An Introduction to a Learning Style Dominance Inventory

by Gwenna Humphreys

Abstract

"There is no one pedagogy or curriculum method that will work effectively in all classrooms and with all students." (Teele 1999)

This paper introduces the learning style dominance inventory that was administered to first year Japanese college students. The inventory, based on the Theory of Multiple Intelligences (MI), revealed that out of the seven typical learning styles of *linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic, intrapersonal* and *interpersonal* that the students' typical dominant learning styles were *musical, bodily-kinesthetic* and *interpersonal*. It is interesting to note that the data also revealed valuable insight into how the students preferred not to learn. They showed little preference for anything *intrapersonal* or *logical-mathematical*.

Multiple Intelligences and the Seven Learning Styles

The Theory of Multiple Intelligences (MI) was first introduced by Harvard psychologist Professor Howard Gardner in his book *Frames of Mind* (1983). According to Gardner's original work, all individuals possess seven learning styles (Appendix A) with varying degrees of dominance in each area. As of late, Gardner has added new intelligences to his original list of seven and it appears that there may be more classifications in the future. Only the original seven seen in Appendix A were included in this paper.

The formation of Gardner's MI theory was based on his conclusion that traditional lessons taught at schools leaned in the direction of the *linguistic intelligence* and the *logical-mathematical intelligence*. Linguistic and logical-mathematical oriented students progressing through a system that is geared towards them excel and in turn these students return to the same system as teachers. Gardner theorized that the traditional school system appears to have been built around these two intelligences and students who have these dominant learning styles naturally tend to succeed in a system that is geared towards their natural dominances. On the other hand, other students with different dominances in the other 5 areas may not excel in an arena that teaches and tests linguistically and

logically.   Teachers, schools and society tend to measure the ability of students by linguistic and logical-mathematical means.   The TOEIC and TOEFL tests would be examples of *linguistic* and *logical-mathematical* measurement.   Students with dominances in the other five areas aren't always given the opportunity in a traditional school to show what they know.   After all, it was Gardner who first wondered how well someone like Mozart would do on an SAT or a GRE and if Mozart would have been able to score well enough to even enter into an Ivy League school.

What is Learning Style Dominance?

For those not familiar with the concept of learning style dominances, try to view it as one would view a hand dominance test.   Imagine if a ball were pitched to someone eight times.   How many times would it be caught in the right hand and how many times would it be caught in the left?   Though age would play a factor in the outcome, for most individuals the ball would be caught solely in the right or the left hand.   If a test like this shows that one has a dominance for using their left hand over their right does it mean that their right hand is *bad*?   Probably not.   The result more likely means that the subject, since birth, has preferred to use their left hand over their right hand and as a result their left hand is their preferred hand.   A learning style dominance inventory measures your learning preferences in a similar way.   Simply put, how does one like learning 'pitched' to him or her in a learning situation?

The Learning Style Dominance Inventory

To measure the learning styles of students, the author chose to use the Teele Inventory of Multiple Intelligences (referred to hereafter as TIMI) created by Sue Teele.   This ingenious test, referred to as an inventory, acts as a tool for measuring the learning styles of students.   In turn, teachers can use the results to apply the theories of MI in the classroom or in other words, figure out what pitches are preferred by their students.

The inventory consists of 28 pairs of drawings and it is presented in a forced-choice format.   In an effort to make the inventory appealing to a wide range of individuals much thought was put in to the drawings themselves.   Instead of using human figures, the TIMI contains drawings of pandas engaged in specific activities that represent one of the seven

intelligences.   The drawings are meant to come across as being ageless, gender neutral and in only 8 of the 56 drawings, English phrases were used to help express an intelligence.   For example, drawing 1A is a representation of the *linguistic intelligence* with a panda sitting and reading a book and 1B represents the *spatial intelligence* with a panda painting a picture of a sailboat.   The subject is supposed to look at each drawing and try to see him or herself as each panda.   At no place on the inventory is it written what intelligence each drawing is representing though it might be possible to classify most of the pictures and guess what intelligence the drawing might be trying to represent.

By the end of the inventory, the subject will have seen 56 drawings of pandas in a variety of poses and possibly holding or manipulating a variety of objects.   Subsequently, the subject notes his or her 28 preferences.

None of the drawings is repeated though each intelligence is represented equally on the TIMI eight times.   Each of the pairs of drawings contains representations of the seven different intelligences so the subject is always choosing between two different intelligences. For example, the subject wouldn't see a drawing representing the musical dominance paired up with a different drawing also representing the musical dominance.

Other than not having the same two dominances paired together there appears to be no intentional pattern to the pairings of the dominances either.   For example, the linguistic dominance was portrayed in the 1st, 5th, 11th, 15th, 21st, 23rd, 34th and 41st drawings.

When the subject is finished the selections are tallied.   It is not possible to score more than 8 in any intelligence nor is it possible to have a sum of more than 28.   One either has more or less of each dominance.   A result might look like this

An Example Result of the Dominance Test
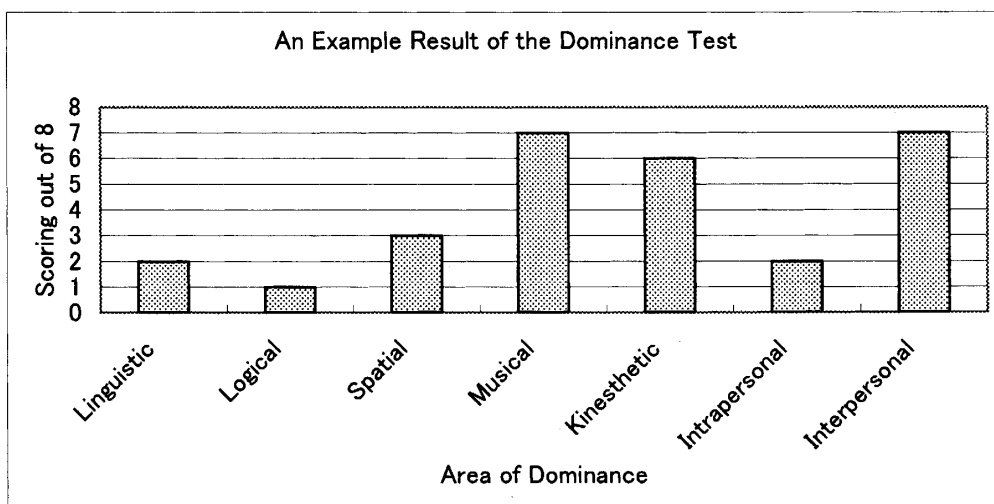
The Subjects for the Inventory

The TIMI was administered to approximately 240, 18 or 19 year-old Japanese early childhood education majors enrolled in an English communication class. The English language level of the subjects was expected to be extremely low and their cross-cultural experiences were anticipated to be minimal.

Application of the TIMI Inventory

The point of the TIMI was to collect accurate results about learning style dominances, not test the students' English ability. There were snippets of English on 8 of the 56 drawings (See Chart A), so by *Japanizing* those parts of the TIMI, the author hoped to increase the reliability of the data collected. Simply put, there was cause for concern that the students would choose one drawing with no English on it over another drawing with English on it, simply due to lack of English ability and thus skewing any results.

Here in Chart A are the eight English phrases that appeared on the TIMI and the oral interpretations that were used to guide the subjects.

Chart A

Drawing	English	Japanese
3A	Stories Old and New My Book of Poems	マザー・グーズ ももたろう
6A	Super Speller bat grate bear	つづり教本 こうもり ---① くま
11A	I love bears	ラメーン ライオン テントウムシ②
12A	Once upon a time there were three bears...	むかしむかしあるところにさんびきのくまがいました。
12B	If line A crosses line B, then the answer is...	AセンとBセンのぶつかるところはどこですか。
18B	I feel good about who I am and know my strengths.	ぼくはなんでもできる。じしんがあります。③
21A	My Life's Story A Tale of Two Bears Smokey	かんそうぶん おさる　の　ジョージ④
25A	D-O-G OH YES, D-O-G dog	パンダ⑤ アアアパンダ！

① In drawing 6A, two pandas are engaged in a study session about spelling. Though the subjects may know the nouns 'bat' and 'bear' (in English), the verb 'grate' was way beyond the English ability of the subjects so the author just gave the interpretations for bat and bear.

② Drawing 11A is interesting in the fact that it is the only drawing in the inventory where the subjects repeatedly asked the author for clarification of the instructions. The overall instructions for the inventory were for the subjects to see themselves as the pandas in each drawing. The author was impressed by these queries as Japanese students tend to not ask questions, even when they have them. What is unique about drawing 11A is that the subject sees only a crossword puzzle that spells out the words *I love bears*, and a panda-like teddy bear underneath the puzzle itself. This is the only drawing without a panda figure.

In Japan, crossword puzzles can be seen in newspapers, magazines and school English lessons. As the words *I love bears* doesn't form a crossword shape in the Japanese language, a model using ラメーン, ライオン and テントウムシ was used. The author wanted to use everyday nouns that almost all Japanese would be familiar with and to make sure that all the students were aware that drawing 11A was a drawing about a crossword puzzle.

③ The English phrase in drawing 18B was a bit awkward to interpret and linguistically far too complicated for the anticipated subjects to understand. In the drawing, the subject sees a panda sitting on a cushion, on the floor, with a thought bubble that reads "I feel good about who I am and know my own strengths." Before the inventory, the author asked a handful of students to interpret the drawing but none of them was able to accurately interpret the English or the drawing. In Japan, in a lot of living rooms, people sit on cushions on the floor, as it is the custom to not have sofas or chairs in their living rooms. Culturally, there was a different conclusion in the minds of Japanese students about what they were seeing in drawing 18B. One 10 year old Japanese said that when he misbehaved that his mother made him sit on a cushion for a while. He seemed to be describing a Japanese version of a 'time out' to modify behaviour. In this boy's mind, when he looked at the drawing, he didn't 'see' anything regarding being confident. The boy just saw his 'time outs' recreated in this drawing. A clue was most needed to keep the subjects on track

for this drawing. After much consultation a Japanized phrase was selected. The rough interpretation of 「ぼくはなんでもできる。じしんがあります。」 was used and the subjects could understand roughly what was in the thought bubble.

④ In drawing 21A there is a student-like panda sitting at a desk writing on a sheet of paper entitled *My Life's Story* which was interpreted into 「かんそうぶん」. On this same desk, the spines of two books can be seen and the titles are *A Tale of Two Bears* and *Smokey*. The author suspects that the titles of the two books were chosen to follow the bear theme of the TIMI. *A Tale of Two Bears* was probably spun from the Charles Dickens's novel of *A Tale of Two Cities* and *Smokey* may have been shortened from the children's song *On Top Of Old Smokey*. Neither of these are well-known in Japan by a wide range of the population so 「おさる　の　ジョージ」 was used to help express the intelligence to the subjects.

⑤ With drawing 25A the subject sees a teacher-panda with the word d-o-g written on a blackboard and 3 student-pandas figuring out how to read the word d-o-g. The author chose to replace the word "dog" with パンダ so that the subjects would be hearing a longer word of 3 Japanese *kana* sounds instead of a shorter word with 2 *kana* sounds. In English, *dog* has 3 letters but in Japanese, the word for dog has 2 letters or *kana* and is aurally shorter. For this reason, an aurally longer word with 3 *kana* was selected.

The Selection of the Written Japanese System to be used on the TIMI

With the rewrites of the phrases, the author chose to use the easier Japanese writing system called *kana* over that of the more difficult form of Chinese characters used in Japan called *kanji*. To those not familiar with the Japanese writing system of *kana* and *kanji*, think of it as choosing to use block letters instead of calligraphy in a first grade class at the elementary school level. The block letters would be comprehensible by most whereas the calligraphy would be understood by few, if any at all. *Kana* is the system that Japanese learn first and use throughout their entire lives whereas *kanji* is taught systematically over many years. To maintain the spirit of an inventory that could be taken by anyone at any age *kana* was intentionally used.

Ambiguity in the TIMI drawings

Some of the drawings send out mixed messages to the subject taking the inventory. 26 of the drawings on the TIMI are of single pandas engaged in various activities. These drawings are straightforward and anyone taking the inventory should have little trouble forming an opinion and making selections accordingly. There are 29 drawings with 2 or more pandas. Drawings with more than one panda are needed to represent some of the intelligences, for example the *interpersonal intelligence*, and these drawings with two or more pandas do help to create a feeling of a group. Unfortunately, this is where some confusion starts.

In drawing 21B, one can see three pandas sitting at a table. The panda in the middle is crying and the other pandas seated to the right and left of the crying panda are trying to comfort the panda in the middle. This drawing is suppose to represent the *interpersonal intelligence* yet it is a bit confusing to the subject taking the inventory. Is the subject supposed to see him or herself as the panda on the right or the left who is comforting the panda in the middle or is the subject supposed to see him or herself as the panda in the middle that is being comforted?

Drawing 10B is also representative of the *interpersonal intelligence*. The subject can see a porch scene with a front-porch swing where a parent-like panda is sitting on it with one arm around the shoulders of a child-like panda. There are two child-like pandas sitting near the feet of the adult-panda. Now, is the subject supposed to see him or herself as the adult panda, the child panda being cuddled by the adult panda or one of the two child pandas relaxing near the feet of the adult panda?

Drawing 25A depicts a classroom scene with a teacher and three students. Once again there is some confusion, is the subject supposed to be the teacher panda or one of the students?

This confusion in some of the pictures probably impacts the results but to what extent that is unknown at this time. Though multiple pandas are necessary and aid in the visual expression of the intelligences, a distinctive feature given to one panda would help the subject see him or herself in the multiple panda drawings. For example, a unique shape could be given to the black markings around the eyes of the main panda in the multiple

panda drawings to differentiate the main panda from the other pandas. This kind of clarification would lead to more accurate and useful results.

The TIMI Results

In Chart B are the results of the TIMI from April of 2003. Class A and B are pre-school teacher majors whereas class C, D and E are day-care worker majors.

Chart B
Early Childhood Education First Inventory in April, 2003

(241 students/first year)

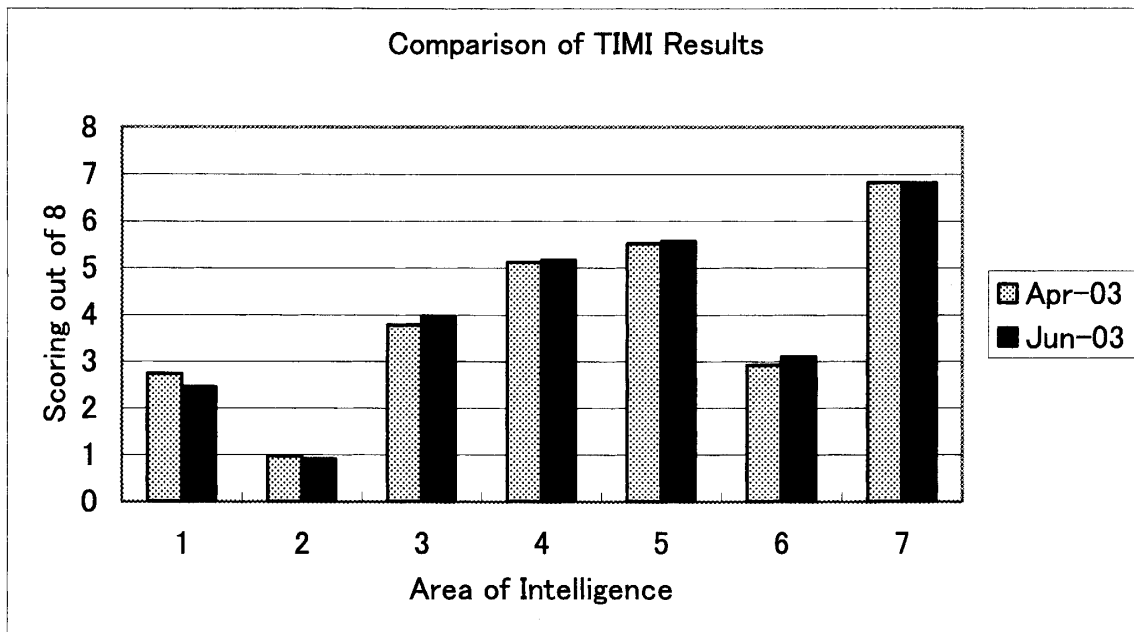|	linguistic	log/ math	spatial	music	kines- thetic	intra- personal	inter- personal	
A	2.59	1.11	4.25	5.14	5.55	2.86	6.50	28
B	2.75	1.04	3.77	4.94	5.58	3.13	6.79	28
C	2.92	0.79	3.63	5.48	5.40	2.65	7.15	28
D	2.88	0.98	3.51	5.02	5.45	3.16	7.00	28
E	2.58	0.96	3.74	5.04	5.58	2.80	6.72	28
	2.74	0.98	3.78	5.12	5.51	2.92	6.83	28

Chart C shows the results from a retest given in June of 2003.

Chart C
Early Childhood Education Second Inventory in June, 2003

(242 students/first year)

	linguistic	log/ math	spatial	music	kines- thetic	intra- personal	inter- personal	
A	2.50	1.13	4.19	5.33	5.52	2.94	6.40	28
B	2.44	0.98	3.80	4.93	5.71	3.04	7.09	28
C	2.63	0.58	3.75	5.35	5.46	3.08	7.15	28
D	2.46	1.23	3.94	5.12	5.23	3.46	6.56	28
E	2.20	0.69	4.16	5.14	5.92	2.98	6.90	28
	2.45	0.92	3.97	5.17	5.57	3.10	6.82	28

Comparison of TIMI Results

Scoring out of 8

☒ Apr–03
■ Jun–03

Area of Intelligence

One can see that there were no significant changes between the results in Chart B and C.

Chart D

American Data on 18 year old Females-1995							
linguistic	log/math	spatial	music	kines-thetic	intra-personal	inter-personal	
3.28	2.26	4.22	3.95	4.95	3.79	5.48	28

* Data from Sue Teele

The Japanese subjects' top three choices seen in Chart B and C were the *interpersonal, kinesthetic* and *musical intelligences* and those dominances were chosen 17 out of 28 times or 61% of the time. The American top three choices were *interpersonal, kinesthetic* and *spatial intelligences* being chosen 14 out of 28 times or 50% of the time.

Even though America is a diverse nation and Japan is, for the most part a homogenous nation, it is interesting to see that the subjects in both countries chose *interpersonal* and *kinesthetic* as their first and second preferences. Japanese subjects chose either *interpersonal* or *kinesthetic* 12.24 out of 28 times or at a rate of 44% and the American subjects chose *interpersonal* or *kinesthetic* 10.43 out of 28 times or 37% of the time.

As seen in Chart C, the overall Japanese results in the seven intelligences ranged from a low of 0.92 to a high of 6.48 whereas the American data in Chart D shows a low of 2.26 to a high of 5.28. In other words, the Japanese subjects had more extremes in preferences whereas the American subjects had fewer extremes.

A Comparison of American and Japanese 18 year olds

Scoring of of 8

	1	2	3	4	5	6	7
—◆— American	3.28	2.26	4.22	3.95	4.95	3.79	5.48
—▦— Japanese	2.45	0.92	3.97	5.17	5.57	3.1	6.82

Dominant Intelligence

—◆— American —▦— Japanese
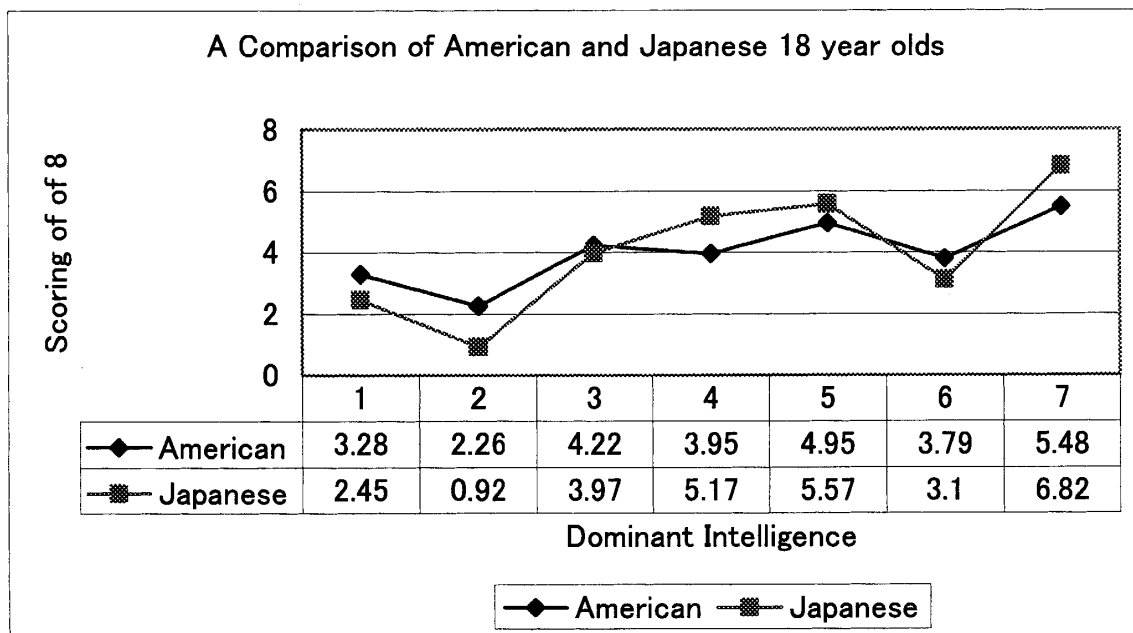
The Application of the Results

The data showed the emergence of an "Early Childhood Education Learning Style Character" and it supported the concept of using the *musical intelligence, kinetic intelligence* and *interpersonal intelligence* in the author's classes. Subsequently, lesson plans were created to draw on the preferences of the students. In addition, linguistic and logical-mathematical information was kept to a minimum as the data showed that the students didn't prefer that kind of teaching. This was accomplished by reducing the teacher talking time and cutting out explanations. This allowed time for the students to discover facts by themselves, rather than have knowledge presented in a neat package by the author. The low scores in the two areas of linguistic and logical-mathematical should not be interpreted to mean that the students were lacking in linguistic and logical-mathematical skills. These low scores just meant that these intelligences were the less popular intelligences. The subjects truly wanted to explore for themselves and discover facts on their own. Going back to the pitching metaphor, it simply meant that the students would just prefer to receive musical, kinesthetic and interpersonal "pitches".

The author was also able to keep a look out for students who fell outside this afore-mentioned Early Childhood Education Learning Style Character type. For example, the author found three students that had scored unusually high in the linguistic dominance (5 or

6 out of 8). The author intentionally seated these three together just as the other students were seated with other members of the same intelligence. Japanese college students are often assigned seats in alphabetical order but the author seated all the students with others who had the same learning style preferences. During one musical, kinesthetic, interpersonal oriented activity that involved each student bouncing a tennis ball to feel the stress of words, these three linguistic oriented students drifted off into their own learning style, opening up a dictionary, as they preferred to learn about word stress in that way instead. Though 47 students were bouncing tennis balls and three were referring to dictionaries, all the students were on task and most of all, all were learning.

Possible uses of the TIMI

In addition to letting teachers know the learning preferences of their students, the TIMI could prove to be an interesting tool to screen candidates who aspire to enter the specialized schools.

Of interest, the author gave the inventory to a student who hadn't been doing well at the school and who wasn't able to finish the two-year course. She will need a third year to graduate and generally speaking, she seems to be marching to her own drummer. She scored 4 in the interpersonal intelligence, below the 6.83 class average, 4 in intrapersonal, above the class average of 2.92, and 3 in kinesthetic, below the class average of 5.51. Her peers scored on average 12.24 out of 28 in the two areas of kinetic and interpersonal yet she scored 7 out of 28 in these same two areas. She seems to fall outside of the Early Childhood Education Learning Style Character type that a lot of the students enrolled in the Early Childhood Education Course seem to naturally possess. The TIMI might help in the selection process of students entering a college programme.

Conclusion

The author sees this kind of an inventory as having widespread application within the Japanese school system. Teachers would be able to gain insight into the minds of their students even before the beginning of the academic year and adjust their classes accordingly. There is a language problem with a few of the drawings and probably an international version of the TIMI could be created where no English phrases are used and attention to

cultural aspects also considered. In addition, schools could use the TIMI in their screening process to gain insight into the minds of applicants.

A Note from the Author

Much credit needs to go towards Sue Teele and her work in the development of the TIMI. This inventory has really brought out the application of MI. Her future work is much anticipated.

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Appendix A The Seven Intelligences

1) Linguistic Intelligence
   - Has highly developed auditory skills
   - Enjoys reading
   - Likes to write
   - Can learn by listening
   - Possesses a good memory for names, dates, places

2) Logical-Mathematical Intelligence
   - Explores patterns, categories and relationships
   - Reasons in a logical pattern
   - Likes to problem solve and experiment
   - Can think sequentially

3) Spatial Intelligence
   - Thinks in images and pictures
   - Enjoys visually oriented activities
   - Designs, invents, and creates
   - Reads maps, charts, and diagrams

4) Musical Intelligence
   - Sensitive to sounds in the environment
   - Enjoys music
   - Responds to rhythm and melody in musical structure

5) Body-Kinesthetic Intelligence
   - Processes knowledge through bodily sensations

-Needs to move around physically

-Likes to touch and feel things

-Responds best to experimental, con-structivist learning

-Is able to use body in differentiated and skilled ways

6) Intrapersonal Intelligence

-Understands inner self

-Aware of strengths, weaknesses, and inner feelings

-Often is reflective and introspective

-Marches to own drummer

-Can be strong-willed and independent

7) Interpersonal Intelligence

-Understands and works with others

-Expresses empathy for feelings of others

-Responds to moods and temperaments of others

-Enjoys relating and participating with peo-ple

-May be able to effect transformation in patterns between individuals and groups

優勢的学習法調査の紹介

グエナ・ハンフリーズ

概　　要

「すべてのクラス、すべての生徒に対して効果的な教育法やカリキュラムなど存在しない」(ティール、1999年)

この論文は、日本の大学１年生を対象に行われた優勢的な学習法調査を紹介しています。多重知能 (MI) 理論に基づいたこの調査により、言語的、論理数学的、空間的、音楽的、身体運動的、内省的、対人的の７種類の典型的な学習法のうち、学生に多い学習法は音楽的、身体運動的、対人的であることが分かりました。また面白いのは、このデータによって学生がどのように学ばないことの方を好んだのかという点においても貴重な結果が得られたことです。内省と論理数学を好む人はほとんど見られませんでした。

教育の秘訣は生徒を尊重することにある。
ラルフ・ウォルドー・エマソン