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The Changes in Middle School Student Multiple Intelligence Scores Over the School Year

Terry O’Gorman

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ABSTRACT

This study of middle school students was based on Multiple Intelligences, as theorized by Howard Gardner. The instrument used was acquired from the on-line Memletics page of Advanogy.com. This descriptive survey measured which intelligence learning method is strongest in 229 students in sixth, seventh, and eighth grades at the beginning and the ending of the school year. This study also measured the possible changes in the student intelligence scores, including gender comparisons. About 40% of the students had their highest scores in the social intelligence, while about 20% had aural intelligence as their highest score. Logical and intrapersonal intelligences were the lowest. Eighth graders showed the most changes. Hopefully this study will stimulate more research into multiple intelligence strengths of the middle school population and improve the teaching-learning interaction.

INSTRUCTION

Throughout the 20th and into the 21st centuries the search for the key to unlock student methods of learning and seeking knowledge has been ongoing. Dewey, Piaget, Vygotsky, Erikson, the Dunns, Bruner, Gardner, and many others have all sought the understanding of the human thought process. The theory of multiple intelligences is a unique quest for how the mind most easily, or preferably, learns. Using, originally, seven modes of learning Howard Gardner (1983) presented a new aspect of student learning capabilities to the classroom and the teacher. In this study the measured multiple intelligences of students at the beginning of the academic middle school year are compared to measurements at the end of the year. Middle school usually begins with the

sixth grade and runs through the eighth grade. The ages of middle school students begin at ten years old with fifth graders just out of elementary school, and on up to sometimes sixteen years of age as the student is about to enter high school. Over this three year period their growth is noticeably physical, but their mental growth is hidden within the students' brains. Changes due to the many social and academic experiences, centered on the middle school years, should enhance considerable mental growth.

The concept of multiple intelligences, which were brought to the forefront of education by Howard Gardner, have been researched and utilized extensively in many different ways by educators and teachers. The measure of these intelligences is dependent on many things. When the students come to school they bring a lot of history of their nature plus nurture (their upbringing) that can be interpreted in many ways. The multiple intelligences (Appendix) measure the basic preferences each student uses in enjoying each learning situation. What this study was to determine is (a) whether the intelligences change over a school year, (b) the significance of that change, and then (c) ideas on this phenomenon that might affect the teaching methods throughout the year. Over the years Gardner's original multiple intelligence concepts have been enhanced not only by himself but also by a number of other researchers looking to broaden the range of the methods for understanding knowledge comprehension. In 1997 C. Branton Shearer added more descriptors to each multiple intelligence in his research on the validity of these types of intelligence tests. Later that same year Kathy Checkley interviewed Howard Gardner and elicited more terms to describe the original seven intelligences. In 2001 Carole Kloop, and James and Pamela Toole, in measuring service learning strategies to multiple intelligences, utilized the noun "smart" in describing the seven intelligences. Stephen Denig, in 2004, added more formal phrases when referring to each of the original seven multiple intelligences.

The Seven Intelligences

Howard Gardner introduced his seven intelligences in 1983. There were seven initial intelligences that Gardner stated. To begin with, musical intelligence (Gardner, 1983) is an auditory function of recognizing tones, melodies and rhythms. Shearer (1997) emphasized sounds, melodies and singing along with primarily enjoying music. Checkley (1997), in an interview with Gardner,

emphasized the abilities to recognize, hear, and remember musical patterns. Kloop & Toole (2001) stated “music smart” described these people. Denig (2004) added the concept of identifying sounds.

Next, bodily-kinesthetic intelligence (Gardner, 1983) is the use of one’s own mental abilities to coordinate one’s own bodily movements. Shearer (1997) includes physical dexterity and use of hands. In Checkley’s (1997) interview, Gardner elaborates on the use of body parts to solve problems. Kloop & Toole (2001) refer to “body smart” with the grace and control of movement. Denig (2004) adds touching and feeling to the bodily intelligence.

Another, logical-mathematical (Gardner, 1983) intelligence is used to detect patterns, reason deductively, and think logically. Shearer (1997) adds understanding number relationships, problem solving and quantification. The Checkley (1997) interview includes the manipulation of operations. Kloop & Toole bring “logic smart” or the ability to figure things out. Denig (2004) states simple reasoning and an ability to classify belongs to this intelligence.

Also there is spatial intelligence (Gardner, 1983). This is the ability to create and manipulate mental images. Shearer (1997) adds the ability to perceive in three dimensional images which manifests ease of assembly. Kloop & Toole (2001) say “picture smart”. Denig (2004) provides the concept of the mind’s eye can visualize what is being presented.

More recognizable is linguistic intelligence (Gardner, 1983), which is the intelligence to use one’s mastery of language to express one’s self. Shearer (1997) adds expressive word use along with abilities to speak, read and write well. Checkley (1997) adds Gardner’s belief that this intelligence truly highlights one’s speaking abilities. Kloop & Toole (2001) say these people are “word smart” and listen well and then verbalize well. Denig (2004) includes an enhanced storytelling capacity and a very competent discussion style.

In addition, there is interpersonal intelligence (Gardner, 1983). This is the ability to recognize the feeling and intentions of others. Shearer (1997) adds sensitivity to the feelings of others and understanding those feelings. Checkley (1997) brought out the ability to deal with other people, to be sociable. Kloop & Toole (2001) say “people smart” is a good term and that body language should be recognized. Denig (2004) identifies sharing, comparing, and cooperating within the scope of this intelligence.

Finally, there is intrapersonal intelligence which Gardner (1983) says is the ability to understand one’s own feelings and motivations and exemplifies

this intelligence. Shearer (1997) adds goal awareness, managing feelings and behaviors, and self-awareness. Checkley (1997) brought in Gardner's understanding that these intelligences include the awareness of what to avoid and what to seek. Kloop & Toole (2001) say "self smart" along with the ability to self-assess. Denig (2004) completes this intelligence noting that the ability to work alone and understanding self-pacing are also keys in this category.

Theory Comparisons

Why use multiple intelligences to measure change? There are many other methods for determining the cognition abilities of students. Samples (1992) covered the "different ways of knowing". He pointed to Bruner (1967) relating knowledge to movement, art, sight and logic. Samples also cites Bateson (1997) whose maps and territory concept brought to light the processes of thinking and aesthetics that are required to construct and draw maps - a form of cognitive measurement of the natural world we live in.

Wilson (1998) describes Dunn and Dunn (1979) and their four groups of learner preferences: environmental, emotional, sociological and physical - so close to Gardner's. Wilson also states that Witkin (1962) argued that learning styles are concerned with the form rather than the content of the learning activity. Learning styles refer to individual differences in how we perceive, think, solve problems, learn, and relate to others. And Gregoric (1979) stated that information was acquired with the dualities of abstract vs. concrete and sequential vs. random. Further there is the Myers-Briggs Type Indicator and the sixteen possible personality types that people may view themselves. From these few cognition measurement types Samples (1992) refers to the 'technique of the week" in addressing in what ways students should be taught based on the many and various assessments of learning styles.

Schultz (1999) compared Bloom's taxonomy (Bloom, Masia, & Krathwohl, 1956) with Gardner's multiple intelligences stating that the hierarchies of learning can be manifested in each of the intelligences. Dunn, Denig, and Lovelace (2001) say that Howard Gardner redefined Funk and Wagnall's (1977, p.702) definition of intelligence. Vardin (2003) states how Montessori showed how children absorbed, observed, and experienced the environment around them much like Gardner's intelligences.

From these many compared theories Gardner's is the most versatile in description of what is to be measured in measuring intelligence. The purpose

of this research is to determine whether these measurements of multiple intelligences change over the time period of the school year. When students in middle school grades were given a standard multiple intelligence test at the beginning of the year and then again at the end of the same school year, it was possible to measure the changes in each of the multiple intelligence scale. Each individual student's intelligence score was incidental to the outcome of the measurement changes. Seeking the amount of change in each intelligence category over the period of a school year and then measuring the change could lead to a review of how students should be taught throughout the year. I believed that there would be significant changes over the year as middle school students brains grow and develop with their emotional, physical, and educational experiences throughout the school year. A gender comparison at each grade level would also show some change. And any change being measured over the school year should be addressed by the teachers of these students in the way they would present their content material.

METHOD

SETTING AND PARTICIPANTS

Middle school is a part of a county school system located in central Georgia, which is comprised of seven middle schools with a student population of approximately 5500 students. Each school separates each of the grade levels into different halls and there is very little intra-grade contact during the school day. Each grade level curriculum is set and based on the Georgia Performance Standards.

Forty-three sixth grade students, ninety-three seventh grade students, and ninety-three eighth grade students (a total of 229 students), ranging in ages from 10 – 15 years, were measured in this research. They were selected from three middle schools. There were 119 females in the study. And the average ethnic profiles of the schools are approximately 64% white, 30 % black, and 6% Asian, Hispanic and other. An average of 42% of the students at these schools qualifies for free or reduced lunch.

INSTRUMENTATION

The instrument used in the multiple intelligences survey (Appendix) was a self-report form of seventy questions acquired from the on-line Memletics page of Advanogy .com (2003). The seven classifications with ten reference questions are scattered throughout the survey in a random and a reliable order. Utilizing the survey and the scoring sheet, the scores are entered into the category tally sheet (Appendix) for ease of recording the results per intelligence category. The highest score in any multiple intelligence category, whether it was a twenty (the highest) or a one, as long it is the highest in any of the seven classifications, refers to the strongest intelligence preference for that individual student.

PROCEDURES

Parental and student permissions were obtained for participants in this study. The survey instrument (see instrument sample in the Appendix) was given to each of the involved students within the first week of school. Individual science teachers administered the survey in their classrooms. Instructions were on the questionnaire and were also read to the students and any pertinent student questions were answered. The instrument took less than twenty minutes to complete. The results of the surveys were collected, scored, and recorded. Results were returned to the appropriate science teacher to disperse back to the students. The interpretation of the results was explained to each student so each could identify which of the multiple intelligences they preferred most in a learning environment. The teachers could also use the results in understanding their student's intelligence strengths. The tests were given again during the last week of school. Results were again scored, recorded, and matched to the first set of scores of each student.

DATA ANALYSIS

This was a descriptive study with one set of seven variables measured at the beginning and ending of the school year for three groups of students, sixth graders, seventh graders and eighth graders. A multivariate analysis of variance (MANOVA) on the between subject factor of grade with one repeated

measure was used to test for differences in preferred intelligence style, changes in preference from the beginning to the end of the year, and for differences by grade level. Gender differences were also explored. When appropriate, follow up tests such as MANOVA by gender or by style were used to look for specific differences in the pretests and posttests separately. The alpha level was set at .01 per comparison to indicate significance.

RESULTS

The MANOVA revealed statistically significant differences in the subjects' scores in the different styles, that is, some styles were higher or lower than others. $F(6,221) = 106.9, p < .001$ Partial Eta Squared = .74, observed power = 1.0. Partial Eta Squared means that 74% of the variance in the scores is due to differences within the styles. The social intelligence was the highest scoring factor, and for about 40% of the students was their preferred (highest ranked) learning style. Next highest was aural intelligence with about 20% of the students showing a preference in that one. Physical intelligence was the third highest preference. Lowest ranked with the fewest students was intrapersonal (solitary) with logical intelligence only a little higher. See table 1 for pretest and posttest descriptive statistics. It appears that generally areas of strength for most middle school students seemed to be social and aural, while areas of weakness were logical and solitary for middle school students across all three grade levels.

The hypothesis was that the amount of change (increase or decrease) in each intelligence category over the period of a school year could be important and that there would be significant changes over the year as middle school students brains grow and develop with their emotional, physical and educational experiences throughout the year. There were no statistically significant differences in style scores by grade level, that is, the intelligence style preferences/profiles stayed the same over the three grades. About 60% of the students did have a change in their highest preferred style from one to another during the school year. About 20% of the students had multiple (two- or three-way ties) styles as their highest scores. Physical and verbal skills improved the most, while social and visual skills improved the least. Only changes (increases) in physical, aural, and verbal skills were enough to be statistically significant at the $p = .01$ level. This is over all grade levels together. See tables 2 and 3.

The MANOVA repeated measures also revealed a statistically significant difference overall from the pretest scores to the posttest scores [$F(1,226) = 15.7, p < .001$. Partial Eta Squared = .07, observed power = .98]. Partial Eta Squared means that 6% of the variance in the scores is due to the change from pretest to posttest. Follow up tests revealed that eighth graders had the most change from pretest in August to posttest in May. See Figure 1. Using paired t -tests, all of the intelligence styles showed increases (growth) which were statistically significant except for social intelligence. See Figure 1.

The second hypothesis was that there would be gender differences in multiple intelligences preferences. There was a difference in learning style by gender in eighth graders using a multivariate analysis of variance with repeated measures. $F(6,86) = 3.66, p = .003$. Partial Eta Squared = .20, power is .95. This means that 20% of the difference in variances is due to gender. On the pretest the statistically significant differences are in two areas, verbal [$F(1,91) = 15.72, p < .001$] and aural [$F(1,91) = 7.47, p = .008$] where girls scored higher than boys. The mean for the girls on verbal was 10.7 ($SD = 3.7$) and the mean for the boys was 7.9 ($SD = 3.2$). The mean for the girls on aural was 14.1 ($SD = 3.2$) and the mean for the boys was 12.2 ($SD = 3.4$). On the post test the differences are also only in two areas, social [$F(1,91) = 7.53, p = .007$] and aural [$F(1,91) = 7.95, p = .006$]. The mean for the girls on social was 15.3 ($SD = 2.8$) and the mean for the boys was 13.5 ($SD = 3.5$). The mean for the girls on aural was 15.2 ($SD = 3.0$) and the mean for the boys was 13.3 ($SD = 3.6$). Using paired t -tests with the eighth graders separated by gender to look for changes over the school year, we found that for boys, logical improved the most for boys and social improved the least. Verbal, logical, & interpersonal intelligences improved to a statistically significant degree ($p < .01$) for eighth grade boys. This was not true for girls where the physical intelligence improved the most while the verbal improved the least. Aural and physical intelligence changes (improvements) were statistically significant ($p < .01$) for the eighth grade girls.

Seventh graders also had differences by gender using MANOVA with repeated measures. $F(6, 86) = 4.59, p < .001$. Partial Eta Squared = .29, power is .99. This means that 29% of the difference in variances was due to gender. On the pretest MANOVA using gender as the independent variable the difference was only in one area; aural [$F(1,91) = 8.82, p = .004$]. The mean for the girls on aural was 14.9 ($SD = 3.9$) and the mean for the boys was 12.3

($SD = 4.4$). On the posttest MANOVA the significant differences were in three areas, social [$F(1,91) = 7.33, p = .008$], aural [$F(1,91) = 7.28, p = .008$], and verbal [$F(1,91) = 12.53, p = .001$]. The mean for the girls on social was 15.8 ($SD = 2.9$) and the mean for the boys was 14.2 ($SD = 3.0$). The mean for the girls on aural was 15.0 ($SD = 3.5$) and the mean for the boys was 13.0 ($SD = 3.5$). The mean for the girls on verbal was 11.8 ($SD = 3.2$) and the mean for the boys was 9.1 ($SD = 4.1$).

Using MANOVA with repeated measures showed that the sixth graders had differences by gender that approached the .01 level of significance on gender by style interaction using a multivariate analysis of variance with repeated measures [$F(6,36) = 2.90, p = .02$]. However there were no statistically significant differences by change (repeated measure) over the school year ($p = .20$). On the pretest the statistically significant difference by gender was in one area, logical [$F(1,41) = 9.50, p < .001$], where boys scored higher than girls. The mean for the girls on logical was 7.55 ($SD = 4.0$) and the mean for the boys was 11.0 ($SD = 3.3$). On the posttest, the differences were not statistically significant at the $p = .01$ level, although the boys still had higher means in logical intelligence than the girls. The posttest mean for the sixth grade girls on logical was 8.4 ($SD = 4.0$) and the mean for the boys was 11.0 ($SD = 3.3$).

DISCUSSION

Each of the seven intelligences has many descriptors encompassing a broad range of thought within each category. Many more authors of research than those listed have duplicated, or can add to the synonyms for each of these categories. The fact is that each additional descriptor reinforces the overall meaning of the separate intelligence measures and does not in any way deter from the basic premise of any of them. This research shows that the scores recorded at the beginning of the school year compared to the scores recorded at the end of the school year registered statistically significant changes in some areas. There are changes for sixth, seventh and eighth grades respectively, gender inclusive, over the year's time in each of the intelligence categories, statistically significant or not. And these changes alone are important enough to draw attention to a potential need for changes in teaching methods over the school year.

Although there were not any significant changes over the year's time for all of the students across all of the middle school grades levels, there were some changes of significance within the eighth grade level. These significant changes will lead to further study of the eighth grade as an individual level of concentration for multiple intelligence changes. In gender comparisons for the sixth and seventh grade boys and girls, there were some intelligence preferences that barely approached significance. However gender differences were significant in several intelligences for eighth grade boys as well as eighth grade girls, though none of the intelligences registering significance were the same intelligence between the genders.

The final hypothesis of this study concerns the teaching strategies of the middle school teacher. Knowledge of any significant change in any intelligence preference regardless of grade level could assist the teacher in keeping the student in a constant alertness to content knowledge. Any change over the year in, for instance, visual or verbal skills can affect the concentration of the student. While all students have different levels of preferable intelligence skills, the teacher should recognize that there will be changes and construct the classroom teaching strategies around these intelligence skills and their potential changes.

Threats to validity are minimal. The subjects selected are anonymous and within the target of the research. The history, maturation, and regression to the mean of the subjects are what is being measured. The instrument while perhaps tedious to this age level is consistent and unchanging. Any students that did not complete both of the surveys at the beginning and end of the year obviously were dropped from the research. The number of teachers administering the test, although given specific instructions, may affect a minimal amount of validity depending how and what questions were answered from subjects. Considering the number of questions per intelligence category, this challenge to validity is minimal.

There is a great deal of information in the data from this instrument and the comparisons that can be made using statistical tests are many. The individual intelligence classifications could be tested against the state criterion referenced curriculum test scores from year to year. The physical intelligence classification of the athletic students could be investigated. The correlation between the changes in any two of the classifications could be measured at any grade level. The correlation of the changes between each grade level for

each student can be measured longitudinally. This research shows change. We as educators are always seeking better methods to present content but we need to also recognize that our students are changing continuously. There will be further student intelligence measurements over the next few years to track potential change from year to year. And hopefully this study will stimulate more research into the multiple intelligence strengths of the middle school population.

TABLE 1

Descriptive Statistics for All Students at the Beginning and Ending of the School Year

Beginning (August)

	Min	Max	M	SD
Social Pretest	0	20	14.3	3.4
Aural Pretest	2	20	13.6	3.8
Physical Pretest	2	18	11.4	3.4
Visual Pretest	1	20	11.1	3.8
Verbal Pretest	1	18	9.8	3.8
Logical Pretest	0	18	8.8	3.8
Solitary Pretest	1	18	8.6	3.7

Ending (May)

	Min	Max	M	SD
Social Posttest	2	20	14.8	3.2
Aural Posttest	5	20	14.1	3.5
Physical Posttest	1	20	12.1	3.6
Visual Posttest	1	20	11.6	3.7
Verbal Posttest	2	20	10.4	3.9
Logical Posttest	0	19	9.4	3.8
Solitary Posttest	0	19	9.2	3.6

TABLE 2

Pretest Scores Disaggregated by Grade Level

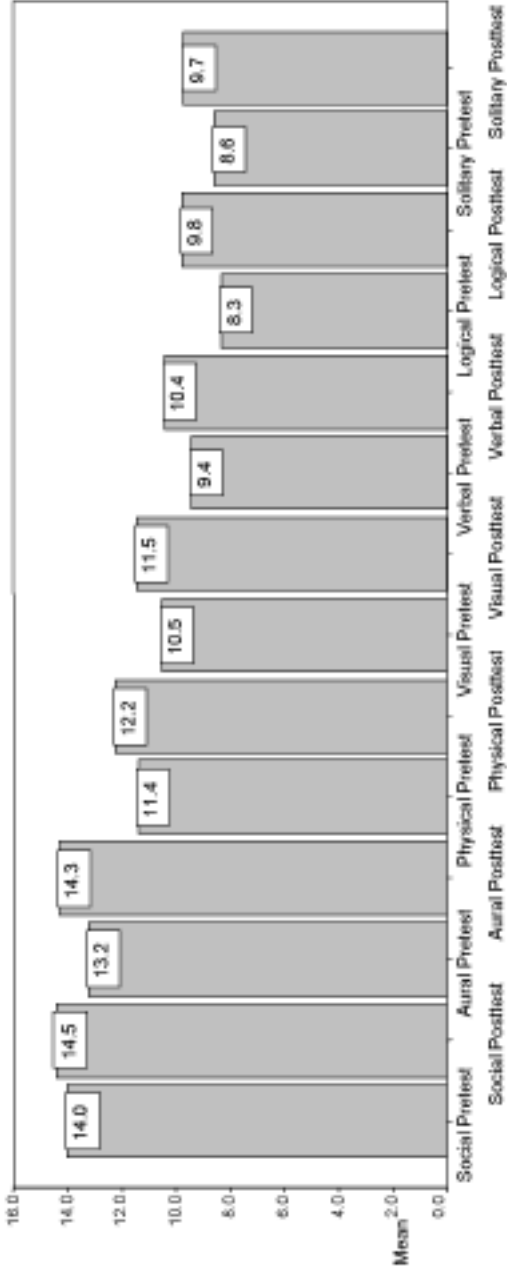
		N	M	SD	Min	Max
Visual Pretest	6	43	11.7	3.4	4	19
	7	93	11.3	3.9	2	20
	8	93	10.5	3.7	1	18
	Total	229	11.1	3.8	1	20
Verbal Pretest	6	43	9.8	3.4	1	16
	7	93	10.1	4.1	1	17
	8	93	9.4	3.7	2	18
	Total	229	9.8	3.8	1	18
Aural Pretest	6	43	14.2	3.1	9	20
	7	93	13.6	4.3	2	20
	8	93	13.2	3.4	4	20
	Total	229	13.6	3.8	2	20
Physical Pretest	6	43	11.3	3.5	3	18
	7	93	11.3	3.4	2	18
	8	93	11.4	3.4	3	18
	Total	229	11.4	3.4	2	18
Logical Pretest	6	43	9.2	4.0	2	18
	7	93	9.0	3.6	2	17
	8	93	8.3	3.8	0	17
	Total	229	8.8	3.8	0	18
Social Pretest	6	43	14.6	3.2	4	19
	7	93	14.5	3.7	0	20
	8	93	14.0	3.1	5	19
	Total	229	14.3	3.4	0	20
Solitary Pretest	6	43	7.7	3.0	2	15
	7	93	9.1	3.8	2	18
	8	93	8.6	3.9	1	17
	Total	229	8.6	3.7	1	18

TABLE 3*Posttest Scores Disaggregated by Grade Level*

		N	M	SD	Min	Max
Visual Posttest	6	43	11.8	4.1	2	20
	7	93	11.5	3.6	2	19
	8	93	11.5	3.7	1	19
	Total	229	11.6	3.7	1	20
Verbal Posttest	6	43	10.3	3.7	2	20
	7	93	10.5	3.9	2	19
	8	93	10.4	4.1	2	19
	Total	229	10.4	3.9	2	20
Aural Posttest	6	43	13.9	3.5	7	20
	7	93	14.0	3.6	7	20
	8	93	14.3	3.4	5	20
	Total	229	14.1	3.5	5	20
Physical Posttest	6	43	12.1	3.4	2	18
	7	93	11.9	3.6	4	19
	8	93	12.2	3.6	1	20
	Total	229	12.1	3.6	1	20
Logical Posttest	6	43	9.7	3.9	0	19
	7	93	8.8	3.5	0	17
	8	93	9.8	4.1	1	17
	Total	229	9.4	3.8	0	19
Social Posttest	6	43	15.0	3.4	2	20
	7	93	15.0	3.0	6	20
	8	93	14.5	3.3	6	20
	Total	229	14.8	3.2	2	20
Solitary Posttest	6	43	8.4	3.1	3	16
	7	93	9.0	3.7	0	18
	8	93	9.7	3.6	2	19
	Total	229	9.17	3.569	0	19

FIGURE 1

Growth in Eighth Graders is Statistically Significant



APPENDIX

Musical (Aural)

- Recognize tones, melodies, rhythms
- Sounds and singing along
- Recognize and hear musical patterns
- Identifying sounds
- Music Smart

Logical – Mathematical

- Detect patterns, reason deductively, think logically
- Number relationships, problem solving, quantification
- Manipulation of operation
- Figure things out
- Simple reasoning, ability to classify
- Logic Smart

Bodily – Kinesthetic (Physical)

- Coordinate bodily movements
- Dexterity and use of hands
- Use body parts to solve problems
- Grace and control of movement
- Touching and feeling
- Body Smart

Spatial (Visual)

- Create and manipulate mental images
- Perceive in three dimensions for ease of assembly
- Visualize with the ‘mind’s eye’
- Picture Smart

Linguistic (Verbal)

- Mastery of language to express one’s self
- Expressive word use, ability to speak, read, and write well
- Communication ability
- Listen and verbalize well
- Storytelling ability, competent discussions
- Word Smart

Interpersonal (Social)

- Recognize feelings and intentions of others
- Sensitive to and understanding feelings of others
- Ability to deal with other people and to socialize
- Recognize body language
- Sharing, cooperating and comparing
- People Smart

Intrapersonal (Solitary)

- Understand one’s own feelings and motivation
- Goal awareness, self-awareness, manage feelings and behaviors
- Aware of what to avoid and what to seek
- Self-assess
- Ability to work alone and pace oneself
- Self Smart

Answer the questions

Answer each question by circling one of the numbers on the right. You could also write zero, one or two directly into the scoring sheet further below. If you enter your scores into the score sheet while you answer the questions, hide the bottom of the score sheet so you don't see the styles for each column.

The scale is as follows:

0. The description sounds nothing like you.
1. The description sounds partly like you.
2. The description sounds exactly like you.

Take as long as you like. Afterwards we rate your answers. Remember there are no right or wrong answers. Usually the first response that comes into your mind when you read the question is a good answer.

Questions

- | | | |
|----|---|-------|
| 1 | You have a personal or private interest or hobby that you like to do alone. | 0 1 2 |
| 2 | You write and use detailed lists, such as to-do lists, and you number the items and set priorities. | 0 1 2 |
| 3 | Jingles, themes or parts of songs pop into your head at random. | 0 1 2 |
| 4 | You prefer math and science subjects at school. | 0 1 2 |
| 5 | You are happy on your own. You like to do some activities alone and away from others. | 0 1 2 |
| 6 | You enjoy learning in classroom style surroundings with other people. You enjoy the contact and it helps your learning. | 0 1 2 |
| 7 | You read everything. Books, newspapers, magazines, menus, signs, etc. | 0 1 2 |
| 8 | You can easily visualize (see in your mind) objects, buildings, scenarios etc. from descriptions or plans. | 0 1 2 |
| 9 | You are goal oriented and know where you want to go in life, study or work. | 0 1 2 |
| 10 | You prefer team games and sports such as football/soccer, basketball, netball, volleyball, hockey, and baseball. | 0 1 2 |
| 11 | You find your way around well use maps with ease. You rarely get lost. You have a good sense of direction. You usually know which way North is. | 0 1 2 |
| 12 | You prefer to study or work alone. | 0 1 2 |
| 13 | You like being a close friend, mentor or guide for others. | 0 1 2 |
| 14 | You spend time alone to reflect and think about your life. | 0 1 2 |

Numerics Accelerated Learning Styles Inventory

- | | | |
|----|---|-------|
| 15 | In regular conversation, you often bring up other topics or events you have heard about or read. | 0 1 2 |
| 16 | You enjoy finding links and associations, for example between numbers or objects. You like to classify or group things to help you understand the relationships between them. | 0 1 2 |
| 17 | You keep a journal or personal diary to record your thoughts. | 0 1 2 |
| 18 | You communicate well with others and you often help solve problems between two people. | 0 1 2 |
| 19 | You love sport and exercise. | 0 1 2 |
| 20 | You like to listen. People like to talk to you because they feel you understand them. | 0 1 2 |
| 21 | You like listening to music - in the car, studying, at work (if possible!), or anywhere. You love live music. | 0 1 2 |
| 22 | You can balance a checkbook or you know how much you have in your bank account/piggy bank. You like to set budgets and other numerical goals. | 0 1 2 |
| 23 | You have some very close friends. | 0 1 2 |
| 24 | You use many hand gestures or other physical body language when communicating with others. | 0 1 2 |
| 25 | English, languages and literature are your favorite subjects at school. | 0 1 2 |
| 26 | You like making models, or working out jigsaws. | 0 1 2 |
| 27 | You prefer to talk over problems, issues, or ideas with others, rather than working on them by yourself. | 0 1 2 |
| 28 | Music is your favorite subject at school, or you like playing in a band. | 0 1 2 |
| 29 | In school, you prefer art, technical drawing, or geometry. | 0 1 2 |
| 30 | You love telling stories. | 0 1 2 |
| 31 | You like identifying logic flaws or problems in other people's words and actions. | 0 1 2 |
| 32 | You like using a camera or video camera to capture the world around you. | 0 1 2 |
| 33 | You use rhythm or rhyme to remember items, for example phone numbers, PIN numbers, and other items. | 0 1 2 |
| 34 | In school, you like sports, wood or metalworking, craft, sculpture, pottery and other similar subjects. | 0 1 2 |
| 35 | You know lots of words, and like using the right word at the right time. | 0 1 2 |
| 36 | You notice and like the feel of clothes, furniture and other objects. | 0 1 2 |

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| 37 | You would prefer to holiday on a deserted island rather than a resort or cruise ship with many other people around. | 0 1 2 |
| 38 | You like books with many diagrams, illustrations, or pictures. | 0 1 2 |
| 39 | You easily express yourself, whether it's out loud or in writing. You can clearly explain ideas and information to others. | 0 1 2 |
| 40 | You like playing games with others, such as card games and board games. | 0 1 2 |
| 41 | You use specific examples and references to support your points of view. | 0 1 2 |
| 42 | You pay attention to the sounds around you. You can tell the difference between instruments, or cars, or aircraft, based on their sound. | 0 1 2 |
| 43 | You have a good sense of color. | 0 1 2 |
| 44 | You like playing with the meaning of words, saying tongue-twisters, making rhymes. | 0 1 2 |
| 45 | You like to think out ideas, problems, or issues while doing something physical. | 0 1 2 |
| 46 | You read self-help books, you've been to self-help workshops, or you've done similar work to learn more about yourself. | 0 1 2 |
| 47 | You can play a musical instrument or you can sing on (or close to) key. | 0 1 2 |
| 48 | You like crosswords, scrabble and other word games. | 0 1 2 |
| 49 | You like logic games and brainteasers. You like chess and other strategy games. | 0 1 2 |
| 50 | You like getting out of the house and being with others at parties and other social events. | 0 1 2 |
| 51 | You occasionally realize you are tapping in time to music, or you naturally start to hum or whistle a tune. Even after only hearing a tune a few times, you can remember it. | 0 1 2 |
| 52 | You solve problems by "thinking aloud." You talk through issues, questions and possible solutions. | 0 1 2 |
| 53 | You enjoy dancing. | 0 1 2 |
| 54 | You prefer to study alone. | 0 1 2 |
| 55 | You don't like silence. You would prefer to have some background music or other noise to silence. | 0 1 2 |
| 56 | You love theme park rides that involve much physical action, or you dislike them because you are sensitive to the physical forces on your body. | 0 1 2 |
| 57 | You draw well. You find yourself drawing or doodling on a notepad when thinking. | 0 1 2 |

Menetics Accelerated Learning Styles Inventory

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| 58 | You easily work with numbers, and can do decent calculations in your head. | 0 1 2 |
| 59 | You use diagrams and scribbles to communicate ideas and information. You love whiteboards (and color pens). | 0 1 2 |
| 60 | You hear small things that others don't. | 0 1 2 |
| 61 | You would prefer to touch or handle something to understand how it works. | 0 1 2 |
| 62 | You don't mind taking the lead and showing others the way ahead. | 0 1 2 |
| 63 | You easily absorb information through reading, audiocassettes or lectures. The actual words and phrases come back to you. | 0 1 2 |
| 64 | You like to understand how and why things work. You keep up to date with science and technology. | 0 1 2 |
| 65 | You like tinkering. You like pulling things apart, and they usually go back together! You can easily follow instructions represented in diagrams. | 0 1 2 |
| 66 | Music evokes strong emotions and images as you listen to it. Music is prominent in your recall of memories. | 0 1 2 |
| 67 | You think independently. You know how you think and you make up your own mind. You understand your own strengths and weaknesses. | 0 1 2 |
| 68 | You like gardening or working with your hands in the shed. | 0 1 2 |
| 69 | You like visual arts, painting, and sculpture. You like jigsaws and mazes. | 0 1 2 |
| 70 | You use a specific step-by-step process to work out problems. | 0 1 2 |

Memetics Accelerated Learning Styles Inventory

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Overall Totals:

Visual	Verbal	Aural	Physical	Logical	Social	Solitary

Add (sig) lines from the columns above.

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