Revisiting Multiple Intelligence Theory to Boost Writing Performance

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Abstract

This experimental study aimed to investigate the effect of Multiple Intelligence Theory on EFL learners' writing performance. The issue of stimulating learners to become better writers was addressed through using a selection of activities prepared to trigger the multiple intelligences defined by the founder of Multiple Intelligence theory, Howard Gardner. In the study, both experimental and control groups analyzed the same materials. The course of treatment for the experimental group was outlined through inclusion of multiple intelligences activities during 'while-stage' of writing. In the control group, on the other hand, there was not any intervention in the planned flow. The results of the study yielded that the learners whose multiple intelligences were activated during implementation displayed better performance in writing. The findings are discussed in line with the current status and several implications are provided for utilizing the multiple intelligences in ELT.

APA Citation

Doğan, C. (2019). Revisiting Multiple Intelligence Theory to Boost Writing Performance. *The Literacy Trek, 5*(2), 47-67.

Introduction

The decline of methods brought about the idea that rather than pursuing a prescribed set of techniques put forward by a teaching method, an eclectic perspective should be adopted to teach the language to be able to communicate successfully (Kumaravadivelu, 2001, 2006). Another shift which caused breaking from the old practice of thinking in set rules assuming intelligence as a fixed biological concept was replaced by new approaches towards the concept of intelligence. In the 1980s, Multiple

Intelligences Theory, proposed by Gardner challenged the mainstream perspective towards intelligence. He claimed that human beings are a composite body of different types of intelligences that one or more of them can be dominant over others. Although the intelligences he proposed were categorized as abilities up to that time, he preferred to view 'a pluralistic view of mind' (Gardner, 1993a, p. 6) and reinforced a cross-cultural look into human cognition by highlighting that intelligences are influenced by the cultural practices of a society. In a similar vein, Armstrong (1987) put emphasis on a variety of strengths and weaknesses in intelligences and praised individual learning styles. The intelligence types proposed by Gardner were entitled as: Linguistic Intelligence (capacity to use language orally or written to express complex meanings); Logical-Mathematical Intelligence (capacity to quantify and do mathematical operations); Visual-Spatial Intelligence (capacity to think in three-dimensions and recreate, transform images); Bodily-Kinesthetic Intelligence (using body to express ideas and feelings and produce through using body); Musical Intelligence (sensitivity to pitch, melody, rhythm and tone and the capacity to transform and express musical forms) Interpersonal Intelligence (capacity to comprehend others and manage interactions among people); Intrapersonal Intelligence (having an accurate perception of oneself and using such knowledge in designing one's life); Naturalist Intelligence (identifying, categorizing objects and comprehending natural and human-made systems in nature) (Abdul Razaki & Zaini, 2014; Alaee, 2015; Baleghizadeh & Shayeghi, 2014; Mckenzie, 2009; Panahandeh, et al., 2015; Sadıq, 2019).

The theory propounds the idea that people's cognition, emotions, social and physical lives may be subject to change when they are provided with the opportunities to learn through their strengths. This made the theory put into practice in multidisciplinary educational programs. Regarding English Language Teaching, the theory has been utilized in teaching four skills: listening, speaking, reading and writing (Davoudi & Chavosh, 2016; Kemala, 2018; Lunenburg & Lunenburg, 2014; Yeh, 2014). In this study writing was selected as the core skill and learner academic performance in writing paragraphs is analyzed in a higher education context.

Literature Review

On the Definitions of Intelligence

There have been controversial debates on the nature of intelligence which was defined as 'smartness', 'giftedness' or solely 'ability to carry on in daily life'. The word intelligence was revived by Herbert Spencer and Francis Galton in the mid-19th century as 'innate, general cognitive capacity': 'innate' carried the meaning inherited, and not acquired later in life by means of experience (Synderman, 1988, p.51). It is simply the skill to learn for teachers and administrators, the ability to adapt to environment according to biologists; the ability to generate solutions for psychologists and the ability to process information for computer scientists. In quest of finding a well framed answer to 'What is intelligence?' gained less popularity than classifying learners according to quantifiable assessment tools (Masoomeh & Mahdieh, 2014). A French psychologist, Alfred Binet (Gardner, 1999a) produced intelligence tests which became worldwide famous particularly in the USA. In the course of time, several standardized tests became routine tools for classifying learners to be assigned to certain programs in which it was assumed that their performance would reach the peak (Resnick, 1976). The IQ (Intelligence Quotient) Test has been agreed upon as the standard test to measure the degree of verbal and logical mathematical intelligence of an individual. It was a practical test but there was/is still little consensus on what was/is measured. Currently, the so-called generated tests do not yield results concerning individuals' productive skills or their ethics. Therefore, the idea of valuing/attaching much weight to individual competence originated from different perspectives on intelligence put forward by psychologists and educators of the modern world (Elnaz & Zargham, 2018; Kail & Pellegrina, 1985). Gardner proposed that intelligence could not be a subject to measurement as an absolute figure such as height, weight or blood pressure. He claims 'It's not how smart you are but how you are smart' and defines intelligence as 'an ability to solve a problem or fashion a product which is valued in one or more cultural settings." (Gardner, 1999a, p. 25).

Table 1 below is a summary of how the Multiple Intelligence Theory is different from the traditional understanding of intelligence.

Table 1. *Traditional versus Multiple Intelligence Theory View on Intelligence*

Traditional Intelligence	Multiple Intelligence Theory
Measurable by short-answer tests	Short answer tests are not favourable as they do not require deep understanding but favour rote memorization
e.g. Stanford-Binet Intelligence Quotient Wechsler Intelligence Scale for Children (WISCIV)	**PAM** (Performance Assessment in Math) and **PAL** (Performance Assessment in Language) tests produced to value process
People are born with a fixed amount of intelligence	People have all of the intelligences, but each person has a unique combination
Intelligence level remains same	They are improvable
Intelligence consists of logic & language	There are many more types of intelligence which reflect different ways of interacting with the world
Teachers teach the same material to everyone.	Teachers teach and assess differently providing space for individual intellectual strengths and weaknesses
Teachers teach a topic or "subject."	Teachers develop strategies allowing students to demonstrate multiple ways of understanding

The most significant criticism for the theory is naming the capacities as intelligences but not skills, learning styles or talents. Gardner provides some psychometric findings of people who had brain damage as a result of trauma to support the theory. They may exhibit separate strengths and deficits: a patient may have unimpaired speech but cannot find their way home which is put forward as a support of his notion of isolated intelligences governing language and spatial thinking. Besides, all intelligences have their distinctive background and end state performance. Whereas spoken language develops rapidly, little progress in higher mathematics can be observed without schooling. Gardner's research emphasizes that intelligence can be referred as solving daily life problems and generating new problems and making valuable contributions to the society.

Factors contributing to the development of intelligences are categorized as biological factors (25%) and social competence (75%) which includes motivation, health, social skills, quality of teaching, prior knowledge, family support, attitudes, beliefs and background (Borich, 2000). Biological factors are hereditary characteristics of individuals. Social competence embodies several factors which are

interrelated. To illustrate, a person who was brought up in a village will be advantageous in developing his/her naturalistic intelligence when compared to someone living in a city center. An individual's bodily kinesthetic intelligence may be obstructed by an unfortunate accident.

Multiple Intelligences in Language Education

Students vary in their inclinations; some may be more inclined to learn through listening and enjoy presentations and student discussions in small or large groups. Some may opt for learning through visual representation while others like hands-on experience. Therefore, teachers should provide a selection of options in their instructional menu to appeal learners' intelligences. The initial step may be exploring learner intelligence types through questionnaires. The results may be used in needs analysis and goal-setting process. Bearing in mind that 'not every aspect of multiple intelligences can be used with equal effectiveness for every pedagogical goal' on a given topic or skill teachers can brainstorm with learners a list of activities to practice (Gardner, 1999a, p.188). A choice of projects, such as descriptive writing, map drawing, illustration, a dialogue creation, making a timeline, song writing, and retelling can be offered which also fits well with project based learning (Kallenbach, 1999; Omari, Bataineh, & Smadi, 2015). Allowing learners to process and communicate what they have learned should be emphasized during all stages of instruction (Coustan & Rocka, 1999; Ekinci, 2014; Iyitoglu & Aydın, 2015; Koura & Al-hebaishi, 2014; Yanrong, 2019). In the book of 'Teaching and Learning Through Multiple Intelligences', (Campbell & Dickinson ,1996) there are a few instructional formats being used in the implementation of the theory. The 'Instructional Menus' below offer some ideas for expanding pedagogical repertoires which were used as a guiding list in the current study (Campbell & Dickinson, 1996, p. 265).

Instructional Multiple Intelligences Menus for Exploitation

•Linguistic Menu

Use storytelling to explain ___

Conduct a debate on ___

Conduct an interview of __ on __

Give a presentation on____

Use technology to write___

Invent slogans for___

Write a letter to ___ about___

•Logical-Mathematical Menu

Make up analogies to explain ___

Describe the patterns or symmetry in ___

Create story problems for ___

Use a Venn diagram to explain___

Design a code for___

Categorize facts about___

•Bodily-Kinesthetic Menu

Create a movement or sequence of movements to explain ___

Plan and attend field trips that will ___

Bring hands-on materials to demonstrate ___

Role play or simulate___

Design a product for___

•Visual Menu

Create a slide show, videotape, or photo album of ___

Illustrate, draw, paint, sketch, or sculpt ___

Create advertisements for___

Use overhead projector to teach___

Color code the process of___

•Musical Menu

Sing a rap or song that explains ___

Indicate the rhythmical patterns in ___

Explain how the music of a song is similar to ___

Make an instrument and use it to demonstrate ___

Present a short class musical on___

•Interpersonal Menu

Participate in a service project to ___

Practice giving and receiving feedback on ___

Use technology to interact with___

Act out diverse perspectives on___

Participate in a group to___

Collaboratively plan rules or procedures to___

Give and receive feedback on___

Address a local or global problem by___

•Intrapersonal Menu

Describe one of your personal values about ___

Write a journal entry on ___

Assess your own work in ___

Describe how you feel about___

Explain the reason to study on___

•Naturalist Menu

Create observation notebooks of ___

Draw or photograph natural objects ___

Collect and categorize data___

Keep a journal of observations about___

Specify the characteristics about___

As the theory appreciates individual differences, a holistic point of view to explore learners' intelligences gains importance. The more realistic expectations are set, the more successful outcomes are to be reached. Teaching all the content through eight modes of intelligences in one lesson is not likely, but selecting appropriate tools for activating intelligences is an achievable target. Sometimes teaming with a colleague can enhance the learning options if any of the intelligences is out of comfort zone for the teachers. (Campbell & Dickinson, 1996, p.267)

The objectives of a multiple intelligences lesson can be set by asking several lesson planning questions as in the following table (Saban, 2001, p. 66).

Table 2. *Lesson Planning Questions*

Intelligence	Planning Questions
Verbal-Linguistic	How can I make use of speech and written texts?
Logical-Mathematical	How can I integrate numbers, logic, categorizations and critical thinking into the lesson?
Visual-Spatial	How can I use visual materials, colors, pictures, figures, diagrams and mind maps or metaphors?
Musical	How can I use music, rhythm, melody and sounds in the environment to enhance student learning?
Bodily-Kinesthetic	How can I develop learning facilities that focus on body movements and skills?
Interpersonal	How can I help students share, work together and learn from each other's experiences?
Intrapersonal	What can I do to find options that activate individual emotions and memories?
Natural	How can I integrate the nature, environmental consciousness into the lesson?

After deciding on the objectives of the lesson, the guiding questions above were used to prepare appropriate stimulating activities during the study.

Multiple Intelligences in Writing Classes

'People learn to speak their first language at home without systematic instruction, but many of us had to be taught in school how to write the same language' As it can be deduced from the statement (Raimes, 1983, p. 4) that writing is not just a natural extension of learning to speak, read or listen a language, rather it requires a systematic process mostly via formal schooling. It needs competence in a variety of connected spheres (Biria & Boshrabadi, 2014; Satriani, Emilia & Gunawan, 2017). What the writers have to deal with while writing are grammar, syntax, content, writing process in stages, audience, mechanics, organization, word choice and purpose (Raimes, 1983, p. 6). Writing is a challenging process. In their study on writing pedagogy, Yeşilyurt and Kartal (2018) listed difficulties in writing from learners' perspectives and found that the literature covers negative transfer, cultural backgrounds, L2 writing anxiety, negative self-efficacy and inability to think critically which correlates with intelligence. Moreover, writing is directly related to verbal-linguistic intelligence and logical-mathematical intelligence which play a vital role in planning and organizing thoughts. Determining the logic of the story, ordering it in certain terms such as chronological or importance are one of the most necessary components of the process. Also, writing can be described as a social act as it is written to transmit ideas. Self-exploration and revealing personal experiences are reflected in written forms such as journals, diaries. They are powerful means of developing one's intrapersonal intelligence. Organizational outlining of the thoughts carries the intention of creating mental images on the readers' minds. This feature of writing process can be tapped through both logical-mathematical and visual-spatial intelligences.

This study aimed to bring strengths of the learners through multiple intelligences theory in writing courses and to find out whether writing instruction through stimulating activities result in a better academic performance compared to an instruction without making use of multiple intelligences stimulating activities. Hence, it seeks answers to the following research question:

Is there a significant influence on learners' writing performance through using activities stimulating multiple intelligences?

Method

Participants and Setting

This quantitative study was designed and applied within the limits of one segment of a reading and writing course entitled "Academic Reading and Writing" at a state university. The participants were 40 students all of which were in their freshman year at English Language Teaching Department of a state university in Turkey. The participants took two standardized exams (National University Entrance Exam and Proficiency Exam) before their freshman year. Their scores determine whether they need to take the preparatory classes for one year offered by the School of Foreign Languages. The undergraduate program of the English Language Teaching Department accepts the students after a placement test that validates them to be proficient in English. Therefore, the participants of the current study were acknowledged to be proficient in English albeit their label of non-native speakers. Accordingly, all the participants of the study were supposed to be almost at the same proficiency level. The number of participants in experimental and control groups was limited to 40 students (20 students for each group). The experimental group was exposed to a series of activities aiming to tap learners' multiple intelligences during the writing course. The instruction in both experimental and control groups lasted four weeks. The writing agenda was as the following:

- Reading and analysing sample paragraphs

- Identifying the parts of a paragraph

- Writing topic sentences

- Writing support sentences

- Writing conclusions

- Writing narrative, descriptive, comparison and contrast, and cause and effect paragraphs

- Summarizing.

Study design

Before the study, two classes were selected as the control and experimental group. 'During the study' stage constitutes the instructional processes. Commencing

with the analysis of the parts of a paragraph, both groups were presented with the same teaching material. In addition to the course book used, supplementary materials were distributed and PowerPoint Presentations (henceforth PPPs) were displayed in the experimental group during paragraph analysis. Afterwards, the groups began to analyze types of paragraphs. Nevertheless, the instructional style varied.

In the experimental group, the students' multiple intelligences were stimulated through activities while in the control group these activities were not utilized but the mainstream book activities were used. The students of the control group simply read the instructions completed the tasks provided and wrote their paragraphs individually as it was outlined in their course book. They began with the topic sentence, did several activities on improving given topic sentences, support sentences and writing conclusions. During the 3rd week, both groups started to analyze paragraphs. In the control group, the students were asked to analyze the parts of the paragraph and answer the questions about the organization individually. In the experimental group; however, this stage was devoted to activating students' intelligences in individual/pair and group activities. The last week of the instruction was paragraph writing for both groups.

In the final stage, the control group was assigned to write a paragraph on a free topic. In the experimental group, on the other hand, the same stages were followed through using activities designed to tap students' intelligences. To illustrate, during the reading text entitled as 'Body Languages of Turkish people and Americans', students were presented with a PPP on Turkish body language accompanied by acting them out and elaborated on the context they were used. Then, the students were provided with some popular illustrations of American body language one by one. In order to draw comparisons and contrast between two cultures, certain drama techniques were used to stimulate students' bodily – kinesthetic intelligence, visual- spatial intelligence, interpersonal intelligence, intrapersonal intelligence and verbal-linguistic intelligence (Doğan & Balbay, 2018). After that, students were asked to match the illustrations with the correct wording. In the following stage they were provided with comparison and contrast charts to fill aiming to tap students' intrapersonal and logical-mathematical intelligence. They were provided with sufficient writing time and at the end of the time limit were given a checklist to revise their drafts until they felt satisfied. The students

graded each other's work and gave oral feedback to their peers. Taking the peer checklist into consideration, the students made some changes on their paragraphs before submitting them. After peer editing session, students were assigned to watch a Turkish and an American film and bring some examples to present in the classroom. Finally, students were put into groups and asked to write the lyrics of a rap-song that includes examples from what they studied. They were free to use extra mimicry or gestures in their show. Paragraphs were collected and graded out of 100 using a holistic rubric adapted from Heaton (1990). Both pre-tests and post-tests were scored according to their content, organization, vocabulary, language use and mechanics. Three weeks later, the same procedure was repeated for the reliability of the scores.

Data Analysis

The Statistical Package for Social Sciences (SPSS) 22.0 was used for the quantitative analysis. The difference between control and experimental groups   in terms of their pre-test and post-test scores were calculated by using separate independent samples t-tests. The pre-test and post-test scores received from both groups are demonstrated, analyzed and interpreted.

Findings

Comparison of Pre-test Scores

A mean score was calculated for each groups' pre-test scores. The difference between the mean pre-test scores that were received from both control and experimental groups were compared by employing independent samples t-tests. Table 3 below compares the mean pre-test scores of the two groups.

Table. 3. *Independent Samples T-Test Results for Experimental and Control Group Mean Scores*

	Levene's test for equality of variances					t-test for equality of means			
	F	Sig.	t	df	Sig. (2-tailed)	Mean diff.	Std.Err. diff.	95% Con. Inter. Diff.	
								Lower	Upper
Equal variances assumed	.041	.842	.223	38	.825	1.0000	4.48316	8.07567	0.07567
Equal variances not assumed			.223	37.674	.825	1.0000	4.48316	8.07825	0.07825

The mean pre-test scores of the control group is 64, 25 out of 100; the mean pre-test scores of the experimental group is 65, 25. When these two scores are compared through an independent samples t-test as shown, the difference does not appear significant at a confidence level of .0.5. The mean scores of two groups are close revealing no significant difference between the pre-test scores of experimental and control groups. Therefore; the groups displayed a similar writing performance.

Comparison of Post-test Scores

After the instruction, the post-test scores of the two groups were compared. A mean score was calculated for each group's post-test scores. The difference between the mean post-test scores that were received from both control and experimental groups were compared by using independent samples t-tests as shown in Table 4.

Table 4. Independent Samples T-Test Results for Experimental and Control Group's Post-Test Mean Scores

	Levene's test for equality of variances					t-test for equality of means			
	F	Sig.	t	df	Sig. (2-tailed)	Mean diff.	Std.Err. diff.	95% Con. Inter. Diff.	
								Lower	Upper

	F	Sig.	t	df	Sig. (2-tailed)	Mean diff.	Std.Err. diff.	Lower	Upper
Equal variances assumed	.780	.383	3.250	38	.002	10.0000	3.07687	3.77121	6.22879
Equal variances not assumed			3.250	36.417	.002	10.0000	3.07687	3.76231	6.23769

The mean post-test scores of the control group is 72, 25 out of 100; the mean post-test scores of the experimental group is 82, 25 out of 100. When these two scores are compared, the difference appears to be significant at a confidence level of .05. That is to say, the significant difference in the mean post-test scores of the two groups reveals that stimulation of multiple intelligences in the experimental group contributed to their writing performance.

Comparison of Pre-test and Post-test Scores of the Experimental Group

The mean scores of pre-test and post-test of the experimental group were figured out. The difference between the mean pre-test scores and the mean post-test scores were compared by independent samples t-test. The mean pre-test scores is 65, 25 while the mean post-test scores is 82, 25 out of 100. It was seen that there is a considerable increase in the scores after the instruction as in Table 5 below.

Table 5. *Independent Samples T-Test Results for the Comparison of Experimental Group's Pre-Test and Post-Test Scores*

	Levene's test for equality of variances		t-test for equality of means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean diff.	Std.Err. diff.	95% Con. Inter. Diff.	
								Lower	Upper
Equal variances assumed	4.650	.037	-4.429	38	.000	-17.0000	3.83800	24.76963	-9.23037
Equal variances not assumed			-4.429	30.611	.000	-17.0000	3.83169	24.83169	-9.16831

Comparison of Pre-test and Post-test Scores of the Control Group

The mean score of pre-test and post-test of the control group were compared. The difference between the mean pre-test scores and the mean post-test scores were compared by independent samples t-test. The mean pre-test scores are   64, 25 while the mean post-test scores is 72, 25 out of 100. There was an increase; however, it was not as remarkable as the increase in the score of the experimental group.

Table 6. *Independent Samples T-Test Results for the Comparison of Control Group's Pre-Test and Post-Test Scores*

	Levene's test for equality of variances		t-test for equality of means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean diff.	Std.Err. diff.	95% Con. Inter. Diff.	
								Lower	Upper
Equal variances assumed	1.707	.199	-2.077	38	.045	-8.0000	3.85169	5.79734	-.20266
Equal variances not assumed			-2.077	36.109	.045	-8.0000	3.85169	5.81077	-.18923

The comparison of the mean scores of pre-tests of both experimental and control groups demonstrated that they had almost the same proficiency levels. The post-test paragraph scores calculated after the instruction showed significant differences. The students in the experimental group showed better performance than the students in the control group. Each paragraph was graded through the same criteria. The comparison of these scores reveals that students who studied comparison and contrast paragraph through multiple intelligences stimulating activities were more successful than those who studied paragraph writing without intervention. The results of the study indicated that utilizing activities to stimulate multiple intelligences has a positive effect on the students' paragraph writing performance.

Discussion and conclusion

The aim of the study was to see whether activities prepared considering individual competences incorporated into writing classes would foster students' writing. To fulfil this aim, two groups were selected which were similar regarding their English level. During instruction, the writing course book was the primary source. In the experimental group students' multiple intelligences were stimulated and student paragraphs were more successful in terms of organization, content, vocabulary, language use, mechanics and layout. Additionally, richness in vocabulary choice was observed.

It can be inferred that multiple intelligences approach provides space for individualized instruction. The study also reveals that tapping various intelligences of the students brings better performance in writing skills. Multiple intelligences should not only be used in writing classes but also in teaching listening and speaking, reading, vocabulary and grammar. The findings of the study are in line with Ahmadian and Hosseini (2012), Gunst (2004), Marefat (2007), Saeidi and Karvandi (2014). In their study, Sarıcaoglu & Arıkan (2009) concluded the positive effect of multiple intelligences on student writing. Naoe (2010) and Nolen's (2003) studies are supported with the findings of the current study. Their studies also yielded results on the positive effect of multiple intelligences activities in writing performance of students particularly accuracy in writing.

This study would have implications for further studies to be carried out to address the use of educational technology to tap students' intelligences and their effect in writing performance. Another implication would be developing methods of assessment and ways to include them in measurement and evaluation of writing instruction through multiple intelligences.

Concerning the limitations of the study, the number of participants constitutes the primary limitation. Data obtained from a larger group of students would yield more reliable results and make it possible to generalize the findings. The second limitation was the educational backgrounds of the groups. Having taken standardized exams, students were expected to have similar proficiency levels; however, there may be inequalities in their educational backgrounds concerning the courses they had in high school. The final limitation of the study was that the researcher was the scorer of both

the pre and post-tests. In order to avoid being subjective the paragraphs were scored twice. A one-month period intervened between each scoring session and some other instructors were asked to view the papers. Although it reduced the amount of subjectivity, it did not totally eliminate it. Finally, the results of a larger-scale study would yield more reliable results.

Notes on the contributors

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