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An investigation of the validity of a children's version of the Gregorc Style Delineator

Howard, Peggy

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AN INVESTIGATION OF THE VALIDITY OF A CHILDREN'S VERSION OF THE GREGORC STYLE DELINEATOR

RESEARCH PROJECT

EDUCATION 6001

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PEGGY HOWARD

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1. INTRODUCTION AND PURPOSE OF THE STUDY:

What is a learning style?

A student's learning style are those characteristic cognitive, affective, and physiological behaviors that serve as relatively stable indicators of how he perceives, interacts with and responds to a learning environment (Keefe, 1979). This mode of learning, or style, is a manner of expression characteristic of that individual.

Anthony Gregorc in 1984 developed a Style Delineator to categorize students' modes of learning, or styles. Gregorc stated that his Style Delineator was designed to be a self-administered, self-analysis tool. The categories examined by the Delineator were intended to aid the individual in recognizing and identifying the channels through which the student receives and expresses information. (Sewall, 1986).

In this critique of the Gregorc Delineator, Sewall emphasizes the Inventory's scientific shortcomings:

1. absence of normative information in the test manual leaves interpretation of the raw scores to chance,
2. internal consistency scores may be inaccurate and unstable over time.

Sewall feels that the review of psychometric information provided in the manual is inadequate provides to support the reliability and validity of the instrument. He

suggests that until more statistical support for the scale becomes available, the instrument should be used strictly for research purposes.

From my own classroom experience of observing students' learning styles and subsequently trying to match my teaching style with the students' learning styles (based on Kathleen Butler's interpretation of the Gregorc Model) (Butler, 1982), I noticed students become more comfortable, and more eager to learn.

In this pilot study I wanted to see if perceptions of the classroom teacher, the parents, and the students would match. Would there be congruence in identification of learning styles among teacher, parent, and student assessments using the Gregorc Model?

Academically gifted grade six students, their parents, and their gifted program teacher participated in this study. The students completed a novel children's version of the Gregorc Style Delineator. Their parents and teacher completed the same instrument to give their perceptions of the students. The students were guided through a story writing session which included a number of creative problem solving activities involving both group and independent work as preparation for the story writing. At the conclusion of the story writing session they completed another instrument, the Creative Problem Solving Questionnaire, to reveal those aspects of the creative problem solving and story writing session which were preferable or more enjoyable. The questions in this

instrument were intended to enable students to reveal their learning styles as defined by the Gregorc model.

The research questions for the study were:

1. Would there be concruence between the two instruments completed by the students, the children's version of the Gregorc Style Delineator (developed by the researcher), and the Creative Problem Solving Questionnaire? That is, would results, from these two instruments provide an indication of concurrent validity for the novel children's version of the Gregorc Style Delineator?
2. When parents and the teacher complete the children's version of the Gregorc Style Delineator on behalf of the students and these results are compared with the students' own self-reports on the instrument, will support for the validity of the students' self-reports be indicated?

2. REVIEW OF THE LITERATURE:

2.1 LEARNING STYLES:

Research in learning styles began as early as the 1800's with Jung, Schiller, Piaget, Freud, Erickson and others. Great emphasis was placed on problem solving, creativity, emotional, motivational and social factors.

According to Dunn (1978), the first half of the twentieth century saw crowded homes, hunger, illness, family chores, national origin and religious backgrounds as reasons attributing to lack of academic progess. During the 1950's and 1960's rapid growth, extensive mobility, and belligerent student attitudes were widely accepted reasons for poor academic achievement. Today, low academic achievement is blamed directly on schools, teachers and their programs or methods. In the 1980's we are attempting to educate more children with varying levels of intelligence and diverse cultural backgrounds with exposure to highly stimulating technology. To bring these students into a confining environment, and group them in a way that makes good educational sense is virtually impossible unless we examine each student to see how he/she learns most effectively.

In general terms, learning style represents an individual's biologically and experientially induced

characteristics that allow him or her to interact with the environment in a unique way. As a hypothetical construct intended to explain the learning process, Keefe (1979), suggested that "Learning styles are characteristic cognitive, affective, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment" (p.4).

Most researchers and educators use "learning style" as a generic term to include concepts of cognitive style and student response style. Claxton and Ralson (1978) use learning style to refer to a "student's consistent way of responding to and using stimuli in the context of learning" (p.7).

Cognitive style is a hypothetical construct developed to explain the process of mediation between stimuli and responses. Cognitive style refers to characteristic ways in which individuals conceptually organize the environment, filter and process stimuli so the environment takes on psychological meaning. Research and theory into cognitive style emphasize structure rather than content. Structure is how cognition is organized. Behavioral consistency is the product of that structure.

Smith (1982) contends that learning style is composed of individualized cognitive, affective, and environmental factors. Cognitive factors include field-independence versus field-dependence, conceptualizing and

categorizing, reflectivity versus impulsivity, and reliance on the senses to experience and organize information. Affective elements include the amount of structure and authority the learner prefers, expectations and motivation and the degree of interest in the subject matter. Environmental factors range from room temperature to emotional support. Smith (1982) asks: "What is meant by style? It has long been apparent to teachers, educators, and observers that people differ in how they go about certain activities associated with learning. They differ as to how they approach problem solving. They differ as to how they go about "information processing", or putting information through their minds. Some people like to "get the big picture" of a subject first and then build to a full understanding of that picture by details and examples. Other people like to begin with examples and details and work through to some kind of meaningful construct or way of looking at an area of knowledge out of these details. Some like theory before going into practice. Others don't." (p.23)

Recently, educators have recognized that learners have different ways of collecting and organizing information into useful knowledge. In an effort to tailor instructional approaches to the needs, interests and skill levels of the learner, educators have turned to learning style theory to provide a better match between

how a person best gains knowledge and the methods used to impart that knowledge. In other words, to individualize instruction. They recognize that individual teachers have some responsibility for gearing their teaching styles to suit the preferred learning style of each learner.

Hunt (1971, p. 33) wrote:

> "If a psychological principal is to be useful for education, it should take into account both the effectiveness of different approaches upon different types of students..." "Rather than ask whether one educational approach is generally better than another, one must ask, "Given this kind of person, which of these approaches is more effective for a given objective?"

Hunt (1979) added these words to his definition of learning style: "learning style describes a student in terms of those educational conditions under which he is most likely to learn. Learning style describes how a student learns, not what he has learned." Hunt believes that matching teaching/ learning styles can be approached in an environmental or learning style manner.

National Association of Secondary School Principals, Director of Research, Jim Keefe, in 1979 wrote:

> "Learning style diagnosis opens the door to placing individualized instruction on a more

rational basis. It gives the most powerful leverage yet available to educators to analyze, motivate, and assist students in school. As such, it is the foundation of a truly modern approach to education." (p.132)

The last decade has seen many people using the concept of learning styles to develop models, scales and instruments designed to measure individual differences in learning style (e.g. Canfield and Lafferty, 1974; Gregorc, 1984; Kolb, 1976). Success has been reported using learning style based instruction to adjust curriculum (Dunn, 1981; Jenkins, 1982; Pizzo, (1982).

The Learning Style Inventory (LSI) (Dunn and Dunn, 1978) was developed in response to the need for identifying how students prefer to learn when provided an opportunity to choose from among environmental, sociological, and physical conditions. Several research studies have shown that (1) students can identify their own learning styles, (2) when exposed to a teaching style consonant with the ways they believe they learn, students score higher on tests and factual knowledge, have better attitudes, and are more efficient than those taught in a manner that is dissonant with their learning style, and (3) it is advantageous to teach and test students in their preferred modalities (Domino, 1970; Farr, 1971). Repeated studies have validated initial results: teaching and learning are significantly more

effective when learning activities are matched to learning style (Urbschat, 1977; Charkins, O'Toole & Wetzel, 1985). Keefe (1982) reported that the Learning Style Inventory "is the most widely used assessment instrument in elementary and secondary schools" (p. 52). Matching resources with perceptual strengths should produce higher test scores.

Learning style has been shown to be individual and consistent over time and across subjects (Copenhaver, 1979). If students were allowed to learn in matched situations, their grade point averages were higher (Cafferty, 1980). Further research has indicated an increase in positive learning attitude when students are made aware of their learning styles (Domino, 1970). Confirmation of their self-knowledge from the Learning Style Inventory was personally positive and reinforcing (Farr, 1971; Dunn & Price, 1980). It became evident that achievement and attitudes toward school improved when students were taught through their unique learning style.

The kinds of decisions a student makes concerning instructional choices should be related directly to his/her learning style- for different learning style characteristics appear to respond to different methods and resources. Students should be aware of their learning styles so they are able to make intelligent decisions regarding the instructional options available to them. A student's confidence and achievement may be

related to his self-concept and therefore a student with high self-concept and an awareness of his personal learning style characteristics should be able to function well in an individualized program (Dunn & Dunn, 1979; Dunn & Price & Sanders, 1986; Ellis, 1979; Reiff, 1986). Purposeful mismatching, as reported by Kagan (1966), saw impulsive children become more reflective when placed with a reflective teacher. Similarly, Hunt (1971), found that teachers who operated on a more abstract level could increase their students' level of conceptual complexity.

Studies by James (1962), Pascal (1971), and Smith (1976) supported the student-based approach to learning style matching. That is, students examined their own needs and goals. Teaching styles based on their stated preferences were provided. These studies found that there were significant differences in student achievement and/or attitude twoard subject matter. Educational outcomes were enhanced by giving students the opportunity to evaluate their learning style preferences and by delivering instruction that was consistent with these assessments (Dixon, 1985; Dunn & Griggs, 1985). Simple and straightforward as these findings are, their implications for classroom practice and learning are significant. Documentation suggests that learners' attitudes toward instructional style can affect their openness and responsiveness to content being taught.

This phenomenon is further supported by Lemmon, 1985.

Renzulli & Smith (1982) suggest that it is possible that matching teaching methods to learning style preferences helps eliminate barriers to learning which arise when we fail to address the affective responses various teaching modalities elicit from students. Depending on the teaching approach being used, different demands are placed on students and different skills are required to perform successfully. Learning style preferences vary among individuals and efforts should be made to understand these differences, and to alter instructional style in those areas and at those times that modifications are possible.

Using the Learning Styles Inventory (LSI, Renzulli & Smith, 1978), a research-based instrument that was designed to guide teachers in planning learning experiences that consider learning style preferences of students, Stewart (1979) and Wasson (1980) investigated the difference in preferred learning style between gifted and non-gifted students. Results indicated that gifted students differed significantly from students in general with lecture, independent study, discussion and projects. Gifted students preferred instructional methods emphasizing independence, games, and non-lecture (further supported by Dunn & Price, 1980; Price, Dunn, Dunn & Griggs, 1980).

Ricca, (1984) joins the Dunns and Price in saying: "Just as the acceptance of various modes of instruction

suggests the advisability of incorporating options and alternatives within the curriculum, so do demonstrated differences in learning style preference across grade levels necessitate dynamic rather than static planning." (Further supported by Keefe, 1982, Schmeck, 1982, Fischer and Fischer, 1979, and Kuchinshas, 1979).

McCarthy (1980) writes that humans perceive and process experience and information in different ways. She developed the **4 Mat System**, which identifies four types of learners. The system moves through the learning cycle in sequence teaching in all four modes and incorporating the four combinations of characteristics. The sequence is a natural learning progression. McCarthy contends that students will come to accept their strengths and learn to capitalize on them, while developing a healthy respect for the uniqueness of others, furthering their ability to learn in alternative modes without the pressure of "being wrong".

Gregorc (1979) viewed learning style as "consisting of distinctive behaviors which serve as indicators of how a person learns from and adapts to his environment. It also gives clues as to how a person's mind operates." Greogorc's Mediation Ability Theory and model of learning style assume that the human mind is an active and goal-oriented decision maker, designed to express each individual's unique capabilities and capacities. His research indicates that the mind works in myriad ways,

acts for specialized reasons, and reveals itself through subtle nuances. His theory states that the mind functions within patterns, and signals the world, through the individual's behavior which he calls style. Gregorc theorizes that every mind has an overarching set of natural qualities designed to promote the individual's relationship with self and the world. These qualities, through mind channels, serve to help express one's natural driving forces. "The power, capacity and dexterity to utilize channels are collectively termed mediation abilities". The outward appearance of an individual's mediation abilities is what is termed "style". Phenomenology aims to uncover the nature and role of the individual's perceptions as a means to gain an understanding of the individual's fundamental consciousness- the essential self. Phenomenological research suggested to Gregorc that invisible, driving forces lie at the core of the being- the individual essence- and that the mind is the vehicle that expresses one's individual essence. Through a phenomenological approach and by using style as a tool for personal interpretation, we are able to describe ourselves to others.

Gregorc's Mediation Ability Theory defines four types of mediation abilities, or ways of dealing with the world: perception, ordering, processing, and relating. Everyone has all of these qualities, but most people have innate tendencies that "tip" toward one aspect of a

duality rather than the other: that is, the learner is more concrete than abstract, or more sequential than random. Gregorc found interrelationships in these qualities and merged them to form four distinct transaction ability channels: concrete/sequential (CS), abstract/sequentail (AS), abstract/random (AR), and concrete/random (CR). For a more complete description of these four learning style types as they relate to students refer to the Appendix. Although each of us has all these qualities, we are predisposed toward one, two, or even three channels. The predilections are natural and affect not only how we view the world and ourselves, but, also how we are perceived by that world. Physically and phenomenologically, these channels are manifested as behavior and register in our conscious minds as preferred means of learning and teaching. The behaviors and related preferences allow us to identify styles through observation, interview, and paper-and-pencil instrumentation.

A style-based approach to teaching is valuable because it is a beginning to the understanding of the driving forces of another person. We try to understand the individual's perspective, to comprehend the forces that drive the person, the reasons the individual perceives the world in a certain way. Our knowledge about learning style can help us to sort the various perceptions of the world which individuals hold. Style

is a sorting mechanism, a differentiating step in recognizing others as well as a way for our minds to translate themselves to the rest of the world (Butler, 1982).

Environments may not always accommodate our needs or our desire to use our preferred, natural styles but instead may require us to adpt or "style-flex" to the environment. Teachers may nurture students' natural styles by helping them to understand, express and refine their natural abilities through activities, experiences, even conversation. Teachers can cultivate non-natural styles by requiring students to use many different types of skills and abilities. A teacher who uses only one style of teaching forces students to work within concomitant demands or face failure. Environmental influences force students to develop non-dominant channels, or continually defer their dominant channels in favor of pleasing others.

How does style relate to the individual's internal goals and how can style help or hinder achievement of these goals? As a psychological model, style is a vehicle for personal analysis, interpersonal understanding, and organizational change. Its value depends upon the user's willingness to recognize its purpose and potential to cause a change in attitude, and ultimately, a change in behavior for the purpose of self-realization and self-actualization. The integrity of the environment is maintained when we reccognize and act upon

the belief that other people and places have legitimate goals that deserve respect. By applying style to the way different types of people experience the world, we can validate the way an individual learns, works, and thinks. By recognizing and accepting all styles of learning as valid and valued, teachers may help to develop or increase positive self-concepts in their students. If teachers can approve of many different ways to learn, children may have the opportunity to see themselves as good learners. By addressing style differences and attempting to develop all the style channels, we may be able to increase the number and qualitative range of our responses in different situations. Gregorc found that individuals are capable of using their minor proclivities to varying extents and that developing them is necessary because of the multivariate demands from our environment. A deeper implication is that the environment may make comfortable demands on the mind-qualities of one person while placing frustrating and painful burdens on another. "There is a commonly ascribed to belief that, "Teachers teach the way they were taught". "A more accurate statement would be, "Teachers teach the way they learned". (Dunn & Dunn, 1979). Instruction may challenge the learner's complex and delicate mind-qualities and his ability and willingness to adapt. The stress may be indiscernible, or it may be subtly destructive.

Butler (1982) suggests that educators, with greater awareness, can develop a diagnostic/prescriptive approach to instruction. By examining one's teaching style through using The Teaching Style Questionnaire, a teacher can begin to match his/her teaching style to the learning style of the student.

Nohl, as translated by H. Danner, says that:

> "...educational love demands empathy into the child and his or her dispositions, into the possibilities of his or her ability to be educated, always with respect to an accomplished life..." "The educator's intention of alteration and shaping is always reduced at the same time and enriched in its core by a conscious reserve towards the spontaneity and individuality of the pupil."

There is an expanding core of research to demonstrate the importance of accommodating students' learning style preferences. Griggs and Dunn (1984) indicate that there is significant improvement in academic achievement, student attitudes, and student behavior when students' learning styles are accommodated through complementary teaching styles, instructional approaches, or resources. Although the learning style model is based on the premise of individual differences, research indicates that various special groups have a core of learning style preferences that distinguishes

them from others. Gifted and talented students comprise one of these groups. They deomonstrate a unique pattern of personal traits.

Assessing learning styles provides today's teachers with a new direction in developing a more personalized form of instruction. The teacher is much like an orchestra conductor, bringing unique presence and talents, a personal history and an individual style to the persons with whom he or she will work to create harmony or dissonance. The teacher , as an instrument of thought and action, influences the teaching/learning style process in subtle, yet very powerful ways. As teachers, we bring our own qualities and style to our positions. We maximize ourselves in our work by using our own natural qualities and by refining our style flexibilities to meet multiple types of people and circumstances. We can do this most easily when our goals, perceptions, and expectations are congruent with those of our job and evaluators. Purposeful, guided match and mismatch of learning style requires that self-confident and content-knowledgeable teachers provide students with multiple curricular experiences, and choices.

The magnitude and popularity of matching teaching/learning styles is gaining more attention. Teachers are becoming interested in the subject and want to know more about its application to their classroom.

Students are becoming more interested in their own particular styles. By being better informed, students will be better able to develop non-dominant styles. It is probable that classroom management will become easier when teaching/learning styles are matched, by reducing stressful situations for both teacher and learner. Investigating the field of learning styles while maintaining a sense of practicality with a spirit of imagination is what is needed to achieve the greatest benefit for teachers and students.

2.2 CREATIVE PROBLEM SOLVING:

Ellis and Blank (1985, p.22) write, "The process of problem solving from the recognition of a problem to the verification of a solution is essentially that of the creative act: The solution of a problem that did not exist before" (Getzels et al, 1976)."

Ellis and Blank (1985) report that using creative problem solving (CPS) allows students to work on complex or open-ended topics while encouraging them to exhibit more comprehensive and original solutions. They feel that students can become more autonomous learners by using CPS. Gifted and talented students, specifically, can produce rather than simply consume knowledge. Critical and divergent thinking skills are involved in the process. Students who use CPS can become more active, risk-taking learners. The authors feel that combining, or recombining or changing the central elements of the problem in some unique and adaptive way to add to the ideas initially stimulated by the problem is what is essential to the creative process.

Crutchfield (1973) postulated these steps as necessary to creatively solve problems:

1. Cognitive elements essential to the process of problem solving (needed information, principle, ideas, images) must be brought into focus and available to manipulate.

2. The problem solver must recognize and selectively activate elements in the problem necessary to its solution.

3. The elements of the problem must be available for the solver to access.

4. The problem solver must be able to think divergently and freely.

5. The problem must be clearly defined and directed.

6. Collecting pertinent information to solving the problem is an important variable.

7. A question-asking attitude is essential so as not to limit the chance of new ideas.

8. Openness to exploration, tolerance for ambiguity and avoidance of premature closure are essential to creative problem solving.

In rationalizing the value of creative problem solving Ellis (1986) recognizes the emphasis now placed on thinking skills. She writes that the techniques of creative problem solving provide students with visual organizers and sets of steps for both critical and creative thinking. CPS provides for gathering information and ideas, summarizing and organizing knowledge to be viewed simultaneously, and disengaging ideas from their usual contexts so they can be recombined in novel contexts.

Ellis (1987) designed creative problem solving procedures to help students in the problem solving process. The steps were designed to ensure that students:

a) identify or acquire knowledge that is relevant to the problem;

b) summarize and organize knowledge to make it readily available and manipulable;

c) manipulate and organize knowledge in a way that frees it from previous contexts;

d) establish an open, playful and exploratory attitude to the problem.

Problems must first be classified as information deficient, idea deficient, solution deficient, or solution testing, before one attempts to apply CPS techniques, which are only required when there is no obvious way to proceed or the obvious way is unsatisfactory (Ellis, 1987).

Gifted students are frequently asked to engage in creative production, to manipulate ideas and produce new concepts. They can use CPS to generate new ideas, organize their wealth of ideas, or plan their way through complex, unstructured projects (Ellis, 1986).

3. METHODOLOGY:

3.1 POPULATION AND SAMPLE:

Eleven students comprised the sample for this study. The students were members of the AIM class, which is the gifted elementary class in the Medicine Hat Public School System. Medicine Hat is an industrial/agriculture- based city in southern Alberta which has a population of about forty thousand. Seven girls and four boys, all aged twelve, were selected into the AIM program on the basis of results above the 95 percentile on CTBS (Canadian Test of Basic Skills), and CCAT (Canadian Cognitive Abilities Test), teacher nomination, and IQ very near or above 130. The students had been tested in grade three and were drawn from a pool of about 460 students.

3.2 INSTRUMENTS USED:

3.2.1 STUDENT SELF-RATING LEARNING STYLE INVENTORY:

The Inventory consisted of forty items. These items were choices of activities representative of the characteristics of the four learning style categories_ Concrete Sequential, Abstract Sequential, Abstract Random and Concrete Random. The students were asked to circle True if the statement was most often true for them, or

False if the statement was most often false for them. They were to complete all items, even if the choice was a difficult one. (Refer Appendix A).

3.2.2 PARENT LEARNING STYLE INVENTORY:

The same forty items that comprised the Student Self-Rating Learning Style Inventory were given to the parents to complete. The parents followed the same directions as the students, but were asked to complete the Inventory from the perspective of the parent. That is, to judge how their child would react to the statement. (Refer Appendix A).

3.2.3 TEACHER LEARNING STYLE INVENTORY:

Again, the same forty items that comprised the Student Self-Rating Learning Style Inventory, were given to the teacher to complete. The teacher followed the same directions as the students, and parents, except that she was asked to complete the Inventory from her perspective, that is, she would circle Ture if she felt the statement was true for the student most of the time, or false if the statement was false for the student most of the time. (Refer Appendix A).

3.2.4 CREATIVE PROBLEM SOLVING QUESTIONNAIRE:

Nine clusters of four items each were developed using Butler's interpretation of the Gregorc Model to give choices of activities representative of the four learning styles. Each cluster contained one choice for each of the four learning style categories. Students were asked to rate their preferences on a scale of 1-4, with 1 indicating the most favorable choice of activity for that group of four choices. This questionnaire was given to the students after following the Creative Problem Solving technique (Ellis, 1986) to solve a creative writing problem. The choices on the questionnaire referred directly to the problem solving situation the students had just encountered.

3.3 DEVELOPMENT OF INSTRUMENTS:

Both the Learning Style Inventory and the Creative Problem Solving Questionnaire were developed from Kathleen Butler's interpretation of the Gregorc Style Delineator. From characteristics of the four learning style types, activities or situations which would allow a student to demonstrate those characteristics were presented as alternatives. On the Learning Style Inventory a choice had to be made between either True or False. On the Creative Problem Solving Questionnaire, the students rated their preferences on a

scale of 1-4, with 1 indicating the most favorable preference.

For the Learning Style Inventory, a choice of True counted as a positive result for that learning style category. The category with the most positives indicated the student's preferred learning style. (Refer Appendix D).

For the Creative Problem Solving Questionnaire points for each learning style category were tallied. The lowest total signified the dominant learning style category of the student, since a "1" designated the choice of greatest preference. (Refer Appendix D).

3.4 STUDY PROCEDURES AND TIMELINE:

After permission to conduct the study was granted from the Ethics Committee at the University of Lethbridge, permission was granted from the Assisstant-Superintendent of Schools in Medicine Hat. Two weeks prior to the class visitation, parents of the AIM students were sent a letter introducing the research project. They were asked to sign their permission for their student to participate in the research project. At the same time they were given the Parent Learning Style Inventory to complete. At this same time as well, the teacher was asked to complete the Teacher Learning Style Inventory. The evening prior to the class visitation,

all parents were contacted by telephone confirming their students' participation in the project and return of their complete Inventory to school with their child the next morning.

During the class visitation, the project was briefly explained to the students. After explanation of the term "learning style", the students were asked to complete the Student Self-Rating Learning Style Inventory. These were collected along with their Teacher and Parent Inventories. The students were then led through the creative problem solving steps to solve a creative writing problem. After completing these steps, the students completed the Creative Problem Solving Questionnaire. Following its completion, an informal discussion with the students regarding the process of CPS ensued. Results were then analyzed on computer at the University of Lethbridge.

4. ANALYSES OF RESULTS:

Descriptive statistics for the learning style scores obtained from all groups and both instruments are presented in Table 1. Descriptive statistics for the learning style scores obtained from the students' completion of the Learning Style Inventory are presented again separately in Table 2. Descriptive statistics for the learning style scores from the students' completion of the Creative Problem Solving Questionnaire are presented again separately in Table 3. Table 4 shows the highest learning style scores for all subjects, as assigned by parents, teacher and students on the Learning Style Inventory. Table 5 compares the highest learning style scores for all subjects, as assigned by parents, and teacher for the Learning Style Inventory, to the students' scores obtained on the student self-rating Creative Problem Solving Questionnaire. Table 6 shows the students' self-assessments on LSI and CPS.

Table 1

Descriptive Statistics for Learning Style Scores From All Sources

	Mean	Minimum	Maximum	Median	Standard Deviation
Concrete Sequential					
Student LSI	6.36	5	9	7	1.29
Parent LSI	5.91	3	9	6	2.02
Teacher LSI	7.27	5	10	8	1.68
CPS	16.27	12	22	16	2.97
Abstract Sequential					
Student LSI	6.91	5	10	7	1.64
Parent LSI	7.00	5	9	7	1.18
Teacher LSI	6.55	5	9	6	1.29
CPS	18.55	8	24	21	4.80
Abstract Random					
Student LSI	7.00	4	9	7	1.34
Parent LSI	6.82	5	10	7	1.66
Teacher LSI	6.82	5	8	7	1.17
CPS	17.09	11	24	17	3.56
Concrete Random					
Student LSI	7.55	3	9	8	1.75
Parent LSI	8.18	7	10	8	1.08
Teacher LSI	7.27	1	10	8	2.87
CPS	17.73	15	20	18	1.62

Table 2

Descriptive Statistics for Learning Style Scores

For Student LSI

	Mean	Minimum	Maximum	Median	Standard Deviation
Concrete Sequential	6.36	5	9	7	1.29
Abstract Sequential	6.91	5	10	7	1.64
Abstract Random	7.00	4	9	7	1.34
Concrete Random	7.55	3	9	8	1.75

Table 3

Descriptive Statistics for Learning Style Scores

For Student CPS Questionnaire

	Mean	Minimum	Maximum	Median	Standard Deviation
Concrete Sequential	16.27	12	22	16	2.97
Abstract Sequential	18.55	8	24	21	4.80
Abstract Random	17.09	11	24	17	3.56
Concrete Random	17.73	15	20	18	1.62

Table 4

Highest Learning Style Scores for Each Subject As Assigned by Parents (P), Teacher (T), and Students (S) on LSI

Subject	CS	AS	AR	CR
# 1	P	S		T
# 2	*T	*S,*T	P	*S
# 3	*T,*P		*T,*S,*P	*S
# 4	T	*S,P	*S	
# 5				S,P,T
# 6	*T	*T	*S,P,*T	*S
# 7		S		P,T
# 8			T	S,P
# 9				S,P,T
# 10				S,P,T
# 11	S			P,T

Note. * Tie

Table 5

Highest Learning Style Scores for Each Subject As Assigned by Parents (P), and Teacher (T) on LSI and Students (S) on CPS

Subject	CS	AS	AR	CR
# 1	S,P			T
# 2	*T	*T	S,P	
# 3	S,*T,*P		*T,*P	
# 4	T	P	*S	*S
# 5	S			P,T
# 6	*T	*T	S,P,*T	
# 7			S	P,T
# 8	S		T	P
# 9			S	P,T
# 10				S,P,T
# 11		S		P,T

Note. * Tie

Table 6

Students' Self-Assessments on LSI and CPS Instruments

Subject	CS	AS	AR	CR
# 1	CPS	LSI		
# 2		*LSI	CPS	*LSI
# 3	CPS		*LSI	*LSI
# 4		*LSI	*LSI,*CPS	*CPS
# 5	CPS			LSI
# 6			*LSI,CPS	*LSI
# 7		LSI	CPS	
# 8	CPS			LSI
# 9			CPS	LSI
# 10				LSI,CPS
# 11	LSI	CPS		

Note. * Tie

5. RESULTS AND DISCUSSION:

A sample of eleven students was too small for the data to lend themselves to analysis using non-parametric statistics. Although the distribution of scores was small, it is noteworthy to mention some interesting results.

Table 1 reveals that the teacher was most discriminating for Concrete Random, with a minimum of 1 and a maximum of 10. The standard deviation confirms this. The parents were least discriminating for this style, that is, they assigned Concrete Random to most of the subjects.

Table 2 (showing the Student LSI results) shows a median of 8, out of a possible 10, to indicate that half or more of the students strongly selected the Concrete Random style. Poor differentiation among styles exists since half or more of all students indicated "True" for almost all characteristics.

Table 3 (showing Student CPS Questionnaire score results) shows a median of 21, out of a possible 24, indicating that the majority of subjects chose Abstract Sequential as their dominant style.

Table 4 compares parents', teacher, and students' highest learning style scores derived from the Student LSI instrument. Five cases of agreement were reported for parents, teacher and students. Three of these

assessments were Concrete Random, two were Abstract Random. Parents and the teacher report eight cases of agreement- five assessments were Concrete Random, two Abstract Random, and one Concrete Sequential. Students and parents report ten cases of agreement- four Concrete Random, three Abstract Random, two Concrete Sequential and one Abstract Sequential. Students and teacher report seven cases of agreement- three Concrete Random, two Abstract Random, one Abstract Sequential and one Concrete Random. One case of no agreement amon parents, teacher and student was reported.

For the LSI instrument, the highest congruence was reported between students and parents. Second was parents and teacher, third, students and teacher, and last students, parents, and teacher. The Concrete Random style was the dominant style chosen in all cases.

Table 5 compares students' highest learning style scores on the CPS instrument with parents' and teacher assessments on the LSI instrument. That is, Table 5 reports the comparison of assessments of the parents and teacher using the LSI instrument with students' assessments using the CPS instrument. Students, parents and teacher reported identical assessment in three cases with three different styles- Concrete Sequential, Abstract Random, and Concrete Random. Two cases reported no agreement among students', parents', and teacher assessments. Parents and teacher reported seven cases of agreement in their assessments of student style. All

cases were Concrete Random, with the exception of one Abstract Random and one Concrete Sequential. Students' and parents' assessments show agreement in five cases- two Concrete Sequential, two Abstract Random and one Concrete Random. Students and teacher report three cases of agreement in Concrete Sequential, Abstract Random and Concrete Random styles.

Using the CPS instrument, highest congruence was reported for parents and teacher, second for students and parents, third tied for students and teacher, and parents, teacher and students. Parents and teacher agreed on Concrete Random as the dominant style. No dominant style was reported for the other assessors.

Examining both LSI and CPS instruments, parents, teacher and students reached a higher degree of agreement on the LSI instrument. This is also true for all other pairs of assessors, especially for students/teacher, and students/parents. This may be due to the more general nature of the choices presented in the Inventory as opposed to the more specific alternatives related to the creative problem solving technique used in the CPS Questionnaire.

Table 6 compares Students' assessments using the LSI and CPS instruments. There were three ties using the LSI instrument and none for the CPS instrument indicating students were able to make more clearcut choices using the CPS instrument. Being able to rate choices on a

preference scale of 1-4, instead of a forced choice between True or False may account for this phenomenon. On the CPS instrument the dominant styles chosen were Concrete Sequential and Abstract Random, while on the LSI instrument, the dominant styles chosen were Abstract Sequential and Concrete Random. The two instruments show no congruence of students' choices.

The LSI and CPS instruments show strength in their ability to discriminate style categories among the eleven subjects. On the LSI instrument, however, over half of the subjects reported "True" for the majority of characteristics. Although the "yeah saying" may be in effect, no pattern is exhibited across the system.

From the analyses of results, it can be concluded that parents, teacher, and students share the lowest degree of agreement in assignment of children's learning styles.

Why might parents not share the same perceptions in identifying learning style as their children? I would propose these possible reasons:

1. Parents may be unaware their children have these characteristics.

2. Parents may never have seen their children exhibit certain characteristics.

3. Parents may be intolerant of certain characteristics causing the child to manifest an alternate style.

4. Parents may have an unwritten agenda for their children resulting in encouragement of some

characteristics, and discouragement of others.

Teachers, as well as being parents themselves, may be influenced by still more variables. These may account for some of the reasons why teachers may not share the same perceptions as their students in identifying learning styles.

1. Teachers may have hidden agendas for their students.

2. Teachers are bound by restrictions of classroom management, curriculum, administration, and physical design. Students behaviors may be funneled into a restricted and acceptable standard inhibiting a true manifestation of a student's learning style.

3. The teacher has his/her own personality with which to deal and through which he/she view the student.

It is noteworthy to mention that students and parents shared the highest agreement in assignment of learning styles on the LSI, the more general of the two instruments. It would be expected that parents should know their children better that the teacher would, who sees them two half days a week.

A consideration for the unanimous choice of Concrete Random as the dominant style on the LSI instrument, and in the case of highest agreement on the CPS instrument, may be the screening procedures used to

select students for the gifted classroom. The selection criteria itself, narrow the diversity in the type of student allowed into the program.

In discussion with students after the completion of the inventories, it was found that several students (#5-CR, #9-CR, #10-CR, #11-CS) disliked any type of problem solving strategy. They cited these reasons: too cumbersome, too time consuming, loss of spontaneity in idea generation, preference to go with their own initial idea or solution.

Students (#3-AR, #4-AR, #8-CR) enjoyed using the CPS technique. It allowed them to explore new ideas and play with their own existing ideas.

Students (#1-AS, #2_AS, #7-AS) reported liking the CPS process saying that it helped them to organize their diverse ideas. These students reported rewriting stories to satisfy their teacher and to obtain extra marks for neatness.

Whatever preconceived notions regarding learning style or problem solving the students held, their oral responses confirmed their self-assessments.

5.1 DIRECTIONS FOR FURTHER RESEARCH:

1. It appears desirable to force a finer distinction in the Learning Style Inventory, than the True/False options. Even though students encountered difficulty in completing the CPS Questionnaire, which allowed for weighted choices 1-4, 1 being the most favorable, a finer distinction would force the student to be more discriminating in his schoice of style. In this study students preferred the 1-4 rankings over the True/False.

2. To counter the "yeah saying" phenomenon, negative items should be included in the inventory.

3. The instruments themselves, especially the CPS Questionnaire, need to be revised to ensure parallel structure.

4. Another element of the study could include refinement of an oral interview, since results of the very brief, yet spontaneous discussion which followed the inventory completion, were so closely aligned to results obtained from the LSI and CPS instruments.

5. Further research could explore why parents and teacher do not share perceptions of the children and

students.

6. A further study may try to answer :

Are students trained to adapt to a particular learning style?

Do learning styles remain stable over time?

Does being in an environment which tolerates different styles, encourage and allow students to exhibit the style to which they have a natural tendency?

Will a student exhibit a different learning style in a gifted classroom than he would in a regular classroom setting?

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APPENDIX A

LEARNING STYLE CATEGORIES

(Developed from Butler's interpretation of the Gregorc Model).

The numeral at the left indicates the number of the item as it appears on the Learning Style Inventory.

CONCRETE SEQUENTIAL

23. Prefer to have your books and personal belongings in order and in their place.

8. Like to collect, organize, and arrange things and ideas.

14. Like to follow a routine.

31. Like to complete tasks in a specific order and on time.

4. You are a perfectionist when it comes to detail.

36. You would rather do something than listen to how to do it.

24. Like tests that have right or wrong answers.

11. Like to memorize.

18. Don't like long reading assignments or long lectures.

30. Don't like people changing their minds in mid-stream.

ABSTRACT SEQUENTIAL

40. Like to think and work when it's quiet.

13. Like to get your ideas from books.

22. Like to do book reports and research papers.

39. Like to read a book from cover to cover.

3. Like to try to convince someone that your ideas are the right ones.

35. Like the teacher to lecture.

10. Concerned about getting top marks.

17. Like to take an ideas apart and look at all sides of it.

29. Find it hard to respect other students who fool around in class.

7. Don't like surprise tests.

ABSTRACT RANDOM

5. Cry easily over a sentimental story.

15. Have and make friends easily.

1. Like to decorate your books and binders.

26. Like to use your imagination.

34. Like to learn by seeing, for example, movies, T.V., films.

19. Worksheets, drill, and busywork annoy you.

37. Poetry, art, music and literature are your favorite areas of interest.

12. Don't mind switching into a new routine.

28. You like to become personally involved with your feelings when learning something new.

21. Don't like it when you must have a finished product to your ideas.

CONCRETE RANDOM

32. Like to find out -of-the ordinary solutions to problems.

6. Like to use a trial and error (experimental) approach to solving a problem.

9. Don't mind taking risks.

25. Don't like it when you can't do your own thing.

20. You usually have many ideas or answers.

16. Like to work on assignments that you can organize in you own way.

2. Like to ask, "What if...?".

33. Like to discover methods, play games, role play.

38. You don't mind if the job is not finished.

27. Like to change and improve things.

STUDENT SELF-RATING LEARNING STYLE INVENTORY

DIRECTIONS:

If the statement is more often true for you- circle True.

If the statement is more often false for you- circle False.

Even though the choice may be a difficult one,

circle either True or False for every question.

PARENT LEARNING STYLE INVENTORY

Directions:

As part of this research project, would you please complete the following questionnaire, seal it, and return it to Mrs. Fischer.

It is of utmost importance that you complete the questionnaire without input from your child. These are to be YOUR perceptions of your child's learning style characteristics.

Please be advised that the characteristics should not be interpreted on a judgmental basis. The characteristics are descriptions of how a particular learning style might manifest itself. Although it may be difficult, please circle either True or False for every question.

Circle True- if the statement is more often true for your child.

Circle False- if the statement is more often false for your child.

TEACHER LEARNING STYLE INVENTORY

DIRECTIONS:

If the statement is more often true for the student, circle True.

If the statement is more often false for the student, circle False.

Please ensure that you have circled either True or False for every question.

LEARNING STYLE INVENTORY

True False 1. Like to decorate your books and binders.

True False 2. Like to ask, "What if...?".

True False 3. Like to try to convince someone that your ideas are the right ones.

True False 4. You are a perfectionist when it comes to detail.

True False 5. Cry easily over a sentimental story.

True False 6. Like to use a trial and error (experimental) approach to solving a problem.

True False 7. Don't like surprise tests.

True False 8. Like to collect, organize, and arrange things and ideas.

True False 9. Don't mind taking risks.

True False 10. Concerned about getting top marks.

True False 11. Like to memorize.

True False 12. Don't mind switching into a new routine.

True False 13. Like to get your ideas from books.

True False 14. Like to follow a routine.

True False 15. Have and make friends easily.

True False 16. Like to work on assignments that you can organize in your own way.

True False 17. Like to take an idea apart and look at all sides of it.

True False 18. Don't like long reading assignments or long lectures.

True False 19. Worksheets, drill, and busywork annoy you.

True False 20. You usually have many ideas or answers.

True False 21. Don't like it when you must have a finished product to your ideas.

True False 22. Like to do book reports and research papers.

True False 23. Prefer to have your books and personal belongings in order and in their place.

True False 24. Like tests that have right or wrong answers.

True False 25. Don't like it when you can't do your own thing.

True False 26. Like to use your imagination.

True False 27. Like to change and improve things.

True False 28. You like to become personally involved with your feelings when learning something new.

True False 29. Find it hard to respect other students who fool around in class.

True False 30. Don't like people changing their minds in mid-stream.

True False 31. Like to complete tasks in a specific order and on time.

True False 32. Like to find out-of-the ordinary solutions to problems.

True False 33. Like to discover methods, play games, role play.

True False 34. Like to learn by seeing, for example, movies, T.V., films.

True False 35. Like the teacher to lecture.

True False 36. You would rather do something than listen how to do it.

True False 37. Poetry, art, music and literature are your favorite areas of interest.

True False 38. You don't mind if the job is not finished.

True False 39. Like to read a book from cover to cover.

True False 40. Like to think and work when its quiet.

APPENDIX B

CREATIVE PROBLEM SOLVING

CONCRETE SEQUENTIAL

Following the CPS steps to write your own story.

The orderliness of the CPS steps.

Having to go through the CPS steps.

Would enjoy following this procedure on a new topic of your choice.

You found the sharing of ideas too noisy.

Were glad to have the CPS outline to follow.

Would have preferred an outline on paper, where you had to fill in your ideas.

Would have preferred making a model about the topic.

Didn't like to spend the time going through the steps when you knew what you wanted to say.

CREATIVE PROBLEM SOLVING

ABSTRACT SEQUENTIAL

Sharing your ideas with the other students.

Discovering you had some new ideas.

Pushing yourself to find new ideas.

Would have preferred using the library to locate information on the topic.

Finding the whole creative writing activity didn't suit you.

Didn't like to brainstorm your bad ideas.

Would have liked a chance to read more about the topic.

Thought some of the other ideas were silly.

You found it frustrating not to get a chance to elaborate your own ideas.

CREATIVE PROBLEM SOLVING

ABSTRACT RANDOM

Illustrating your story would suit you better.

Working with other students.

Using CPS was like being part of a team.

You were bothered that you didn't share as many ideas as some other students.

Would have preferred to illustrate your ideas.

Enjoyed hearing other students' ideas.

Liked to brainstorm, and not to have to hold your ideas inside.

Would have liked to do CPS to music and use only musical ideas.

Found categorizing the ideas a waste of time.

CREATIVE PROBLEM SOLVING

CONCRETE RANDOM

Being left alone to write your own story.

Experimenting with new ideas.

Thinking up new ideas to solve the problem.

Would like to use this CPS technique to solve another creative writing problem.

Would like to do another creative writing activity, but not follow the CPS steps.

Would find using CPS tedious if you had to do it again.

It was too long to sit and go through the steps.

Didn't see why you should have to give your ideas to help solve the problem.

Liked working with the process and didn't mind not getting a chance to get to the writing.

CREATIVE PROBLEM SOLVING QUESTIONNAIRE:

The letters in brackets at the left indicate the learning style category to which the item belongs.

The items were developed using Butler's interpretation of the Gregorc Model, in conjunction with Ellis' Creatvie Problem Solving technique.

CREATIVE PROBLEM SOLVING QUESTIONNAIRE:

(CS) ___ Following the CPS steps to write your own story.

(AR) ___ Illustrating your story would suit you better.

(CR) ___ Being left alone to write your own story.

(AS) ___ Sharing your ideas with the other students.

(CR) ___ Experimenting with new ideas.

(CS) ___ The orderliness of the CPS steps.

(AR) ___ Working with other students

(AS) ___ Discovering you had some new ideas.

(CR) ___ Thinking up new ideas to solve the problem.

(AR) ___ Using CPS was like being part of a team.

(CS) ___ Having to go through the CPS steps.

(AS) ___ Pushing yourself to find new ideas.

(AS) ___ Would have preferred using the library to locate information on the topic.

(CR) ___ Would like to use this CPS technique to solve another creative writing problem.

(CS) ___ Would enjoy following this procedure on a new topic of your choice.

(AR) ___ You were bothered that you didn't share as many ideas as some other students.

(AS) ___ Finding the whole creative writing activity didn't suit you.

(CS) ___ You found the sharing of ideas too noisy.

(CR) ___ Would like to do another creative writing activity, but not follow the CPS steps.

(AR) ___ Would have preferred to illustrate your ideas.

(CS) ___ Were glad to have the CPS outline to follow.

(CR) ___ Would find using CPS tedious if you had to do it again.

(AS) ___ Didn't like to brainstorm your bad ideas.

(AR) ___ Enjoyed hearing other students' ideas.

(AS) ___ Would have liked a chance to read more about the topic.

(CR) ___ It was too long to sit and go through the steps.

(CS) ___ Would have preferred an outline on paper, where you had to fill in your ideas.

(AR) ___ Liked to brainstorm, and not to have to hold your ideas inside.

(CR) ___ Didn't see why you should have to give your ideas to help solve the problem.

(AR) ___ Would have liked to do CPS to music and use only musical ideas.

(CS) ___ Would have preferred making a model about the topic.

(AS) ___ Thought some of the other ideas were silly.

(AR) ____ Found categorizing the ideas a waste of time.

(CS) ____ Didn't like to spend the time going through the steps when you knew what you wanted to say.

(CR) ____ Liked working with the process and didn't mind not getting a chance to get to the writing.

(AS) ____ You found it frustrating not to get a chance to elaborate your own ideas.

APPENDIX C

STUDENT QUESTIONNAIRE:

CREATIVE PROBLEM SOLVING:

DIRECTIONS:

Following is a series of learning style characteristics as they relate to the CPS technique. The charateristics are grouped in families of four. Please rate the characteristics as they apply to you. Mark the statements:

1- if you prefer this choice over the others in the group.
2- if you mildly prefer this choice
3- if you mildly dislike this choice
4- if you dislike this choice the most in the group.

Even though making the choice may be difficult, please ensure that you complete each group with a 1, 2, 3, 4 rating.

CREATIVE PROBLEM SOLVING QUESTIONNAIRE:

___ Following the CPS steps to write your own story.

___ Illustrating your story would suit you better.

___ Being left alone to write your own story.

___ Sharing your ideas with the other students.

___ Experimenting with new ideas.

___ The orderliness of the CPS steps.

___ Working with other students

___ Discovering you had some new ideas.

___ Thinking up new ideas to solve the problem.

___ Using CPS was like being part of a team.

___ Having to go through the CPS steps.

___ Pushing yourself to find new ideas.

___ Would have preferred using the library to locate information on the topic.

___ Would like to use this CPS technique to solve another creative writing problem.

___ Would enjoy following this procedure on a new topic of your choice.

___ You were bothered that you didn't share as many ideas as some other students.

___ Finding the whole creative writing activity didn't suit you.

___ You found the sharing of ideas too noisy.

___ Would like to do another creative writing activity, but not follow the CPS steps.

___ Would have preferred to illustrate your ideas.

___ Were glad to have the CPS outline to follow.

___ Would find using CPS tedious if you had to do it again.

___ Didn't like to brainstorm your bad ideas.

___ Enjoyed hearing other students' ideas.

___ Would have liked a chance to read more about the topic.

___ It was too long to sit and go through the steps.

___ Would have preferred an outline on paper, where you had to fill in your ideas.

___ Liked to brainstorm, and not to have to hold your ideas inside.

___ Didn't see why you should have to give your ideas to help solve the problem.

___ Would have liked to do CPS to music and use only musical ideas.

___ Would have preferred making a model about the topic.

___ Thought some of the other ideas were silly.

___ Found categorizing the ideas a waste of time.

___ Didn't like to spend the time going through the steps when you knew what you wanted to say.

___ Liked working with the process and didn't mind not getting a chance to get to the writing.

___ You found it frustrating not to get a chance to elaborate your own ideas.

APPENDIX D

DATA SYNTHESIS

STUDENT SELF-RATING LEARNING STYLE INVENTORY:

STUDENT: _____

CS		AS		AR		CR	
Question/Rating		Question/Rating		Question/Rating		Question/Rating	
4	–	3	–	1	–	2	–
8	–	7	–	5	–	6	–
11	–	10	–	12	–	9	–
14	–	13	–	15	–	16	–
18	–	17	–	19	–	20	–
23	–	22	–	21	–	25	–
24	–	29	–	26	–	27	–
30	–	35	–	28	–	32	–
31	–	39	–	34	–	33	–
36	–	40	–	37	–	38	–
Total ____CS		Total ____AS		Total ____AR		Total ____CR	

DATA SYNTHESIS

PARENT LEARNING STYLE INVENTORY:

STUDENT: _____

CS		AS		AR		CR	
Question/Rating		Question/Rating		Question/Rating		Question/Rating	
4	–	3	–	1	–	2	–
8	–	7	–	5	–	6	–
11	–	10	–	12	–	9	–
14	–	13	–	15	–	16	–
18	–	17	–	19	–	20	–
23	–	22	–	21	–	25	–
24	–	29	–	26	–	27	–
30	–	35	–	28	–	32	–
31	–	39	–	34	–	33	–
36	–	40	–	37	–	38	–
Total ____CS		Total ____AS		Total ____AR		Total ____CR	

DATA SYNTHESIS

TEACHER LEARNING STYLE INVENTORY

STUDENT: _____

CS	AS	AR	CR
Question/Rating	Question/Rating	Question/Rating	Question/Rating
4 -	3 -	1 -	2 -
8 -	7 -	5 -	6 -
11 -	10 -	12 -	9 -
14 -	13 -	15 -	16 -
18 -	17 -	19 -	20 -
23 -	22 -	21 -	25 -
24 -	29 -	26 -	27 -
30 -	35 -	28 -	32 -
31 -	39 -	34 -	33 -
36 -	40 -	37 -	38 -
Total ____CS	Total ____AS	Total ____AR	Total ____CR

DATA SYNTHESIS

Student CPS Questionnaire

Characteristics	CS	AS	AR	CR
Group 1				
Group 2				
Group 3				
Group 4				
Group 5				
Group 6				
Group 7				
Group 8				
Group 9				
	TOTAL_____CS	TOTAL_____AS	TOTAL_____AR	TOTAL_____CR

The
University of
Lethbridge

STUDENT'S NAME: _____

Please mark an (X) in the box below to indicate permission.

☐ Yes, I give my permission to have my child participate in Peggy Howard's Research Project.

Parent's Signature: _____

Please mark (X) in the box below and provide your name and address if you would like to receive a copy of the results of the Research Project.

☐ _____

_____

_____

_____

The University of Lethbridge

4401 University Drive
Lethbridge, Alberta, Canada
T1K 3M4
403-329-2251

FACULTY OF EDUCATION

1988 03 01

Parents of A.I.M. Students
Medicine Hat, AB

Dear Parents:

I am a Master of Education student from The University of Lethbridge presently teaching with Medicine Hat School District No. 76. As partial completion of my degree I need to fulfil requirements for a Creative Project. My project, entitled An Investigation of the Validity of a Children's Version of the Gregorc Style Delineator, involves research with Grade 6 gifted students.

My project involves determining students' learning styles by presenting a lesson in Creative Problem Solving followed by having the students complete questionnaires in relation to how the process suited the manner in which they prefer to learn.

Mrs. Fischer is well informed about the project and will be in the classroom with me. The project will involve about two hours of class time. As the process is a self-rating activity I have found that students enjoy participating in it. It tells them something about themselves in a non-judgmental fashion. There is no preferred category of style, and no stigma attached to any category. Students are not identified by name in the final draft, but only by learning style category.

I need your permission to have your child participate in the project. Should you have any questions about the process please call me at school (527-2257) or at home (526-8572).

At the completion of the project I would be very willing to meet with parents and students to discuss results of the study. Thank you for your time and your child's time.

Yours sincerely,

P. Howard
Teacher
Crestwood School
PH/DB12.27

The University of Lethbridge

4401 University Drive
Lethbridge, Alberta, Canada
T1K 3M4
403-329-2251

FACULTY OF EDUCATION

1988 03 01

Dr. H.T. Storlien
Assistant Superintendent
601 - 1 Ave. S.W.
Medicine Hat, AB
T1A 4Y7

Dear Dr. Storlien:

As partial completion of my Master of Education degree at The University of Lethbridge I need to fulfil requirements for a Creative Project. My project, entitled An Investigation of the Validity of a Children's Version of the Gregorc Style Delineator involves research with the Grade 6 gifted students. The project involves determining students' learning styles by presenting a lesson in Creative Problem Solving, followed by having students complete three questionnaires in relation to how the process suited the manner in which they prefer to learn.

I would like your permission to carry out this research project with students in the AIM program. I have spoken to Mrs. Fischer about the process. She is very willing to offer her support and participation.

At the completion of the project I would be happy to share with you the information I am able to gather.

Yours sincerely,

P. Howard
Teacher
Crestwood School

PH/DB12.25