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Teacher Recognition of Student Learning Styles

Michelle Wright

Longwood College

This thesis has been approved by:

Dr. Patty Whitfield_

Dr. Stephen Keith Alexande C. Ke

Dr. Bill Hyson_

May 1, 1997

Running head: Learning Styles

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Abstract

The ability of teachers in a special education classroom utilizing individualized instruction to recognize students' learning preferences was investigated. Each student's learning style preference was determined by the administration and evaluation of a learning styles inventory. Teachers were asked to respond to a similiar inventory as they felt their students would respond. A Pearson r performed on the results indicated that a relatively strong relationship existed between the responses at the .10 level of significance.

Teacher Recognition of Student Learning Styles

One of the recent trends in education, especially special education, is that of individualized instruction. Individualized instruction emphasizes focusing on a single student and his/her strengths and weaknesses. It places less importance on competition among students and instead allows for formation of goals and objectives which cater to the idea of each student realizing his or her potential. Because the emphasis is on the individual, the more that is known about him or her, the more individualized the instruction can become. Not only does each individual possess an unique set of personality, physical, and emotional characteristics, but each person also has a set of learning characteristics, known as a learning style.

Review of the Literature

The concept of learning styles has become increasingly popular in recent years. The idea of incorporating an individual's strengths into classroom methodology appeals to teachers, parents, and students. Being able to identify a student's weaknesses also contributes to the growing popularity of this trend of individualized instruction using learning styles. Knowing a student's learning style allows the instructor to incorporate instructional means which emphasize the

student's preferred method of learning. Being aware of each student's learning strengths and weaknesses may also help educators enhance the student's life adjustments (Smith, 1985). When parents understand a student's learning style, they are better able to understand the success or failure of their child (Foriska, 1992). If the student knows his or her learning style, he or she will also understand why some assignments or tasks are easier or harder. Understanding their learning styles may help students develop metacognition, the ability to understand how they learn (Pennell, 1985).

One of the obstacles to using learning styles has been to define clearly what learning style is; the definitions are numerous. One of the earliest and most prominent researchers in the area of learning styles is Rita Dunn. In some of her recent research (1993) she defined learning style as "how students concentrate, process, and retain new and difficult information." Jenkins (1991) wrote that learning style is "how students learn and how they like to learn." The National Association of Secondary School Principals created a task force which submitted this definition: learning style is "the composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment" (Keefe and Ferrell, 1990).

In another attempt to grasp exactly what defines a learning style, Keefe and Ferrell (1990) wrote that learning style is "a complexis of related characteristics in which the whole is greater than its parts"(p. 59). They also added that learning style is "a gestalt combining internal and external operations derived from the individual's neurobiology, personality, and development"(p. 59) which is reflected in the learner's behavior.

In 1990, Vicki Snider identified learning style as "a type of aptitudetreatment interaction." This type of interaction is believed to be effective because it helps the educator decide on a specific teaching approach based on an individual student's characteristics.

One other definition was offered by Reynolds in 1992; he suggested that learning style characteristics are preferences that people have for the way they learn. Reynolds's definition submitted that a learning style is the differences in the way one student approaches a learning task from the way another student would. Reynolds' definition offered a huge variety of learning style possibilities. Certainly, one of the biggest obstacles in the effective use of learning styles is that educational experts have not been able to agree on a single definition of learning styles. They also disagree on the number and type of characteristics involved (Reynolds, 1992). Consider that in 1966, Clements' Task Force listed 99

characteristics associated with persons with learning disabilities; that makes 4, 851 possible pairings that any one individual might have (Smith, 1985) and hints at the vast possibilities associated with discovering a student's learning style.

On the other hand, Howard Gardner used only seven categories to distinguish learners. In his book, Frames of Mind (1983), he identified seven types of intelligences: (1) linguistic, (2) logical/mathematical, (3) musical, (4) spatial, (5) bodily/kinesthetic, (6) interpersonal, and (7) intrapersonal. Fagella and Horowitz (1990) described people who exemplified Gardner's types of intelligences and their learning styles and preferences. The person with linguistic intelligence as a strength loves reading, writing, and telling stories; this individual has a good memory. The logical/mathematical student is good at math and has strong problem-solving and reasoning skills. Someone with spatial intelligence needs pictures to help understand material; he or she has a good imagination, may daydream, and likes maps, charts, diagrams,, mazes, and puzzles. The musical learner is aware of sounds, remembers melodies, and notices pitch and rhythm. The bodily/kinesthetic learner is good at physical activities and likes to move, touch, or gesture. Someone whose strength is interpersonal intelligence is a strong leader; he or she is sociable and understands people. This person is good at organizing, communicating, mediating, and negotiating. The person with

intrapersonal skills as a strength has a strong sense of self and may be quite confident. This student may dream and prefers to work alone. He or she may have a strong sense of what his or her abilities are. This person follows through on interests and goals and asks for help as needed.

For teachers, this information provides a nearly limitless number of specified strengths and weaknesses to consider for each individual learner. Yet teachers are generally taught to consider only four basic approaches to how students learn: tactile, auditory, visual, and kinesthetic. Although these four are important to consider, researchers have identified a number of other possible learning approaches and characteristics.

Dunn (1990) listed five factors to consider for each student: (1) surrounding environment, (2) emotional predisposition, (3) sociological preferences, (4) physiological characteristics, and (5) psychological processing systems. In 1981, Dunn was part of a team which created the Dunn, Dunn, and Price model. They identified 23 elements which can be classified under the five areas that Dunn said should be considered. They included fundamental considerations such as noise level, temperature, motivation, persistence, peer groupings, energy level, and hemispheric style. Reynolds and Gerstein (1992) had six categories for consideration: (1) perceptual preference, (2) physical

environment, (3) social environment, (4) cognitive style, (5) time of day, and (6) motivation and values.

Robert Sternberg (1990) developed his own theory of thinking styles which he referred to as mental self-government. The central idea of his theory was that individuals must manage everyday activities of life by using self-governming techniques. His three functions of mental self-government were (1) legislative, (2) executive, and (3) judicial. The legislative function concerns itself with creating, imagining, and planning. The executive implements and does. The judicial judges, evaluates, and compares. To Sternberg, mental self-government may have an internal or external scope. Internal scope involves students working alone, while external involves group collaboration. Sternberg indentified four forms of mental self-government: (1) monarchic-single guiding goal; (2) hierarchic-many goals with different priorities; (3) oligarchic-many goals with equal importance; and (4) anarchic-no rules or goals. This theory offered two levels of mental selfgovernment: global and local. The global level of processing addresses general problems which require abstract thinking. The local level addresses specific problems which require concrete thinking. Finally, Sternberg reported students may have a consumer style in which they like to learn that which is already known,

or they may have a producer style in which they like to create knowledge that others can, in turn, learn.

Anthony Gregorc produced some very influential work on learning styles. In 1982, he identified the following four "mindstyles": (1) the concrete sequential learner who is structured, practical, predictable and thorough; (2) the abstract sequential learner who is logical, analytical, conceptual, and studious; (3) the abstract random learner who is sensitive, sociable, imaginative, and expressive; and (4) the concrete random learner who is intuitive, original, investigative, and able to solve problems.

McCarthy was one of Gregorc's peers who developed his own theory. In 1983, he identified four categories of learning styles. He described these as follows: (1) the innovative learner who needs personal involvement in what he/she is learning and does well with social interaction; (2) the analytic learner who learns by thinking through ideas and is interested in what the experts think; (3) the common-sense learner who wants to know how things work and learns best with hands-on activities; and (4) the dynamic learner who wants to try things a number different ways and learns best through self-discovery.

Researchers have attempted to measure students' learning styles using a variety of methods and instruments. The Learning Styles Inventory (1983),

measures nine areas within the three domains of cognitive, social, and expressive. The five areas within cognitive learning styles are: (1) auditory language, (2) visual language, (3) auditory numerical, (4) visual numerical, and (5) tactile concrete. By identifying a learner's cognitive style, teachers may determine how a student learns best. The auditory language learner learns best from hearing words spoken. The visual learner learns well from seeing words in various mediums. The auditory numerical learner is helped by hearing numbers and oral explanations. Those students with visual numerical as a strength need to see numbers. The tactile concrete learner learns best by experience. Individual and group learning are within the social domain. The individual learner gets more done alone, and the group learner does best when working with at least one other student. The expressive domain addresses the student's preferred way to give out information; its two categories are oral expressive and written expressive. The oral expressive student can tell his/her audience what he/she knows and finds paper and pen tasks tedious and difficult. The written expressive student writes well and is uncomfortable doing oral work.

Reynolds and Gerstein (1992) offered a workshop to help educators begin to understand learning styles. They attempted to describe the concept, to identify individual learning style characteristics, and to suggest ways learning style

characteristics might make a difference in learning. One tool that they used was Kolb's Learning Style Inventory. This inventory "consists of 12 sentences with four different endings for each sentence" (p. 125). This self-scoring tool has its respondants rank four responses as they feel the answers compare to their learning styles.

Another tool is the NASSP Learning Style Profile. Jenkins (1991) described this tool as one which "measures 24 elements of style clustered in three domains" (p. 4). The responses relate to cognitive skills, perceptual responses, and study and instructional preferences.

Keefe and Monk's Learning Style Profile consists of 126 items. These items addressed perceptual, cognitive, affective, and environmental issues (Keefe and Ferrell, 1990). This profile was developed by a task force who wanted to "create a valid, reliable, easily administered learning style instrument that could assess a broad spectrum of research-based elements" (p. 60).

Having information about an individual student's learning style can be helpful to educators, the parents of the student, and the student. Knowing about a student's learning style can enable teachers to meet more effectively the needs of the student; this broadens the idea of student need to include what a student needs to learn effectively (Jenkins, 1991). If the information is placed into a student file

where it is accessible, it can enable the teacher or teaching team to plan alternative approaches to common objectives (Jenkins, 1991). Reynolds and Gerstein (1992) reported that teachers and administrators found themselves able to improve the quality of instruction in their schools when they were aware of both their own and their students' learning styles. Dunn (1993) stated that responding to how students learn best can significantly increase the students' achievement and attitude test scores.

Many concerns surround the study and use of learning styles information. In her review of literature, Curry (1990) identified three problem areas in the research and testing of learning styles. The first was confusion in definition; Curry found that a number of definitions exist with many different variables involved. Secondly, she found that weaknesses exist in the reliability and validity of measurements. Curry gave four reasons for these weaknesses: (1) many of the studies were conducted by Ph.D. students whose professors strongly believe in a certain conceptualization of learning style theory; (2) comparison groups may often have been selected on the basis of extreme scores; (3) few studies look at the effect of pretesting the students; and (4) students may react to the experimental arrangement instead of the variable. Curry's third concern was the lack of idenification of relevant learner and setting characteristics. She felt that

researchers would need to actually develop alternative curriculum structures, carefully match learning styles to these structures, and evaluate the real effects of these changes.

Teachers also express concerns relating to learning styles. According to Black (1993), some educators think that "teaching to style" is too much trouble. She believed that some teachers will attempt to diagnose a student's learning style based on observation only. This information may not be reliable as the teacher may observe the student reacting to a teaching method instead of displaying his or her true learning style. Another concern is that teachers tend to teach the way the were taught or the way that they learn best; therefore, only those students with the same learning style as the teacher have the best chance of success. According to Black (1993), most teachers are visual or auditory learners. As a group, teachers prefer to learn by seeing or hearing information; few prefer tactile or kinesthetic methods. Teachers also tend to prefer to learn alone and in a guiet atmosphere. Curry (1990) reported that researchers do not know if it is best for teachers to match or mismatch a student's learning style to a curriculum or method. These concerns make it difficult for teachers to use effectively any learning style information that they may have.

Statement of the Problem

The purpose of this study is to examine teacher evaluation of students' learning styles. Black (1993) suggested that it is unwise for teachers to attempt to determine a student's learning style based on obervation. This study will attempt to answer the question: To what degree are teachers in an individualized instructional setting able to informally identify a student's learning style?

Method

Subjects

Four teachers and 20 students participated in this study. The student participants were twenty boys from a wilderness program in central Virginia. This private program serves approximately 64 students who range in age from 11-18. The students exhibit a range of disabilities, including emotional disturbance and learning disabilities. These students live in six peer groups with two or three staff members. The students set goals that they must reach in order to earn privileges such as homevisits, school hours, and jobs.

Participation in this study was voluntary and permission was obtained verbally. Students understood that they could withdraw at any point and two students chose to do so. Confidentiality was ensured by the use of individual numbers assigned to each student.

The teacher participants were the four special education teachers at the wilderness program. Each teacher participant was female. Each teacher had taught at the program for a minimum of one year. All teacher participants were Caucasian.

The Learning Styles Inventory by Educational Activities, Inc. consists of a 45 item self-evaluation. This inventory was designed to be used with intermediate and secondary students. It was formulated at the Murdock Teacher Center in Wichita, Kansas, as part of an ESEA Title 111 ProjectCite. To use the Inventory, individuals must rank each item on a scale of four (most like me) to one (least like me). The inventory may be taken in written form or administered on the computer. If taken in written form, the educator must then enter the data into the computer for results. If the student completes the inventory on the computer, the computer program stops after each item to ask the student if he/she is sure of the given answer. Once all the responses are entered, the computer compiles the results on a graph and offers suggestions for best meeting the student's needs based on his/her responses. Individual data, class composites, comparisons of student to class, and comparisons of teacher to class may all be printed. The reliability report on the LSI was submitted on July 6, 1976. Split-half reliability measures were used to determine construct reliability. Eighty-five percent of the constructs were .60 or better. Ninety-five point six percent of the items received reliability results of .50 or better (Babich, 1976).

Design and Procedure

The Inventory was given to twenty student participants in written form (see Appendix A). All of the student inventories were administered in the month of August, 1995. After all of the Inventories were administered, the students' overall profiles were available to the classroom teachers to assist in determining instructional methods.

Each teacher was given a similar inventory to complete for her math and English students who were participating in the study (see Appendix B). The teachers were asked to use the laundry number which is assigned to each student when he enters the school. The teachers were asked to complete the revised inventories as they felt the instrument best reflected the learning preferences of each student.

This study addressed the correlation between the cumulative responses of the students and the cumulative responses of the teachers for each of the nine areas represented on the LSI. Five questions on the inventory applied to each of the nine areas. A sum total was found for the students' responses and for the teachers' responses in each area. A Pearson r was performed on the cumulative results of the inventories.

Results

Twenty students participated in this study. Eleven of the partcipants were persons without disabilities. Of the remaining nine, two were eligible for special education services in the category of severely emotionally disturbed, one in the area of severely learning disabled, three in the area of learning disabled, two as emotionally disturbed, and one as mild mental retardation. Three of the students were 14 years of age, two were 15, six were 16, six were 17, two were 18, and one was 19.

The first teacher participant had taught at the program for seven years and had a Master's degree in learning disabilities. The second teacher had taught at the school for five years and in public school for two years. She had a teaching certificate in mathematics and had almost completed a Master's program in learning disabilities. The third teacher had worked with the program for one year and had an undergraduate degree in special education. She was certified in the area of ED and was six semester hours from receiving her Master's degree. The fourth teacher was certified to teach English and had been with the program for five years. She had almost completed her Master's degree in learning disabilities.

At the .10 level of significance, there was a relatively strong relationship between the responses of the students and the responses of the teachers. The Pearson r at that level of significance was .6365.

Discussion

Being aware of a student's preferred learning style may be helpful for teachers. Such awareness allows the teacher to approach this student in a manner with which the student may feel comfortable and confident. If that learning style preference is unlike that of the teacher, he/she can then be aware of approaching his/her student differently. However, this study addressed whether or not teachers can correctly assess a student's learning style simply by observing the student. The results suggested that, based on the teachers' responses, this may be possible. Is this important? This researcher has come to the conclusion that it is not. Knowing a student's learning preference is, in some ways, helpful, but it can also be dangerous in that the teacher may only attempt to reach that student in one way. The literature suggested (Cuccia, 1985; Jenkins, 1991), and this researcher has come to believe, that it is much more important that teachers be aware of the variety of learning styles and preferences and that they attempt to approach all students in a variety of methods. Simply because a student prefers to work alone in the afternoon listening to music does not mean that this preference should dictate how he or she operates in the classroom. Certainly, he or she should be able to work that way occasionally, but this student also needs to be approached in the morning, in groups, orally, visually, and other ways. The teacher who is able

to incorporate a variety of learning methods and teaching means into the classroom is more likely to experience more success with students.

A learning styles inventory is still a useful instrument. It can be used to help students be their own advocates. Helping a student to learn why he or she learns more easily a certain way or enjoys certain tasks more allows him or her to speak up about personal preferences or make decisions about projects and papers. This inventory's results could be useful for forming cooperative groups, to make sure that students are placed together heterogeneously.

A number of limitations exist with this study. Due to the small number of teachers, the author of the study participated in the study. Since she was more familiar with learning styles and preferences, she may have responded differently to the questionnaire and affected the results. Even so, the results represent a very specialized location which probably could not be replicated in another setting. The school is a unique setting in which the teachers are able to build strong, personal relationships with the students. Since most teachers are responsible for many more students in one day, they would have difficulty building that kind of strong relationship.

The study addressed whether or not teachers were able to identify students' learning styles by observation; it is questionable if this is useful at all. Much more

useful would be the knowledge surrounding accommodations of learning style varieties or even awareness of the variety of learning styles. The focus of the study would have been more useful had it addressed student awareness of learning preference or the ability of the student to use his or her learning style to his or her advantage.

Learning styles is an intriguing area that has positive possibilities in the classroom and, possibly, in the workplace. The more individuals know about how they themselves and others work, the easier it is to get along together and to accomplish what needs to be done. This study suggests need for further study into teachers' understanding of the variety of learning styles and into teachers' use of a variety of teaching styles.

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Appendix A

Learning Styles Inventory

Student version

LEARNING STYLES INVENTORY

Instructions: Read the statement carefully and circle the number that best agrees with how	you feel
about the statement.	44

Sample: I would rather do work in the afternoon than in the morning.

(4) (3) (2) (1)

A number "4" response means that you prefer to work in the afternoon. A response of "1" means that you very much prefer to work in the mornings. There is no right or wrong response, only the way you feel about the statement. You may have all the time you need, so please respond to every statement. If

there are no questions, you may begin.

34. 193.	and no questions, you may oug_	Most Like Me			Least Like Me
1.	Making things for my studies helps me to remember what I have learned.	(4)	(3)	(2)	(1)
2.	I can write about most of the things I know better than I can tell about them.	(4)	(3)	(2)	(1)
3.	When I really want to understand what I have read, I read it softly to myself.	(4)	(3)	(2)	(1)
4.	I get more done when I work alone.	(4)	(3)	(2)	(1)
	I remember what I have read better than what I have heard.	(4)	(3)	(2)	(1)
	When I answer questions, I can say the answer better than I can write it.	(4)	(3)	(2)	(1)
7.	When I do math problems in my head, I say the numbers to myself.	(4)	(3)	(2)	(1)
8.	I enjoy joining in on class discussions.	(4)	(3)	(2)	(1)
9.	I understand a math problem that is written down better than one that I hear.	(4)	(3)	(2)	(1)
10.	I do better when I can write the answer instead of having to say it.	(4)	(3)	(2)	(1)
11.	I understand spoken directions better than written ones.	(4)	(3)	(2)	(1)
	I like to work by myself.	(4)	(3)	(2)	(1)
	I would rather read a story than listen to it read.	(4)	(3)	(2)	(1)
14.	I would rather show and explain how a thing works than write about how it works.	(4)	(3)	(2)	(1)
15.	If someone tells me three numbers to add, I can usually get the right answer without writing them down.	(4)	(3)	(2)	(1)
16.	I prefer to work with a group when there is work to be done.	(4)	(3)	(2)	(1)
17.	A graph or chart of numbers is easier for me to understand than hearing the numbers said.	(4)	(3)	(2)	(1)
18.	Writing a spelling word several times helps me remember it better.	(4)	(3)	(2)	(1)
19.	I learn better if someone reads a book to me than if I read it silently to myself.	(4)	(3)	(2)	(1)
20.	I learn best when I study alone.	(4)	(3)	(2)	(1)



Class

LEARNING STYLES INVENTORY

		Most Like Me			Least Like Me
21.	When I have a choice between reading and listening, I usually read.	(4)	(3)	(2)	(1) (1)
22.	I would rather tell a story than write it.	(4)	(3)	(2)	(1)
	Saying the multiplication tables over and over helps me remember them better than writing them over and over.	(4)	(3)	(2) (2)	(1) (1)
24.	I do my best work in a group.	(4)	(3)	(2)	(1)
25.	I understand a math problem that is written down better than one I hear.	(4)	(3)	(2)	(1)
26.	In a group project, I would rather make a chart or poster than gather the information to put on it.	(4)	(3)	(2)	(1) (1)
27.	Written assignments are easy for me to follow.	(4)	(3)	(2)	(1)
28.	the state of the s	(4)	(3)	(2)	(1)
29.	I do well in classes where most of the information has to be read.	(4)	(3)	(2)	(1) (1)
30.	I would enjoy giving an oral report to the class.	(4)	(3)	(2)	(1)
	Mearn math better from spoken explanations than written ones.	(4)	(3)	(2)	(1)
32.	If I have to decide something, I ask other people for their opinions.	(4)	(3)	<mark>(2)</mark>	(1)
33.	Written math problems are easier for me to do than oral ones.	(4)	(3)	(2)	(1)
34.	I like to make things with my hands.	(4)	(3)	(2)	(1).
35.	I don't mind doing written assignments.	(4)	(3)	(2)	(1)
36.	I remember things I hear better than things I read.	(4)	(3)	(2)	(1)
	I learn better by reading than by listening.	(4)	(3)	(2)	, (1)
38.	It is easy for me to tell about the things that I know.	(4)	(3)	(2)	(1)
	It makes it easier when I say the numbers of a problem to myself as I work the problem out.	(4)	(3)	(2)	(1)
40.	If I understand a problem, I like to help someone else understand it too.	(4)	(3)	(2)	(1)
41.	Seeing a number makes more sense to me than hearing a number.	(4)	(3)	(2)	(1)
42.	I understand what I have learned better when I am involved in making something for the subject.	(4)	(3)	(2)	(1)
43.		(4)	(3)	(2)	(1)
44.	I find it easier to remember what I have heard than what I have read.	(4)	(3)	(2)	(1)
45.	It is fun to learn with classmates, but it is hard to study with them.	(4)	(3)	(2)	(1)

A

Class_

Date_

, 6

Appendix B

Learning Styles Invertory

Teacher version

Instructions: Read the statement carefully and circle the number that best agrees with how you feel about the statement.

Sample: The student would rather do work in the 1 2 3 4 afternoon than in the morning.

A number "4" response means that the student prefers to work in the afternoon. There is no right or wrong response, only the way you feel about the statement in regards to the student referred to below. You may have all the time you need, so please respond to every statement. If there are no questions, you may begin.

	stions, you may begin	ast		mo	ost .
	like	stud	ent	like	student
		1	2	_	4
	Making things helps him to remember what he has learned. The student can write about	1	2	3	4
2.	most of the things he knows better than he can tell about				
	t h nee	1	2	3	4
з.	When he really wants to under- stand what he has read, the	1			
	student reads it softly to				
	himself. The student gets more work done	1	2	3	4
	the marke alone.	1	2	3	4
	The student remembers what he has read than what he has heard.	907	0	3	4
6.	The be anguere questions, he can	1	2	3	
	when he answer better than he can write it.	1	2	3	4
7.	not be problems in his				
8.	The student enjoys joining in on	1	2	3	4
	-1 disquesions.	1	2	3	4
9.	The students understands a math problem that is written down bette	-			
	. L - heave		2	3	4
10.	The student does better when he ca write the answer instead of having				
	to say it. The student understands spoken di-		2	3	4
	vections better than written one		2	3	4
12.	u- likes to work by himself.	1	2		4
13.	The student would rather read a story than listen to it read.	1			4
	- L L LITTE WATER SHOW WITH	1	2	3	4
14.	explain how a thing works than wri about how it works.	te			

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with his hands.

Learning Styles

Learning Styles 33 35. The student doesn't mind doing written assignments. 36. The student remembers things he hears better than things he reads. 37. The student learns better by reading than by listening. 3 38. It is easy for him to tell about 2 the things that he knows. 39. It makes it easier when the student 1 says the numbers of a problem to himself as he works the problem out. 40. If he understands a problem, the student likes to help someone else understand it too. 41. Seeing a number makes more sense to the student than hearing a number. 42. The student understands what he has learned better when he is involved in making something for the subject. 43. The things he writes on paper , 2 sound better than when he says them. 44. The student finds it easier to remember what I have heard than what I have read. 45. The student finds it fun to learn 2 3 with classmates, but it is hard for him to study with them. Teacher_____ Student number____ Subject_____ Date assigned __/__/__

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