On Teaching to Diversity: Investigating the Effectiveness of MI-Inspired Instruction in an EFL Context

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Abstract

This study reports an experiment conducted to investigate the effectiveness of implementing MI-inspired instruction in an EFL context. To this end, a group of ten intermediate female students took part in a quasi-experimental study. At the beginning of the experiment, Multiple Intelligences Survey (Armstrong, 1993) was administered to determine the participants' MI profiles. The participants were pre-tested using Oxford Placement Test (OPT) (Allen, 2004) to determine their level of proficiency. During the control phase, the participants received so-called 'MI-poor' instruction which mostly focused on verbal-linguistic type of intelligence among others. During the experimental phase, based on the initial MI survey and students' exit slips, a variety of activities were implemented to invoke various types of intelligence. At the end of both control and experimental phases, OPT along with Headway Stop & Check tests were administered. OPT was administered to determine the participants' general progress and Stop & Check tests were given to trace any possible specific progresses. The findings of the study revealed a significant performance on Stop & Check tests which was indicative of the *at least* partial effectiveness of implementing MI-inspired instruction.

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1. Introduction

Learner variables have increasingly been a major issue of interest for psychologists in general and language educators in particular. Due to the significance of learner characteristics, differentiated instruction has received an increasing attention in recent years. Gardner's (1983) Multiple Intelligences Theory (MIT) -- a major relevant theory which has seized many educators -- has recently been embraced by numerous theorists and applied by countless language instructors.

MIT has proved influential in the field of psychology and its paramount influence has been the focus of attention in language pedagogy in recent years. Gardner (2005) defined intelligence as "a biopsychological information-processing capacity" (6) which he considered to have both biological and cultural bases (Gardner, 1983). The idea that intelligence is a culture-dependent construct is indicative of the necessity of exploring MIT in a variety of situations including EFL context. Differentiating instruction is the pivotal implication of MIT. Viewed from MI lens, more students succeed as different pathways can be offered to them. This is a learner-based philosophy which could bring about far-reaching implications in the realm of education. In essence, MIT challenges the traditional notion of intelligence as a unitary concept and proposes the existence of at least eight intelligence types. Gardner (2003) enumerates these intelligences as verbal/linguistic, logical/mathematical, visual/spatial, bodily/ kinesthetic, musical/rhythmic, interpersonal, intrapersonal and naturalist. In fact, Gardner (1999) proposed several criteria to identify intelligence types. This reveals that the selection of intelligence types should not be arbitrary. Gardner examined Spiritual Intelligence as a candidate, but he ended up rejecting it as being short of the proposed criteria. Existential Intelligence is another possible candidate which does not seem to meet all the criteria. Arnold and Fonseca (2004) also referred to so-called Existential Intelligence as "less amenable to development in the classroom" (131).

Various intelligence types reflect a pluralistic view towards learners' individual differences. Gardner (2005) argued that all people have these intelligences and it is what makes people human beings. Individuals – Gardner argues – do not have the same profile of intelligences. No particular intelligence type is considered to be superior to other types. However, all types of intelligences are needed when one is to function productively in society. A desired objective is to try to release and empower language learners to use various intelligences in their learning (Gen, 2000). MI theory helps us "to look at what these students could do well, instead of what they could not do" (Harburger, 2004). In fact, MIT can better serve the needs of various learners as it offers a model for relevant reforms in curriculum (Dryden & Morrone, 1999).

The theory of multiple intelligences, according to Gray and Viens (1994), has the potential to distinguish the ways students can solve problems. It can be used to identify strength and group students according to complementary intelligences.

In EFL contexts, novice teachers frequently complain about heterogeneous classes where instruction is found to be a demanding challenge. In fact, such heterogeneity might not be a matter of 'various capability levels' but 'varied capability types'. It seems that this so-called heterogeneity is most often misunderstood. The consequence of this misunderstanding can be disastrous. As a result, many students might lose their motivation as the instructor does not legitimize their different capability. Moreover, students might find their capabilities unattended and hence not do their best to reach their full potential.

In EFL classes in general and Iranian context in particular, various capabilities and preferences of learners are not usually taken into account. This is in part due to the misconceptions that since students are learning a foreign language together, they have much in common hence neglecting the learner characteristics. The homogeneity of teaching practices and classroom procedures currently in use is indicative of such a problem. The present study addresses this problem to investigate the significance of implementing MI-inspired instruction. It is to be examined if such a

problem can be solved by paying due attention to EFL learners' individual differences. Moreover, it has not been determined how this diversity relates to particular strengths of various EFL learners. Enhancing language instruction is a desired objective at which all educational attempts are duly directed. Having an understanding of various capabilities and individual preferences are in line with classroom activities and procedures seems to be a potential solution to such a noticeable problem.

Gardner (1993) argued that the various kinds of intelligences would call for different ways of teaching, rather than one particular way. This argument needs to be empirically investigated across a wide variety of contexts. The present study gains significance as it deals with this problem in an EFL context which might not reveal findings similar to those pieces of research conducted in other contexts. Now it seems plausible to give further credit to the role of context as it is considered to be a determining factor in language pedagogy. The implications drawn from the implementation of MI are claimed to be far-reaching and profound (Dryden & Morrone, 1999). Diversifying teaching practices to accommodate various intelligences is an option in need of empirical investigation. There is now a paucity of research on how to implement MI theory into practice and how to cater for its potential role. The applicability and effectiveness of MI theory in an EFL context is interestingly a very appealing issue worthy of further exploration. From a theoretical point of view, the effectiveness of MIT can be examined through such explorations. Currently, our understanding of diverse intelligence types is imprecise and not well-grounded. From a practical point of view, deeper insights will be gained concerning the relationships among EFL learners' preferences and capabilities and EFL classroom procedures. When it comes to classroom, the point is "how the intelligences can best be mobilized to achieve specific pedagogical goals" (Gardner, 2003: 11). Gardner's question is in fact very significant and a well-grounded answer to it is in effect an answer to a multitude of unsettled issues and controversies in the area of language teaching and learning.

2. Literature Review

In what follows, a number of major studies relevant to the present study are outlined.

Walters (1992) argues that if the purpose of education is to prepare students to face the challenges they might face after graduation, constant challenges are to be posed to force students to invoke various intelligences. He further states that to be compatible with the very nature of MIT, more authentic and performance-oriented procedures are needed. Veenema, Hetland and Chalfen (1997) also referred to the Spectrum Approach based on a nine-year research which aimed at recognizing different students' abilities. One of the advantages of MI-inspired instruction –in their opinion is that the line between curriculum and assessment is blurred. Also, the materials used by the teacher are 'intelligence-fair'. Meaningful and real-world activities are used for the assessment procedures. Dryden and Morrone (1999) also highlighted the significance of MI as it makes learning meaningful for learners. MIT gives credit to the role of personal experience and discovery-oriented learning. It has the potential to help learners attain full possession of their capabilities and powers. MI is in fact an effort to realize how culture and various disciplines are able to shape human potential (Osciak & Milheim, 2001). Mbuva (2003) also suggested that MIT is an effective teaching and learning tool at all levels. He argued that "traditional ways of understanding pedagogy, and static methods of teaching, are giving way to the new classroom examination and application of the MI" (p. 1). Arnold and Fonseca (2004) also argued in favor of the application of MIT to EFL contexts. They asserted that neuroscience confirms the need for a holistic view of the language classroom based on which both the physical and affective dimensions of learners are to be taken into account if their cognitive side is to have optimal function.

There are several survey studies, two of which are summarized here. In a study by Loori (2005), the differences in intelligence preferences of ninety international ESL male and female students were examined. The results showed significant differences between males' and females' preferences of intelligences. It was found that "males preferred learning activities involving

logical and mathematical intelligences, whereas females preferred learning activities involving intrapersonal intelligence" (p. 77). In another study by Sadighi and Tahriri (2007), somewhat different findings were found. The participants of the study were a group of junior EFL students. The findings showed that male and female participants were different with respect to their intelligence types. Whereas females were found to be mainly 'naturalistic' and 'intrapersonal', the males were found to be 'naturalistic' and 'linguistic'. However, females were found to be more naturalistic compared to male participants. One part of this study was in line with the results reported by Loori (2005) as females were found to be of intrapersonal intelligence.

Numerous experimental studies have been carried out which have addressed the implementation of MIT. For example, Hoerr (1994) describes a successful application of MIT. A discussion of the nature of intelligence in this study resulted in a revised educational curriculum and varied instructional techniques. Furthermore, the application led to "alternative assessment (using a combination of portfolios, progress reports, profiles, demonstrations of understanding, and standardized tests), improved professional development for teachers, and new ways to communicate with parents" (Abstract section). In an MA thesis, Elliott and Gintzler (1999) implemented and evaluated a personal approach to MI instruction. They developed thematic lessons which strengthened various intelligence types of the participants. Planning webs and monthly themes incorporating a multitude of MI products were constructed along with informal journals. Observations, survey checklists, product choices and student reactions were utilized to document MI instruction. It was reaffirmed what strategies are utilized, how information is presented and how they affect student learning. It was demonstrated that a teacher's instructional method can affect students' strengths and weaknesses. In another study, Hall Haley (2001) aimed at identifying, documenting and promoting applications of MIT in language classes. The results of the study indicated that MI-inspired approaches had a profound impact on language teachers. A more learner-centered classroom was the outcome which made the teachers enthusiastic about their

pedagogy. Students were also found to have keen interest in the concepts of MIT and their reaction was positive. In a second action research, Hall Haley (2004) investigated learner-centered instruction from the MI perspective. Results of the study showed that upon the implementation of MIT, students achieved greater success rates. Osciak and Milheim (2001) also focused on MI strategies which could be implemented with web-based instruction. They stated that "utilizing the principles of Multiple Intelligences theory and the dynamics of the Internet allow instructional designers to develop learning experiences that are diversified, exploratory, guided, and soundly constructed" (p. 358). They also argued that web-based instruction is a very flexible type of instruction on the basis of which all intelligences could be represented and cultivated irrespective of the student's physical location. In a study by Kallenbach and Viens (2002), data were gathered through on-site observations, qualitative interviews, and teacher journals. It was found that the application of MIT can lead to high levels of adult learners' engagement. In his PhD dissertation, Walker (2005) aimed at identifying "the causations of the girls' reticence to demonstrate verbalization skills that were commensurate with those of their male counterparts" (Abstract section) and developing a set of strategies to increase females' verbal participation. Observations were made and all the students were interviewed during the study. Little significant change was found in female students' emotional quotient. Tallies on the observational sheets revealed an increase in females' verbal participation. However, "the females' frequencies of self-initiated speaking and responses to higher-level inquiries did not increase to the levels projected by the writer" (Abstract section).

To sum up, literature on multiple intelligences reveals the significance of a multidimensional style of education and pinpoints a number of ever-neglected key considerations in the area of language teaching. As Hall Haley (2004) rightly points out, a review of the literature indicates the paucity of research concerning practical applications of MIT in EFL and ESL contexts.

2.1 Research Questions

The study sought to answer the following questions:

1. What intelligence types are more salient in EFL learners?

2. What is the relationship between EFL learners' intelligences and their preferences and capabilities?

3. Does MI-based instruction enhance EFL learners' language learning compared to the type of language instruction in which a minimum number of intelligence types are activated?

3. Methodology

This section introduces the participants, the instruments, data collection and data analysis procedures.

3.1 Participants

An intermediate EFL class was randomly selected from Allameh Tabatabae Language Center in Rasht, Iran. The participants consisted of ten female language learners who were attending an intensive course over a two-month period during the summer in 2008.

The age of the participants averaged 19.1. The textbook used was New Headway English Course (Soars & Soars, 1996). The textbook was divided into four equal parts, hence resulting in four successive levels, i.e. (I1, I2, I3 & I4) each of which consisted of four units. The first level investigated in the present study was I3 to be followed by I4 in the second half of the term. Repeated measures design was utilized to cancel out the potential factors such as personality, cognitive and affective factors which might affect the findings of the study. To this end, the female participants served as control group in I3 level and as experimental in I4 level.

3.2 Instruments

In order to identify the characteristics of the participants of the study, Multiple Intelligences Survey (Armstrong, 1993) was utilized to collect information about the intelligence profiles of the participants. The checklist consists of eight sections representing the eight types of intelligence based on Gardner's classification. The Persian translation of the checklist was

administered at the beginning of the experiment. The reliability of the translation was checked through back translation by two university instructors.

To pre-test the participants, Oxford Placement Test (Allan, 2004) was utilized. The test consists of two parallel versions. The OPT is an objective test which consists of 200 items on listening, reading, grammar and vocabulary. The first section is a test of listening skills. The performance on this test is based on applying knowledge of sound and writing systems at a speed well within the native speakers' competence. The second section tests grammar, vocabulary and reading skills together in contextualized items. Item reliability across various test populations was found to be high. The facility values and discrimination indices have been already checked to provide meaningful discrimination at various levels as identified by the Common European Framework. In 2003 and 2004, further tests were carried out to establish inter-test reliability and concurrent validity of the OPT with ESOL examinations (Allan, 2004).

Voice recording was also utilized to record EFL learners' class performance to see which intelligences are paid attention to and which ones are not based on the classroom activities and teaching procedure. Any success and progress were noted and the general trend was identified through keeping daily logs. Some data were collected through student exit comments to get appropriate feedback with respect to the students' attitudes concerning classroom procedures.

3.3 Data collection and data analysis

To teach from an MI perspective, the procedure presented by Agostini (1997, cited in Larsen-Freeman, 2000) was utilized. To this end, lessons were planned so that various intelligence types were represented in the experimental class. A variety of activities were developed some of which were based on the textbook and some were innovative in nature. Wherever it was possible to modify the activities to invoke various intelligence types, it was prioritized. Otherwise, more relevant activities were implemented. Following this procedure, in each session a number of intelligence types

were activated based on the initial survey. The sample activities used with the experimental group are based on activities which are commonly associated with each intelligence type.

To begin the MI study, the project was explained to the participants in the study in order to guarantee their cooperation. The MI survey was administered so that the intelligence profiles of the participants could be prepared. OPT 2 (Allan, 2004) was also administered to determine the proficiency level of the participants. As the control group of the study during their I3 level, the participants received more traditional teacher-centered instruction. Standard classroom procedures were maintained. The teacher had control over the presentation of the materials and exercises that had to be done in class. Consequently, as the textbook called for, verbal/linguistic intelligence was the focus of instruction. No other intelligence types were activated. As the experimental group of the study, the students received instruction that incorporated the elements of MIT (MI-based instruction) during the I4 level. A wide variety of MI-based activities was utilized in the experiment (see Table 1 as an example).

Table 1: Intelligence types along with relevant activities (Unit 10)

Session	Intelligence Types	Relevant Activities
1	• Logical-Mathematical • Logical-Mathematical • Logical-Mathematical • Interpersonal • Logical-Mathematical	• Grammar tests • Making guesses • Grammar Practice • Pair work (Short dialogues) • Discussing grammar (Giving reasons)
2	• Visual-Spatial/Intrapersonal • Logical-Mathematical • Logical-Mathematical • Visual-Spatial • Logical-Mathematical	• Making a chart (Ss' life events) • Making guesses • Grammar Practice • Itinerary (a tour guide) • Discussing grammar
3	• Intrapersonal/Interpersonal • Visual-Spatial/Logical-Math. • Visual-Spatial/Logical-Math.	• Risky activities (An opinion survey) • Guessing (based on man's pictures) • Guessing (Bizarre packet of cigarette)

Session	Intelligence Types	Relevant Activities
4	• Logical-Mathematical • Interpersonal/Bodily-Kines. • Verbal-Ling./Interpersonal • Logical-Mathematical	• Language Work • Role-play (Help your friend quit smoking) • Group discussion (smoking & smokers) • Matching compound nouns
5	• Visual/spatial • Verbal-Ling./Intrapersonal • Intrapersonal/Naturalist • Logical-Math./Interpersonal • Logical-Mathematical	• Making compound nouns by matching • Personal collections • Bringing collections to class • Guessing games (twenty questions) • Writing letters
6	• Intrapersonal/Logical/Math. • Bodily-Kines./Inter. • Logical-Mathematical	• Spending free time (personal writing) • Role-Play (Making complaint) • WORKBOOK

The students were asked to give their exit comments at the end of every other session. Voice-recording was also utilized to ensure the accuracy of the collected data. At the end of the experiment, post-tests (*OPT & Stop and Check Tests*) were administered to compare the progress of the participants and compare the performance of the members of control and experimental groups. The collected data were analyzed quantitatively and qualitatively. Data were examined by taking students' class performance and the surveys conducted. The daily logs were used to record brief descriptions and the frequency of the implementation of MI-inspired activities in the sample classes. The participant students completed exit comments in which they described their individual reactions to the MI activities and procedures. Data obtained from classroom observations, MI surveys, daily logs and students' exit comments were scrutinized.

4. Findings and Results

In this section, the findings of the study are presented. Then the relevant conclusions will be elucidated.

The experiment began with administering the Persian translation of the Multiple Intelligences Survey (Armstrong, 1993). To come up with a more

comprehensive profile of the strengths of the participants of the study, the dominant intelligence of each participant was determined and the type close to the dominant one was also specified. Table 2 summarizes the intelligence profile of the participants of the study as determined by the MI survey.

Table 2: Intelligence types of participants

Student \ Type	Dominant Intelligence Type(s)	Secondary Type(s)
1.	Interpersonal	Bodily-Kinesthetic
2.	Logical-Mathematical, Visual/Spatial & Musical-Rhythmic	-------------
3.	Logical-Mathematical	-------------
4.	Logical-Mathematical & Interpersonal	Bodily-Kinesthetic
5.	Logical-Mathematical & Naturalist	Interpersonal
6.	Logical-Mathematical	Intrapersonal
7.	Logical-Mathematical	Bodily-Kinesthetic
8.	Interpersonal & Naturalist	-------------
9.	Interpersonal	-------------
10.	Bodily-Kinesthetic	Visual-Special & Logical-Mathematical

Table 3 shows the frequency of primary and secondary intelligence types of the participants of the study in descending order. As some students showed more than one dominant intelligence type, the number of the intelligence types in the table is more than the number of the participants.

Table 3: Frequency of intelligence types

Primary Types	Secondary Types
Logical-Mathematical (6)	Bodily-Kinesthetic (3)
Interpersonal (3)	Logical-Mathematical (1)
Naturalist (2)	Interpersonal (1)
Body-kinesthetic (1)	Visual-Special (1)
Musical-Rhythmic (1)	Intrapersonal (1)
Visual/Spatial (1)	-----

The above table includes the answer to our first research question concerning the salient intelligence types in our participants. As can be seen,

logical-mathematical, interpersonal, bodily-kinesthetic and naturalist were the most frequent types respectively. The initial survey helped the researcher direct classroom activities towards most frequent types in the experimental phase of the study.

At the beginning of the experiment, the participants were pre-tested to determine their level of proficiency. To do so, Oxford Placement Test 2 (Allan, 2004) was utilized. The following table shows the results of the pre-test administered at the beginning of Intermediate 3 (I3).

Table 4: I3 pretest and post-test results

	N	Minimum	Maximum	Mean	Std. Deviation
Pretest	10	124.00	142.00	132.9000	5.83952
Post-test	10	118.00	149.00	134.2000	9.93087

Based on OPT language level, those who scored 120-134 were considered as lower intermediate and those who scored 135-149 were rated as upper-intermediate. As Table 4 reveals, the participants were between lower and upper intermediate levels.

For the control group, an attempt was made to restrict the range of the activities to those in the textbook which in particular were verbal-linguistic in nature. In case the activities given in the textbook could possibly address various intelligence types, they were either not covered or modified deliberately to limit the number of intelligence types invoked. Based on the profile of the participants, a plan was devised to address various intelligence types through the experimental phase. Based on students' exit comments, the activities were refined to better meet and serve the specific needs and preferences of the students. In addition, when an activity was implemented, it was tried to direct the activity towards a number of intelligence types to enrich the class with an atmosphere of diversity.

Based on classroom observations, MI surveys, daily logs, students' exit comments and oral interviews, the data were compiled. The collected data were analyzed qualitatively to identify effective teaching activities. This was checked against the students' preferences and feedback. All in all, the

intelligence types and preferred activities were identified so that the classroom activities would be geared to them. A summary of the findings is presented in Table 5 which, in effect, presents the answer to our second research question concerning the relationship between intelligence types and learner preferences. In order to observe the anonymity principle, the students are identified by either their initials or the letters of the alphabet.

Table 5: Intelligence types and learner preferences

S	Intelligence type	Preferred activity
E	Interpersonal *Bodily-Kinesthetic	hand-on, pair-work and problem-solving
F	Logical-Mathematical, Visual/Spatial & Musical-Rhythmic	logical type, classification and categorization, working with charts and making inferences
G	Logical-Mathematical	logic-based exercises and puzzles
Ma	Logical-Mathematical & Interpersonal *Bodily-Kinesthetic	interaction-based activities, mathematical types of exercises, and speaking and guessing games
M.N	Logical-Mathematical & Naturalist *Interpersonal	text-based activities, more formal exercises, vocabulary items and making inferences
M.S	Logical-Mathematical *Intrapersonal	text-based activities, speaking, preview, and idioms
Mo	Logical-Mathematical *Bodily-Kinesthetic	making inferences and categorization
S	Interpersonal & Naturalist	interaction-based activities, speaking and guessing
T	Interpersonal	role-plays and simulations
Y	Bodily-Kinesthetic *Visual-Special & Logical-Mathematical	Speaking and conversational activities, grammar-based exercises.

S = student   * = Secondary intelligence type

To answer the third research question, Wilcoxon Signed Ranks Test was run. The first comparison was done between the I3 pretest and post-test results, which indicated that there was no statistically significant difference in this respect (Table 6). Furthermore, at the end of both control and experimental phases, Oxford Placement Test (Versions 1 & 2) was

administered to check students' progress. Another Wilcoxon test was run to see the difference. The results, as shown in Table 6, revealed no statistically significant difference.

Table 6: Wilcoxon Signed Ranks Test on I3 pretest/post-test and I4/I3 post-test

		N	Mean Rank	Sum of Ranks	Z	Sig.
I3post-test - I3pretest	Negative Ranks	5	4.10	20.50	-.716	.474
	Positive Ranks	5	6.90	34.50		
	Ties	0				
	Total	10				
I4post-test - I3post-test	Negative Ranks	3	3.17	9.50	-1.543	.123
	Positive Ranks	6	5.92	35.50		
	Ties	1				
	Total	10				

In order to trace the specific progress the participants of the study might have made, two content-valid post-tests were also administered at the end of both control and experimental phases. The tests were taken from *New Headway Intermediate* practice tests. The I3 post-test consisted of the following items: General revision, present perfect: active & passive, conditionals and time clauses, vocabulary and translation. The I4 post-test consisted of general revision, indirect questions, reported statements and questions, reported commands, vocabulary and translation. Each test was scored out of one-hundred. The post-tests referred to as *Stop & Check (3& 4)* were based on the units seven to nine and ten to twelve of the textbook respectively. They were concerned with the specific objectives covered during the experimental and control phases of the study. Table 7 shows the comparison between the two groups.

Table 7: Wilcoxon test on I3 and I4 post-test (*Stop & Check*)

		N	Mean Rank	Sum of Ranks	Z	Sig.
I3post-test - I4post-test	Negative Ranks	9	5.33	48.00	-2.092	.036
	Positive Ranks	1	7.00	7.00		
	Ties	0				
	Total	10				

As the above table shows, the difference is significant at the 0.05 level (2-tailed). This finding shows the significant effect of the treatment. Analyzing the class performance of the participants revealed that the initial surveys were almost truly indicative of their intelligence profiles. In most cases where the present researcher implemented activities in line with the MI profile of the participants, their affective and cognitive reactions were almost salient. From an affective perspective, they expressed more willingness and ease as this was reflected in their exit comments. When a different and contrasting activity was practiced, they explicitly voiced that they were bored and this was reflected in their class performance. From a cognitive perspective, when MI-informed activities were put into practice, the participants had improved performance which could be noticeably recognized in their class performance.

5. Conclusions

As the findings of the study reveal, the difference between the performances of the participants on I3 pretest and posttest was not found to be statistically significant. In other words, the treatment offered during the control phase was not effective. Concerning the performance of the participants after the experimental phase, their scores were found to be higher after the treatment. Based on the performance of the participants on *Stop & Check* tests, a significant progress could be observed among the participants. This is indicative of *at least* partial effectiveness of implementing MI-inspired instruction in an EFL context.

This study looks forward. It does not just answer some research questions, but it suggests questions to be pursued in future. It hopefully

invites instructors to get closer and address MI in their classrooms in order to enrich their classes with diversity and hence empower language learners. The MIT in fact gives us a more egalitarian perspective towards giftedness. This is a revolutionary idea which has outstanding pedagogical implications.

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