



## **Lake City, Minnesota Future Problem Solving Program Study**

Results from Torrance Tests of Creative Thinking

Figural Edition Pre & Post Test Scoring

June 20, 2009

The Minnesota Future Problem Solving Program (FPSP) Affiliate Director Cheryl Whitesitt, in conjunction with Scholastic Testing Service, Inc.(STS), conducted a study known as “Torrance Testing for Creativity and the Future Problem Solving Program” at Lake City High School in Lake City, Minnesota. The study was to determine the creative developmental effects of the FPSP process embedded into curriculum. The Torrance Tests of Creative Thinking, Figural Edition (TTCT-F), Forms ‘A’ and ‘B’ were administered in October and May, respectively, to 61 students from three seventh grade Life Science sections. Mr. Rob Nutt, the seventh grade Life Science instructor, was himself previously involved in the Future Problem Solving Program, and worked diligently to embed the FPSP process into his Life Science curriculum during the 08-09 academic year. Five of the 61 students were participants in the Future Problem Solving Program.

The TTCT-F consists of three different ten minute subtests requiring students to construct pictures and title them, and assesses five major areas of creativity—fluency, originality, abstractness of titles, elaboration, and resistance to premature closure. The test also yields up to thirteen creative strengths. There are two major total scores, the average Standard Score (SS) and a Creativity Index (CI) comprised of the SS and the creative strengths.

### **SCORE DESCRIPTIONS:**

- A. Fluency—the total number of relevant responses/pictures and titles for them
- B. Originality—how different the pictures and titles are from others; usually occurring less than 2% of the time, uniqueness of the figures
- C. Abstractness of Titles—whether the title is a very concrete one word label for the picture or so abstract that one must see both the picture and title for complete understanding, e.g., newspaper editorial cartoons or a title such as “vacation” could be many scenes
- D. Elaboration—the amount of details in the picture additional to what the title describes, e. g., a picture of a dog titled “dog” with trees, dog house, street, cars and more - all except for the dog is elaboration
- E. Resistance to Premature Closure—the creative attribute of remaining open to new and different ideas in contrast to having a closed mind or making quick conclusions



There are thirteen creative strengths with scores of **(0)**, **(1)**, or **(2)**. These scores are added to the SS to develop the “Creativity Index.” The descriptions are below:

### **CREATIVE STRENGTHS DESCRIPTIONS:**

1. Emotional Expressiveness—the degree to which our feelings are affected by the drawings; e.g., happy, sad, meditative, or others
2. Storytelling Articulateness—how the picture(s) and title(s) tell stories
3. Movement or Action—the ways in which there is movement and action shown, e.g., wind, clouds, or rainfall in weather
4. Expressiveness of Titles—an opportunity to award the very abstract titles
5. Synthesis of Incomplete Figures—making combinations of pictures and titles into stories, combining two or more incomplete figures into a story or one picture of two or more incomplete shapes
6. Synthesis of Lines (Form A) or Circles, Form B—same as 5 above, except combining sets of parallel lines or circles.
7. Unusual Visualization—looking at objects from different angles, above, below, and other than simply facing the object as in a photo
8. Internal Visualization—viewing the inside as though there is transparency of an object
9. Extending or Breaking Boundaries—going “outside the box” with drawings
10. Humor—surprise and joy in viewing what is seen and described with a title
11. Richness of Imagery—strong, sharp, distinct pictures that enable the viewer to smell, touch, or otherwise involve senses from the drawing and title
12. Colorfulness of Imagery—earthy exciting images and titles that place the viewer close to or in some pictures
13. Fantasy—drawings of fantasy figures, aliens, robots, cartoon characters

The tables and narrative analyses which follow, present a review of averages for three different groupings:

**FPSP STUDENTS** – consisting of the five students currently involved in FPSP.

**NON-FPS STUDENTS** – consisting of the 56 students not involved in FPSP.

**GROUP** – consisting of the entire 61 students (5 FPSP Students and 56 NON-FPSP Students).



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	COMPARING FPSP N=5			and	NON-FPSP N=56		
	Pre- Test	Post Test	Change		Pre- Test	Post Test	Change
Fluency	102	124	+22		104	111	+7
Originality	101	114	+13		99	103	+4
Elaboration	106	103	-3		96	98	+2
Abstractness of Titles	96	119	+23		93	96	+3
Resistance to Closure	101	102	+1		101	100	-1
Average Standard Score (national average =100) (range from 60 to 140)	101	113	+12		99	102	+3
Creativity Index (Seventh grade Average=112)	113	127	+14		110	113	+3
Change from Average SS to CI	+12	+14			+11	+11	

## OBSERVATIONS ON DIFFERENCES

### Major Scores

As can be seen above, the averages for both groups of students increased from fall to spring, except for the FPSP students whose scores for elaboration went down by 3 SS.

Note especially the substantial increases for the FPSP students in Fluency (many more pictures completed), Originality (many more unique pictures), and Abstractness of Titles (many more higher level abstract titles for their pictures).

It is also important to note that the Non-FPSP students evidenced creative growth in all areas except resistance to closure.

### Creative Strengths

The review of the creative strengths helps to identify their existence for each group of students. The difference between the SS and the CI shows how many of those strengths the students show in their pictures.

The maximum difference between the SS and the CI is 26, thirteen constructs which could add 2 points each.

The FPSP students' CI increased not only by 14 from pre to post test, but as well achieved a difference of +12 for the pre test and +14 for the post test.

The Non-FPSP students gained three points in creative strengths from pre to post tests, and remained at the same eleven point difference between the SS and the CI.



## PRE AND POST TEST AVERAGES FOR TOTAL GROUP

N=61

	Pre- Test	Post Test	Change
Fluency	102	114	+12
Originality	97	106	+9
Elaboration	97	100	+3
Abstractness of Titles	94	99	+5
Resistance to Closure	100	102	+2
Average Standard Score (national average =100) (range from 60 to 140)	98	104	+6
Creativity Index (Seventh grade Average=112)	109	116	+7
Change from Average SS to CI	+11	+12	

It is very important to note that the averages for the total group and for each group increased from Fall to Spring, except as noted above, in Elaboration for the FPSP group. The advantage to the students for the application of FPSP principles to the teaching of Life Science by Mr. Nutt is likely to be the reason for these positive changes, and the greater growth in the FPSP students may be attributed to their participation in the FPSP program.

It is also noteworthy that the data derived from this study would suggest that that integration of FPSP techniques into the classroom can improve overall student creativity.

Respectfully Submitted:

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