New Directions in Creativity program in a quasi-experimental study conducted with intact sixth-grade classrooms. The results indicated a significant main effect of classrooms within treatment on all creativity ability measures. The treatment group achieved higher performance on figural and verbal creativity measures when compared to the control group. These results suggested that the interaction between classroom teachers and students may be the most influential variable in the development of students’ creativity. Callahan (1973) concluded that the New
Directions in Creativity program may have an overall effect on students’ creative thinking, but this effect is modified by their teachers and classroom environments.

In another study, Ford and Renzulli (1976) used the New Directions in Creativity with mentally retarded students, in which significant differences were found between the experimental and control groups when creativity was measured by the Guilford tests of creativity. Lowery (1982) conducted a study to identify the effects of three creativity instructional methods on the creative thinking of gifted elementary school children. In the first method, New Directions in Creativity was implemented as programmed instruction; in the second method, the same program was developed with teaching suggestions and follow-up activities; and the third method consisted of guided fantasy trips with music. The results indicated that students who were trained in the third method scored higher on Torrance Tests of Creative Thinking than students in groups 1 and 2. She also found that there was no significant difference in the treatment means between students trained in method 1 and the students trained in method 2. Given the limited number of investigations conducted using the New Directions in Creativity program, and its well-supported theoretical background, the present study carried out an assessment of this program with a more diverse population.

Theories of Self-Concept

Self-concept has been a subject of interest for psychologists and educators since the beginning of this century (Cooley, 1902; James, 1892). However, it was only in the 1980s that researchers started to develop theoretical models and appropriate instruments, and obtain consistent findings from research about self-concept (Zhang, 1995). Since
then, three major models of self-concept have been proposed: (a) the unidimensional model (Coopersmith, 1967) focusing on a general, overall, or total construct of self-concept; (b) the multidimensional model (Byrne, 1984; Harter, 1985), which postulates that self-concept is a composite of distinct dimensions; and (c) the multifaceted, hierarchical model (Marsh, Byrne, & Shavelson, 1988; Shavelson, Hubner, & Stanton, 1976), which uses the multidimensional construct as a starting point, and then establishes a hierarchy for the distinct factors.

According to Hoge and Renzulli (1991), “Most of the empirical evidence supports some sort of multidimensional conception, and the unidimensional model has relatively little appeal today” (p. 2). Likewise, Harter (1986) posited that self-concept cannot be understood if its dimensionality is ignored. She believes that self-concept cannot be treated as a static, trait-like construct, but as a phenomenon susceptible to changes. Research evidence is generally supportive of the multidimensional model (Byrne, 1984; Harter, 1985; Winne & Marx, 1981). Although relationships among the various facets of self-concept are complex, strong support exists for the relative independence of some facets. However, some controversies exist with respect to the adequacy of hierarchical models. Some researchers have discussed conceptual issues, such as the absence of a theory specifying the way in which the various components organize themselves in a hierarchy (Harter, 1986; Hoge & Renzulli, 1991).
The Relationship Between Bilingualism and Creativity

Many studies have evaluated the relationship between bilingualism and creativity (Carringer, 1974; Corbett, 1990; Jacobs & Pierce, 1966; Janssen, 1969; Kessler & Quinn, 1987; Konaka, 1997; Landry, 1968; Martorell, 1991; Okoh, 1980; Ricciardelli, 1992; Stone, 1992; Torrance, Gowan, Wu, & Allioti, 1979; Wang, 1982). The majority of these investigations have reported that bilingual people have higher performance on creativity measures when compared to monolingual people, suggesting a positive relationship between bilingualism and creativity. However, it is important to note that significant differences were not obtained on all creative ability measures (e.g., verbal and figural fluency, flexibility, originality, and elaboration). A specific pattern was not identified that could characterize the superior performance of bilingual people. The subjects in the studies listed above could be grouped in two categories: immigrants who speak a second language, and children who learn a foreign language in their own country. Because of this, cultural background should be considered when examining research about bilingualism and creativity.

Research Questions

The following research questions were addressed in this experimental study:

1. To what extent can differences between treatment groups (i.e., treatment and control) be explained by variations in creative thinking abilities and type of classroom (i.e., monolingual or bilingual), after adjusting for initial differences in creative thinking abilities?
2. To what extent can differences between treatment groups (i.e., treatment and control) be explained by variations in self-concept and type of classroom (i.e., monolingual or bilingual), after adjusting for initial differences in self-concept?

3. What aspects of the creativity training program appear to influence students’ creative abilities and self-concept?

**Methods and Procedures**

**Research Design**

A pretest-posttest control group design using a sample of intact groups was used in this study. Qualitative methods were used to address the third research question.

**Sample**

The sample included 69 third graders, 72 fourth graders, and 76 fifth graders distributed in 14 classrooms from a suburban elementary school in New England. Almost half of the sample (n=90) were bilingual students, Brazilian immigrants, who spoke both English and Portuguese (their native language). Brazilian students in this school were placed in bilingual education classrooms. When classroom teachers determined that students’ English was adequate, students were placed in monolingual classrooms in which the population is primarily students who spoke English only. Two students, who were in the bilingual classrooms during the course of this study, were placed in monolingual classrooms. The school had two bilingual classes each for grades 3, 4, and 5. The school also had three third, three fifth, and two fourth grade monolingual classes. The academic content was the same in all classes. Classroom teachers were
randomly assigned to treatment and control groups. One teacher who was selected to implement the program in her classroom declined to participate in the treatment group. She was replaced by another teacher who teaches the same grade level. Classroom teachers in the treatment group from one non-bilingual and one bilingual class per grade received instructions on how to implement the creativity program (n=6). The remaining classes constituted the control group. The creativity program package was available to the control group classroom teachers after the completion of the study.

**Treatment**

The training was conducted over a 15 week period. During the first three weeks, teachers received instruction on how to implement the program in the classroom. The researcher met with each teacher individually to introduce the rationale, purposes, principles, activities, and procedures for implementing the activities developed in the *New Directions in Creativity* program (Renzulli, 1973, 1986). Mark I and Mark II volumes of this program were used because they were appropriate for the sample grade levels. The program was designed to help teachers develop students’ creative thinking abilities (fluency, flexibility, originality, and elaboration). The theoretical background of the program is based on Guilford’s Structure of the Intellect Model (1967), and focuses on the divergent thinking section of the model. In the nine subsequent weeks, teachers implemented the creativity program in their classrooms. Teachers were asked to keep a record of the activities developed each week. The researcher observed each classroom and met with teachers every two weeks to ensure that the program was being implemented as planned. Classes in the control group proceeded with regular classroom
activities during the treatment period. Pretest measures were administered during the first three weeks of the staff development training. Posttest measures were administered to the treatment groups immediately after the classroom training was finished, and were administered one week earlier to the control groups.

**Instrumentation**

Three verbal and three figural sub-tests of Torrance Tests of Creative Thinking (TTCT) (1974a) were used to assess the following creative thinking abilities: (a) fluency, the number of different responses the students gave to the stimulus situation; (b) flexibility, the number of different categories of responses to a problem; and (c) originality, new or unique responses that were statistically infrequent. A parallel form of the TTCT was used as the posttest. Test-retest reliability evidence of Torrance’s tests ranges from .60 to .93 (Torrance, 1974a). Many studies (Cropley, 1972; Cropley & Clapson, 1971; Torrance, 1972a) have found support for the predictive validity of TTCT. Torrance (1974a) reported studies that provide evidence for the construct validity of these tests. However, Torrance Tests of Creative Thinking have not gone without criticism. A number of studies (Harvey, Hoffmeister, Coates, & White, 1970; Hocevar, 1981; Wodtke, 1964) have found that correlations of divergent thinking measures, including TTCT, with other measures of creativity have been inconsistent. Low reliability evidence of the TTCT has led researchers to suggest that it be used for research situations only (Wodtke, 1964). The TTCT was selected for this study because it has more technical support than other creativity measures; it is appropriate for the grade levels in this study; and it has been used world-wide (Alencar, 1974; Beaudot, 1971; Fleith, 1990;

Three scales of the Self-Perception Profile for Children (Harter, 1985) were administered to the sample: scholastic competence (child’s perception of his/her competence or ability within the realm of scholastic performance), social acceptance (degree to which the child is accepted by peers or feels popular), and global self-worth (the extent to which the child likes oneself as a person). The internal consistency reliability evidence for the three scales ranges from .75 to .84 (Harter, 1985; Kenny, Archambault, & Hallmark, 1995). Marsh and Gouvernet (1989) provided support for the construct validity of Harter’s instrument. This instrument was selected because it has been used with culturally different samples (Asendorpf & Van-Aken, 1993; Pedrabissi, Santinello, & Scarpazza, 1988; Peixoto & Mata, 1993; Veerman, Tjeerd-ten-Brink, Straathof, & Treffers, 1996). The same scales were administered prior to treatment and after treatment. Instructions to bilingual classroom students were provided both in English and Portuguese for both Torrance and Harter’s instruments.

The Massachusetts English Language Assessment - Oral (Massachusetts State Department of Education, 1994) was used to assess the level of proficiency in English language of Brazilian students. This assessment produces a rich description of a student’s progress toward full English proficiency through a series of informal observations in natural classroom situations, and it is conducted by classroom teachers twice a year. It provides information about the student’s English speaking and listening development. The bilingual education district office provides training for administering the assessment. To obtain biographical data about the sample, students were asked to
complete a survey. Students placed in bilingual classrooms were also asked about their language background.

In addition, semi-structured interviews were conducted with teachers who implemented the program in the classroom and with a sub-sample of bilingual and monolingual students to identify aspects of the creativity program that may have influenced students’ creative thinking abilities and self-concept. The interviews were conducted during the treatment.

**Data Analyses**

Statistical Package for Social Sciences (SPSS, 1998) was the statistical software program used to do the initial screening of the data and the subsequent analyses. Descriptive hierarchical discriminant function analysis was used to address research questions one and two. For research questions one and two, the grouping variables were the groups (i.e., treatment group and control group). The predictor variables for research question one were pretest creative thinking abilities score and type of classroom (i.e., monolingual or bilingual that were dummy coded 0 and 1), which were entered as covariates, and posttest creative thinking abilities score. The predictor variables for research question two were pretest self-concept score and type of classroom (i.e., monolingual or bilingual), which were entered as covariates, and posttest self-concept score. Classroom was used as the unit of analysis in this study. Assumptions related to the discriminant function analysis such as normality, linearity, homogeneity of variance, and independence of observations were examined and found to be met. To address research question three, qualitative procedures were used to analyze data from classroom
observations and interviews. Responses were coded and categorized according to techniques suggested by Strauss and Corbin (1990) and analyzed for patterns and themes. To enhance the trustworthiness of this study, the following techniques were used (Marshall & Rossman, 1995): checking and re-checking the data, value-free note taking, triangulation of sources of data, and keeping a researcher’s journal.

**Limitations**

**Internal Validity**

Testing, statistical regression, experimental treatment diffusion, and compensatory rivalry by the control group were potential threats to this study. To address the potential testing threat, a parallel form was used to measure creative thinking abilities. However, the same self-concept scales were administered before and after treatment, which may be a threat that had an impact on the results. Statistical regression may be a threat to this study. The students in the control group experienced a decline in self-concept scores in the posttest when compared to their scores on the pretest. The researcher met with teachers from both treatment and control groups to explain the purpose of the study, the importance of standardized methodological procedures, and to assure teachers in the control group that they would receive the same materials and opportunity for training provided to teachers within treatment group, after study has been completed. Using these procedures, the researcher tried to control for experimental treatment diffusion and compensatory rivalry by the control group threats. With regard to the qualitative aspect of this study, Lincoln and Guba (1985) suggest credibility as a
replacement term for internal validity. Credibility, therefore, was attempted by spending adequate time in the field, using triangulation sources, and thorough description.

**Statistical Conclusion Validity**

Low statistical power was a threat to this study because of the small sample size. Thus, effect size (practical significance) was the focus of this study rather than the statistical significance. As a consequence, the discriminant function analysis performed was considered a descriptive analysis rather than an inferential analysis.

**External Validity**

The factors that may affect the generalizability of this study are population validity, treatment fidelity, and pretest sensitization. Because this was an exploratory, heuristic study, it has limited population validity, but it has the potential to assess the cognitive and affective characteristics of bilingual immigrant students placed in a transitional bilingual education program, as well as investigate the benefits of a creativity program in developing these characteristics. According to Díaz-Rico and Weed (1995), “The presence of many linguistic and ethnic minority students in the United States has challenged educators to rethink basic assumptions about schooling” (p. xiii). To assure treatment fidelity, the researcher randomly observed some classes and had weekly meetings with teachers to assess how the program was being implemented. Pretest sensitization was a threat to external validity; therefore, the findings must be reported with this in mind. Because of the small number of classrooms participating in this study, a randomized Solomon four-group design, which controls for pretest sensitization threat
(Isaac & Michael, 1995), could not be used. Finally, transferability of one set of findings to another context can be considered as a qualitative measure of external validity (Lincoln & Guba, 1985; Marshall & Rossman, 1995). Thorough description and triangulation of sources of data provided information upon which to base decisions about the transferability of findings to another context.

This chapter presented the statement of the problem, the background of the study, the research questions, and an overview of the methodology. Chapter Two provides a review of literature that served as the basis for this study. The methodological aspects of the study are explained in Chapter Three and the research findings are presented in Chapter Four. Chapter Five includes a discussion of the results, the implications and limitations of the study, and provides suggestions for further research.
CHAPTER TWO

REVIEW OF THE LITERATURE

This chapter reviews the theory and research relevant to the study. The first section describes major creativity training programs and discusses their effectiveness on the development of creative abilities. The second section presents three major models of self-concept and discusses the relationship between self-concept and creativity. The third section describes the foundations of bilingual education and addresses the relationship between creativity and bilingualism.

Creativity Training Programs

According to Parnes (1970), since research has demonstrated that creative behavior is learned, and therefore can be enhanced, programs and courses in creativity have been multiplying. Their common premise is that training, practice, and encouragement in using creative abilities can foster individuals’ creativity. Reviews of training programs (Cohn, 1984; Parnes & Brunelle, 1967; Pyryt, 1997; Rose & Lin, 1984; Torrance, 1972a) have supported the idea that it is possible to teach people to think creatively. Although research findings have concluded that creativity can be improved with training, divergent opinions threaten the consensus that creativity can be developed. For example, Mansfield, Busse, and Krepelka (1978) have claimed that this optimistic conclusion with respect to the development of creativity is premature, since conceptual and methodological problems pervade most evaluation studies. Conflicting views about the effectiveness of creativity training programs are examined below.
Creative Problem-Solving Program

The Creative Problem-Solving (CPS) program was originally developed by Osborn (1963), and has been elaborated upon by Parnes (1967, 1981), Isaksen and Treffinger (1985), and Treffinger, Isaksen, and Dorval (1997). The program includes divergent and convergent thinking stages, and follows brainstorming rules such as: defer judgment, strive for quantity of ideas and unusual ideas, and seek combinations of ideas. According to Treffinger (1996), early representations of the CPS process presented the program as a linear stage model, with a set of strategies to be followed in a prescriptive manner. Recent versions of CPS present the program as a framework for organizing a variety of methods and techniques from which individuals select for dealing efficiently with particular tasks.

Treffinger, Isaksen, and Dorval (1997) have expanded on the work of Osborn and Parnes and categorized CPS into three major components: understanding the problem, generating ideas, and planning for action. The first component includes three stages: mess-finding, seeking opportunities and establishing a general goal for problem-solving; data-finding, examining many details from different viewpoints and determining the most important data; and problem-finding, considering many possible problem statements and selection of one of them. The generating ideas component involves the production of many, varied, and unusual ideas, and the identification of promising options (idea-finding). The third component, planning for action, includes two stages: solution-finding, developing and selecting criteria for analyzing options; and acceptance-finding, considering sources of assistance and actions for implementation, as well as formulating a specific plan of action.
CPS has been considered powerful when used with real world problems (Starko, 1995). However, because CPS is a complex process, students need many, varied experiences with the program to master the stages and apply them to different situations. Furthermore, CPS does not provide specific lessons to be implemented in the classroom, because its primary focus is on the process that can be applied to any curricular area. This may help teachers and students to discuss and work on problems that are relevant for them. On the other hand, some teachers would be more comfortable implementing a more structured program.

Many studies have reported empirical evidence of the impact and effectiveness of CPS. Torrance (1972a) found that 22 studies using combinations of techniques based on the creative problem-solving program achieved some degree of success in enhancing creative abilities. Similarly, in a meta-analysis study about long-term creativity training programs conducted by Rose and Lin (1984), CPS was found to have a consistent impact on creative thinking abilities (effect size=.629 SD). The most powerful effect of CPS seemed to be on verbal creativity. On the other hand, Mansfield, Busse, and Krepelka (1978) have pointed out limitations in the studies that have examined the effectiveness of CPS. According to them, the results of studies on CPS have been favorable due to massive sample attrition and the exclusive use of CPS investigations with high school and college students.
The Productive Thinking Program

The Productive Thinking Program is a self-instructional program for fifth and sixth grade students that aims to develop creative problem-solving abilities and favorable attitudes toward problem-solving by having students solve detective mysteries (Covington, Crutchfield, & Davies, 1972; Covington, Crutchfield, Davies, & Olton, 1974). Self-pacing, self-administration, active participation, and alternative ways of thinking are emphasized in this program.

Treffinger and Ripple (1971) evaluated the effectiveness of the Productive Thinking Program by analyzing the results of six studies. Conflicting results did not offer support for the effectiveness of the program. The researchers concluded that generous spacing of lessons, provision for supplementary practice, and a greater degree of teacher participation were procedures implemented in the Productive Thinking Program that could help improve students’ creativity. Likewise, Torrance (1972a) evaluated the findings of seven studies on Productive Thinking Program, and noted that the program was effective especially when teachers were actively involved in the program. However, without teacher involvement, its impact on creativity was rather low. Rose and Lin (1984) confirmed previous results by finding that the Productive Thinking Program accounts for only 1% of the variance in scores of creative thinking abilities. Mansfield et al. (1978) also noted inconsistent results of the Productive Thinking Program studies when tests dissimilar to the training materials were used. Moreover, they found that the largest training effects have been found in small studies with serious methodological problems.
According to Callahan (1973), a serious problem in this program is the convergent nature of all the activities. “Only negligible attention has been paid to the development of divergent abilities in this program” (p. 34). Mansfield et al. (1978) also criticized the convergent emphasis of the program by pointing out that some of the problems developed in the program required only one right answer. It was noted that findings of studies on the Productive Thinking Program were less powerful at the sixth grade level than fifth grade, suggesting that more challenging activities are required as grade level increases (Ripple & Dacey, 1967).

The Purdue Creative Thinking Program

The Purdue Creative Thinking Program consists of 28 audiotapes, which include a presentation on the principles of creative thinking, accompanied by short stories about famous American pioneers and printed exercises providing practice in divergent thinking skills. The exercises, based on the content of the story, ask children to put themselves in the place of the person in the story, and emphasize the need for many solutions to the problems presented (Feldhusen, Treffinger, & Bahlke, 1970).

Feldhusen et al. (1970) evaluated the results of three studies on the Purdue Creative Thinking Program. The findings supported the effectiveness of this instructional program, indicating that children who received the instructional materials made highly significant gains on creative abilities when compared to children in the control group. Interestingly, one of the studies reported that the impact of the program decreased as the grade level increased (Bahlke, 1969). The effectiveness of the Purdue Creative Thinking Program has also been evaluated in other cultures. Alencar (1974)
reported that fourth and fifth grade Brazilian students who received training obtained significant higher scores on figural and verbal fluency, flexibility, and figural originality than students who did not receive training. Torrance (1972a) found positive effects of this program on divergent thinking scores as reported in seven studies involving elementary grade students.

Conversely, Rose and Lin’s meta-analysis (1984) concluded that the practical significance of the Purdue Creative Thinking Program is low (effect size=.329 SD). They believe that the small effects of this program, as well as the Productive Thinking Program, may be due to the absence of adequate research and data reporting. Mansfield et al. (1978) obtained results consistent with Rose and Lin’s findings. Five studies they reviewed suggested that the Purdue Creative Thinking Program has limited effectiveness. They pointed out methodological problems in these studies such as inadequate unit of analysis (student instead of classroom), lack of randomization, lack of control group, and use of tasks in the treatment condition similar to those used in the posttest. According to Mansfield et al., studies conducted “under optimal conditions were likely to provide estimates of effectiveness that were much greater than can be typically attained” (p. 522).

New Directions in Creativity

New Directions in Creativity consists of five volumes: Mark A, Mark B, Mark 1, Mark 2, and Mark 3 (Renzulli, 1973, 1986; Renzulli & Callahan, 1986). The program is designed to help teachers develop the creative thinking abilities (specifically, fluency, flexibility, originality, and elaboration) of primary and middle-grade students. The
theoretical background of the program is based on Guilford’s Structure of the Intellect Model (1967), and focuses the divergent thinking section of the model. Each volume provides teachers with a systematic set of activities (verbal and figural) aimed at promoting children’s creative abilities. The activities are also classified according to the types of information involved in each exercise (semantic, symbolic, figural, and behavioral), and the ways that information is organized in each exercise (units, classes, relations, systems, transformations, and implications). Students’ responses are generally open-ended, and fewer restrictions are placed on the nature of products developed by them. This program also focuses on self-evaluation rather than teacher evaluation of students’ products. Emphasis is placed on teaching students to become evaluators of their own work. According to Renzulli (1973, 1986), persons must place their own opinions and feelings above those of others in order to break away from social pressure toward ordinary production and to establish the value of their products.

Callahan (1973) obtained evidence of the effectiveness of the New Directions in Creativity program (Mark 1 volume) in a quasi-experimental study conducted with intact sixth-grade classrooms. The results indicated a significant main effect of classrooms within treatment on all creativity ability measures. The treatment group achieved higher performance on verbal fluency, flexibility, and originality, and figural fluency, flexibility, originality, and elaboration measures when compared to the control group. These results suggested that the interaction between classroom teachers and students may be the most influential variable in the development of students’ creativity. Callahan (1973) concluded that the New Directions in Creativity program may have an overall effect on
students’ creative thinking, but this effect is modified by their teachers and classroom environments.

Ford and Renzulli (1976) also investigated the effects of *New Directions of Creativity* (Mark 1 volume) on educable mentally retarded students’ creativity. Eighteen classrooms were randomly assigned to the treatment group and 12 classroom were designated as the control group. Children ranged from 50 to 80 in IQ and 10 to 16 in age. Results indicated that the treatment group exceeded the control group in the four measures of creativity (alternate uses, ideational fluency, consequences, and word fluency, as measured by Guilford tests of creativity). The analysis also suggested that the *New Directions in Creativity* program had the greatest effect on the students’ flexibility, with significant effects on originality and fluency. Lowery (1982) conducted a study to identify the effects of three creativity instructional methods on the creative thinking of gifted elementary school children. In the first method, *New Directions in Creativity* was implemented primarily as programmed instruction, with a minimum of instruction and explanation by the teacher. In the second method, the same program was developed with teaching suggestions, follow-up activities, and enhancement of teacher-student and student-student interactions. The third method included a guided fantasy with music. Thirty-six grades 3, 4, and 5 students were randomly assigned to one of the three treatment groups. The results indicated that students trained in the third method scored significantly higher than students trained in the first or second method on verbal fluency, flexibility, and originality, figural originality, total verbal, and grand total creativity. No significant differences were found in the treatment means between students trained in the first method and students trained in the second method. Although Lowery suggested that
guided fantasy might be a more effective instructional method for increasing creativity than the New Directions in Creativity program, she also highlighted that the first method can be more effective when implemented with gifted students.

The studies discussed in this section suggest that training does affect creativity. Moreover, the results indicated that verbal creativity is affected more by creativity training programs than figural creativity. According to Rose and Lin (1984), this disparity can be explained by the verbal nature of the programs. In addition, Torrance (1972a) highlighted that “The most successful approaches seem to be those that involve both cognitive and emotional functioning, provide adequate structure and motivation, and give opportunities for involvement, practice, and interaction with teachers and other children” (pp. 132-133). These findings reinforce the idea that the curriculum developed in the schools should include training in a variety of creative thinking tasks. Improving students’ creative thinking and problem-solving abilities, cultivating an awareness of creativity, and molding creative attitudes are both important and viable educational goals (Davis, 1992; Treffinger, 1986).

Theories of Self-Concept

Definitions and Characteristics of Self-Concept

Self-concept has been of interest to many psychologists and educators since the beginning of this century (Cooley, 1902; James, 1892). In the 1960s, affective education programs designed to enhance self-images of children were encouraged. The conception of these programs was influenced by the humanistic movement, which focused on the importance of healthy mental development (Maslow, 1968; Rogers, 1961). However,
due to conceptual and measurement problems, that goal of nurturing children’s self-concept was not realized. As a consequence, educators returned to an emphasis on the cognitive and behavioral aspects of the curriculum (Harter, 1986). It was only in the 1980s that researchers started to develop theoretical models, appropriate instruments, and research studies to obtain consistent findings about self-concept (Zhang, 1995).

The absence of a clear, concise and universally accepted definition of self-concept is still a challenge for researchers (Byrne, 1996; Marsh & Craven, 1997; Shavelson, Hubner, & Stanton, 1976). For example, James (1892) defends the idea that one’s self-concept develops in terms of a cognitive process in which individuals assess their successes against the expectations they hold for themselves. According to him, self-concept cannot be reduced to the aggregate of perceived successes in life; rather it represented a ratio of successes to pretensions. In contrast to James’ internal model, Cooley (1902) postulates that self-concepts are social constructions consisting of perceptions of the images held by other persons. Self-concept derives from the opinions of significant others about one’s self. Rogers (1959) emphasizes the internal knowledge and consistency of the self-concept as well as the importance of the interactions with others in the development of the self-concept. He refers to self-concept as an organized and consistent set of perceptions of the characteristics of “I” or “me” as well as the perceptions of the relationships of this “I” to other people. For Rogers, approval and unconditional acceptance are prerequisites for high self-concept. He also believes that human beings have a basic need to maintain and enhance the self-concept. More recently, Byrne (1984) has defined self-concept as “our attitudes, feelings, and knowledge about our abilities, skills, appearance, and social acceptability” (p. 429), while
Shavelson et al., integrating features from many definitions, have defined self-concept as “a person’s perceptions of himself. These perceptions are formed through his experience with his environment … and are influenced especially by environmental reinforcements and significant others” (p. 411). They stated that self-concept is not an entity within the person, but a hypothetical construct that is potentially useful in explaining and predicting how a person acts (Marsh & Craven, 1997).

Five critical characteristics of the self-concept can be highlighted: (a) the involvement of a descriptive and an evaluative component of self-description (Shavelson et al., 1976), (b) the existence of developmental differences in the structure of self-concept (children shift their focus from behavioral characteristics of the self in the early years, to trait-like constructs during middle childhood, and then to more abstract, psychological constructs during adolescence) (Harter, 1986), (c) the role of self-concept as a mediating variable that facilitates the attainment of other desired outcomes (Byrne, 1996; Shavelson et al.), (d) the influence of cultural factors in the development of self-concept, and (f) involvement of both internal (cognitive) and external (social) forces operating to affect self-concept (Hoge & Renzulli, 1991).

**Models of Self-Concept**

Disagreement among researchers exists not only involving conceptual issues of self-concept, but also with respect to the way in which the construct should be operationally defined. In this regard, three major models of self-concept have been proposed: unidimensional models, multidimensional models, and hierarchical models.
The unidimensional perspective is represented by two models. The nomothetic model postulates that although there are various aspects to self-concept (such as academic achievement and athletic ability), the only meaningful way of conceptualizing the construct is in terms of a general construct of self-worth. Proponents of this model (Coopersmith, 1967; Piers & Harris, 1964) have argued that given the dominance of a global self-concept, it is impossible to differentiate among its subcomponents. The “true” unidimensional model (as termed by Byrne, 1996) assumes that global self-concept can be measured directly and, as a consequence, it is not necessary to measure specific self-concepts (Rosenberg, 1965). Both models have been widely criticized. Harter (1990) points out that important distinctions individuals make in their self-perceptions of adequacy related to various aspects of their lives can be masked by simply combining all self-concepts in one overall score. According to her, self-concept cannot be understood if its dimensionality is not taken into account. She believes that self-concept cannot be treated as a static, trait-like construct, but as a phenomenon susceptible to changes. Marsh and Hattie (1996) have also shown that there is an absence of empirical support for construct validity of unidimensional models. Statistical analyses have failed to identify only one dimension. As a consequence, the unidimensional models have relatively little appeal today (Hoge & Renzulli, 1991).

Studies (Harter, 1985; Marsh & Holmes, 1990; Winne & Marx, 1981) have investigated self-concept as a multidimensional construct. The multidimensional perspective is represented by three models. One approach of the multidimensional perspective postulates that self-concept is composed of a set of independent dimensions or factors (Soares & Soares, 1980). According to this model, multiple self-concepts
develop independently as a consequence of one’s daily experiences, capabilities, and interaction with significant others (Byrne, 1996). Furthermore, this model argued against the existence of a global self-concept. Hattie (1992) and Marsh and Hattie (1996), however, have criticized the statistical analyses used by the proponents of this model, and posited, therefore, that there is little empirical support for the validity of the multidimensional independent model. By contrast, a second model of the multidimensional perspective allows the multiple, domain-specific self-concepts to be correlated both among themselves and with a facet of global self-concept (Harter, 1985). Within the framework of this model “Self-concept is conceptualized along a continuum of very specific to very global perceptions of one’s competency, and these approaches are not necessarily mutually exclusive” (Byrne, 1996, p. 16). Many studies (Harter, 1985; Marsh, 1990; Marsh & Gouvernet, 1989) have demonstrated support for the correlated-factor model.

The third multidimensional model, a compensatory model, postulates that once self-concept has been accounted for, remaining variation is explained by multiple bipolar facets that are inversely related (Winne & Marx, 1981). According to this model, in the unconscious attempt to maintain one’s sense of well-being, self-perceptions of low status in one domain (e.g., academic) will be compensated by self-perceptions of high status in other domains (e.g., social, physical). Although the rationale underlying this model seems to be reasonable, research in support of this model has been strongly challenged (Byrne, 1996). Marsh and Hattie (1996), for example, concluded that support for the compensatory model was more an artifact of the use of rank order scales than a compensatory process underlying self-concept structure, which means that when
someone ranks him/herself more highly on one scale, rankings on the other scales will be inevitably lower. Marsh’s (1986) internal/external frame of reference model is a support for the compensatory model. This model assumes that students compare their academic abilities with those of their peers (external frame of reference), as well as compare their own ability in one academic subject with that in other school subjects (internal frame of reference). This model, however, has been limited to relationships between academic self-concept and academic achievement. According to Byrne (1996), more research that incorporates nonacademic facets of self-concept is necessary.

The hierarchical model constitutes a third way of conceiving self-concept. This model adopts the multidimensional perspective as the starting point and postulates a hierarchical organization for the various facets of self-concept. The global perceptions of self as a person (general self-concept) is located at the apex of the hierarchy and the actual behavior at the base; moving from the top to the bottom of the hierarchy, the structure became increasingly differentiated (Marsh, Byrne, & Shavelson, 1988; Shavelson, Hubner, & Stanton, 1976). According to this model, global self-concept splits into two branches: academic and nonacademic (social, physical, and emotional) self-concepts. Each of these facets is divided into separate and more specific self-concepts (e.g., math, peers, and physical appearance). Although there is an abundance of evidence of construct validity support for the academic dimension of self-concept in the hierarchical model (Marsh, 1990; Marsh, 1992; Marsh, Parker, & Smith, 1983; Marsh, Smith, & Barnes, 1983), only recently the construct validity support for the nonacademic branch of the hierarchical model has been investigated (Byrne, 1996). Hattie (1992) argues that the multidimensional hierarchical model cannot be generalized to all
individuals. Considering developmental changes in the life-span, he states that self-concept is more unitary before the child reaches adolescence. In addition, Harter (1986) has pointed out that it is necessary to develop a theory specifying the way in which the various components of self-concept organize themselves into a hierarchy. In fact, Marsh and Shavelson (1985) recognize that although there was strong support for the hierarchical model based on responses by younger children, “As the self-facets become more distinct as in the late-adolescent data, the utility of the hierarchical ordering becomes questionable” (p. 122). Finally, for Hoge and Renzulli (1991), there is an absence of meaning in the concept of global self-worth in the hierarchical model.

According to Marsh and Craven (1997), “Self-concept cannot be adequately understood if its multidimensional, domain-specific nature is ignored” (p. 191). To realize students’ full potential, self-concept enhancement should target specific facets of self-concept rather than general self-concept. The design and implementation of high-quality self-concept enhancement studies will provide promising directions for future research and classroom practice.

**The Relationship Between Self-Concept and Creativity**

Self-concept has been posited as a mediating variable that facilitates the attainment of other desired outcomes (Byrne, 1996; Marsh & Hattie, 1996), and improvements in self-concept lead to improved desirable academic outcomes (Marsh & Craven, 1997). The relationship between self-concept and creativity has been the focus of many studies. In the 1950s, investigations about the characteristics of creative individuals indicated that highly creative individuals had stronger self-concept than their

However, although some studies have pointed out that there is a strong, positive relationship between self-concept and creative behavior, different findings have also been reported. Divergent results about the relationship between self-concept and creativity are discussed below.

Felker and Treffinger (1971) have found that fourth grade students with high self-concept scored significantly higher than those with low self-concept on self-evaluation of creative abilities and on creativity measures such as verbal fluency, flexibility, and originality. Similar results were obtained by Smith and Tegano (1992), using college students as a sample. Students who displayed better performance on a creativity inventory also scored higher in six of the eleven dimensions of a self-image questionnaire (emotional tone, social relationships, sexual attitudes, mastery of the external world, vocational and educational goals, and superior adjustment) than students who scored lower in creativity. Sears (1963) also found that children of superior intellectual ability had higher self-concepts, as well as higher ability to think in original, creative ways, than children of lesser intellectual ability.

Conversely, some studies have failed to support the relationship between self-concept and creativity. Sexton (1984), for example, found no significant relationship between self-concept and creativity (e.g., fluency, flexibility, originality, and elaboration) of Black and Hispanics fourth graders. Likewise, Williams, Poole, and Lett (1977) indicated that there was no significant difference between self-concept scores of high creative children and low creative Australian children. Fabrizi and Pollio (1987) assessed the relationships among humor, creativity, and self-concept in seventh and eleventh grade
students. Regression analyses indicated that negative self-concept was a significant predictor of originality scores on the Torrance Tests of Creative Thinking for seventh graders. Deo and Mohan (1972) also found no differences between creativity and self-concept of tenth and eleventh grade Indian students. In addition, the results obtained by Wright, Fox, and Noppe (1975) did not support the existence of a relationship between creativity and self-concept in college students. Studies involving the relationship between self-concept and creativity of gifted and non-gifted students suggested that there were no differences with respect to creativity between gifted students with higher self-concept and students with lower self-concept (Gilbert, 1991; Quaglino, 1979). However, Quaglino (1979) found that non-gifted students with high self-concept scored significantly higher on the creativity measure than did those with lower self-concept.

Many studies have evaluated the impact of creativity/enrichment programs on self-concept and creativity of students. The results have shown an improvement of creative abilities, but no significant changes related to self-concept. Blankenship (1975) investigated the effects of 10 hours of creativity training on the creative performance and self-concept of first grade students. He found that the treatment group displayed significant improvement in creative abilities such as fluency, flexibility, originality, and elaboration, but no effect was observed with respect to students’ self-concept. Similar results were obtained by Meador (1994) who implemented a program using synectics with kindergarten children. Camp (1994) conducted a 12 year longitudinal study involving the Williams Cognitive Affective Interaction model-based enrichment program with creative children. The effect of the program on students’ creativity varied over the years. Figural measures of fluency, flexibility, and originality indicated a maintenance of
high scores or an increase in scores up through grade 6 and then a decline through grade 12. The verbal measures also indicated declines in scores in the sixth to twelfth grade period. As reported in previous studies, no significant treatment effect was observed related to self-concept. Interesting results were obtained by Bennett (1982) with respect to the influence of a creative experience in drama upon the creativity and self-concept of fifth and sixth grade students. In this study, the treatment group had a significant gain in creativity, while the control group experienced a decline. However, both treatment and control groups experienced significant gains in self-concept.

Fults (1980) investigated the effectiveness of an instructional program for developing creative thinking, positive self-concept, and leadership among intellectually and academically gifted students in grades 4, 5, and 6. The intervention process included stimulation of individual interest, provision of enriched experiences, and emphasis on the development of cognitive and affective skills. The treatment group improved with respect to creativity, while the control group had gains in self-concept. Kolloff and Feldhusen (1984) also assessed the effects of an enrichment program, called the Program for Academic and Creative Enrichment, on self-concept and creative thinking of third, fourth, fifth, and sixth grade gifted students. They found that the treatment group had gains in verbal and figural originality, but no significant main effect was observed with respect to self-concept. Finally, Olenchak (1995) investigated the effects of a highly structured, personally tailored enrichment program on self-concept and creative productivity of fourth, fifth, and sixth grade gifted/learning disabled students. Results suggested that year-long participation in the program had a significant positive impact on self-concept and creative production of the students sampled in this study.
Based on the findings of studies reported above, the evidence about the relationship between self-concept and creativity is far from clear. The discrepancies may be due to many factors including: (a) the use of different measures of self-concept and creativity, which makes comparison of results difficult; (b) the use of self-concept instruments based on the unidimensional model, which might mask the relationship between creativity and specific dimensions of self-concept; (c) sampling using subjects of different ages as subjects, which makes it difficult to generalize the results; (d) the varied characteristics of individuals used as subjects (e.g., gifted, non-gifted, learning disabled), which make difficult to contrast the findings; (e) the influence of social and cultural variables (individualization vs. group membership, nationality, religion, as examples) in the development of self-concept and creative abilities; (f) the use of different research designs (e.g., experimental, quasi-experimental, correlational studies), each one investigating different research questions, and therefore, analyzing the relationship between self-concept and creativity from distinct perspectives; and (g) the use of basic statistical analyses (e.g., t-test, Pearson product-moment correlation) to assess the complex relationship between self-concept and creativity, which might lead to partial and/or inaccurate results. It seems clear that further research is necessary to investigate the extent to which self-concept and creativity are related to better advise teachers with respect to educational strategies that can enhance both students’ creativity and self-concept.
Bilingualism and Creativity

Foundations and Definitions of Bilingual Education

The United States is a diverse and pluralistic society with citizens who differ in many ways including culture, ethnicity, and language. As a consequence, “School models and methods based on the notions that students share the same cultural background, speak the same language, and have the same academic preparation are not meeting the needs of today’s students” (Díaz-Rico & Weed, 1995, p. xiii). Due to the growing multicultural student population in the United States, educators have been challenged to rethink basic assumptions about schooling to provide a meaningful and high-quality education to all students. In this regard, teachers are becoming aware of the need to be sensitive and knowledgeable about students’ cultural and linguistic background.

In the past, students whose native language was other than English were expected to succeed in school without any special language assistance. Recent research findings in language acquisition have concluded that language and academic development are better approached through the respect and incorporation of a student’s primary language into his/her learning experience. One means of preserving and supplementing the home languages of students is through bilingual education. Although bilingual education has existed in the United States since the colonial period, in 1968, Congress signaled its first commitment to bilingual education by enacting the Bilingual Education Act to address the needs of students whose first language was not English (Díaz-Rico & Weed, 1995). By the year 2000, 32 percent of the total school population will come from a culturally and linguistically diverse background (Cegelka, 1988). Therefore, it is urgent to create
an educational environment in which culture and language differences are valued and developed (Kloosterman, 1997).

Definitions of bilingualism vary widely. According to Hakuta (1986), a broad definition such as “The speaker of one language can produce complete meaningful utterances in the other language” (Haugen, 1953, p. 7) is preferable to a narrow one that might include only those with native-like control of two languages. Native-like control is difficult to define, and more important, the broad definition incorporates a developmental perspective, bringing the process of second-language acquisition into the domain of bilingualism. Likewise, García (1991) highlights the broad range of definitions of bilingualism:

At one end of the continuum are general definitions such as ‘students who come from homes in which language other than English is spoken.’ At the other end of the continuum are highly operationalized definitions, ‘students scored in the first quartile on a standardized test of English language acquisition.’ (p. 115)

Skutnabb-Kangas (1995) offers one of the most comprehensive definitions of bilingualism. For him, a bilingual person is one:

… who is able to function in two (or more) languages, either in monolingual or bilingual communities, in accordance with the sociocultural demands made on an individual’s communicative and cognitive competence by these communities and by the individual herself, at the same level as native speakers, and who is able positively to identify with both (or all) language groups (and cultures) or parts of them. (p. 46)

As bilingual people have the ability to communicate in two languages, the range of proficiency skills (listening, speaking, reading, writing, and reasoning) can vary widely, from fluent bilingualism to limited communicative skills in either one of two languages. The optimal level is known as balanced bilingualism. The closer the child is to this level, the greater the cognitive and social benefits. Bilingual students may be
more flexible in their thinking because of the constant switching and awareness of using both languages (Kloosterman & Díaz, undated).

**Bilingualism: Emotional, Cognitive, Sociocultural, and Educational Factors**

**Emotional factors**

Global self-worth enhancement, such as empowering students with positive images of self, family, and culture, and providing them successful language acquisition experiences may facilitate language learning process (Díaz-Rico & Weed, 1995). Culturally and linguistically diverse students will also be more motivated to learn a second language if the learning process takes place in a positive and challenging atmosphere, in which students’ cultural background as well as personal characteristics are protected and valued (Kloosterman, 1997). Anxiety also plays a role in the process of learning a second language. Feelings of self-consciousness, desire to be perfect when speaking, fear of making mistakes, and fear of not representing themselves fully in a new language or understanding others readily are factors that can cause learners to feel defensive and block effective learning. In this regard, educators must become aware of the importance of providing a supportive, nonthreatening learning environment. Attitudes toward a second language acquisition and those who speak it can also affect students. Negative reactions against a second language are the result of negative stereotypes or the experience of discrimination. Students may also emphasize cultural behavior that helps them to differentiate themselves from the dominant culture and cling to language behavior that characterizes their group as opposed to the language group represented by the school (Díaz-Rico & Weed, 1995).
Cognitive factors

Age is an important factor to be considered in the process of second-language acquisition. The optimum age for a second-language acquisition has been widely debated. According to Díaz-Rico and Weed (1995), exposure to a second language during childhood can lead to higher second language proficiency than exposure in adulthood, but this proficiency is restricted to pronunciation skills only. On the other hand, some studies (Collier, 1987; Snow & Hoefnagel-Hoehle, 1978) have demonstrated that adults learn languages more skillfully than children. They have more memory strategies and experiences with language than young people. Another point of discussion among researchers is whether a person’s first language affects learning a second language. For Cummins (1984), students are more successful in school when they have the opportunity to develop cognitive and academic skills in his/her first language before developing these skills in the second language. A learner can transfer concepts from the first language to the second. “Knowledge of the world, as well as knowledge of language (metalinguistic awareness) enables a learner to streamline language learning the second time around” (Díaz-Rico & Weed, 1995, p. 33). In contrast, Skutnabb-Kangas (1981) states that the first language interferes with second language learning. Many bilingual students feel that their second language is somehow impoverished, poorer in emotion, more superficial, and less rich in words than the first language. In this regard, the first language can interfere with learning the second.

The level of bilingualism is another cognitive factor that may affect academic proficiency in first and second languages. Limited bilingual students develop relatively low levels of academic proficiency in both languages. Neither positive or negative
cognitive effects were found in students who achieved a native-like level in one of their languages (partial bilingualism). The most positive cognitive effects (concept formation, creativity, and cognitive flexibility) are experienced by students who attain high levels of proficiency in both languages (proficient bilingualism). Cummins (1984) proposed the threshold hypothesis to explain the extent to which bilingual abilities may have cognitive advantages. According to him, children must attain a critical level of linguistic proficiency in order to avoid cognitive deficit and allow their bilingualism to benefit their cognitive growth.

Sociocultural factors

The social value and prestige of speaking a second language varies with socioeconomic position and the second language that is spoken. Middle-class parents believe that learning a second language benefits their children personally, socially, and professionally. However, each foreign language has a differential status. Languages spoken by immigrants may be labeled as second-class status, and therefore, are not valued. Value system is another sociocultural factor that can interfere with bilingualism. Teachers have to be attentive to the values and behaviors of their students’ cultures in order to develop a flexible cultural repertoire within the context of teaching. “Children need to find within the structure and content of their schooling those behaviors that permit them to switch between home and school culture without inner conflict or crises of identity” (Díaz-Rico & Weed, 1995, p. 44). This means that adults should validate children’s experiences, acknowledge linguistic and cultural differences, and integrate the community as a resource in development. The culture that students bring from home is the foundation for their learning. Teachers must be aware that cultures must be valued
and there are no culturally deprived children. All cultures provide an adequate pattern of living for their members.

*Educational factors*

Teacher expectations have a high influence on students’ achievement. Teachers develop initial expectations based on students’ performance in previous years, or on stereotypes about racial, cultural, and linguistic groups. These expectations form the basis for differential treatment of students and for the rationalization for such treatment. Students, in turn, react to this treatment in ways that confirm teachers’ expectation (self-fulfilling prophecies). Empowerment of language minority students is an important educational factor that has contributed to school success of those students. School programs in which minority students’ language and culture are accepted and incorporated, and community participation is encouraged, is a demonstrated method to provide success for language minority students (Cummins, 1984). Involving parents in schools is another educational strategy that can improve bilingual students’ performance in the school. According to Díaz-Rico and Weed (1995), “By involving parents in the classroom, teachers can honor the lives of students and their parents, and in addition, can enrich their own understanding of the individual child and the child’s group” (p. 162).

Placement is another educational issue in bilingualism. Culturally and linguistically different students have been disproportionately referred to and placed in special education programs. Low level of acculturation, inadequate assessment, language problems, and poor school progress are some of the explanations for this type of placement. Compensatory education programs are school provisions often used for students whose native language is not English. This practice reveals a lack of knowledge...
and sensitivity to children’s culture, values, customs and interests. A more discriminatory approach is the segregation program in which language minority students are grouped separately from native speakers of English during the school day. Reflecting about policy decisions and pedagogical practices with respect to bilingual students in the United States such as those described above, Cummins (1992) suggests that:

… rather than attempting to eradicate children’s bilingualism ‘in order to help them to learn English,’ educators should encourage students to develop their linguistic talents and also provide parents with advice and resources (e.g., first language books) to enable them to promote the language at home. (p. 95)

Types of Bilingual Education

In the United States, bilingual programs for culturally and linguistically diverse students have been created to respond the needs of the non-English or limited English speaking immigrants who are continuously arriving in this country (Baker, 1993; Kloosterman, 1997). There are different types of bilingual programs. Some support and extend the home language and culture, while others consider the students’ language and culture irrelevant to schooling (Díaz-Rico & Weed, 1995).

There are five types of programs that provide English to culturally and linguistically diverse students: submersion, transition, maintenance, immersion, and English as a second language (ESL). In submersion programs, students receive instruction in English, with English monolinguism as the goal. There is no assistance for students who are limited English proficient. For this reason, this type of program is also referred as “sink-or-swim language instruction” (Baker, 1993; Crawford, 1991; Díaz-Rico & Weed, 1995). The students may succeed academically, but the majority of students do not have the cognitive and academic foundation in their native language and
do not succeed. In a transitional bilingual education program, students are educated in their home language until the English they are learning is presumed to be adequate to place them in an English mainstream classroom. The curriculum is developed in two languages, and second language is built upon students’ first language. A maintenance bilingual program supports not only education and communication in the students’ native language, but also students’ heritage and culture. Students in this type of program are not quickly mainstreamed but are encouraged to be proficient in both English and their home language. Immersion programs provide academic and language instruction in two languages over a period of years. The goal of immersion programs is for students to be proficient in both languages (Díaz-Rico & Weed, 1995). In ESL programs, students receive instruction in vocabulary, grammar, oral language, and spelling for a few hours each week and the instruction is always in English.

Some controversy exists with respect to the effectiveness of bilingual education for limited English proficient students. A meta-analysis study conducted by Willig (1985) revealed positive effects for bilingual programs on academic achievement. Cummins (1979) also stated that “There exists a substantial number of recent studies which suggest that bilingualism can positively influence academic and cognitive functioning” (p. 228). Cummins believes that mixed results have been found with respect to the effectiveness of bilingual education because evaluations have ignored the interaction between educational treatment variables (such as teacher attitudes and expectations and types of bilingual programs) and student input characteristics (such as competence and motivation to learn the native language and a second language). Likewise, Thomas and Collier (1995) indicated that research evidence exists that the
implementation of immersion programs benefits all students by enhancing their bilingualism and academic performance. On the other hand, Baker (1987) concluded that the federal government was not justified in mandating transitional bilingual programs because many programs had either no effect or a negative effect on students’ academic achievement.

Bilingual educators have been faced with numerous challenges. They have become aware that learning English is not the only guarantee of achievement of limited English proficient students (Díaz-Rico & Weed, 1995). It is also necessary to value students’ culture and values: to provide learning activities in which students can pursue their own interests, to integrate innovative instructional strategies (such as cooperative learning, peer coaching) into bilingual education, to increase the number of language minority students identified for gifted and talented programs, to raise the expectations of teachers for minority students, to increase the number of bilingual teachers, and to examine state policies that adversely affect limited English proficient students. In this regard, August (1994) reflected about the importance of educational reform that contemplates the needs of bilingual students who are limited English proficient:

Language minority students can greatly benefit from the movement toward higher standards for all. Yet, all too often, this goal is frustrated by a myopic focus on English acquisition, to the virtual exclusion of other subjects. To break the self-perpetuating cycle of low expectations and academic failure, limited English proficient children must be provided access to challenging content while they are acquiring English. For children who face language barriers to achieve high standards, schooling must be tailored to their strengths and needs. (p. 6)
The Relationship Between Bilingualism and Creativity

Various researchers have discussed whether or not bilingual children have cognitive advantages. Some researchers have found that bilinguals who have high levels of native and second language outperform monolinguals on a variety of cognitive tasks (Díaz, 1983; Duncan & DeAvila, 1979; Galambos & Goldin-Meadow, 1990; Skutnabb-Kangas, 1981). Some studies have been conducted to investigate the relationship between bilingualism and creativity. The majority of the investigations suggested that there is a positive relationship between bilingualism and creativity. Ricciardelli (1992), for example, analyzed 24 studies involving the relationship between bilingualism and creativity and found that bilingual individuals performed better than monolinguals on creativity measurements in 20 studies. Where a negative relationship has been found, it was argued that bilinguals might not have been proficient in either their native or second language. This finding is consistent with the bilingual threshold theory that states that bilingual individuals need to achieve high levels of linguistic proficiency in both their languages before bilingualism can promote cognitive development.

Similar results were obtained by Carringer (1974). High school Spanish-English bilingual students scored higher than monolingual students on verbal and figural creativity measures. Konaka (1997) also found that the degree of bilingualism of sixth and seventh grade Japanese-English speaking students predicted verbal and figural creativity abilities. Likewise, the results of Williams, Douglass, and Ramirez’s study (1977) indicated that fourth grade Mexican-American males scored higher than American males on both verbal fluency and flexibility measures. The results obtained by Kessler and Quinn (1987) indicated that cognitive creativity is enhanced by bilingual language
Sixth grade bilingual students presented qualitatively higher scientific hypotheses using complex metaphoric language in their second language when compared to monolingual students. Okoh (1980) investigated the relationship between bilingualism and creativity of 9-11 years old Nigerian and Welsh children and found that bilingual children scored significantly higher on verbal creativity tests than their monolingual counterparts. However, no significant differences were found between the groups with respect to figural creativity. Wang (1982) also obtained results favoring bilingual students on some creativity measures. She found that Chinese-English speaking balanced bilinguals scored significantly higher than English speaking monolinguals of Chinese background on verbal associational fluency, ideational fluency, and flexibility, and figural flexibility. No differences between the groups, however, were found with respect to verbal expressional fluency and figural flexibility. Stone (1992) investigated the creativity of multi-ability and multicultural third, fourth, and fifth grade students. The sample included bilingual, monolingual, regular, and learning disabled children. The findings indicated that bilingual students performed equal to or higher than the monolingual students in 68% of the creativity tests, and scored higher in flexibility across all groups.

Conversely, Torrance, Gowan, Wu, and Aliotti (1970) noted that monolingual third, fourth, and fifth grade students in Singapore were more fluent than their bilingual peers. With respect to figural flexibility, the results were the same as for figural fluency, except in the fourth grade when bilingual students performed better than monolingual students in the creativity tests. No significant differences between the groups were found regarding originality. Bilingual children outperformed monolingual children only in the
figural elaboration measure. In two studies (Landry, 1973; Stephens, 1997) no relationship was found between bilingualism and creativity.

Although the majority of the investigations indicated that bilingual persons have higher performance on creativity measures when compared to monolingual people, it is important to note that significant differences were not always obtained in all creativity measures (e.g., verbal and figural fluency, flexibility, originality, and elaboration). A specific pattern was not identified that could characterize the superior performance of bilingual people. Some variables such as age and degree of bilingualism influence the results described earlier. However, further studies are necessary to accurately assess the importance of these variables in the relationship between bilingualism and creativity. It was also noted that the studies listed above could be grouped in two categories: immigrants who speak a second language, and children who learn a foreign language in their own country. Because of this, cultural background should be considered when examining research about bilingualism and creativity.

Although there has been a great deal of research on the effectiveness of creativity training programs, and the relationships between self-concept and creativity and bilingualism, the results are divergent and inaccurate. Further research is necessary to better inform teachers and administrators of educational strategies and characteristics of a classroom climate that effectively can meet cognitive, social, and emotional needs of students from diverse cultural and linguistic backgrounds, as well as the ways to implement these strategies. The present study addresses these topics.
CHAPTER THREE
METHODOLOGY

This chapter describes the methods and procedures employed in this study: the research design; sample; treatment, including an overview of how the creativity training program was implemented; instrumentation, including a description of the measures of creativity, self-concept, and interview protocols; and procedures used for collecting and analyzing both the quantitative and qualitative data.

Research Design

A pretest-posttest control group design (Gall, Borg, & Gall, 1996), using a sample of intact groups, was used in this study. For the first two research questions, the grouping variables were the groups (i.e., treatment and control) and the predictor variables were posttest creative thinking abilities scores and posttest self-concept scores. The covariates were pretest creative thinking abilities scores, pretest self-concept scores, and type of classroom (i.e., monolingual or bilingual). The third question was addressed using qualitative methods (Marshall & Rossman, 1995; Strauss & Corbin, 1990).

Sample

The sample included 69 third graders, 72 fourth graders, and 76 fifth graders distributed across 14 classrooms in a suburban elementary school in New England. Almost half of the sample (n=90) were Brazilian immigrants who spoke both English and Portuguese (their native language). Brazilian students in this school are placed in a
transitional bilingual education program. This program has been implemented in this school for six years. Most of the instruction is offered in the students’ native language. When classroom teachers determine that students’ English is adequate, the students are mainstreamed into English-only classrooms. According to the principal, this transition takes between 3 and 5 years, and is called a “late exit” program. Children are provided the time to develop the skills they need. The academic curriculum is the same in all classes. The students placed in bilingual and monolingual classrooms are integrated during music, arts, and physical education classes. Furthermore, once a month, students in all classrooms have an opportunity to make a presentation in both English and Portuguese to the entire school community.

Students from six bilingual (n=90) and eight monolingual (n=127) classrooms participated in this study. Three bilingual and three monolingual classrooms (one classroom per grade) constituted the treatment group. The remaining classrooms, three bilingual, and five monolingual (including two third, two fifth and one fourth grade classrooms) constituted the control group (see Table 1). The average number of students per classroom was 16 for monolingual classrooms, 15 for bilingual classrooms, 17 for the treatment group, and 15 for the control group (see Table 2). Prior to this study, five Brazilian students from grades 3 through 5 were mainstreamed in English-only classrooms, and two were moved from bilingual to monolingual classrooms during the course of this study (February to May 1998).

Classroom teachers were randomly assigned to treatment and control groups. One teacher who was selected to implement the program in her classroom declined to
Table 1

Number of Students by Grade, Type of Classroom, and Type of Group

<table>
<thead>
<tr>
<th>Grade</th>
<th>Monolingual Classrooms</th>
<th>Bilingual Classrooms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Treatment</td>
<td>Control</td>
</tr>
<tr>
<td>3rd grade</td>
<td>20</td>
<td>21</td>
</tr>
<tr>
<td>4th grade</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td>5th grade</td>
<td>18</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>56</td>
<td>71</td>
</tr>
</tbody>
</table>

Table 2

Number of Students per Classroom

<table>
<thead>
<tr>
<th>Monolingual Classrooms</th>
<th>Treatment Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>A&lt;sup&gt;a&lt;/sup&gt;</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>B&lt;sup&gt;b&lt;/sup&gt;</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>C&lt;sup&gt;c&lt;/sup&gt;</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>D&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>E&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>F&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>G&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>H&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Bilingual Classrooms</th>
<th>Treatment Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>I&lt;sup&gt;a&lt;/sup&gt;</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>J&lt;sup&gt;b&lt;/sup&gt;</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>K&lt;sup&gt;c&lt;/sup&gt;</td>
<td>17</td>
<td></td>
</tr>
<tr>
<td>L&lt;sup&gt;a&lt;/sup&gt;</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>M&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>N&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td>13</td>
</tr>
</tbody>
</table>

Note. <sup>a</sup> Third grade classroom. <sup>b</sup> Fourth grade classroom. <sup>c</sup> Fifth grade classroom.
participate in the treatment group and was replaced by another teacher who taught the same grade level. Classroom teachers in the treatment group from one monolingual and one bilingual classroom per grade received instructions on how to implement the creativity program. Five of the treatment group teachers were female and one was a male. Among the teachers who received training, four were American, one was Brazilian, and one was a Portuguese naturalized American who came to the United States when she was 3 years old. One of the American teachers was an exchange student in Brazil and was fluent in Portuguese. The Brazilian teacher, the Portuguese teacher, and the American teacher who spoke Portuguese implemented the creativity training program in bilingual classrooms. Six of the control group teachers were female and two were male. Among them, six were American, one was Brazilian, and one was Portuguese who became an American citizen. One of the American teachers lived in Brazil for ten years and learned Portuguese. The Brazilian teacher, the Portuguese teacher, and the American teacher who spoke Portuguese taught bilingual classroom students. The remaining teachers taught monolingual classroom students (see Table 3).
Table 3

Teachers’ Nationality by Type of Classroom and Type of Group

<table>
<thead>
<tr>
<th>Nationality</th>
<th>Monolingual Classrooms</th>
<th>Bilingual Classrooms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Treatment</td>
<td>Control</td>
</tr>
<tr>
<td>American</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Brazilian</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Portuguese</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Note:  
<sup>a</sup> American teacher who speaks Portuguese.  
<sup>b</sup> Teacher who was born in Portugal and naturalized American.

The sample consisted of 121 boys and 96 girls whose ages ranged from 8 to 12 years old (see Table 4). Most students in the monolingual classrooms were studying in this school since kindergarten, but the entrance date for Brazilian students varies from kindergarten to grade 5 because of the continuous immigration process of the Brazilian population.

Most students (93.70%) placed in monolingual classrooms were born in the United States. The remaining students were born in Brazil (3.14%), Australia (0.79%), Canada (0.79%), Russia (0.79%), and The Netherlands (0.79%). Among the students placed in bilingual classrooms, only 14 (14.43%) were born in the United States. The others were born in Brazil. The period during which these students had lived in the United States varied from one month to nine years at the beginning of this study. Six (6.67%) students from bilingual classrooms never lived in Brazil. Thirty-two students (25.20%) from English-only classrooms spoke more than one language. Although 33.3% of the students placed in bilingual classrooms indicated that they did not
Table 4

**Students’ Gender and Average Age per Grade, Type of Classroom, and Type of Group**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Gender</th>
<th>Average Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monolingual Classrooms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd grade</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>4th grade</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>5th grade</td>
<td>11</td>
<td>7</td>
</tr>
<tr>
<td>Control Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd grade</td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>4th grade</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>5th grade</td>
<td>12</td>
<td>16</td>
</tr>
<tr>
<td>Bilingual Classrooms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd grade</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>4th grade</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>5th grade</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>Control Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3rd grade</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>4th grade</td>
<td>9</td>
<td>7</td>
</tr>
<tr>
<td>5th grade</td>
<td>7</td>
<td>6</td>
</tr>
</tbody>
</table>
speak English, they also reported that they can communicate in this language at the school, when they are playing with non-Brazilian friends, shopping or answering a phone call. Only three students (3.3%) stated that they did not speak English at all. The majority of Brazilian students did not study English before they came to the United States. Most Brazilian students (65.56%) reported that they speak both English and Portuguese at home. Only 30% of the students indicated that they prefer to speak Portuguese at home, and 4.44% reported that they prefer to speak English at home.

According to the teachers, from both the treatment and control groups, the level of English proficiency of the Brazilian students is wide. Some students who had just arrived in the United States spoke no English and other students who attended school in this country since kindergarten could both understand and express themselves orally in English.

According to the principal of the school, most students in the school live in upper-middle class neighborhoods. On the other hand, the Brazilian children’s socioeconomic status is considered in transition. For example, the vast majority of the Brazilian children are in the free lunch program (65 to 70%), while only a small number of the non-Brazilian children are part of this program (10%).

This school implemented a program for academically/intellectually gifted and talented students which provided a differentiated curriculum for these children including critical and creative thinking skills development, mini-studies, and independent study. Two different services were delivered in this program: classroom integration, which involved the presentation of thinking skills and enrichment topics in the regular classroom; and resource pullout, which provided a differentiated instruction for identified
students (2 hours per week). Most students in the pullout program were non-Brazilians. One possible explanation for this low participation is that the instruments used in the identification process are not available in Portuguese, limiting the access of Brazilian students to this program.

The school staff included the principal, teachers, a nurse, a social worker, a counselor, one ESL (English as a second language) teacher, a school psychologist, an enrichment teacher, and three secretaries. The school had also a Brazilian psychologist, who was responsible for Brazilian students’ placement, testing, counseling, crisis intervention, consultation for teachers, and students’ home assessment; an American speech therapist who spoke Portuguese; two Brazilian assistant teachers for special education; and a Brazilian secretary who was the translator for parents and children who do not speak English. She was also responsible for translating school newsletters into Portuguese.

**Treatment**

At the end of the spring semester of 1997, the school principal contacted The National Research Center on the Gifted and Talented at the University of Connecticut asking assistance in developing a program in the area of creativity or giftedness in a school of monolingual students and a large number of Brazilian, bilingual students. In December of 1997, the researcher (who is Brazilian) and one of her advisors went to the school to introduce a creativity training program, *New Directions in Creativity* (Renzulli, 1973, 1986) to the staff and to provide an overview of the research project that would be conducted in the spring semester of the following year. In January of 1998, parents
completed informed consent forms giving permission to their children to participate in the study (see Appendix A).

The training was conducted over a 15 week period. During the first three weeks, the teachers received instruction on how to implement the program in the classroom. The researcher met with each teacher individually to introduce the rationale, purpose, principles, activities, and procedures for implementing the activities developed in the *New Directions in Creativity* program (Renzulli, 1973, 1986). An adaptation of the *New Directions in Creativity* manual was developed by the researcher and introduced to the teachers (see Appendix B). Forty activities (verbal and figural) from the Mark I and Mark II volumes of this program were used because they were appropriate for the sample grade levels (see examples of the activities in Appendix C). The teachers of bilingual classrooms received the activities in English and Portuguese. All of the participating teachers were provided with instructions for each activity, as well as handouts for their students. This program was designed to help teachers develop students’ creative thinking abilities in the following areas: fluency (the ability to generate a flow of ideas, possibilities, consequences, and objects), flexibility (the ability to use many different approaches or strategies in solving a problem; the willingness to change direction and modify given information), originality (the ability to produce clever, unique, and unusual responses), and elaboration (the ability to expand, develop, particularize, and embellish ideas, stories, and illustrations).

The theoretical background of this program is based on Guilford’s Structure of the Intellect Model (1967) and focuses on the divergent thinking component of the model. The Structure of the Intellect Model is an attempt to explain intelligence by the use of a
three-dimensional classification system designed to encompass and organize 120 possible
cognitive abilities according to: (a) types of mental operations (cognition, memory,
convergent production, divergent production, and evaluation), (b) the types of content
involved in the thinking process (figural, symbolic, semantic, and behavioral content),
and (c) the types of products that result from the act of thinking (units, classes, relations,
systems, transformations, and implications and elaborations).

New Directions in Creativity includes activities from all of the divergent
production factors involving the use of semantics, as well as selected activities that use
symbolic and figural information (see Figure 1).

By focusing on the divergent thinking operation of this model of human thinking
abilities and developing activities whose objectives include the generation of a
wide range of products, Renzulli intended to provide a program which translates
the theory behind creative thinking into meaningful, systematically organized
practice in applying the principles of creative thinking. (Callahan, 1973, p. 44)

The New Directions in Creativity program focuses on self-evaluation rather than
on teacher evaluation of students’ products. Students’ responses are generally open-
ended, and fewer restrictions are placed on the nature of student products. Because the
program is not based on students’ ability to recall information, students are given an
opportunity to express their creativity by using their background and experience.

In the nine subsequent weeks of the treatment, teachers implemented the
creativity program in their classrooms. The activities were developed according to the
classroom’s schedule. The average number of activities implemented in the classroom
was 25 (62.5%), and the average number of activities implemented per week was 3 (see
Tables 5 and 6). The amount of regular curriculum to be covered, achievement testing
(practice and administration), and many extra-classroom events were among the factors
that contributed to the reduction in the time spent on the implementation of the creativity training program.

<table>
<thead>
<tr>
<th><strong>Product</strong></th>
<th><strong>Content</strong></th>
<th><strong>Semantic</strong></th>
<th><strong>Symbolic</strong></th>
<th><strong>Figural</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>No. of Activities</strong></td>
<td><strong>No. of Activities</strong></td>
<td><strong>No. of Activities</strong></td>
</tr>
<tr>
<td><strong>Units</strong></td>
<td>Thinking about things</td>
<td>2</td>
<td></td>
<td>Fun with figures</td>
</tr>
<tr>
<td><strong>Classes</strong></td>
<td>Words with feelings</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Relations</strong></td>
<td>Sames and opposites</td>
<td>2</td>
<td>Way-out-words</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Comparisons</td>
<td>2</td>
<td></td>
<td>Say it with symbols</td>
</tr>
<tr>
<td><strong>Systems</strong></td>
<td>Let’s write a slogan</td>
<td>2</td>
<td></td>
<td>Figure arrangement</td>
</tr>
<tr>
<td></td>
<td>Sentence skeletons</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Make-a-sentence</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transformations</strong></td>
<td>Consequences</td>
<td>2</td>
<td>What’s in a name?</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Changing things</td>
<td>1</td>
<td>Saying it nicely</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Advertisement game</td>
<td>2</td>
<td></td>
<td>Hidden figures2</td>
</tr>
<tr>
<td><strong>Implications and Elaborations</strong></td>
<td>What would you call it?</td>
<td>1</td>
<td></td>
<td>Cartoon captions</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td></td>
<td>Figure completion</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>A message from planet X</td>
<td>1</td>
<td>Can you design it?</td>
<td>1</td>
</tr>
</tbody>
</table>

**Figure 1.** Number of New Directions in Creativity activities selected for this study according to the Guilford’s classification system.
Table 5

Number of Creativity Activities Implemented in the Classrooms

<table>
<thead>
<tr>
<th>Grade</th>
<th>Total number of activities implemented</th>
<th>Number of activities implemented per week</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd grade monolingual</td>
<td>18</td>
<td>2.0</td>
</tr>
<tr>
<td>4th grade monolingual</td>
<td>23</td>
<td>2.6</td>
</tr>
<tr>
<td>5th grade monolingual</td>
<td>30</td>
<td>3.3</td>
</tr>
<tr>
<td>3rd grade bilingual</td>
<td>30</td>
<td>3.3</td>
</tr>
<tr>
<td>4th grade bilingual</td>
<td>36</td>
<td>4.0</td>
</tr>
<tr>
<td>5th grade bilingual</td>
<td>12</td>
<td>1.3</td>
</tr>
</tbody>
</table>
Table 6

Activities Implemented in the Classrooms

<table>
<thead>
<tr>
<th>Grade</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd grade monolingual</td>
<td>Thinking about things (a) (b), consequences, fun with figures (a) (b), let’s write a slogan (a) (b), advertisement game (a) (b), figure arrangement (a) (b), sames and opposites (a) (b), figure completion (a) (b), changing things, sentence skeletons (a) (b)</td>
</tr>
<tr>
<td>4th grade monolingual</td>
<td>Thinking about things (a) (b), consequences, fun with figures (a) (b), let’s write a slogan (a) (b), advertisement game (a) (b), figure arrangement (a) (b), sames and opposites (a) (b), figure completion (a) (b), changing things, sentence skeletons (a) (b), comparisons (a) (b), make-a-sentence (a), can you design it, what’s in a name (a), fun with figures (a) (b)</td>
</tr>
<tr>
<td>5th grade monolingual</td>
<td>Thinking about things (a) (b), consequences, fun with figures (a) (b), let’s write a slogan (a) (b), advertisement game (a) (b), figure arrangement (a) (b), sames and opposites (a) (b), figure completion (a) (b), changing things, sentence skeletons (a) (b), comparison (a), make-a-sentence (a), can you design it, what’s in a name (a), what would you call it, way-out words (a), say with symbols (a), a message from planet X, cartoon captions (a) (b), words with feelings, consequences, hidden figures (a)</td>
</tr>
</tbody>
</table>

3rd grade bilingual
Thinking about things (a) (b), consequences, fun with figures (a) (b), advertisement game (a) (b), figure arrangement (a) (b), sames and opposites (a) (b), figure completion (b), sentence skeletons (a) (b), comparisons (a), make-a-sentence (a) (b), can you design it, fun with figures (a) (b), what would you call it, way-out-words (a) (b), say with symbols (a) (b), a message from planet X, cartoon captions (a) (b), words with feelings, consequences.

4th grade bilingual
Thinking about things (a) (b), consequences, fun with figures (a) (b), let’s write a slogan (a) (b), advertisement game (a) (b), figure arrangement (a) (b), sames and opposites (a) (b), changing things, sentence skeletons (a) (b), comparisons (a) (b), make-a-sentence (a) (b), can you design it, what’s in a name (a) (b), fun with figures (a) (b), way-out-words (a) (b), saying it nicely, say with symbols (a) (b), a message from planet X, cartoon captions (a) (b), words with feelings, consequences, hidden figures (a) (b).

5th grade bilingual
Thinking about things (a) (b), consequences, fun with figures (a) (b), let’s write a slogan (a) (b), advertisement game (a) (b), figure arrangement (a) (b), sames and opposites (a) (b), changing things, sentence skeletons (a) (b), comparisons (a) (b), make-a-sentence (a) (b), can you design it, what’s in a name (a) (b), fun with figures (a) (b), way-out-words (a) (b), saying it nicely, say with symbols (a) (b), a message from planet X, cartoon captions (a) (b), words with feelings, consequences, hidden figures (a) (b).
Teachers were asked to keep a record of the activities per week and to make comments about students’ reactions to the activities. During the period of creativity program implementation, the researcher observed each classroom at least two times (the average of observations per classroom was 3) and met informally with teachers every two weeks to ensure that the program was being implemented as planned. Teachers who demonstrated more difficulty implementing the program were observed more often by the researcher than the teachers who implemented the program as instructed. Teachers usually started an activity by reading the instructions and giving examples to the children when necessary. This happened more often in third grade classrooms. Teachers encouraged children to present unique, original ideas, and some of them explained the goals for the activities. The vast majority of the activities were completed individually, although the Brazilian children usually exchanged ideas with their friends. At the end, the students were asked to share their ideas with the whole classroom. Two teachers also tried to debrief the activities with children by raising questions such as “What did you like most in this activity? Did you have any difficulty?” Activities were usually implemented in the morning. Two teachers of the bilingual classrooms assigned a few activities as homework. Classes in the control group proceeded with their regular classroom activities during the treatment period.

Pretest creativity and self-concept measures were administered during the first three weeks of the staff development training. The students were also asked to answer a biographical survey. Posttest creativity and self-concept measures were administered to the treatment groups immediately after the training in the classroom was finished, and were administered one week earlier to the control groups. The posttest administration
was completed during a 3 week period. Interviews were also conducted with teachers and groups of randomly selected students who participated in the creativity training program during the last three weeks of the treatment implementation.

**Instrumentation**

*Torrance Tests of Creative Thinking*

Three verbal and three figural sub-tests of Torrance Tests of Creative Thinking (TTCT) (1974a) were used to assess students’ creative thinking abilities: (a) fluency, the number of different responses the students give to the stimulus situation; (b) flexibility, the number of different categories of responses to a problem; and (c) originality, new or unique responses that are statistically infrequent. The three verbal sub-tests used in this study were: (a) product improvement, where children are asked to think about interesting and unusual ways for improving a stuffed toy elephant (form A) or monkey (form B) in order to make it more fun to play with; (b) unusual uses, where children are asked to think of interesting and different uses for cardboard boxes (form A) or tin cans (form B); and (c) just suppose, where the children are asked to list different consequences for an improbable situation - just suppose clouds had strings attached to them which hang down to earth (form A) or just suppose a great fog were to fall over the earth and all we could see of people would be their feet (form B). The three figural sub-tests used in this study were: (a) picture construction, where children are asked to think of a picture or an object that can be drawn having a specific shape as a part (forms A and B); (b) picture completion, where children were asked to add lines to incomplete figures to sketch interesting objects or figures (forms A and B); and (c) lines (form A) or circles (form B),
where children are asked to draw different objects or pictures from pairs of straight lines. Form A of TTCT was used as the pretest and the parallel Form B was used as the posttest.

The guidelines of the TTCT manual for scoring and interpreting verbal results (Torrance, 1990), the TTCT streamlined scoring guide for figural (Torrance, Ball, & Safter, 1992), and the TTCT directions manual and scoring guide figural test booklet A (Torrance, 1972b) and B (Torrance, 1974b) were used to score the subtests. The first two sources were used as guidelines to score verbal and figural fluency, verbal flexibility, and verbal and figural originality. Flexibility scores were based on the recommendations contained in the TTCT directions manual and scoring guide figural test booklet A and B. The fluency scores were defined as the total number of relevant responses, with relevance being defined in terms of the requirements of the specific task or activity. The originality scores were given only when a response was given fluency credit. The score was either a zero (0) or a one (1). A zero-originality score was given when the response was found on a zero-response list provided in the manuals for each activity. All other relevant responses were given originality scores of 1 point. The flexibility scores were obtained by using the flexibility categories provided in the manuals for each activity, and represented the number of different categories represented (Torrance, 1990). The total scores of verbal creativity and figural creativity were obtained by adding up the verbal or figural fluency, flexibility, and originality sub-tests scores. Because of high intercorrelation among verbal and figural creativity scores, detected by low values of tolerance for the predictors, a total score of creativity was obtained by adding up both scores (see Table 7). To combat multicollinearity, combining predictors was used, as
recommended by Stevens (1996). Instructions to bilingual classroom students were provided both in English and Portuguese on Torrance’s instrument.

Test-retest reliability evidence for Torrance’s tests ranges from .60 to .93 (Torrance, 1974a). Many studies (Cropley, 1972; Cropley & Clapson, 1971; MacDonald & Raths, 1964; Torrance, 1972c, 1981; Yamamoto, 1963) have found support for the short-term and long-term predictive validity of the TTCT. According to Torrance (1988), the strongest evidence of a relationship between test behavior and real-life creative achievement was obtained through longitudinal studies. The results of these studies indicated that TTCT scores were correlated with accomplishments in adulthood with validity coefficients of .59 for males and .46 for females (over 12 years) and .51 and .49 (over 20 years) (Torrance, 1972c, 1972d, 1981). Also, Matthews-Morgan and Cramond (1998), conducting a 40 year follow-up of Torrance’s longitudinal study, found that a creativity index, obtained by the combination of TTCT scores, and originality scores were good predictors of quality of creative achievements for males (.51 and .36) and females (.43 and .45). Cropley (1972) found canonical correlations of .52 for males and .46 for girls between Torrance tests performance and creative behavior in nonacademic life. Torrance (1974a) also reported studies that provide evidence for the construct validity of the TTCT. However, the Torrance Tests of Creative Thinking have not gone without criticism. A number of studies (Harvey, Hoffmeister, Coates, & White, 1970; Hocevar, 1979, 1981; Wodtke, 1964) have found correlations among divergent thinking measures, including TTCT, to be inconsistent with other measures of creativity. Modest reliability evidence of the TTCT has led researchers to suggest that it be used for research situations only (Wodtke, 1964). Kogan and Pankove (1974) cited negative evidence of
long-term predictive validity of TTCT. Hocevar and Michael (1979) pointed out that the lack of discriminant validity for divergent thinking tests can be associated with the mutual dependency of the flexibility and originality dimensions on the number of responses (fluency). They pointed out that the validity of TTCT can be enhanced by scoring each response for flexibility and originality and by dividing the resulting score by the total number of responses. This technique score was called the “percentage scoring formula,” in contrast to the summing scoring formula recommended in the manuals of divergent thinking tests (including the TTCT). In this study, both techniques were used to score the TTCT. Common factor analysis was performed to check the explained variance of factors in both techniques. The summing scoring formula explained 83% of the variance in the model and the internal consistency reliability estimate was .78. On the other hand, the percentage scoring formula explained 54% of the variance in the model and the internal consistency reliability estimate was only .15. The summing scoring formula was thus, used in this study, because it had better psychometric properties than the percentage scoring formula, supporting the findings obtained by Runco, Okuda, and Thurston (1987). The TTCT was selected because it has more technical support than other creativity measures; it is appropriate for the grade levels in this study; and it still remains the most widely used creativity instrument in the world (Alencar, 1974; Beaudot, 1971; Fleith, 1990; Konaka, 1997; Madaus, 1967; Mar’i, 1971; Raina, 1971; Sikka, 1991; Torrance, 1973, 1979; Virgolim, 1991).
Self-Perception Profile for Children

The Self-Perception Profile for Children (Harter, 1985) was developed to assess children’s domain-specific judgments of their competence, as well as a global perception of their worth as a person. Three scales of the Self-Perception Profile for Children were administered to the sample: scholastic competence (children’s perception of their competence or ability within the realm of scholastic performance), social acceptance (degree to which children are accepted by peers or feel popular), and global self-worth (the extent to which children like themselves as persons). Because this instrument is a multidimensional scale, the global self-worth scale is not considered a measure of general competence, but another self-concept dimension.

Each scale contains six items. Each item includes two opposite sentences describing characteristics of a child (e.g., some kids often forget what they learn but other kids can remember things easily). The child is asked to decide which kind of kid is most like him or her, and is then asked whether this is sort of true or really true for him or her. Each item is scored on a scale from 1 to 4, and a score of 1 indicates low perceived competence while a score of 4 reflects high perceived competence. In the example above, the child who indicates that he or she often forgets what he or she learns and then indicates that this as really true for him or her would receive a 1. The child for whom this part of the statement is only sort of true for him or her would receive a 2. The child who indicates that it is sort of true for him that he or she can remember things easily, would receive a 3, and the child for whom this part of the statement was really true would receive a 4 (Harter, 1985). Some items of the Self-Perception Profile for Children are: “some kids feel that they are very good at their school work but other kids worry about whether they can do
the school work assigned to them” (scholastic competence), “some kids would like to have a lot more friends but other kids have as many friends as they want,” “some kids are always doing things with a lot of kids but other kids usually do things by themselves” (social acceptance), and “some kids are very happy being the way they are but other kids wish they were different” (global self-worth).

The internal consistency reliability evidences for the academic competence, social acceptance, and global self-worth scales are .81, .75, and .78 respectively according to Harter (1985), and .84, .76, and .80 respectively, according to the research conducted by Kenny, Archambault, and Hallmark (1995). Marsh and Gouvernet (1989) provided support for the construct validity of the Self-Perception Profile for Children. Factor analyses indicated that the target loadings for this instrument were consistently large (range from .32 to .75), whereas nontarget loadings were generally much smaller (range from -.14 to .34). Likewise, multitrait-multimethod provided reliability evidence for the convergent validity of Harter’s instrument. This instrument was selected because it has been used with culturally different samples (Asendorpf & Van-Aken, 1993; Pedrabissi, Santinello, & Scarpazza, 1988; Peixoto & Mata, 1993; Veerman, Tjeerd-ten-Brink, Straathofh, & Treffers, 1996). The same scales were administered prior to and after treatment. Instructions for bilingual classroom students were provided both in English and Portuguese for Harter’s instrument.

Interestingly, the scores of the three scales used in this study, scholastic competence, social acceptance, and global self-worth were highly intercorrelated (detected by low values of tolerance for the predictors), raising questions about the multidimensional perspective of the instrument (see table 7). To combat
multicollinearity, a total score of self-concept was obtained by adding up the scores of the three scales (Stevens, 1996).

Table 7

Values of Tolerance and Squared Multiple Correlation for the Predictors

<table>
<thead>
<tr>
<th>Predictors</th>
<th>Tolerance</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verbal creativity (pretest)</td>
<td>.27</td>
<td>.73</td>
</tr>
<tr>
<td>Figural creativity (pretest)</td>
<td>.28</td>
<td>.72</td>
</tr>
<tr>
<td>Verbal creativity (posttest)</td>
<td>.39</td>
<td>.61</td>
</tr>
<tr>
<td>Figural creativity (posttest)</td>
<td>.68</td>
<td>.32</td>
</tr>
<tr>
<td>Scholastic competence (pretest)</td>
<td>.14</td>
<td>.86</td>
</tr>
<tr>
<td>Social acceptance (pretest)</td>
<td>.10</td>
<td>.90</td>
</tr>
<tr>
<td>Global self-worth (pretest)</td>
<td>.72</td>
<td>.28</td>
</tr>
<tr>
<td>Scholastic competence (posttest)</td>
<td>.26</td>
<td>.74</td>
</tr>
<tr>
<td>Social acceptance (posttest)</td>
<td>.15</td>
<td>.85</td>
</tr>
<tr>
<td>Global self-worth (posttest)</td>
<td>.45</td>
<td>.55</td>
</tr>
</tbody>
</table>

The Massachusetts English Language Assessment – Oral

The Massachusetts English Language Assessment – Oral (Massachusetts State Department of Education, 1994) was used to assess the level of proficiency in English language of Brazilian students. It is based on the concept of communicative competence, which consists of a learner’s ability to understand, speak, and be understood by others in English. This assessment produces a rich description of a student’s progress toward full English proficiency through a series of informal observations in natural classroom
situations, which is conducted by classroom teachers twice a year. It provides information about the student’s English speaking and listening development. The assessment helps teachers to plan activities that will address students needs. The bilingual education district office provides training for administering the assessment. Students are assessed in two areas: the ability to comprehend and the ability to produce English including assessment of students’ fluency, vocabulary, pronunciation, and grammar. The student is rated on 6 levels of proficiency scale, in which 0 indicates no demonstrated ability in that proficiency category and 5 indicates a level of ability that is equivalent to that of a native English speaker of the same age. The classroom teacher is also asked to describe student’s level of English comprehension and production. Quantitative data of the assessments conducted in the fall 1997 and spring 1998 were made available to the researcher by the director of bilingual education of the school district.

Interviews

Semi-structured interviews, consisting of open-ended questions, were conducted with teachers who implemented the program in the classroom (n=6) and with a sub-sample of bilingual (n=9) and monolingual (n=9) students to identify aspects of the creativity program that may have influenced students’ creative thinking abilities and self-concept (see interview protocol in Appendix D). There were two mainstreamed Brazilian students among the students in monolingual classrooms who were interviewed. Children were randomly selected for the interviews. Personal interviews were conducted with teachers in their classroom during students’ recess (only one teacher was interviewed in
the enrichment classroom). Focus group interviews were conducted with students (six groups of three students) in the enrichment classroom. The focus group interview method was selected to facilitate the verbalization of young students. As Marshall and Rossman (1995) explained:

This method assumes that an individual’s attitudes and beliefs do not form in the vacuum: People often need to listen to others’ opinion and understandings in order to form their own. One-to-one interviews may be impoverished because the participant had not reflected on the topic and feels unprepared to respond. (p. 84)

Personal interviews were also conducted with the school principal and the school psychologist who determines the placement of Brazilian students. The purpose of these two interviews was to gain a more accurate description of the subjects of the sample and an evaluation of the integration of Brazilian students into the school routine. The interview questions included topics related to the description of Brazilian and non-Brazilian students, integration between bilingual and monolingual classrooms, perceptions of school community about Brazilian students, Brazilian students’ perceptions about themselves, Brazilian parents’ participation in the school activities, and level of English proficiency of Brazilian students (see interview protocol in Appendix D).

All the interviews were conducted during the treatment period, and were recorded and transcribed. In addition, to obtain biographical data about the sample, students were asked to complete a survey (see Appendix E). Students placed in bilingual classrooms were also asked about their language background.

**Data Analyses**

Statistical Package for the Social Sciences (SPSS, 1998) software program was used to do the initial screening of the data and subsequent analyses. Normality, linearity,
and homogeneity of variance were checked for measures of creativity and self-concept. Because all assumptions were met, no transformations were needed.

Descriptive statistics were used to analyze the level of proficiency in English of bilingual classroom students. Paired sample t-tests were also used to determine whether there were differences in comprehension and production in English between fall and spring semesters. The variables comprehension and production were reflected and log transformed to adjust for negative skewness.

Because comparison of different groups was the purpose of this study, descriptive hierarchical discriminant function analysis was used to address research questions one and two (Buras, 1996; Dolenz, 1993; Huberty, 1975; Klecka, 1980). For these research questions, the grouping variables were treatment groups (i.e., treatment group and control group). The predictor variables for research question number one were pretest creative thinking score and type of classroom (i.e., monolingual or bilingual that were dummy coded 0 and 1), which were entered as covariates, and posttest creative thinking abilities score. The predictor variables for research question number two were pretest self-concept score and type of classroom (i.e., monolingual and bilingual), which were entered as covariates, and posttest self-concept score. Classroom was used as the unit of analysis in this study.

To address research question number three, qualitative procedures were used to analyze data from interviews with teachers and students. Responses were coded and categorized according to techniques suggested by Strauss and Corbin (1990) and analyzed for patterns and themes. This included the use of a coding paradigm that resulted in the formulation of core categories of findings after using three levels of
coding. These levels are open coding, a process during which the researcher examines, breaks down, compares, conceptualizes, and categorizes the data; axial coding, a process that involves the examination of each category whereby relationships between the categories emerge; and selective coding, a process during which the core categories are selected from categories that emerged in the data collection and analyses. In addition, informal observation in the classrooms where the creativity program was implemented was used as another source of data.

To enhance the trustworthiness of this study, the following techniques were used (Marshall & Rossman, 1995): checking and re-checking the data, value-free note taking, a researcher’s journal, and triangulation of the sources of data. Consideration of multiple viewpoints enables a more accurate interpretation of a phenomenon or situation than consideration of data sources or viewpoints individually. The triangulation was achieved through “between methods” and “between subjects” collection of data. Between methods refers to using more than one method of data collection such as conducting interviews and observation in the setting as occurred in this study. Between subjects refers to gathering several viewpoints on the same situation as was done by conducting interviews from both teachers and students (Miles & Huberman, 1994).

This chapter described the methods and procedures used in the study. Chapter Four presents the results of the quantitative data analyses related to research questions one and two, and qualitative analyses of the interviews used to address research question number three.
CHAPTER FOUR

RESULTS

In this chapter, the results of this study are presented. The effects of the creativity training program, New Directions in Creativity, on creative thinking abilities and self-concept in monolingual and bilingual classrooms are discussed. The first section presents the preliminary analyses of data screening and the level of proficiency in English of bilingual classroom students, and the quantitative results for research questions one and two. The second section presents the qualitative results for research question three.

Quantitative Analysis

Preliminary Data Analyses

Scores obtained on the Torrance Tests of Creative Thinking (TTCT) (Torrance, 1974a) and Self-Perception Profile for Children (Harter, 1985) were used to address research questions one and two. Because the treatment in this study involved interaction among students, the classroom was used as the unit of analysis. As a consequence, the sample size was small, and statistical power was low. Thus, effect sizes (practical significance) are the focus of the results from this study rather than statistical significance. Many researchers suggest focusing on the effect size, because statistical probability values do not reflect the importance or magnitude of an effect (APA, 1994; Daniel, 1977; Slakter, Wu, & Suzuki-Slakter, 1991; Smith, 1983; Thompson, 1994, 1996). As Thompson (1994) recommended:

Two analyses should be emphasized over statistical significance testing. First, effect sizes should be calculated and interpreted in all analyses…. Second, the replicability of results must be empirically investigated, either through actual
replication of the study, or by using methods such as cross-validation, the jacknife, or the bootstrap. (p. 2)

An initial screening of the data was performed using SPSS. No outliers were identified. Assumptions of normality, skewness, linearity, and homogeneity of variance were found to be satisfactory. However, to reduce multicollinearity, detected by low values of tolerance for the predictors (Tabachnick & Fidell, 1996), the scores of verbal and figural creativity, and scholastic competence, social acceptance, and global self-worth were combined, resulting in a total creativity score and a total self-concept score.

The assessment of Brazilian students’ level of English proficiency was obtained through the Massachusetts English Language Assessment-Oral (MELA-O). Students’ ability to comprehend and produce English was assessed by the classroom teacher in the fall of 1997 and spring of 1998. The variables, comprehension and production, were reflected and log transformed to adjust for negative skewness. Paired sample t-tests with a Bonferroni adjustment (alpha=.025) were run to determine whether there were differences with respect to comprehension and production in English of bilingual classroom students between fall and spring semesters. The SPSS statistical software program was used to perform the analyses, and student was the unit of analysis. Data from 82 students on both variables were available to the researcher. Significant differences were obtained as reported in Table 8. These findings suggested that the level of oral English proficiency of students who had been in the bilingual program at least one year improved. The comprehension ability improved more than the production ability in English.
Table 8

Comprehension and Production in English: Means and Standard Deviations Without Transformations by Semester and t-Values

<table>
<thead>
<tr>
<th></th>
<th>Fall 1997</th>
<th>Spring 1998</th>
<th>df</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comprehension</td>
<td>3.26 (1.39)</td>
<td>4.05 (1.11)</td>
<td>81</td>
<td>11.515*</td>
</tr>
<tr>
<td>Production</td>
<td>2.67 (1.44)</td>
<td>3.35 (1.23)</td>
<td>81</td>
<td>10.564*</td>
</tr>
</tbody>
</table>

Note. Standard deviations are in parentheses. The MELA-O scale ranges from 0 (no proficiency) to 5 (proficiency equivalent to a native English speaker). *p < .001.

**Research Question One**

To what extent can differences between treatment groups be explained by variations in creative thinking abilities and type of classroom (i.e., monolingual or bilingual), after adjusting for initial differences in creative thinking abilities?

The SPSS statistical software program was used to address research question one. A descriptive hierarchical discriminant function analysis was conducted to determine whether variations in creative thinking abilities and type of classroom could explain differences between treatment and control groups. Descriptive discriminant function analysis is a method for the multivariate study of the differences between or among groups (Buras, 1996; Betz, 1987; Dolenz, 1993; Huberty, 1975; Klecka, 1980). The grouping variables were treatment groups (i.e., treatment group and control group), and the predictor variables were pretest creative thinking score and type of classroom (i.e.,
monolingual or bilingual were dummy coded 0 and 1), which were entered as covariates, and posttest creative thinking abilities score.

Neither the full model with the three predictor variables (pretest creative thinking score, type of classroom, and posttest creative thinking score) \((F[3,10]=.47, p>.05)\) nor the block of covariates, pretest creative thinking and type of classroom \((F[2,11]=.73, p>.05)\), was statistically significant. As expected, because of the small sample size of this study, the statistical power was low. Thus, to investigate the magnitude of the effect of the creativity training program on students’ creative abilities, effect sizes (practical significance) were examined. As stated by Slakter, Wu, and Suzuki-Slakter (1991), statistical significance does not guarantee practical significance, and the magnitude of the \(p\) value is not a guide to practical significance. In addition, Smith (1993) said, “The significance test itself does not necessarily tell anything about the size of the difference between the means nor how strongly one can believe these results” (p. 317). In this regard, Carver (1993) recommended that “Attention [should] be paid to the size of the effect, whether it is statistically significant or not” (p. 288). Shaver (1993) also stated that “It should be made clear that, with effect sizes specified, power analysis is not relevant” (p. 311).

Multivariate effect sizes were based on the multiple correlation squared \((R^2=1-Wilk's\ lambda)\). The effect size of the covariate, type of classroom, was very small (Wilks’ lambda=.984; \(R^2=.016\)), suggesting that this predictor did not contribute to explain differences in the model. When the creative thinking abilities scores were entered in the model, the explained variance \((R^2)\) for the full model increased .108 (see Table 9). The effect size (or practical significance) for the full model was .124 (Wilks’
lambda=.876), which is considered to be small to medium for a multivariate analysis, according to Cohen (1988). Because multivariate effect sizes indicated differences between the groups, univariate effect sizes were also examined to describe how the groups differ (Tabachnick & Fidell, 1996). The inspection of the univariate means indicated that both treatment and control groups had higher scores on the posttest creative thinking abilities when compared to their scores on the pretest. However, the difference between pretest and posttest creative thinking abilities mean scores of the treatment group was greater than the difference between mean scores of the control group. For the treatment group, the univariate effect size was medium (.50 SD), and for the control group, the univariate effect size was extremely small (.09 SD) (see Table 10).

The jackknife classification procedure for the full model correctly classified 71.4% of original grouped cases. Also, the model predicted treatment group membership better (83.3%) than control group membership (62.5%). According to the results described above, the creativity training program, New Directions in Creativity, slightly improved the creative thinking abilities of classroom students in the treatment group. The students’ placement in monolingual or bilingual classrooms appeared not to influence the development of their creative thinking abilities.
Table 9

Type of Classroom and Creative Thinking Abilities Scores: Multivariate Effect Sizes of Partial and Full Models

<table>
<thead>
<tr>
<th></th>
<th>ES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial model (type of classroom)</td>
<td>.016&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Increment in $R^2$ (creative abilities scores)</td>
<td>.108&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>Full model</td>
<td>.124&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

**Note.**  
<sup>a</sup> Small effect size.  
<sup>b</sup> Small to medium effect size.

Table 10

Mean Scores and Standard Deviations for the Pretest and Posttest, and Univariate Effect Sizes on Creative Thinking Abilities

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th></th>
<th>Posttest</th>
<th></th>
<th>ES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>$M$</td>
<td>$SD$</td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Treatment group</td>
<td>6</td>
<td>129.11</td>
<td>25.73</td>
<td>142.81</td>
<td>29.49</td>
</tr>
<tr>
<td>Control group</td>
<td>8</td>
<td>144.68</td>
<td>28.44</td>
<td>147.54</td>
<td>37.82</td>
</tr>
</tbody>
</table>

**Note.**  
<sup>a</sup> Small effect size.  
<sup>b</sup> Medium effect size.
**Research Question Two**

To what extent can differences between treatment groups be explained by variations in self-concept and type of classroom (i.e., monolingual or bilingual), after adjusting for initial differences in self-concept?

The SPSS statistical software program was also used to answer research question two. A descriptive hierarchical discriminant function analysis was conducted to determine whether variations in self-concept and type of classroom could explain differences between treatment and control groups. Descriptive discriminant function analysis is a method for the multivariate study of the differences between or among groups (Buras, 1996; Betz, 1987; Dolenz, 1993; Huberty, 1975; Klecka, 1980). The grouping variables were treatment groups (i.e., treatment group and control group), and the predictor variables were pretest self-concept score and type of classroom (i.e., monolingual or bilingual that were dummy coded 0 and 1), which were entered as the covariates, and posttest self-concept score.

Neither the full model with the three predictors ($F[3,10]=.31, p>.05$) nor the block of covariates, pretest creative thinking and type of classroom($F[2,11]=.38, p>.05$), was statistically significant. As expected, because of the small sample size of this study, the statistical power was low. Thus, to investigate the magnitude of the effect of the creativity training program on students’ self-concept, effect sizes (practical significance) were calculated in this study, as recommended by Carver (1993) and Shaver (1993).

Multivariate effect sizes were based on the multiple correlation squared ($R^2=1-$Wilks’ lambda). The effect size for the full model was found to be small (Wilks’
lambda=.914; $R^2=.086$) for a multivariate analysis, according to Cohen’s (1988) guidelines for interpretation of practical significance. The effect size of the type of classroom, a covariate, was very small (Wilks’ lambda=.984; $R^2=.016$), suggesting that this predictor did not contribute to explain differences in the model. Likewise, the pretest self-concept score, when forced into the model, did not improve the explained variation (Wilks’ lambda=.984). However, when the posttest self-concept score was entered in the model, the explained variance for the full model increased slightly (increment of $R^2=.07$; see Table 11). Because multivariate effect sizes indicated differences between the groups, univariate effect sizes were also examined to describe how the groups differed (Tabachnick & Fidell, 1996). The inspection of the univariate means indicated that both treatment and control groups had lower scores on the posttest self-concept when compared to their scores on the pretest. Curiously, the univariate effect size for the control group on self-concept scores was greater than the univariate effect size for the treatment group. For the treatment group, the univariate effect size would be considered to be extremely small (.06 SD), and for the control group, the univariate effect size would be considered to be small to medium (.44 SD) (see Table 12).

The jackknife classification procedure for the full model correctly classified 64.3% of original grouped cases. The model correctly predicted 66.7% of the treatment group membership and 62.5% of the control group membership. The results described above indicated that the effect of the creativity training program, *New Directions in Creativity*, on the self-concept of students in the treatment group was negligible. On the other hand, the findings suggested that perhaps not being exposed to the creativity training program was associated with a decline in the self-concept of students in the
control group. Interestingly, it appeared that the implementation of the creativity training program in the classrooms was an important factor that could have moderated the decline of students’ self-concept. The decline in the self-concept of students in the control group between pretest and posttest may also be a result of threats to the internal validity of the study, such as testing and statistical regression. In addition, the condition of being placed in monolingual or bilingual classrooms was not found to influence students’ self-concept.

Table 11

Type of Classroom and Self-Concept Scores: Multivariate Effect Sizes of Partial and Full Models

<table>
<thead>
<tr>
<th></th>
<th>ES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial model (type of classroom)</td>
<td>.016</td>
</tr>
<tr>
<td>Increment in $R^2$ (self-concept scores)</td>
<td>.070</td>
</tr>
<tr>
<td>Full model</td>
<td>.086</td>
</tr>
</tbody>
</table>

**Note.** All effect sizes are small.
Table 12

Mean Scores and Standard Deviations for the Pretest and Posttest, and Univariate Effect Sizes on Self-Concept

<table>
<thead>
<tr>
<th></th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$n$</td>
<td>$M$</td>
</tr>
<tr>
<td>Treatment group</td>
<td>6</td>
<td>55.67</td>
</tr>
<tr>
<td>Control group</td>
<td>8</td>
<td>56.32</td>
</tr>
</tbody>
</table>

Note. $^a$ Small effect size. $^b$ Small to medium effect size.

Qualitative Analysis

Research Question Three

What aspects of the creativity training program appear to influence students’ creative abilities and self-concept?

To address research question three, data from interviews with teachers and students, as well as from classroom observations, were gathered and analyzed using qualitative procedures described in Chapter Three. Six teachers who implemented the creativity training program in the classroom were interviewed. Also, three groups of three bilingual classroom students and three groups of three monolingual classroom students who participated in the program were interviewed. Interviews with the school principal and the school psychologist were also conducted to obtain a more accurate
description of the students placed in bilingual and monolingual classrooms (see biographical information about interviewees in Tables 13 and 14).

Table 13

Number of Students Interviewed by Type of Classroom, Gender, Grade, and Place of Birth

<table>
<thead>
<tr>
<th>Gender</th>
<th>Grade</th>
<th>Place of Birth</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Monolingual classroom</td>
<td>5</td>
<td>3</td>
<td>3a</td>
</tr>
<tr>
<td>Bilingual classroom</td>
<td>5</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Note. a Indicates that one of these students was previously placed in a bilingual classroom.
Table 14

Biographical Information About Teachers, Principal, and Psychologist Interviewed

<table>
<thead>
<tr>
<th>Code</th>
<th>Type of Classroom</th>
<th>Grade</th>
<th>Gender</th>
<th>Years of Experience&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Degree</th>
<th>Place of Birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher A</td>
<td>Monolingual</td>
<td>3</td>
<td>Female</td>
<td>30</td>
<td>Town Master’s&lt;sup&gt;b&lt;/sup&gt;</td>
<td>USA</td>
</tr>
<tr>
<td>Teacher B</td>
<td>Monolingual</td>
<td>4</td>
<td>Female</td>
<td>28</td>
<td>Town Master’s&lt;sup&gt;b&lt;/sup&gt;</td>
<td>USA</td>
</tr>
<tr>
<td>Teacher C</td>
<td>Monolingual</td>
<td>5</td>
<td>Female</td>
<td>30</td>
<td>Master’s</td>
<td>USA</td>
</tr>
<tr>
<td>Teacher D</td>
<td>Bilingual</td>
<td>3</td>
<td>Female</td>
<td>1</td>
<td>Bachelor’s</td>
<td>Portugal</td>
</tr>
<tr>
<td>Teacher E</td>
<td>Bilingual</td>
<td>4</td>
<td>Female</td>
<td>5</td>
<td>Master’s</td>
<td>USA</td>
</tr>
<tr>
<td>Teacher F</td>
<td>Bilingual</td>
<td>5</td>
<td>Male</td>
<td>3</td>
<td>Master’s</td>
<td>Brazil</td>
</tr>
<tr>
<td>Principal</td>
<td>Bilingual</td>
<td></td>
<td>Male</td>
<td>10</td>
<td>Master’s</td>
<td>USA</td>
</tr>
<tr>
<td>Psychologist</td>
<td>Bilingual</td>
<td></td>
<td>Female</td>
<td>20</td>
<td>Licensed</td>
<td>Brazil</td>
</tr>
</tbody>
</table>

<sup>a</sup> Years of experience either as teacher, as principal, or as psychologist.

<sup>b</sup> Courses taken through the town where the school is located that are considered equivalent to a Master’s degree.
The findings discussed in this section emerged as core categories after analyzing the data using open, axial, and selective coding (Strauss & Corbin, 1990). This coding paradigm resulted in the following core categories: the implementation of the creativity training program, the degree of bilingualism of Brazilian students, and cultural issues. Responses given by either at least three teachers or three groups of students interviewed represented general agreement and were reported as a theme within a core category. With regard to the principal and school psychologist, the same response was given by both professionals to be included as a theme.

To enhance the trustworthiness of this study, the following techniques were used (Marshall & Rossman, 1995): checking and re-checking the data, value-free note taking, keeping a researcher’s journal, and triangulation of data sources. The core categories are discussed below.

**The Implementation of the Creativity Training Program**

According to the teachers, the creativity training program, *New Directions in Creativity*, was an opportunity to implement activities that were not usually carried out in the classroom. The teachers discussed five aspects of the implementation of the program that appeared to influence the development of students’ creative abilities and self-concept: the limited amount of time available to implement the program, the opportunity for students to share ideas among each other, the students’ level of enjoyment for the activities (challenges and preferences), differences between bilingual and monolingual students’ working styles, and benefits of the program for less academically able students.
Limited amount of time available to implement the program. According to all teachers interviewed, the creativity training program should not have been implemented in such a short period of time (nine weeks) as was carried out in this study. To implement all 40 activities, the teachers needed to conduct four to five activities per week. As reported by teachers, about 20 to 30 minutes was required to implement each lesson. In addition, the program had to be carried out concurrently with curricular assignments. As a consequence of exposure to many creativity activities in a short time period, students felt overwhelmed, and teachers noticed a decline in interest. As teacher C, who taught a monolingual classroom, explained:

The kids were very enthusiastic in the beginning, but because I sometimes conducted these activities, especially to try to catch up after we had missed a few weeks, I gave children a lot of them and it was too much. It was like overkilling. The students started saying, ‘Are we going do this again?’ It was too much in too little time.

The teachers said that the creativity lessons were valuable and should be done regularly throughout the academic year. Some of them suggested incorporating the activities into the regular curriculum and avoiding repetitive activities (most of the activities had two versions – see Appendix C). As teacher E, who taught a bilingual classroom, explained:

I think some of it could be attached to the curriculum as it is, not as a separate piece. Some of them, we already do in our curriculum, and that can vary from teacher to teacher. For example, the propaganda piece would be very appropriate in language arts. I think for the element of time, some activities could just be linked to what we do, and it might be less-time consuming. When you just introduce the program, there are 5, 10 minutes before you begin an activity, you have to preface it, you have to engage your students to get them prepared. They do the activity and then you need to close it.
Teacher A, who taught a monolingual classroom, evaluated the program as follows:

It is a very comprehensive program as far as the number of lessons, and [it] has been difficult to get all of them done. That has been a problem. Because there are some other requirements I can’t just take this program and do it for 5 minutes. I find that it takes longer and for discussion and explanation. It can’t be just a 5 minute fill in. It has to be done in a formal lesson and I find it runs 15 to 20 minutes. So, the negative part would be the amount of time that it does take. However, I feel it is still valuable. And it has been a high sense of excitement with the children with the different lessons. Probably, the way the program is set up with two similar lessons with each idea, I might limit the number of activities for each lesson. And maybe not do as many.

The opportunity for students to share ideas. According to teachers’ responses (n=6), as well as the researcher’s notes from classroom observations, the most exciting part of the implementation of the creativity activities was when students shared their ideas with other classroom students. The opportunity for students to share ideas helped improve their ability to see problems from different perspectives and their self-concept. Sharing ideas was an opportunity for students to express themselves and feel that their ideas were valued by teachers and peers. As teachers F (bilingual classroom teacher) and teacher A (monolingual classroom teacher) expressed:

At the end you can see that they had enjoyed the activity. When we are sharing our ideas, you see that they are participating, they are very interested in showing their ideas. [Teacher F]

[The positive aspect of the creativity training program is students’] excitement, especially during sharing…. We would go around from desk to desk, and I would hear students saying about someone’s work, “What a great idea.” It was a little bit of a self-esteem builder, as long you use it in a way that they can get a chance to share. I think it is nice for the kids to be able to see what other students are thinking and what they are thinking. [Teacher A]
Activities: Challenges and preferences. Most of the fourth and third grade teachers interviewed (n=3) reported that some creativity activities were very challenging for their students. For example, the activities “let’s write a slogan” and “advertisement game” were mentioned by teachers as difficult for young children. When implementing these activities, teachers spent most of the time explaining the meaning of the word slogan, giving some examples, and trying to motivate students to be engaged in these activities. The level of students’ interest and participation in these activities, especially by the third grade students, was low, as noted by the researcher during classroom observation sessions. On the other hand, students’ involvement with the figural activities was very high. They said that they would like to have more figural activities in the program. A third grade teacher (teacher D) said:

The positive aspect [of the creativity training program] was the diversity, especially drawings. Some verbal activities were challenging for some of my students, for example, slogans. At this level [third grade], they understand very broadly. They need to be working in a group in order to do that. Then, you might get something.

Differences between bilingual and monolingual students’ working styles.

Bilingual and monolingual classroom students differed with respect to their working styles. The three groups of bilingual classroom students reported that they preferred to work in pairs or in small groups when they were doing the activities. They said that working with other students allowed them to have a better understanding of the activity, to share different perspectives of the problem, and to produce more, original ideas. Conversely, two groups of monolingual classroom students said that they preferred to work individually on most creativity activities.
The researcher noted that bilingual classroom teachers were more tolerant with respect to students’ working styles, allowing them to choose how to work (individually, in pairs, or small groups), talk and share ideas while they were doing the activity. In addition, bilingual classroom students interacted more with teachers by asking them questions or sharing their ideas. The monolingual classroom teachers, on the other hand, were stricter regarding students’ interactions, they wanted most of the creativity activities to be done quietly. When some students started talking to each other, the teachers asked them to be quiet and to concentrate on the task.

Benefits of the creativity program for less academically able students. Another theme that emerged from teachers’ responses was the usefulness of the creativity training program for students who had limited academic competence. Three teachers said the program gave students opportunities to express themselves and to become aware of their potential in other areas. As a consequence, it appeared that the creativity training program helped these students develop a more positive self-image. As both teachers C and A, who taught monolingual classrooms, explained:

[The creativity training program is a good strategy to enhance students’ self-concept] especially for those who maybe are not as academically capable. They do not do as well on tests, but they can find they have some talent they did not realize they had before. [Teacher C]

I have some children who have a difficult time expressing themselves verbally and for those kids, I think that participation in something like this, where there is no right or wrong answer, is very good for those students. I think it [the creativity training program] has made an impact for those students. [Teacher A]
The Degree of Bilingualism of Brazilian Students

The degree of bilingualism of Brazilian students, represented by the level of proficiency in both English and Portuguese languages, also emerged in this study. Although Brazilian students were placed in bilingual classrooms, they could not be considered bilingual in terms of being proficient in two languages, but in terms of being exposed to two languages, as the findings below suggest.

Level of proficiency in English. The level of English proficiency of students placed in bilingual classrooms, according to the school psychologist and all bilingual classroom teachers interviewed (treatment group), differed. Informal interviews with two bilingual teachers of the control group and ESL (English as second language) teacher corroborated these findings. The proficiency range was wide, from Brazilian children who had just arrived in the United States and spoke no English, to children who had been in the American school system since kindergarten or first grade and could understand, read and write in English. Between these extremes, there was a group of Brazilian students who had been in the system for a year or less. They could follow simple directions in English, but their English was still very limited.

Most Brazilian students, regardless of their English proficiency, were placed in bilingual classrooms. According to the principal and school psychologist, this was done because the school had new arrivals almost every month, and this could interfere with the class dynamics and the philosophy of the bilingual program. The philosophy of the program was that children should stay in the bilingual program until they have developed the appropriate academic skills to be mainstreamed, a process that may take years.
Teachers needed to feel confident before children moved to a non-bilingual classroom.

As teacher E explained:

[Their level of proficiency in English varies] from 0 to 99. Before putting kids in a regular classroom, you have to make sure that they are not only having English, but they have to be acculturated, have an understanding of what might happen in a classroom here in US. They have to have a reading level very close to an academic fourth grade child, they have to have writing close to an academic fourth grade child.

*Level of proficiency in Portuguese.* Most of the instruction in bilingual classrooms was conducted in Portuguese, because it was necessary for the students to be well-grounded in the Portuguese language to be able to transfer to English. According to the school psychologist and two bilingual teachers, most Brazilian children had a limited linguistic background in Portuguese to transfer to a second language. Children’s access to a rich linguistic background (newspapers, books, magazines, for example) was limited. In addition, the researcher noted that the bilingual classroom materials such as handouts, posters, as well as the school newsletter (translated from English to Portuguese) had spelling, grammar, and sentence structure problems. Only two out of the six the bilingual classroom teachers (including treatment and control groups) were born in Brazil (see Table 3). Although two teachers were born in Portugal, differences between the Portuguese language spoken by the teachers from Portugal and Brazil could also be noticed.

*Cultural Issues*

Interviews with the principal, school psychologist, and teachers and classroom observations indicated that cross-cultural factors seemed to influence students’ development of creative abilities and self-concept. With respect to students placed in
bilingual classrooms, the transition from a cultural background to a different one had an impact on their adjustment to the American educational system. The following cross-cultural factors are described below: socio-emotional characteristics of students, the educational system structure, parental support, and prejudice and discrimination.

Socio-emotional characteristics of students. Brazilian students, who participated in this study, could be characterized as more group-oriented, physically demonstrative of their emotions, outwardly extroverted, and they seemed to need attention, support, and approval. By contrast, students placed in monolingual classrooms (93.70% consisted of American students) were more individualistic-oriented, independent, reserved with regard to showing their emotions, and quieter. These differences were reflected in students’ reactions to the creativity training program, in the dynamics of the classroom, and in the relationship between the students and teachers. These scenarios emerged based on the interviews with the principal, school psychologists, and two bilingual teachers, and notes from classroom observations. One teacher (teacher E) explained:

I think the kids in the bilingual program in general have very low problem-solving skills, because of the nurturing nature of the Brazilian culture. The mother takes care of everything. I think the [Brazilian] children do not have as many independent skills, and in this country [United States] we foster independence. I think there is a conflict, because you are in charge of your learning skills.

The principal also characterized students placed in bilingual classrooms as follows:

Another difference is that they [Brazilian students] tend to be a little bit more outgoing, and they are not shy as a group…. They are also more physically demonstrative than the American kids. It is not unusual to go to the kindergarten class and the little kids come up and hug me. The bigger kids will pat me on the back, that kind of thing. That kind of close physical contact is not done as much [in the case of Americans].
The educational system structure. The structure of the Brazilian educational system was different compared to the American system. According to the principal, school psychologist, and two bilingual classroom teachers, the Brazilian classrooms were very structured. The teacher was in charge of providing rules and limits for students. In this regard, Brazilian students have limited chances to develop self-control and independence skills. When these children were transferred to the American educational system, they did not know the new rules, the importance of being co-responsible for their learning process, and accustomed to the freedom they had in the classroom. As a consequence, many non-bilingual teachers complained about the students’ lack of discipline and the difficulty in controlling them. Furthermore, these children spent more hours in American schools than they did in Brazilian schools.

Interestingly, the researcher noticed that most of students sent to the principal’s office because of discipline problems were Brazilians. Therefore, conflicts due to the adjustment of Brazilian students to a different system, in addition to the teachers’ lack of awareness about the cultural background of these students, seemed to be factors that may contribute to undermining their self-concepts. The school psychologist explained:

The classrooms in Brazil are very structured from what I know. The [Brazilian] kids do not have a chance to learn self-control, to internalize rules, because there is always a teacher who will provide them the control they need. . . . They [the students] put the desks together, and these kids talk. They talk because they need to talk, because emotionally they need to share. They went through changes in their lives, lost in their lives. The parents are very busy working, and they are not giving them all the attention they need. So, they seek attention. Some teachers are pulling their hair out because they do not know how to control those kids. And the secret is easy, structure.

Parental support. Another factor that emerged from the interviews with the bilingual classroom teachers, the principal, and the school psychologist was the limited
support provided by the Brazilian parents. Because the parents wanted to achieve economically and provide a better quality of life for their family, the Brazilian parents had two or three jobs. As a result, they did not seem to have enough time to spend with their children, supervise homework, or participate in school activities. The school was the place where the Brazilian students spent more of their time, and a place where their emotional, social, and educational needs could be addressed. As the principal, the school psychologist, and teacher E explained:

Parents are not used to playing a role in the schools here as much as they did in Brazil. Also many of the Brazilian parents are working two or three jobs, and unfortunately they do not have as much time to spend as I know they would like, and they come to my office and talk to me about how they feel. They have two things to do. The most important is bringing up their children. But they also feel an incredible pressure to achieve economically and provide for their kids and their family…. Another reason is that this school is quite distant from where many of the people live. For those people who don’t have transportation, it is difficult. However, we have seen more and more participation by Brazilian parents. For example, we have child care for many of our evening activities, so the Brazilian parents can bring their children. Because this is the only way for them to come and also that is part of the culture, when they do something, they tend to bring everybody in the family. We learned a lot about how to do this more effectively. [Principal]

It is very hard to have parents come to the school. This is [because of] culture and it is also an attitude. It is culture because we are used to having the school solve the problem for the parents. [In Brazil] we are not part the system. We don’t volunteer to help in school like the Americans do. We are not inside the school developing programs to help the schools. We are not doing fund raising in order to have improvement in the school. PTO is very strong here. It is also attitude, because this is the way we learned. The government or school is in charge of it. I don’t have to be there. Those parents are very busy, working in two, three jobs. So the attitude towards children is different. They leave the kids inside of their house until late at night when they come from work. I can understand. This is not a critique. This is the reality. [Psychologist]

Some kids have been away from their parents for three years, five years [it was not unusual for parents to bring their children to the United States only after they had a job and an adequate place to live], broken families, no supervision. All those things affect the self-esteem. When they have a problem, who do they have to talk to, what skills do they have to have to deal with? [Teacher E]
Prejudice and discrimination. Bilingual classroom teachers, the principal, and the school psychologist discussed the prejudice and discrimination from the school community (students, parents, and teachers) toward Brazilian students. According to them, this occurred because of a lack of knowledge about the Brazilian culture. Cultural and linguistic diversity did not seem to be appreciated by the school community. Importantly, the integration classroom strategy, where students in bilingual and monolingual classrooms are integrated for music, arts, and physical education classes, contributed to improving the relationship between these students. As the school psychologist and the principal explained:

It is hard to address these issues [prejudice and discrimination]. We are dealing with lots of variables we cannot control. I think in general they have self-esteem problems in relation to the mainstream culture. These issues are reinforced by some teachers, the way they treat them [Brazilian students]. There are teachers who treat them very well, but we also have…. They [Brazilian students] and talk about that ‘I do not know why that teacher does not come to us, she goes only to Americans.’ When the kids are integrated, they feel the difference. It reflects in their self-esteem…. There are some good results from the integration classrooms [with respect to the relationship between Brazilian and non-Brazilian students]. They start to get along. At least they are together, because for the rest of the day, they are separated. [Psychologist]

As they learn more and more about the Brazilian culture, and as they meet Brazilians and become friends with them, this has changed quite a bit. We make progress. The [Brazilian] students are much more accepted now than in the beginning [of the bilingual program]. Unfortunately, there is a segment of the population that still looks at the Brazilian community as ‘Why are those kids in our neighborhood school.’ This is what I heard, ‘We do not have a music room because we are overcrowded. Why are we overcrowded? Because of the Brazilians.’ The truth is if the Brazilians were not in this school, we probably would have closed because, five or six years ago, we would not have enough children. But people do not see that. [Principal]
Conclusions

The results of the quantitative analyses indicated that classroom students who participated in the creativity training program, *New Directions in Creativity*, had small gains in their creative thinking abilities scores after the intervention. The results also revealed that the creativity training program had a negligible effect on the self-concept of students in the treatment group, and students who were not exposed to the creativity training program experienced a moderate decline in self-concept scores in the posttest when compared to their scores in the pretest. In addition, being placed in monolingual or bilingual classrooms was not found to affect students’ creative thinking abilities and self-concept.

The qualitative findings provided further insight about aspects related to the creativity training program, as well as characteristics of the school environment, that influenced students’ creative abilities and self-concept. Data analyses generated three core categories: the implementation of the creativity training program, the degree of bilingualism of Brazilian students, and cultural issues. It appeared that how the creativity program was implemented influenced the development of students’ creative abilities and self-concept. The opportunity for students to share ideas, engage in their favorite activities, express themselves and become aware of their potential (especially in the case of less academically able students) were positive outcomes associated with the creativity training program. Teachers’ responsiveness to different students’ working styles and the degree of difficulty for some activities were also factors that contributed to the success of the program. The need to implement the program throughout an academic semester,
rather than over a short period, which occurred in this study, was something that should be considered in future interventions.

The data also suggest that students placed in bilingual classrooms should not be considered bilingual in the same sense, because their level of proficiency in English and Portuguese languages varied considerably. Differences between bilingual and monolingual students with respect to socio-emotional characteristics, differences between the Brazilian and American educational system structures, limited parental support, and attitudes of prejudice and discrimination toward the Brazilian community appeared to be factors that influenced students’ creative abilities and self-concept. A discussion of these results is presented in Chapter Five.
CHAPTER FIVE
DISCUSSION AND IMPLICATIONS

In this chapter, the purpose, design, and implementation of the study, as well as the major findings and their implications are discussed. Limitations of the study and suggestions for future research are also presented.

Rationale for the Study

Educators have emphasized the importance of favorable conditions for developing students’ creativity, and several studies have suggested ways to cultivate creativity in an educational environment (Alencar, 1993; Amabile, 1989; Daniels, 1997; Piirto, 1992; Starko, 1995; Sternberg & Williams, 1996; Timberlake, 1982; Torrance, 1983). However, the development of logical thinking, emphasizing knowledge, recall, and reproduction, is a priority in many schools (De Bono, 1984; Gardner, 1991; Von Oech, 1983). It is important that we make teachers aware of educational strategies that promote the development and expression of students’ creative abilities.

It is also important for teachers to understand that creativity is not exclusively a cognitive construct, but it includes affective dimensions as well (Arieti, 1976; Davis, 1992; Martindale, 1989; Starko, 1995; Tardif & Sternberg, 1988; Vernon, 1989).

Empirical evidence about the relationship between creativity and affective variables, such as self-concept, is sketchy and inconclusive (Dowd, 1989; Gilbert, 1991; Schubert & Biondi, 1977; Sexton, 1984; Williams, Poole, & Lett, 1977). It seems clear that further research is necessary to investigate the extent to which creativity and self-concept are
related. Additional research in this area will help teachers make decisions about the use of instructional strategies that can enhance both creativity and self-concept in the classroom. Furthermore, although efforts have focused on the relationship between creativity and bilingualism, few studies have examined the effects of creativity training programs on individuals from different linguistic and cultural backgrounds (Jellen & Urban, 1988; Raina, 1993; Torrance, 1973, 1979). Therefore, the purpose of this study was to investigate the effects of a creativity training program, *New Directions in Creativity*, on the creative abilities and self-concept of students in monolingual and bilingual classrooms. The study assessed changes in creative abilities and self-concept of students after teachers received staff development on classroom creativity strategies and implemented creative thinking activities in their classrooms.

A pretest-posttest control group design (Gall, Borg, & Gall, 1996) using intact groups was employed in this study to investigate the effects of the creativity training program, *New Directions in Creativity*, on the creative abilities and self-concept of students in grades 3, 4, and 5. Students from six bilingual and eight monolingual classrooms participated in this study. Bilingual classrooms included Brazilian students who spoke both English and Portuguese. Classroom teachers were randomly assigned to treatment and control groups. Classroom teachers in the treatment group received instructions on how to implement a creativity program named *New Directions in Creativity* (Renzulli, 1973, 1986). This program was designed to help teachers develop students’ creative thinking abilities. The theoretical background of the program is Guilford’s Structure of the Intellect Model (1967), and the focus of *New Directions in Creativity* is the divergent thinking section of the model. Forty activities (verbal and
figural) from the Mark I and Mark II volumes of this program were selected because they were deemed appropriate by experts for the sample grade levels. Teachers implemented the creativity training program in nine weeks, completing an average of three activities each week. During the implementation period, the researcher observed each classroom at least two times and met with teachers every two weeks to ensure the program was being implemented as planned. Control group teachers proceeded with regular classroom activities during the treatment period.

Quantitative methodology was used to analyze the effects of the creativity training program on creative thinking abilities and self-concept of students in monolingual and bilingual classrooms. Qualitative methodology was employed to analyze aspects of the creativity training program that may have influenced students’ creativity and self-concept.

**Significance of the Study**

Although research findings have supported the idea that creativity can be improved with training, divergent opinions exist about whether creativity can be developed (Cropley, 1997; Csikszentmihalyi, 1988; Feldman, Csikszentmihalyi, & Gardner, 1994). Previous research has focused on the effects of creativity training programs on cognitive factors sample. Little research has been conducted to examine the effects of a creativity training program on affective variables. Some studies have focused on the relationship between creativity and affective variables, such as self-concept (Dowd, 1989; Schubert & Biondi, 1977). Differing results have been reported with respect to the relationship between creativity and self-concept (Gilbert, 1991; Sexton,
This study was designed to investigate the effects of a creativity training program on students’ creative thinking abilities and self-concept. This experimental study examined whether self-concept could be enhanced through the implementation of creativity activities, in contrast with earlier correlational studies (Fabrizi & Pollio, 1987; Felker & Treffinger, 1971; Quaglino, 1979; Smith & Tegano, 1992; Wright, Fox, & Noppe, 1975).

Another characteristic of creativity studies is that they investigate differences among individuals from similar cultural and linguistic backgrounds (Alencar, 1974; Blakenship, 1975; Callahan, 1973; Camp, 1994; Fleith, 1990). Although efforts have been made to evaluate the relationship between creativity and bilingualism, few studies have examined the effects of a creativity training program on monolingual and bilingual students. Bilingual students who participated in this study were Brazilian immigrants who spoke English as a second language. Therefore, both linguistic and cultural backgrounds were considered in this study. This research also employed qualitative procedures to analyze the creativity training program and characteristics of the school environment that influenced students’ creativity and self-concept.

Because the number of linguistic and ethnic minority students in the United States has increased, educators have been challenged to question basic assumptions about schooling (Díaz-Rico & Weed, 1995). The results of this study better inform teachers and administrators about educational strategies and characteristics of classrooms in which cognitive, social, and emotional needs of all students are considered. The ways to meet these needs may differ for students from diverse cultural and linguistic backgrounds.
Research Findings

Research findings and implications are discussed in three sections. First, the findings and implications related to the effects of the creativity training program, *New Directions in Creativity*, on students’ creative thinking abilities are reviewed. Second, the findings and implications related to the effects of the creativity training program on student’s self-concept are discussed. Finally, the qualitative findings regarding the implementation of a creativity training program in elementary schools with a diverse cultural and linguistic student population are discussed.

**Effects of the Creativity Training Program on Creative Thinking Abilities and Implications**

A descriptive hierarchical discriminant function analysis was conducted to determine whether variations in creative thinking abilities and type of classroom (i.e., monolingual or bilingual) could explain differences between treatment and control groups. The Torrance Tests of Creative Thinking (TTCT) (Torrance, 1974a) were used to assess students’ creative thinking abilities. The results indicated that the creativity training program, *New Directions in Creativity*, slightly improved the creative thinking abilities of students in the treatment group. No significant change was found on the creative abilities of students in the control group between pretest and posttest. Placement in monolingual or bilingual classrooms was not found to influence the development of students’ creative thinking abilities.

The results of this study indicated that training does affect creativity, as measured by TTCT, supporting other research findings that stated that it is possible to teach people
to think creatively (Pyryt, 1997; Rose & Lin, 1984; Torrance, 1972a). Qualitative findings indicated that how the creativity training program was implemented seems to have influenced the students’ creativity. The positive outcomes associated with the creativity training program were the opportunity for students to share ideas, engage in their favorite activities (i.e., figural activities), express themselves and become aware of their potential (especially in the case of less academically able students), as well as the responsiveness of teachers to different students’ working styles. A supportive classroom climate seemed to play an important role in a successful implementation of the creativity training program. According to Torrance (1972a), “The most successful approaches seem to be those that involve both cognitive and emotional functioning, provide adequate structure and motivation, and give opportunities for involvement, practice, and interaction with teachers and other children” (pp. 132-133).

Although studies have suggested that bilingual elementary students have higher performance on creativity measures when compared to monolingual students, the findings of this study did not confirm these studies. The wide range in the degree of bilingualism in the Brazilian students may provide a possible explanation for this result. Qualitative findings indicated that although the Brazilian students were placed in bilingual classrooms, they could not be considered bilingual in terms of proficiency in two languages. The students were exposed to two languages. Children who had just arrived in the United States and spoke no English as well as children who had been in the American school system since kindergarten or first grade and could understand, read, and write English attended the school where the study was conducted. Brazilian students were generally placed in the transitional bilingual education program, in which most of
the instruction was offered in their native language. According to the philosophy of the school, it is necessary for students to be well-ground in their native language to be able to transfer to English. Therefore, limited opportunities existed to develop or improve Brazilian students’ English proficiency. Scores obtained by these students on the Massachusetts English Language Assessment-Oral (MELA-O) indicated that their comprehension ability improved more than their ability to speak in English. Brazilian students had limited opportunities to develop abilities associated with oral language such as fluency, vocabulary, pronunciation, and grammar. In addition, qualitative findings in this study indicated that Brazilian children had either limited access to instructional materials in Portuguese, their native language, or exposure to oral and written materials/resources in Portuguese containing grammar and spelling errors. The translation of materials from English into Portuguese was not done well either. The limited resources written in Portuguese and the difficulty of hiring certified teachers who speak Portuguese are also challenges faced by the school administration. These results supported findings in Diaz-Rico and Weed’s (1995) evaluation of transitional bilingual education programs:

Most of these programs last only two to three years, long enough for students to achieve basic interpersonal communication skills (BICS) but not long enough for children to build cognitive academic language proficiency (CALP) either in their native tongue or in English. As a consequence, they may not be able to carry out cognitively demanding tasks in English, and may be considered to be ‘subtractively bilingual.’ (p. 165)

A continuous evaluation of the transitional bilingual education program, therefore, would be recommended to examine whether the program goals have been accomplished. The evaluation should also investigate: how the program affected the educational experiences of all students; how the program met cognitive, emotional, and
social needs of students; whether training opportunities are available to teachers who
work with culturally and linguistically diverse students; how students, teachers, and
parents reacted to the program; and whether modifications are necessary to improve the
services offered to the program (Gubbins, 1998).

**Effects of the Creativity Training Program on Self-Concept and Implications**

A descriptive hierarchical discriminant function analysis was conducted to
determine whether variations in self-concept and type of classroom (i.e., monolingual or
bilingual) could explain differences between treatment and control groups. The results
indicated that the effect of the creativity training program, *New Directions in Creativity*,
on the self-concept of students in the treatment group was negligible. No statistically
significant changes in self-concept were found, which means that the creativity training
program was not associated with enhanced self-concept of students in the treatment
group. Interestingly, the students in the control group experienced a slight decline in self-
concept between pretest and posttest. The reasons for this decline are not known. One
could speculate that the creativity training program helped maintain self-concept in the
treatment group, but the non-significant results of the significance test and the negligible
multivariate effect size raise questions about this possibility.

The decline in the self-concept of students in the control group between pretest
and posttest may be a result of threats to the internal validity of the study, such as testing
and statistical regression. The same self-concept scale was used before and after
treatment, enabling students to become acquainted with the instrument and, consequently,
providing potential bias for students’ responses on the posttest. Statistical regression or
regression toward the mean also may be a threat in this study and explain a decline in students’ posttest self-concept scores.

The findings of this study do not support the idea that a creativity training program could enhance children’s self-concept, which corroborates what other researchers have found (Blakenship, 1975; Camp, 1994; Kolloff & Feldhusen, 1984; Meador, 1994). According to Hattie and Marsh (1996), meta-analyses of intervention studies have provided limited evidence of the success of self-concept intervention programs, suggesting that it is not easy to enhance self-concept. Adults’ self-concept is much more malleable than children’s self-concept. Moreover, students in this study were preadolescents and, according to Byrne (1996) and Hattie (1987, 1992), self-concept is much more difficult to change at that age level. The cognitive skills of young children are concrete, and the cognitive skills of adults are more abstract and complex. “The effects of most educational interventions are much smaller than effects derived from psychotherapy and out-of-classroom settings” (Hattie & Marsh, 1996, p. 439). Therefore, it would be difficult to produce substantial changes in self-concept of children in this study, considering their age, the educational nature of the intervention, and the short length of the program implementation. As suggested in the qualitative findings, the limited Brazilian parental support and prejudicial attitudes of the school community toward Brazilian students should also be considered factors that may influence the development of students’ self-concept.

In addition, problems related to the self-concept scale used in this study, Self-Perception Profile for Children (Harter, 1985), may contribute to an explanation of the results of the effects of the creativity training program on students’ self-concept.
Although Harter’s instrument was considered a multidimensional scale, the scores of the three sub-scales used in this study, scholastic competence, social acceptance, and global self-worth were combined to prevent multicollinearity, generating a total score and, therefore, a unidimensional score of self-concept. The unidimensional perspective used in this study may have masked gains in specific domains of students’ self-concept. The researcher also noted that both monolingual and bilingual children interpreted some of the items of the scale differently than the author. For example, the item “other kids usually do things by themselves” was interpreted by the children as being independent and able to do things without help, which was considered a positive item. However, if children chose this item, they received a low score, because according to the test developer’s interpretation, the child did not have many friends and felt socially isolated. The item “some kids would like to have a lot more friends” was considered a negative choice, according to the test manual. The children said that they already had a lot of friends, but they would like to have more. The item “other kids wish they were different” was not considered by the students as a negative option, but the scoring instructions in the manual indicated the opposite. Finally, although this instrument had been used with culturally different samples, the linguistically and culturally diverse sample could be a factor interfering with the instrument’s validity.

Because the treatment in this study involved interaction among students, classroom was used as the unit of analysis to avoid violation of the independence assumption. As a consequence, low statistical power was a threat to this study because of the small sample size (N=14). As a result, the discriminant function analysis performed in this study was considered a descriptive analysis rather than an inferential analysis.
Thus, the effect sizes (practical significance) were the focus of this study rather than statistical significance.

**Qualitative Findings and Implications**

The qualitative findings provided additional insights into aspects of the creativity training program, *New Directions in Creativity*, as well the school environment, and how these influenced students’ creative abilities and self-concept. Data analyses generated three core categories: the implementation of the creativity training program, the degree of bilingualism of Brazilian students, and cultural issues.

It was evident that the way in which the creativity training program was implemented had an impact on students’ creative abilities and self-concept. The opportunity for students to share ideas, engage in their favorite activities (usually figural activities), express themselves, and become aware of their potential (especially in the case of less academically able students) were favorable aspects in the development of students’ creativity and self-concept. Teachers’ responsiveness to monolingual and bilingual students’ different working styles was another factor that contributed to the success of the program. The way in which the creativity training program was implemented enabled children to improve their ability to examine problems from different perspectives and believe that their ideas were valued by teachers and peers.

The creativity lessons combined with a supportive and encouraging classroom climate seemed to contribute to the success of the program. Amabile (1989), Csikszentmihalyi (1996), and Sternberg and Williams (1996) believe that a comprehensive view of creativity takes into consideration the interchange between the
individual and the environment in the creative process, the psychological meaning of the creation situation for the individual, and the power of the environment in establishing conditions for the development of the creativity.

Although quantitative results indicated that the creativity training program did not affect the self-concept of trained students as a whole group (considering the classroom as a unit of analysis), according to classroom teachers who were interviewed, it did have a positive impact on less academically able students. Teachers said that the program gave these students opportunities to express themselves, become aware of their potential in other areas, and develop a more positive self-image.

Cross-cultural factors also appeared to play a role in the development of students’ creativity and self-concept. Students placed in bilingual classrooms were characterized as group-oriented, able to demonstrate their emotions, extroverted, and in need of attention. On the other hand, students placed in monolingual classrooms were more individualistic-oriented, independent, and reserved in showing their emotions. In addition to the cultural differences in behavior, the socio-emotional status of Brazilian children should be taken into account. Most were immigrants who had to adjust to a different cultural, social, linguistic, and educational environment. Many of these students, in the process of moving to another country, had to leave behind family members and friends. Moreover, because the Brazilian educational system structure was different from the American system, Brazilian children needed to internalize the new rules. This transition process was not completed in a short period of time. As a consequence, many teachers complained about the lack of discipline in Brazilian students. As observed by the researcher, many Brazilian children were routinely sent to
the principal’s office, and their parents were asked to come to the school. This suggested that their teachers were not knowledgeable about students’ behavioral processes and characteristics, and they had limited ability to manage discipline problems in the classroom.

The qualitative findings also suggested that because Brazilian parents had to work in two or three jobs to provide a better quality of life for their family, they did not have the same amount of time to spend with their children as their American counterparts. This reduced time available to supervise homework and participate in the school activities. Brazilian students’ emotional, social, and educational needs were not always addressed at home and a need existed to address them in the school. However, it is important to note that this study did not include interviews with parents, and one must be cautious when interpreting these data to avoid biases and conclusions based on negative stereotypes.

Limited knowledge and interest about Brazilian values and traditions seemed to be another challenge faced by staff members in this school. Limited information about the Brazilian educational system, as well Brazilian students’ characteristics, needs, and working styles appeared to create prejudicial and discriminatory attitudes toward these students, which may have affected the development of a positive self-concept. Some studies have pointed to the need to change preconceived attitudes towards culturally and linguistically diverse students (Kloosterman, 1997), and the importance of celebrating and discussing multiculturalism in American schools (Banks, 1993; Weil, 1993). According to the principal of this school, the integration classroom strategy, which integrates students placed in bilingual and monolingual classrooms during music, arts,
and physical education classes, had contributed to improving the relationship between these students. This strategy seems to provide an opportunity for students to learn and appreciate cultural and linguistic diversity.

Conclusions

The following conclusions emerged from this study:

- The creativity training program, *New Directions in Creativity*, slightly improved the creative abilities of students in the treatment group. However, placement in monolingual or bilingual classrooms was not found to affect students’ creative abilities.

- The qualitative analysis suggested that a supportive and encouraging classroom climate in which the creativity training program was implemented was an essential factor in the success of the program.

- The quantitative analysis indicated that creativity training program, *New Directions in Creativity*, did not enhance the self-concept of students in the treatment group.

- The qualitative findings suggested that the creativity training program, *New Directions in Creativity*, had a positive impact on the self-concept of less academically able students.

- The qualitative findings suggested that the creativity training program should be implemented regularly throughout the academic year, rather than in a shorter period of time, to increase the level of interest for creativity activities.
• The qualitative findings suggested that students placed in bilingual classrooms should not necessarily be considered bilingual, because their level of proficiency in both English and Portuguese languages varied considerably.

• The results obtained by Brazilian students on the MELA-O assessment indicated that their comprehension abilities in English improved much more than their production abilities in English (fluency, vocabulary, pronunciation, and grammar).

• The qualitative analyses indicated differences in students placed in bilingual or monolingual classrooms with respect to socio-emotional characteristics and working styles. Therefore, classroom teachers and administrators working with culturally and linguistically diverse students should be made aware and informed about differences among culturally and linguistically diverse students. These differences should be considered when new educational strategies are developed and implemented.

• The qualitative findings suggested the existence of prejudicial and discriminatory attitudes of the school community towards students in the bilingual program, indicating a general lack of awareness and appreciation of cultural and linguistic differences and their limited information about Brazilian values and traditions. In this regard, bilingual and monolingual teachers, parents, and students should be encouraged to understand, accept, and appreciate diversity. Integration activities and strategies should be implemented more often in this school. As pointed out by Kloosterman (1997):

  A change of attitudes cannot be imposed but can be taught. In the United States, the absence of understanding of the values and traditions of one culture, and the absence of appreciation of all cultures, contradicts one of the principles sustained by this exemplary democratic country. (p. 235)
**Limitations**

This section discusses the factors that limit the generalizability of the study and the factors that would have enhanced the effectiveness of the treatment. The implementation of the creativity training program in nine weeks may not have been long enough to produce changes in the self-concept of young students. The number of creativity lessons implemented in each classroom varied. It was necessary for participating teachers to use 4 to 5 activities each week to complete all 40 creativity activities in nine weeks. Teachers implemented the activities according to their own schedules, which varied from classroom to classroom. As a consequence, the number of lessons implemented each week was not consistent across classrooms. Also, the number of activities implemented within a classroom varied each week according to classroom’s schedule. It is important to note, however, that the lessons were implemented as recommended by the researcher. Therefore, in future interventions, a long-term implementation of the creativity training program should be considered.

The varied degree of bilingualism of students placed in bilingual classrooms was another issue that influenced the results of this study. Although these students were placed in a bilingual education program, their level of proficiency in English and Portuguese differed. In future studies, the students’ degree of bilingualism should be assessed, and a factorial research design (with different levels of degree of bilingualism) should be considered as well. Placement in a bilingual or monolingual classroom may not have affected students’ creative abilities or self-concept in this study because of differences related to the students’ degree of bilingualism.
Many factors were identified that may have threatened the validity of this study. With respect to the internal validity, four threats were considered: testing, statistical regression, experimental treatment diffusion, and compensatory rivalry by the control group. First, to address the potential testing effect, a parallel form was used to measure creative thinking abilities. However, the same self-concept scale was administered before and after treatment, enabling students to become acquainted with the instrument in the posttest occasion. The use of the same self-concept instrument in the pretest and posttest may be a testing threat that had an impact on the results. Secondly, statistical regression may be a threat to this study. The students in the control group experienced a decline in self-concept scores in the posttest when compared their scores on the pretest, and this may have occurred in the treatment group as well to some degree. To reduce concerns about experimental treatment diffusion and compensatory rivalry by the control group, the researcher met with teachers from both treatment and control groups to explain the purpose and methodological procedures of this study. Furthermore, after the study had been completed, teachers in the control group received the same materials and instructions provided to teachers in the treatment group. However, these threats may have occurred in the present study.

With regard to the qualitative aspect of this study, credibility was used as a replacement term for internal validity, as suggested by Lincoln and Guba (1985). Credibility was ensured by spending adequate time in the field, conducting observations, using triangulation of sources, and thorough description.

Factors that may affect the external validity of this study are population validity, treatment fidelity, and pretest sensitization. The generalizability of this study is limited.
to students who attended a school where a transitional bilingual education program is implemented. Although this study has limited population validity, it has the potential to assess and contrast cognitive, affective, and social characteristics of students placed in monolingual classrooms and immigrant students placed in bilingual classrooms. This study also investigated the benefits of a creativity training program in developing these characteristics. To assure that the creativity training program was being implemented according to the instructions provided to the teachers, the researcher randomly observed classes and had weekly meetings with teachers to clarify questions, assess the program implementation, and make suggestions. Because of the small number of classrooms participating in this study, a randomized Solomon four-group design, which controls for pretest sensitization threat (Isaac & Michael, 1995), could not be used. Transferability of one set of findings to another context can be considered as a qualitative measure of external validity (Lincoln & Guba, 1985; Marshall & Rossman, 1995). Thorough description and triangulation of sources of data enable “observers of other contexts to make tentative judgments about applicability of certain observations for their contexts and to form working hypotheses to guide empirical inquiry in those contexts” (Erlandson, Harris, Skipper, & Allen, 1993, p. 33).

Suggestions for Future Research

The findings from this study about the effects of a creativity training program on the creative abilities and self-concept in monolingual and bilingual elementary classrooms raised a number of issues that might be addressed in future studies. An investigation of the effects of a long-term implementation of the creativity training
program, *New Directions in Creativity*, in contrast with the short-term implementation, as occurred in this study, might provide further insight about its impact on students’ creative abilities and self-concept. Also, the qualitative findings of this study indicated a low level of interest by younger students in some creativity activities. In this regard, age seems to be an important variable to be considered in further studies concerning the effects of creativity training programs. In addition, the use of qualitative methodology to examine how a creativity training program influences students’ self-concept would contribute to an understanding of how creativity and self-concept are related and promote the development of new educational strategies. Because of the limitations of the instrumentation used in this study, the use of a psychometrically stronger instrument that addresses the multidimensional aspect of the self-concept, as well as alternative ways to assess self-concept, such as student self-evaluation and teacher rating scales, are recommended.

The students’ placement in monolingual or bilingual classrooms appeared not to influence their creative abilities or self-concept perhaps because of the varied degree of bilingualism of Brazilian students. Additional research needs to be conducted to determine whether a relationship exists between degree of bilingualism and creativity and self-concept. A factorial research design, which includes different levels of bilingualism, could investigate whether there is an interaction between degree of bilingualism and creativity and self-concept.

The increasing number of immigrant students in the district where this study was conducted, as well as students’ cross-cultural differences and limited awareness and appreciation of cultural and linguistic diversity, suggests the need for a follow-up
investigation of the academic performance of Brazilian students. Furthermore, a study of the dropout rate of this population in high school could contribute to an evaluation of the educational policies for this group.

Qualitative studies involving parents of students placed in monolingual classrooms, as well as monolingual teachers who work with culturally and linguistically diverse students, may help to identify factors that influence their perceptions about Brazilian students and their families. Also, interviews with parents of students placed in bilingual classrooms would provide a better understanding of the relationship between these parents and their children and would provide information about parental involvement in their children’s academic life and the level of participation of these parents in the school activities.

The findings in this study raised questions related to the effectiveness of the transitional bilingual education program in developing immigrant students’ language skills in English and in their native language, Portuguese. It would be interesting to conduct a comparative study involving immigrant students placed in transitional bilingual education programs versus immigrant students integrated into monolingual classrooms having ESL (English as a second language) classes as support. This research would help evaluate the impact of different educational strategies for culturally and linguistically diverse students on several variables such as academic achievement, years in the school, self-concept, peer relationships, teachers’ expectations, and degree of bilingualism. Finally, interviews with monolingual and bilingual classroom students who participated in this study regarding their participation in integration classes (arts, music, and physical education), their cultural, linguistic, and behavioral differences, and their opinions about
the bilingual program may provide a more accurate description of their perceptions about
the relationship between bilingual and monolingual students.

In conclusion, the results of this study suggested that a creativity training can have
an impact on students’ creative abilities. Also, a nourishing classroom climate seems to
play an important role in the process of developing children’s creativity. The results
suggest that it is important to consider students’ cognitive, social, and emotional
characteristics, as well as their linguistic and cultural backgrounds.
References


Dear Parent or Guardian,

I am a graduate student in the Gifted and Talented Program at the University of Connecticut. I am very interested in conducting a study about the effectiveness of a creativity training program on students’ creativity and self-concept. My goal is to investigate whether a creativity training program can increase students’ creativity and self-concept, and to identify which aspects of the creativity program may contribute to the development of students’ creativity and self-concept. Information gained from this study will be used to provide suggestions to teachers on how they might plan strategies and activities to be developed in the classroom in order to foster students’ creative potential.

Thus, I would like to request your permission for your child to participate in this study. Teachers will conduct activities in the classroom in order to enhance students’ creativity. Students will be asked some questions, as well as asked to complete one survey about self-concept and one instrument about creativity. The proficiency in English language records of the bilingual students will also be examined for research purposes only.

Your child’s responses will be considered strictly confidential. Their responses will not be provided to the school, or included in your child’s school records. Parents are free to withdraw their consent and to discontinue their child’s participation from the study at any time; the child is also free to refuse to answer any question or to withdraw at any time.

Mr. __________, the Principal at __________ School, is the contact person for this study. If you will give permission to have your child participate in this study, please complete the attached parental permission form and have your son/daughter return it to Mr. __________ by ______________. Your cooperation and prompt return of this form is appreciated.

If you have questions or concerns regarding this study, you may contact:

Denise de Souza Fleith
Department of Educational Psychology
University of Connecticut
362 Fairfield Road U-7
Storrs, CT 06269-2007
Telephone: (860) 429-9326 or 486-4826

Thank you for your interest in assisting me in this important research.

Sincerely,

Denise de Souza Fleith

Joseph S. Renzulli, Ed.D. (advisor)
Professor of Education
University of Connecticut
Parental Permission Form

I give permission for my child to participate in the study on the effectiveness of a creativity training program on students’ creativity and self-concept being conducted by Denise de Souza Fleith, a doctoral student at The University of Connecticut.

I understand students will be asked to participate in one brief interview session during lunch time, free time, or after school, and will not miss any class time to participate in this study. I understand that all information collected during this project will be confidential and used only for research purposes. I also understand that Ms. Fleith will examine my child’s level of proficiency in English records (if my child is a bilingual student), and administer a brief survey about self-concept, and an instrument about creativity. The scores, however, will not be provided to the school, or included in my child’s school records. I understand Mr. ________, the Principal at _________ School, is the contact person for the study and I may contact Ms. Fleith, Dr. Renzulli or Mr. ________ if I have any question or concerns. I may withdraw my consent and discontinue my child’s participation from the study at any time. Also my child is free to withdraw from the study at any time.

_________________________________    ___________________
Signature of Parent or Legal Guardian    Date

Student’s name: _______________________________________
Grade: ( ) 3rd  ( ) 4th  ( ) 5th
APPENDIX B

New Directions in Creativity Adapted Manual

CREATIVITY TRAINING PROGRAM:

NEW DIRECTIONS IN CREATIVITY

The New Directions in Creativity manual was adapted with permission from the Creative Learning Press.
Section 1

THE IMPORTANCE OF CREATIVITY

Creativity has continually affected our history and the development of our society. We need original and appropriate answers to address the rapid changes occurring in the world. The reproduction of knowledge and strategies will not help us to solve the emerging problems on our planet. It is necessary to modify our behavior and to develop new creative strategies and skills to cope with the challenges.

Schools have a major role in helping children to develop their creative abilities. Teachers can provide opportunities for students to use their critical and creative thinking, to elaborate and test hypotheses, and to explore new alternatives. The students have to be prepared to anticipate problems, to question and renew their values, to reorganize information, and to conduct original adaptations of the environment to successfully deal with the world’s changes. Education must be directed to the future. Therefore, the memorizing of facts and the conformity of attitudes must be avoided. The creative impulse is one of the characteristics of human beings that drive them to engage in creative and efficient daily activities.

The New Directions in Creativity program will provide youngsters with an opportunity to break away from conventional restrictions on their thinking, and develop their creative potential.

Section 2

WHAT IS CREATIVITY?

Defining creativity is a difficulty task. The literature on creativity includes multiple definitions and indicates that there is no universal definition. Creativity has been studied from different perspectives. Sometimes, the product (what is produced) is emphasized; but the process (how it is produced) must also be considered. Furthermore, the personal characteristics (personality traits and intellectual abilities), and the environmental conditions (components in the social environment that affect creative production) are also present in some of the definitions about creativity.

For the purposes of this program, the following operational definition will be used:

Creativity is the production of an idea or product that is new, original, and satisfying to the creator or to someone else at a particular point in time. Creativity exists even if the idea or product has been previously discovered by someone else or if the idea or product is not considered new or original.
Myths About Creativity

Many myths exist about creativity. However, some of them are ambiguous, confusing or even misleading. The following are some of the most prevalent myths about creativity. Which do you think are true or false?

<table>
<thead>
<tr>
<th>False</th>
<th>True</th>
</tr>
</thead>
<tbody>
<tr>
<td>(     ) (     )</td>
<td>1. Creativity is a gift present in some individuals.</td>
</tr>
<tr>
<td>(     ) (     )</td>
<td>2. Creativity depends on internal factors exclusively.</td>
</tr>
<tr>
<td>(     ) (     )</td>
<td>3. Creativity can be developed.</td>
</tr>
<tr>
<td>(     ) (     )</td>
<td>4. Creativity is synonymous with eccentricity.</td>
</tr>
<tr>
<td>(     ) (     )</td>
<td>5. Creativity belongs exclusively in the arts domain.</td>
</tr>
<tr>
<td>(     ) (     )</td>
<td>6. Creativity is an inborn characteristic.</td>
</tr>
<tr>
<td>(     ) (     )</td>
<td>7. Creativity is inspirational.</td>
</tr>
</tbody>
</table>

Answers:

1. **False.** Creativity potential is present in all individuals. In some people, the potential is more developed due to the environmental conditions (family, school, community).

2. **False.** Creativity depends on internal and external factors. The environment can stimulate or block creative growth.

3. **True.** Research has indicated that creativity can be enhanced. The *New Directions in Creativity* program will demonstrate how teachers can encourage children to express their creativity.

4. **False.** It is a stereotype. To be creative does not mean to behave strangely. Creative people tend to be unconforming, but they also tend to be strong mentally and emotionally (Amabile, 1989).

5. **False.** Creativity is present in all fields, not only in arts.

6. **False.** See explanation to the questions 1 and 2.

7. **False.** Creativity demands hard work.

“Creativity implies 2% of inspiration and 98% of perspiration.” (Thomas Edison)
### CHARACTERISTICS OF A CREATIVE PERSON

Each creative person has different abilities and traits. The wide variety of traits can appear in the earliest years. To be creative does not imply that a person has all of these traits and abilities. And, most important, creative abilities and traits can be stimulated and developed, especially by teachers. The following characteristics are normally associated with creative people.

- **Fluency**: the production of many ideas (quantity of ideas).
- **Flexibility**: different views of a situation or an object.
- **Elaboration**: adding onto ideas, expanding ideas.
- **Originality**: uniqueness, new or unusual ideas.
- **Evaluation**: to think critically, to judge if an idea is appropriate or not.
- **Transformation**: to adapt, to “give” new meanings and applications to an idea.
- **Imagination**: to use different kinds of imagery (visual, auditory, etc.), to fantasize, to extend the boundaries, to play with ideas.
- **Persistence**: to overcome the blocks and drive to reach a goal.
- **Curiosity**: to question, to show interest in a lot of issues, to ask about, to look for new information.
- **Openness to inner emotions**: to be spontaneous, to be intuitive, to consider one’s emotions.
- **Independent thinking**: to develop ideas independently of the group, to defend these ideas.
- **Positive self-concept**: to believe one’s potential, to perceive yourself as productive.
- **Risk-taking**: to be adventurous, to dare, to be open-minded.
- **Humor**: to see and analyze the events with humor, to play with ideas.

and …

to have tolerance for ambiguity, aesthetic interests, attraction to the mysterious and complex, nonconformity, unconventionality, and high energy.
Section 4

**BLOCKS TO THE DEVELOPMENT OF CREATIVITY OR HOW TO DESTROY CREATIVITY!**

Some behaviors, expressions or attitudes constitute barriers to the development and manifestation of creativity. These expressions may include:

- Don’t be silly.
- Let’s be serious.
- That’s ridiculous.
- Quiet down.
- The principal won’t like it.
- Let’s be practical.
- You should know better.
- What’s the matter with you?
- That’s not our problem.
- We’ve tried that before.
- That’s not part of our assignment.
- That’s childish.
- A good idea, but …
- It won’t work.
- Don’t be so sloppy.
- The traditional way is more secure.
- We tried that last year and it flopped.

Every effort should be made to avoid using phrases or expressions that naturally kill creativity. In our society many factors can reduce creative ideas, and, especially, “kill” the motivation to be creative. Some of the following factors have been demonstrated to reduce or kill students’ motivation to be creative.

- Consider fantasy and reflection as a waste of time (logical thinking is more important).
- Punish the student who breaks the rules (the uniformity of behavior is necessary).
- Define male activities and female activities, and to guide students to activities according to their gender (emphasis on stereotypes and labels).
- Punish the student who makes mistakes.
- Develop poor self-concepts in the students (I am not able to …, I am not productive, I am not creative).
- Make comparisons in public about students’ performance.
- Encourage competition in the classroom instead of cooperation.
- Restrict students’ choices (the teacher always knows what is better for the students).
- Insist in the use of verbal language instead of nonverbal language.
- Emphasize the traditional way to solve problems.
- Emphasize the reproduction of the knowledge (repetition is desirable).
- Give little opportunity for students to express their ideas.
- Give more attention to the content instead of the development of skills.
- Expect low student performance.
- Develop conformity among students (no questions, no criticisms).
- Consider the classroom a serious place (no jokes, no play, no humor).
- Be practical (no emotions, sensations or intuitions).
Section 5

**TEACHING FOR CREATIVITY**

Teaching for creativity involves two questions: what to teach and how to teach. In some schools, teaching content is a major goal, and the emphasis is on the amount and depth of the content. On the other hand, the development of creative and critical skills has been valued in other schools. However, this kind of teaching does not reduce the importance of the information. To solve a problem, for example, we have to have a substantial background of knowledge. The challenge of teaching for creativity seems to be to know how to balance content, instruction, and skills. How is it possible? By planning experiences that allow students to use important content in creative ways (Starko, 1995). What strategies can a teacher use to teach content creatively? The following have been suggested in the research literature for teaching for creativity.

**TEACHERS SHOULD:**

- Establish a classroom oriented toward students' autonomy and choice.
- Have a deep respect for children’s attitudes and ideas. The student should become a real collaborator in learning.
- Encourage different forms of expression.
- Encourage the students to explore the environment and to identify problems.
- Stimulate students to experiment with new ideas, to solve problems, and to draw conclusions.
- Emphasize real problems or authentic learning.
- Emphasize achievement, not grades (to encourage students to do their best).
- Be emotionally supportive.
- Plan classes based on students’ interests.
- Respect the learning pace of each student.

**CHILDREN SHOULD:**

- Be active learners. They have to perform a co-constructer role in learning.
- Feel both comfortable and stimulated in their classroom.
- Find a receptive climate for their ideas in classroom.
- Have both power and responsibility in the classroom (Amabile, 1989).
- Be involved in evaluating their own work and learning from their mistakes (Amabile, 1989).
- Encouraged to think critically, to develop evaluation skills.
- Be encouraged to ask questions.
- Be encouraged to generate many, varied, and unusual ideas.
- Encouraged to create original products for an appropriate audience.
- Be active learners, and help to construct their role in learning.

The teacher and student strategies above have two functions: to focus on creative attitudes, and to assist students in understanding content meaningfully; two elements which must be considered in teaching students to think creatively. Studies have demonstrated that teaching for creativity results in increased creativity for all students, involvement in creative activities, and school satisfaction.
Section 6

NEW DIRECTIONS IN CREATIVITY

Purposes and Description

*New Directions in Creativity* (Renzulli, 1973/1986) is designed to help teachers develop the creative thinking abilities of primary and middle-grade youngsters. Research has shown that almost all children have the potential to think creatively and that creative production can be improved by providing systematic learning experiences that foster the use of their imagination.

The program is designed to develop each of the following creative thinking abilities:

1. **Fluency**: the ability to generate a flow of ideas, possibilities, consequences, and objects.
2. **Flexibility**: the ability to use many different approaches or strategies in solving a problem; the willingness to change direction and modify given information.
3. **Originality**: the ability to produce clever, unique, and unusual responses.
4. **Elaboration**: the ability to expand, develop, particularize, and embellish ideas, stories, and illustrations.

Each activity in *New Directions in Creativity* is designed to promote one or more of four general abilities. The activities are also classified according to (1) the types of information involved in each exercise (semantic, symbolic, figural), and (2) the ways that information is organized in each exercise (units, classes, relations, systems, transformations, implications, elaborations).

Although the purpose of this manual is to provide teachers with a systematic set of activities to promote creativity in children, a second and equally important objective is to help teachers explore their own potential for more creative teaching. Once teachers understand the general nature of the creative process through active involvement with the program, they are able to apply the same basic strategies to other areas of the curriculum. Thus, this creativity training program can be viewed as a starting point that will eventually lead to the development of a “creativity orientation” on the part of teachers, and this orientation will assist the teacher in finding numerous opportunities for creativity training in a wide variety of learning situations.

The open-ended nature of creativity training activities provides an opportunity to develop a truly nongraded program, and many of the exercises have been used successfully with students at several grade levels. When there are no “right” or “wrong” answers, each student has different levels of response to different types of activities. It is sometimes necessary for teachers to read some of the directions to students, to supervise their work more closely until they understand the nature of the various tasks. Most of the exercises are relatively easy to understand. But because of the open-ended nature of the exercises, the directions must be carefully explained, and teachers may have to provide a few examples to get students started.

One of the major features of this creativity training program is that a youngster can respond to each activity in terms of his/her own background and experience. Because the program is not based on the students’ ability to recall factual information, each student is given an opportunity to express his/her creativity by drawing on previous knowledge and experiences.

One of the underlying purposes of the *New Directions in Creativity* program is to help youngsters learn how to evaluate their own creative products. One of the great tragedies of traditional school instruction is that students almost always depend upon their teacher for evaluation and approval;
and, by doing so, they fail to develop a system of internal self-evaluation. And yet, psychological studies have revealed that each person has a need to be his/her own primary evaluator. The creative individual produces something new, unique, or novel for him/her at a particular time. To break away from social pressure toward ordinary and common production, a person must place his/her own opinions and feelings above those of others. He/she must be satisfied with his/her products and feel that they express a part of his/her feelings, thoughts, and ideas.

One of the major tasks of the teacher using this program is to help youngsters learn how to make judgments about their own work. This is undoubtedly one of the most difficult tasks in teaching; yet, the following, simple questions can help your students evaluate their own work.

- What do you think about it?
- Do you feel good about it?
- Would you like to work on it some more?
- Why do you like (or dislike) it?
- What things (criteria) are important to you?
- How would you compare it to the work you did last time?

A number of studies have indicated that children of all ability levels are capable of creative thinking; thus, all children can benefit from systematic programming in this area. One of the basic assumptions underlying the development of New Directions in Creativity is that all people possess the ability to think creatively in varying degrees. The main purpose is to assist youngsters in generating responses that are creative for the individual student at his/her present level of mental functioning. It is of course hoped that such experiences in creative thinking at their own level will help students develop a characteristic way of looking at things that will, for some individuals, ultimately result in the creation of ideas and products that are truly original and useful for the culture at large.

**Theoretical Background**

New Directions in Creativity attempts to translate one aspect of Guilford’s Structure of the Intellect Model of human abilities into classroom practices. This model has been viewed by many educators as a potentially powerful tool for incorporating new forms of enrichment in the curriculum. The Structure of the Intellect Model (Guilford, 1967) is an attempt to explain intelligence by the use of a three-dimensional classification system that is designed to encompass and organize 120 possible abilities according to (1) types of mental **operations** employed in the act of thinking, (2) the types of **contents** involved in the thinking process, and (3) the types of **products** that result from the act of thinking.

1. **Operations:** The operation dimension of Guilford’s model consists of five major kinds of intellectual activities or processes of mind: cognition, memory, convergent production, divergent production, and evaluation. These five categories represent the mental operations that human beings use in processing information. New Directions in Creativity focuses on divergent production.

→ **Divergent Production:** it is the operation upon which this creativity training program focuses, also involves the generation of information from given information, but here the emphasis is on variety and quantity of output from the same source. This operation is most clearly involved in aptitudes of creative potential.

2. **Contents:** It consists of four classes of information: figural content, symbolic content, semantic content, and behavioral content.
(3) **Products:** It consists of the organization or form that information takes when it is processed by the human mind: units, classes, relations, systems, transformations, and implications.

*New Directions in Creativity* includes activities from all of the divergent production factors involving the use of semantics, as well as selected activities that use symbolic and figural information.

**How to use the program**

The program is not intended to be an end in and of itself. Rather, it is designed to assist the teacher in learning the nature of creative problem solving and in developing his/her own creative activities.

Always use activity *a* before the activity *b*, if the activities have a letter. By the time students get to the second activity sheet, they will have caught on to the nature of the exercise; and you can refresh their memory by referring to the first activity. An important part of the creative process involves sharing one’s creative products with others; therefore all material should be shared with the group and serve as the basis for group discussions.

**Introducing the program**

The basic strategy for introducing the program consists of encouraging students to use divergent production. Approximately one class period can be spent on the introductory session. Students should learn to appreciate questions and activities if there are no right answers. This can be done by contrasting a convergent type of question with a divergent one. Before distributing the first activity sheet, you might say something like the following:

Today we are going to begin practicing a new kind of thinking. This kind of thinking will help us learn how to explore many different kinds of solutions to a given problem. Some problems and questions have only one right answer, but there are also many problems and questions that have hundreds of possible answers.

Suppose I asked you, “In what year did Columbus discover America?” (Wait for an answer and write it on the chalkboard).

Are there any other possible answers to this question? (General conclusion should be negative).

Now suppose I were to ask you, “What are all possible ways that you might have come to this school this morning?” (Call on youngsters and list responses on the chalkboard).

At this point, students will probably provide some simple responses: walk, bus, car, bicycle. Say:

Remember, I said all of the possible ways that you might have come to school. Use your imagination. Let your mind wander, even if you think the method for coming to school is silly or way-out. How about by donkey or pogo stick? (Add these to the list on the chalkboard.)

This part is an extremely crucial point in the introduction of the creativity training program. By suggesting the donkey or the pogo stick, you have accomplished three very important objectives. First, you have conveyed the idea that answers need not be feasible, practical, or realistic. Second, you have let youngsters know how that you will accept these kinds of answers. Third, and perhaps most important, you have let the youngsters know that you are capable of some unusual, way-out ideas.

By this time, students should be giving a wide variety of answers. Let them call out their answers as you write them on the chalkboard. Prompt students if necessary, by saying something such as:

Any other animals that you might have ridden to school? How about an airplane or a rocket? Or being dropped from a plane by parachute?
A second crucial factor at this point is the generous use of praise and encouragement on your part. Enthusiastic comments such as “good,” “great,” and “fantastic” will help the students to be more flexible. Do not call on students who are not raising their hands or volunteering. It takes some students longer than others to trust the teacher and his/her classmates in this type of situation. Let students know that you like what is going on and that you are having fun. When the flow of responses begins to slow down, say:

Let’s go one step farther. Suppose you could change your physical size or shape. Can you think of some other ways that you might possibly come to school?

If one responds, say:

Could you make yourself very tiny and come in your brother’s lunch box? Or, could you change to a drop of water and come in through the drinking fountain? ♦

Continue to write responses on the chalkboard as long as the youngsters are generating responses. When students’ responses begin to slow down, say:

| I guess we have seen that there really are many questions that have several possible answers. |
| Do you think this kind of thinking is fun? |

From time to time, we are going to be working on some activities like the one we just did. The main purpose of these activities will be to practice answering questions and solving problems that have many possible answers. We will be using our imagination to come up with clever new ideas.

At this point, distribute the first activity and ask youngsters to read the directions. If you have any doubts or questions about students’ comprehension of the directions, read them aloud and ask if there are questions. Ask students to complete the first exercise and tell them they will have about five to ten minutes.

After they have finished, allow some students to read their responses aloud. Ask, “how many had that one?” and after a few students have read their responses, ask if anyone has any responses that have not yet been mentioned. Praise unusual responses from individuals, and praise the entire group for doing well. Follow the same procedures for the second exercise.

∞∞∞ As you use these activities in your class, you may find it helpful to keep a record of the activities developed each week. A chart for this purpose is provided at the back of this manual. This chart contains spaces for you to record the date a particular activity was used and to make notes on the class reaction and on how you used the follow-up activities. New Directions in Creativity activities can be implemented during language arts classes. New Directions in Creativity represents an attempt to provide both teachers and students with a set of materials that will help them learn a variety of ways for expressing their creative potential. Enjoy the process!

References


Thinking about things (a)

Have you ever noticed in a library how all books of a certain type are grounded together? You will find all the books sports in one place and all the books containing mystery stories in another place. For some reason, people like to group together things that have certain characteristics in common. In this activity, see how many things you can think of that have the same characteristics.

List all the things you can think of that are made of metal. A few examples are given to help you get started. If you need more space, continue your list on the back of this page.

- Paper clips
- cars
- keys
- scissors
- spoons

List all the things you can think of that people might wear. Use the back of this page if you need more space.

List all the things you can think of that people might wear. Use the back of this page if you need more space.
2 Thinking about Things (b)

List all the things you can think of that are long and thin.

Use the back of this page if you need more space.

List all the things you can think of that you might find in a kitchen. Use the back of this page if you need more space.
Fun with figures (a)

See how many different ways you can combine the above two figures to produce a new figure. The three examples should help you think of other combinations. Use the back of this page if you need more space.
6 Let’s write a slogan (a)

Very often, large companies develop slogans that help people remember the names of the companies and the products they make. These slogans help promote business for the company, and therefore a great deal of thought goes into creating a catchy phrase that customers will always associate with a particular business or company. You have probably heard some of these slogans on television.

See if you can create three clever slogans for each of the following types of businesses. Try to make your slogans short and interesting so that people can remember them easily. You can make up names for the businesses or use the names of businesses in your community.

A clothing store

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

An airline

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

A grocery store

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Interview Protocol

Prior to the interview:

- Tell the interviewee that the interview will last approximately 20 to 30 minutes.
- Inform interviewee that the interview will be taped and transcribed; an opportunity will be provided for review of the transcription if desired; notes will be taken during the interview and the tape may be turned off at any time by request of the interviewee.
- Assure the person that confidentiality will be maintained and that only the researcher will have access to the tapes.

**TEACHERS**

Name
Grade Taught
Gender /Nationality
Academic background
Years of teaching experience (monolingual and/or bilingual classrooms)
Professional experience

Interview Guide:

As you know I am interested in finding out about the creativity training program that you have conducted in your classroom. This interview will focus on aspects of the training that may influence the development of your students’ creativity and self-concept. Any questions before we begin?

1. How do you think the school can influence the development of students’ creativity and self-concept?
2. Do you think that the implementation of a creativity training program is a good strategy for enhancing students’ creativity and self-concept? Why?
3. Describe the positive aspects of the creativity training program that you conducted in your classroom.
4. Were there any negative aspects of developing a creative training program in the classroom? Describe them.
5. Do you think that 2 hours of creativity activities per week is enough to develop students’ creativity and self-concept?
6. Which method of students’ participation did you use most often (individual work, in pairs, small groups, whole class)?
7. What were the reactions of your students to the creativity activities developed in the classroom?
8. How would you describe the atmosphere and environment in your classroom when you implemented the creativity training program?
9. How would you evaluate the effects of the creativity training program that you implemented in your classroom on your students’ creativity and self-concept?
10. (only for teachers of bilingual classrooms) What are the benefits of a creativity training program for bilingual students?

STUDENTS

Name
Grade
Gender/Nationality
Number of years/ months in this school

Interview Guide:
I am interested in finding out about the activities that are used in your classroom. I would like to have your opinion about them.
Any questions before we begin?

1. How would you describe your classroom?
2. What do you like most in your classroom?
3. What do you like least in your classroom?
4. What activities do you like most in your classroom?
5. What is your opinion about the activities [the interviewer will describe some of the activities of the creativity training] that Mr./ Mrs. __________ has developed in the classroom? Were they easy, interesting? Why?
6. Would you like to have spent more or less time on these activities? Why?
7. Would you like to have more activities like these in your classroom? Why?
8. Do you know what the goals are of these activities?
9. How do you prefer to work on these activities (alone, with another person, in a small group, with the whole class)?
10. Do you think that these activities helped you in your schoolwork? How?
11. Do you think that these activities helped you to make new friends? How?

PRINCIPAL

Name
Gender/Nationality
Academic and professional background

1. How long have you been working in this school?
2. Did you know about the Brazilian community in this district when you came to work in this school?
3. How would you describe the school?
4. How would you describe the students?
5. How would you describe the social and economic background of Brazilian and non-Brazilian students?
6. How is the integration between Brazilian and non-Brazilian students?
7. What is the perception of Brazilian students about themselves?
8. What is the perception of the school community about Brazilian students?
9. Why are there few Brazilian students in non-bilingual classrooms?
10. Why is it necessary to place Brazilian students in the bilingual program?
11. What are the advantages and challenges that the school faces in having children from different cultural and linguistic backgrounds?
12. How is the Brazilian parents’ participation in the school activities?
13. How do Brazilian children adjust to the school environment?
14. What are the educational plans of the administration to address Brazilian students’ needs?

PSYCHOLOGIST

Name
Gender/Nationality
Academic and professional background

1. How long have you been living in the United States?
2. How did you come to work at this school?
3. What is your role in this school?
4. How would you describe the school?
5. How would you describe the students?
6. Do you work with all students or only Brazilians?
7. What kind of assessment do you conduct with respect to Brazilian students’ language skills?
8. Could you tell me about the Brazilian children’s placement?
9. How would you evaluate the level of English proficiency of Brazilian students?
10. How would you evaluate the Brazilian students’ social and economic background?
11. Why are there few Brazilian students in non-bilingual classrooms?
12. What do you think it is necessary for Brazilian students to improve their English?
13. How is the integration between Brazilian and non-Brazilian students?
14. How is the participation of Brazilian parents in the school activities?
15. What is your perception about the school community’s view about Brazilian students?
16. What is the perception of Brazilian students about themselves?
17. What do you think could be done in this school to improve Brazilian students’ level of proficiency in English and their adjustment to the school?
APPENDIX E
Biographical Survey

SURVEY

1. My name is: ________________________________
2. I am _____ years old
3. I am a ( ) Boy ( ) Girl
4. I am in grade ( ) 3 ( ) 4 ( ) 5
5. I have been studying in this school since:
   ( ) kindergarten ( ) grade 1 ( ) grade 2
   ( ) grade 3 ( ) grade 4 ( ) grade 5
6. I was born in ____________________
7. If you were not born in the USA, when did you move to the USA?
   ______ years or ________ months
   (For example: Karl was born in Germany and moved to the USA 4 years ago)
8. What languages do you speak?
   ____________________ ____________________ ___________________
9. In this school:
   ( ) I am not in bilingual classroom
   ( ) I am in the bilingual classroom
   ( ) I am not in the bilingual classroom, but I was in the bilingual classroom a time ago
10. How long did you study in Brazilian schools? ______ years

11. Before you moved to the USA, did you study English in Brazil?
   ( ) YES ⇒ Where? ( ) school ( ) English course
   ( ) private classes ( ) my parents taught me
   ( ) other (explain) ______________________

   For how long?
   ( ) less than 1 year ( ) from 1 to 2 years
   ( ) more than 2 years

   ( ) NO

12. Do you prefer to speak in English or Portuguese at home?
   ( ) English ( ) Portuguese ( ) Both languages

13. You speak English when you are:
   ( ) at school
   ( ) answering a phone call
   ( ) playing with non-Brazilian friends
   ( ) shopping
   ( ) other (explain) ________________________  Thanks!