

TEACHING BY DIFFERENTIATING INTELLIGENCE AND DIFFERENTIATING INSTRUCTIONS: Focus on students with the lower score of Multiple Intelligence

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ABSTRACT :

Etymologically, the word education is derived from educare (Latin) "bring up", which is related to educere "bring out", "bring forth what is within", "bring out potential" and desire, "to lead".

Teachers in educational institutions direct the education of students and might draw on many subjects, including reading, writing, mathematics, science and history. This process is sometimes called schooling when referring to the education of teaching only a certain subject, usually as professors at institutions of higher learning. Teachers need to understand a subject enough to convey its essence to students. While traditionally this has involved lecturing on the part of the teacher, new instructional strategies such as focus on the multiple intelligence of students make a student involve into the role of active learner, discovering the subject interestingly. Good teachers can translate information, good judgment, experience and wisdom into relevant knowledge that a student can understand, retain and pass to others if the teacher focuses on the intelligence levels of the student. Howard Gardner's theory of multiple intelligence advocates that each student has seven intelligences in varying proportions. In a classroom, we can identify the intelligence levels and design the teaching methods. This research paper explores the effect of focused teaching theoretical subjects to those students who have a low score in linguistic intelligence and quantitative subjects to those who are low on logical/mathematical intelligence

INTRODUCTION :

Education is a concept, referring to the process in which students can learn something:

- **Instruction** refers to the facilitating of learning toward identified objectives, delivered either by an instructor or other forms.
- **Teaching** refers to the actions of a real live instructor designed to impart learning to the student.
- **Learning** refers to learning with a view toward preparing learners with specific knowledge, skills, or abilities that can be applied immediately upon completion.

However, all the students do not show similar learning styles or interest in a subject since each student is unique in his/her intelligence. Gardner defines intelligence as "the capacity to solve problems or to fashion products that are valued in one or more cultural setting" (Gardner1989). Using biological as well as cultural research, he formulated a list of seven intelligences. This new outlook on intelligence differs greatly from the traditional view which usually recognizes only two intelligences, verbal and computational. The seven intelligences Gardner defines are:

Gardner argues that there is both a biological and cultural basis for the multiple intelligences. Neurobiological

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research indicates that learning is an outcome of the modifications in the synaptic connections between cells. Primary elements of different types of learning are found in particular areas of the brain where corresponding transformations have occurred. Thus, various types of learning results in synaptic connections in different areas of the brain.

LITERATURE SURVEY :

Accepting Gardner's Theory of Multiple Intelligences has several implications for teachers in terms of classroom instruction. The theory states that all seven intelligences are needed to productively function in society. Teachers, therefore, should think of all intelligences, as equally important. This is in great contrast to traditional education systems which typically place a strong emphasis on the development and use of verbal and mathematical intelligences. Thus, the Theory of Multiple Intelligences implies that educators should recognize and teach to a broader range of talents and skills . Multiple intelligences theory meets the various needs of all students in order stimulate and activate the latent abilities.

Everyone is born possessing the seven intelligences. Nevertheless, all students will come into the classroom with different sets of developed intelligences. This means that each child will have his own unique set of intellectual strengths and weaknesses. These sets determine how easy (or difficult) it is for a student to learn information when it is presented in a particular manner. This is commonly referred to as a learning style. Many learning styles can be found within one classroom. Therefore, it is impossible; as well as impractical, for a teacher to accommodate every lesson to all of the learning styles found within the classroom. Nevertheless the teacher can show students how to use their more developed intelligences to assist in the understanding of a subject which normally employs their weaker intelligences (Lazear, 1992). Multiple intelligence theory is providing education with a rationale for doing what we know is good for kids (Darren, 2002: 47)."

Another implication is that teachers should structure the presentation of material in a style which engages most or all of the intelligences. These students, who may not achieve in the traditional way, may become lost to both the school and the community at large (Cambell et al., 1999; Gardner, 1999). Tomlinson (2005), a leading expert in this field, defines differentiated instruction as a philosophy of teaching that is based on the premise that students learn best when their teachers accommodate the differences in their readiness levels, interests and learning profiles. A Chief objective of differentiated instruction is to take full advantage of every student's ability to learn (Tomlinson, 2001a, 2001c, 2004c, 2005).

OBJECTIVE OF RESEARCH :

Having understood that each student is differently intelligent , it becomes a magnanimous task to satisfy every student in the class. However, if the teacher could identify a group of student who are low on mathematical intelligence then the teacher can design the mathematical content delivery in a way so that these students can easily learn. The same holds good with students who have difficulty in articulating a language maybe because of low linguistic intelligence or non-conversant with the teaching medium. If a group having low mathematical intelligence can understand the subject, then the higher intelligence students will surely do. In this way, the whole spectrum of students can be covered to make learning an interesting experience. It has been a regular process of making teaching interesting by targeting the high score students. Researchers have opined that we should teach languages to linguistic intelligent students and teach mathematics to mathematical intelligent

students. If this happens, then the learning will be very interesting. However, in higher education, we cannot isolate a theory subject from a mathematical subject. The curriculum demands equal importance to both the types of subjects. Hence, we need to focus on the lower scores of multiple intelligence before we embark on the teaching mission.

METHODOLOGY :

To implement the differentiated instructions to differentiated intelligence, a sample of the MBA students was considered. This was a class of the first year and 58 students participated in this. The experimenter used a Before- After experimental analysis for the whole group. The group was first exposed to a conventional teaching method for eight hours. A test was conducted for 20 marks and the scores were tabulated. Next, the students were asked to undertake the Multiple intelligence test. The scores of the multiple intelligence test were tabulated and all the students who had a score of less than 15 in Linguistic intelligence and in mathematical intelligence were drawn.

The theoretical subjects were so designed for delivery that the students with lower linguistic intelligence understood every bit. This delivery method incorporated auditory, visual, kinesthetic modes of delivery while including bits of humor, anecdotes and multilingual explanations wherever necessary. The translation of English words or meaning of sentences reinforced the learning for the linguistically low score students. Similarly, the experimenter designed the teaching methodology of mathematical and quantitative subjects to target those students who were low on mathematical/logical intelligence. This method proved to be very successful as the post test scores were higher than the pre-test score.

RESULTS :

The experimental study, aimed at throwing light on the following hypothesis

H_N : There is no significant improvement in the performance of the students with respect to Non-Conventional Teaching Methodology (Multiple Intelligence) as compared to the Conventional Teaching Methodology

H_A : There is a significant improvement in the performance of the students with respect to Non-Conventional Teaching Methodology (Multiple Intelligence) as compared to the Conventional Teaching Methodology

Group Statistics

	Teaching Methodology	N	Mean	Std. Deviation	Std. Error Mean
Performance Score of the students	Conventional	116	10.53	2.11	.20
	Multiple Intelligence	116	16.90	1.66	.15

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Performance Score of the students	Equal variances assumed	7.878	.005	-25.545	230	.000	-6.37	.25	-6.86	-5.88
	Equal variances not assumed			-25.545	217.824	.000	-6.37	.25	-6.86	-5.88

Inference :

The above hypothesis is tested at 5% (0.05) level of significance with equal variances not assumed. Here we observe that the p-value (0.000 \approx 0.0001) is less than the level of significance (0.05), hence we can reject the null hypothesis (H_{02}) at 5% level of significance.

Conclusion :

There is a significant improvement in the performance of the students with respect to Non-Conventional Teaching Methodology (Multiple Intelligence) as compared to the Conventional Teaching Methodology. Since the average performance of the students with respect to Non-Conventional Teaching Methodology- Multiple Intelligence (16.90) which is greater than average performance of the students with respect to Conventional Teaching Methodology(10.53). Hence, it is advocated that e need to segregate the students as per their intelligence level in linguistic and mathematical domain. This will indicate the cluster type of students in the classroom. We a teacher can convincingly teach a student with lower mathematical intelligence, than the whole class stand to gain.

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ANNEXURE – A

Table : 1 Multiple Intelligence Test Score

Roll No	Code No	Multiple Intelligence Score							
		Linguistic	Logical	Interpersonal	Intrapersonal	Musical	Visual/Spatial	Naturalistic	Kinaesthetic
1	A1	13	22	21	22	15	22	19	18
2	A2	19	13	23	19	15	21	11	18
3	A3	17	11	19	15	18	22	16	19
4	A4	17	16	21	23	21	22	16	21
5	A5	19	14	22	17	21	13	19	18
6	A6	18	13	19	18	19	8	18	13
7	A7	17	20	21	23	22	19	19	22
8	A8	15	16	18	19	14	16	16	11
9	A9	16	17	17	25	17	18	18	22
10	A10	15	11	23	13	24	18	14	16
11	A11	20	16	17	23	21	19	15	18
12	A12	13	16	20	14	9	20	13	11
13	A13	18	20	22	22	19	19	18	21
14	A14	19	22	21	21	20	16	13	19
15	A15	21	17	20	14	17	22	16	18
16	A16	18	22	22	20	13	17	16	19
17	A17	10	17	19	21	16	16	16	17
18	A18	21	17	22	15	20	18	22	20
19	A19	11	16	21	18	18	19	11	18
20	A20	20	11	21	23	24	18	17	23
21	A21	17	20	17	14	18	19	14	11
22	A22	18	9	14	19	14	20	13	21
23	A23	20	17	25	24	23	23	17	22
24	A24	21	17	22	15	20	18	22	20
25	A25	11	18	18	22	20	17	10	18
26	A26	24	25	18	22	19	21	19	19
27	A27	9	15	16	20	13	22	5	16
28	A28	14	11	15	15	5	18	20	16
29	A29	23	20	25	24	24	21	21	19
30	A30	16	9	22	18	21	16	14	18

Multiple Intelligence Test Score

Roll No	Code No	Multiple Intelligence Score							
		Linguistic	Logical	Interpersonal	Intrapersonal	Musical	Visual/Spatial	Naturalistic	Kinaesthetic
31	A31	18	20	21	15	13	20	11	18
32	A32	22	16	18	23	23	15	22	23
33	A33	21	20	13	21	8	11	21	20
34	A34	20	17	11	20	18	25	16	22
35	A35	16	11	22	11	8	11	8	19
36	A36	17	19	18	19	18	20	17	18
37	A37	16	20	17	18	14	23	14	20
38	A38	10	16	13	22	10	18	15	15
39	A39	14	13	22	13	20	17	16	13
41	A40	14	15	20	19	19	21	16	17
42	A41	18	16	17	18	17	19	11	16
43	A42	15	11	18	22	10	17	19	20
44	A43	19	22	21	21	20	16	13	19
45	A44	11	23	22	25	16	21	15	20
46	A45	18	11	14	23	19	11	11	17
47	A46	13	22	21	22	15	22	19	18
48	A47	18	16	19	21	22	19	18	22
49	A48	22	21	25	24	21	22	23	21
50	A49	21	16	22	23	13	24	17	22
51	A50	19	14	22	17	21	13	19	18
52	A51	20	16	24	20	21	20	18	18
53	A52	13	11	25	14	22	16	10	18
55	A53	22	11	21	17	7	19	21	21
56	A54	11	25	15	24	16	22	12	23
57	A55	20	14	14	14	13	14	11	15
58	A56	11	15	15	15	19	11	14	17
59	A57	21	25	15	23	13	23	10	23
60	A58	17	19	21	17	23	17	19	20

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