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Multiple Intelligences: An instructional design model that affects English language learners' performance

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ABSTRACT: This research is an empirical study that focuses on the implementation of Gardner's Multiple Intelligences instructional design model as a variable that affects the students' learning process in an ESL context where English is used as a second foreign language. This study identifies, compares and contrasts the students' first three best intelligences in three different school subjects, namely Mathematics, Language Arts, and Social Studies, in such a way as to decide about the first three effective intelligences that teachers use in order to design their lessons and tap on their learners' needs by providing them with practical opportunities and helping them to develop their learning abilities. The analysis of the data that results from the collection methods is done in the light of the mixed methods research. Observation, survey, and interview are the first three best instruments which are adopted to help in the achievement of the objective of the study and get credible, valid, and trustworthy data. The investigation revolves around the idea of finding out the common intelligences among all the students and check how these intelligences are related to the nature of the school subjects. The most striking result about the intelligences used by the students in the subjects under study shows that they are closely related in terms of the nature of the subject itself. The common intelligences are the Verbal-linguistic, the Visual-spatial, and the Bodily-kinesthetic intelligences, which suggests the significant relationship existing between them and how it affects the English language learners' academic achievements.

KEYWORDS: Multiple Intelligences, instructional design model, ESL, English Language Learners, mixed method.

1 INTRODUCTION

The multiple intelligences model trespasses the concept of intelligence to a more broader sense. It helps educators consider their students strengths and weaknesses and see them from a different perspective, which makes them take appropriate and correct decisions concerning the learning process [1]. The fact of implementing this model to teach English as a foreign language or a second foreign language will surely enhance the students' learning and empower their achievement. It will provide teachers with a variety of teaching strategies through which the teaching materials can be used differently and effectively [2]. Constructors will not be urged to conduct their lessons in the same way and use the same tools and strategies every day.

Related to this issue, [3] reported that the use of the Multiple Intelligences (MI) theory would motivate teachers in order to develop their teaching methods especially that Howard Gardner's ideas are based on the fact that children possess different intelligences that can be used to enhance their learning and develop their achievements [4]. However, The MI theory appeared as an efficient and adequate alternative method that supports this tendency. This innovative and creative strategy determines the students' best intelligences and opens the floor in front of them in order to perform well in terms of achievement, learning goals, and thinking methods.

On the cognitive level, the MI theory is considered as a real challenge for the traditional ways of teaching in education and gives a new chance for educators to revisit their assumptions and perceptions vis-à-vis the use of the concept of intelligence and the way the human beings' abilities are measured. In fact, these ideas and others paved the way towards the exploration of these intelligences in the field of education. Therefore, the main purpose of this study is to shed some light on some of the best practices that will facilitate the use of the MI theory in an EFL/ESL context and discover to what extent these new methods

will be a successful guide for students and teachers, especially in terms of the identification of their top three intelligences in three different school subjects, namely Mathematics, Language Arts, and Social Studies. However, such operation requires some important procedures from the teacher's part in terms of instruction use such as the planning and designing of the lessons as well as the implementation of a variety of MI teaching and learning strategies, which requires the investment of lot of time and energy [1].

2 REVIEW OF LITERATURE

In this literature review, one's intention is to try to get all the necessary facts concerning the research question: How does the implementation of Howard Gardner's Multiple Intelligences [5] theory affects ESL students' achievement? This educational investigation is based on an interesting number of primary source articles that tackled the same topic but with different perspectives and from different corners. Most of these studies were conducted in different settings with different circumstances and tendencies all over the four corners of the world.

2.1 CHARACTERISTICS OF THE MI THEORY IN AN ESL SETTING

Beyond the three famous traditional ways of teaching which revolve around the visual, auditory, and kinesthetic learning styles, Howard Gardner's theory of MI comes to investigate and explore the multifaceted aspects of the human intelligences. In fact, Gardner stated that "it is misleading to think of humans as possessing but a single intellectual capacity, which almost always amounts to an amalgam of linguistic and logical mathematical skills" [6]. Hence, it is so obvious that this theory is very appealing and succeeded to attract the interests of the most pessimistic people in the field of education due to its outstanding perception of the student who is considered as a person with considerable innate potentials that should be explored, valued, understood, and reached. Accordingly, the understanding and identification of the students' abilities is going to help teachers make correct decisions about their intelligences in terms of use and exploitation.

However, [7] revealed in one of her studies in Lebanon how Howard Gardner proposed eight different intelligences between 1983 and 1999. These intelligences were introduced as follows:

1. Verbal/linguistic intelligence;
2. Logical/mathematical intelligence;
3. Musical intelligence;
4. Special intelligence;
5. Bodily-kinesthetic intelligence;
6. Interpersonal intelligence;
7. Intrapersonal intelligence;
8. and Naturalistic intelligence.

Therefore, Gardner proposed a wide definition of intelligence by looking at people's different daily basis activities and relating them to their backgrounds and beliefs [7]. Based on the MI strategies and ideas, [7] was able to examine the degree of success of the Lebanon preschoolers in the acquisition of vocabulary and recommends the adoptation of the MI theory as an efficient teaching and learning method in an ESL learning context.

In another similar study, [8] reported on the implementation of the MI as an instructional design model in teaching and learning and exposed the degree of its impact on the community of learners. This case study, which was conducted in a South African school, showed to what extent the adoption of this approach helped in the enhancement of the students' achievements in the classroom and the teachers' performances as well. The implementation process was not so easy because most of the teachers were not very familiar with the MI theory as a teaching and learning instructional model. They were in need of more time to discover it by taking continuous trainings before proceeding to its implementation in their schools and classrooms. Nevertheless, after a year of the adoption of the new teaching method, the researchers came to a result that shows that all the participants who were involved in this study were greatly satisfied with the interesting results obtained after the use of Gardner's MI theory.

In another different cultural context where English is taught in an Iranian EFL setting, [9] tried to proceed in their investigations about the relationship between EFL learners' MI grades of English and their use of different learning and teaching strategies in the classroom. Based on their findings, these researchers found that there is a relatively crucial relationship that is related to the use of this model even though they had clearly mentioned that the musical intelligence did not connect with any of the activities used in the classroom due to the students' cultural context. Once again, Gardner's MI theory proved to be

efficient and acceptable among students, parents, and teachers in a different setting with different tendencies, beliefs, cultures, backgrounds, and socio-economical status.

On the other hand, another study was conducted by [3] in South Korea. The main objective of this study is to discover to what extent the Korean young children are able to demonstrate the different traits and characteristics of intellectual strengths and weaknesses based on Project Spectrum. According to [3], the Project Spectrum itself is based on Howard Gardner's MI theory and Feldman's non-universal theory. The study that focused on sixteen children in a South Korean school, in Seoul, resulted in the fact that ten of these students showed that they have strong intelligences on at least one activity and only two of them were considered as having no strengths or weaknesses at all. Overall, the research embodied the idea that every child has strengths and weaknesses in an area and no strengths or weaknesses in other areas. Accordingly, through the use of the Project Spectrum, the study helped the researchers to put their hands on the children's strong and weak domains and make use of them in the process of learning. Actually, [3] emphasized the idea that this educational project "places children in 'several lines' according to each area of intelligence".

Not far away from South Korea, [10] focused on two concrete examples that showed to what extent the implementation of Gardner's MI theory has positively impacted teaching and learning in Australia. The first example talked about Cook Primary School in Canberra. In fact, this school was closed for 200 days due to the low enrollment. Thus, the second example stated a Catholic school in Cabramatta near Sydney. This school is called Sacred Heart. Most of its students came from low-income families. However, both schools were able to overcome their educational problems by adopting Gardner's MI model. Indeed, [10] reported that the teachers took the responsibility to enhance their students' intelligences by connecting them to the studied subjects. In fact, all the students were able to experience their top intelligences through the use of various classroom activities. Furthermore, the implementation of the theory was given more credibility, validity, and trustworthiness by the involvement of the parents who provided the teachers with all the necessary information concerning their children's background.

2.2 IMPLICATION OF THE MI THEORY

The fact of making use of the eight intelligences stated by Howard Gardner in an EFL/ESL classroom will increase students' participation in the process of learning and motivate them to focus on their strongest intelligences that they have already discovered and of which they are aware. Therefore, teachers should design their lesson plans in accordance with their students' different intelligences in order to revalue and appreciate the students' abilities in terms of productivity, creativity, and motivation. Indeed, such teaching procedures are going to put an end to the old and traditional measurements of intelligence used in the field of education. Related to this study, [11] stated that Howard Gardner has never denied the existence of a general intelligence due to the uniqueness of the learners in terms of social, cultural, and economic backgrounds. However, his emphasis is on the fact that each individual is able to learn and acquire knowledge. This acquisition takes place in different circumstances, settings, learning backgrounds and opportunities, and differs from one student to another in terms of their learning abilities.

However, children may be affected by their genetics or social situations, but not to the extent of building everyone's intelligence on these issues. It is apparent that one is able "to gain more knowledge and be more intelligent in different areas than our parents" [11]. Moreover, the learners will have the chance to learn and acquire knowledge in their own ways by using their best intelligences. In fact, the more they are aware of these intelligences the better their performance is developed and their degree of self-esteem grows. It is then very evident that the use of the MI theory in the classroom is an outlet for teachers who are overwhelmed by seeing their students struggling to overcome their weaknesses on a daily basis, especially while learning English in an EFL/ESL special setting. In fact, the implementation of the MI theory as an instructional framework that is based on the learners' top intelligences will encourage personal growth among them, respect their individual differences, and meet their educational needs.

Therefore, Gardner's MI theory is one of the most important educational approaches that dare to adopt the idea of involving the learners in a kind of cooperative and collaborative learning opportunities where every student will be able to develop his or her learning abilities to the fullest. In a critical study concerning this issue, which is related to students' assessment and how it is influenced by the MI theory, [12] focused on the critical role the teachers play in planning and designing instruction in order to assess their students' abilities, especially those related to the first seven intelligences that Howard Gardner exposed to the world at the beginning of the eighties of the last century. Overall, in their study, they criticized the way Howard Gardner presented these multiple intelligences. Nevertheless, because of the credibility of the findings of the study, these researchers ended up by "acknowledging that a student may be intelligent in ways other than the traditional conception of intelligence" [12].

In another different study, [13] introduced a research about the attitudes of parents, teachers and students in an American context where the transition from the traditional method of teaching to the implementation of the MI theory took place in a successful way. The research was conducted in a diverse school located in north central Indiana. The concentration was on a K-5 elementary school with 520 students. The researchers suggested that the fact of accepting the use of the MI theory has greatly influenced the students' learning. On the other hand, teachers and parents' attitudes changed positively towards this new tendency. As a result, "the MI theory has obvious educational implications, and several schools have restructured their curricula with its domains in mind" [13]. In addition, several strategies were used in this study to gather information. These strategies varied between observation, surveys, field notes, documentation, and interviews. What is amazing about these findings is that all the parents were fully satisfied and demonstrated a positive attitude towards the use of the MI theory in the classroom. Hence, they discovered that all their children were able to tap on at least one of the nontraditional intelligences as a strong point towards excellent academic achievements.

In an attempt to understand how teachers interpret MI theory, [14] tried to focus on this issue by studying three different scenarios in three different American schools that are concerned with the implementation of the MI theory. The researcher stated that teachers also differ from each other as multiple intelligences models. Indeed, every teacher tries to apply the theory according to his or her students' needs in terms of abilities, perceptions, circumstances, and attitudes. This application takes into consideration the appropriateness of the theory in serving the students, schools, parents, and community [14]. By being aware of their own best intelligences, the learners have the chance to choose the ways they prefer to use in order to learn in their own ways, especially while doing their homework or facing any problems outside or inside school. Accordingly, they may be asked by their teachers to go through all the eight intelligences, one at each time, and try to share their strengths and weaknesses with their classmates and families. Hence, the use of the eight intelligences in the same lesson proved to be inadequate and time consuming for both teachers and students [14].

However, the most appropriate teaching method is to focus on the students' best common intelligences and try to vary between them according to the nature of the school subjects or the topic the students are required to study and use a great variety of learning and teaching activities that will help them be easily engaged in the learning process. In fact, the MI theory does not precisely indicate the how and what of the learning [14]. It only helps teachers decide on which way they can rely in order to design their lesson plans and make them fit their students' learning needs and intelligences.

In an investigation to determine to what extent the MI theory affects the sixth grade students' achievement level on the particle model of matter, [15] conducted a research in four randomly selected Turkish elementary schools. The main purpose of the study was to determine the students' profiles and identify the degree of connectivity between their multiple intelligences' profiles and their achievement in this subject in school. It was also an attempt to explore the differences that these students may experience when they succeed to discover one or more of their own hidden intelligences as their strongest way of learning. Based on the statistical analysis of this study, [15] argued in favour of the incorporation and implementation of the MI theory in the Turkish educational system because it affects the students' achievement level on the particulate model of matter topic. On the other hand, the researcher suggests that teachers should take into consideration their students' intelligences while giving instruction in order to properly address their needs and provide them with various teaching and learning opportunities. Hence, the idea of redesigning and reconsidering the use of all the students' multiple intelligences in terms of instruction and directions is going to be reflected systematically on the students' practices and achievements [15].

2.3 ANALYSIS

However, all the studies addressed in the literature review show to what extent the implementation of Howard Gardner's MI theory in the classroom is of great importance in the field of education in terms of efficiency, equity, achievement, motivation, results, creativity, innovation, and students' engagement in the process of learning. Actually, with the adoption of the MI model as an instructional framework that identifies their best intelligences, students will be well oriented in terms of learning and achievement. In addition, the parents will be guided to their children's main interests in terms of education and tendencies and assume their responsibilities in motivating and encouraging them in order to perform well in their studies as well as in their daily basis activities. In fact, most of the studies, if not all, show how the individuals benefit from the impact of the MI theory in the process of learning and teaching [11].

Actually, whether in South Africa, Jordan, Iran, Lebanon, South Korea, Turkey, Australia, or the United States, all the researchers mentioned so far appreciated the implementation of Gardner's MI theory as an instructional device. Hence, it does not matter whether the context is an EFL/ESL setting or not. What matters most is that students are going to have an alternative way to solve their struggling at school. In fact, [16] stated that out of the seven ways of learning suggested by Howard Gardner in the 1980s, only two of them are the most often used at school: the Verbal/Linguistic intelligence and the Logical/Mathematical intelligence. Therefore, the fact of adding the other five intelligences to the teachers' agenda will

increase the chance of success among students and add some innovation and creativity to the teachers' activities and lessons in the classroom. It seems then that the most important role is assumed by the constructors who should take their full responsibility in adopting this instructional model and adapt it to fit their learners' top three intelligences and make use of them appropriately.

On the occasion of his receipt of an honorary degree in Spain, Gardner admitted that he is just a scholar and not a teacher and that the big responsibility concerning the implementation the MI model in the classroom is on the teachers' shoulders [17]. That's to say, the MI theory will not achieve its objective as an adequate model of teaching and learning without the full involvement of the teachers who will take hold of it, adapt it to their learners' needs, and test it as favourable or not.

Therefore, the popularity of Gardner's theory among teachers stems from the fact that it complements their beliefs and validates their knowledge concerning the learners' needs and achievement. It is mainly used as a pedagogical tool because it is useful, makes sense, and enables teachers to reflect on their practices and develop them [18].

2.4 CONCLUSION

After the exploration of all these studies, which are related to Howard Gardner's multiple intelligences theory, one can admit that the implementation of this model in an ESL/EFL classroom is imposing itself as an adequate and efficient teaching and learning method that is appreciated by everyone, whether they are educators, parents, or learners. However, the implementation process may seem so challenging for teachers because they need to make extra efforts in terms of lesson plan designing, research, and gradual change of the new adopted teaching methods and strategies. Other important decisions should be taken on a higher level, especially those related to the curriculum design on the school, district, and national levels. Indeed, when one tests the usefulness and adequacy of these strategies, he or she can better understand why all these people are striving to implement them.

However, would it be possible to take such decisions in new contexts such as the Moroccan setting? To what extent Howard Gardner's multiple intelligences strategies and methods will be accepted and implemented in the classroom by all the main components of the educational system in the country? How is this implementation going to be helpful for teachers, parents, and students? What are the different possibilities that are going to help teachers translate this model into practice? And what are the different barriers that may hinder this kind of implementation?

Whatsoever the scenario will be, one should make sure of one important thing, which is embodied in the fact that the days of the one-size-fits-all methods and strategies have already gone once for all. Hence, through the implementation of the MI theory in an ESL/EFL classroom, a new era is stretching in front of our learners in order to help them learn independently, be creative, innovative, solve their problems alone, and think critically. Actually, this achievement will not be realized unless the students are fully aware of their best and strong intelligences and learn how to make use of them in different settings and circumstances outside or inside the four walls of their classrooms.

However, it seems that most of the students in our schools are nowadays preoccupied with their testing scores. Thus, the need for a classroom where teaching and learning is diversified and engaging is very required. As a result, the adoption of Howard Gardner's multiple intelligences model is imposing itself as a prominent and conspicuous teaching and learning instructional framework for the coming years, especially in primary and secondary schools [19].

3 METHODOLOGY

3.1 DEMOGRAPHIC DATA

Actually, the setting of the study is located in a public school in a small city in the middle of Morocco. This city is considered as one of the poorest cities in the country. The participants who are involved in this research are sixteen third-grade middle school students. They are all beginners. In fact, most of them are introduced to English for the first time. Their ages vary between fourteen and sixteen years old. Some of them have more than sixteen years old (See table 1). There are eight girls and eight boys from different backgrounds, poor family in-come, and with different mother tongues. Some of them live in boarding schools for the whole year. In Moroccan public schools, English is taught as a second foreign language starting from the third grade (K-9). Their mother tongue varies between Moroccan Arabic and the Amazigh (See table 1). Classical Arabic is studied and used only at school and in the administrations.

3.2 TARGET GROUP

The targeted students of this study are mainly those who have some difficulties in acquiring English as a second foreign language. Hence, the use of Howard Gardner's Multiple Intelligences teaching and learning strategies will help teachers identify these students' best learning intelligences and try to design the lesson plans and activities accordingly. Actually, the fact of using this new instructional framework in the process of learning and teaching will benefit the target group in terms of academic achievement, engagement, independence, and motivation.

3.3 BASELINE DATA

However, based on their teacher's experience of more than twenty years, he noticed that these students' performances in Language Arts are not satisfactory due to the fact that English is mainly used between the four walls of the classroom. Indeed, there are no English centers outside school and there are no opportunities for students to practice and enhance their English. In addition, with the lack of any clear political interventions, the overcrowded classes, and the students' desperation due to the lack of motivation, their English level is decreasing gradually. Thus, most of the students find lot of difficulties in the Moroccan English national Baccalaureate exams (K-12) where their level is assessed after three years of studying it as a second foreign language.

Besides Language Arts, these students are going to be tested in two other different school subjects, namely Mathematics and Social Studies. The aim behind the implementation of Gardner's Multiple Intelligences model in these three subjects is to identify the students' top three intelligences and see how common these intelligences are among them in order to make use of them in designing the lesson plans and activities (Tables 1, 2, 3, & 4).

3.4 PROPOSED ACTION

Actually, it is well known that it is high time one revisited their perceptions, thoughts, ideas, and understanding of intelligence as a cognitive and mental ability. However, Howard Gardner's theory of multiple intelligence appeared as a new important alternative that considers human beings as having more than one intelligence. Therefore, it is no longer adequate to consider the students as unable to study or learn because they did not align with the adopted teaching strategies or learning styles [6].

Actually, the nature of the research question as well as the specificity of the setting where the implementation is going to take place pushed the researcher to be very careful while selecting the resource articles for the literature review. Thus, the researcher tried to explore different studies talking about the implementation of the MI theory in the four corners of the continent. This in fact revealed a clear idea about the model. Hence, the three following ideas embody the main actions the researcher would like to take in order to provide adequate answers for the research question: (1) the identification of the students' top three intelligences in three different school subjects, namely Mathematics, Language Arts, and Social Studies, (2) the implementation of the MI theory in these three school subjects, and (3) the enhancement of the students' learning.

Indeed, the identification of the students' top three intelligences is the first step that is going to change the classroom environment and pave the way for a successful implementation. This identification will not be achieved unless the school administration, parents, students, and teachers collaborate in favour of the study. In fact, once the students are aware of the seriousness, credibility, and validity of the new approach, they will start to test it through their involvement in the process of learning. Of course, the teacher is going to play the major role by designing lessons and activities where the MI model is designed and incorporated as an instructional framework for learning. Such procedures will surely enhance the students' academic learning and provide them with adequate strategies, which are based on their strongest intelligences.

However, most of the studies that the researcher has explored so far recognized the importance of Gardner's theory as an instructional design model. Whether it was implemented in South Africa, Canada, South Korea, Lebanon, Iran, or the United States, the results seemed to be the same. Hence, the above ideas can be easily adapted to the Moroccan setting as an ESL context where English is taught as a second foreign language starting from the third grade (K-9) in public schools.

4 DATA COLLECTION AND ANALYSIS METHOD

In fact, this study is conducted in one of the three public schools in the area. Most of the students are from low-income families. The study focuses on one of the twelve third-grade classes (K-9). This class consists of 46 students (26 boys and 20 girls). The focus of the study concentrates on a sample of 16 participants whose age varies between fourteen and sixteen years old. Some of them have already repeated the class due to different circumstances most of which are related to their socio-

economic status. Their average English level is humble because of the obvious decline in their academic achievement and due to the fact that English is studied as a second foreign language.

However, based on the nature of the research question, which tends towards the implementation of Howard Gardner's Multiple Intelligences theory in an ESL setting, the researcher needs to choose adequate data collecting tools that will help him collect information that is going to be used in order to answer all the questions. Observation, survey, and interview are the first three best instruments that seem to help in the achievement of the objective and get credible, valid, and trustworthy data.

In fact, the starting point is conducted through the observation of the students before, while, and after the implementation of the MI strategies in the classroom. This observation took different forms such as simple observation of the students' behaviors, the use of students' journals, and reactions, or through other tools such as videotaping or audiotaping. The survey provides extra and efficient information concerning the students' learning tendencies and strong and weak abilities. Thus, the identification of the students' three best intelligences will contribute in understanding them as well as tapping on their needs in the process of learning. The interview phase is the last step in the process. It is an opportunity for the students to express their ideas about the usefulness of the new teaching and learning strategies used in the classroom. The findings of the interview is compared to all the information obtained through the first two methods and come up with a final product that enriches this study.

After the collection of the study's data, one should immediately move to the analysis phase. Thus, based on the research question, the researcher tried to focus on three main issues in building the triangulation chart (Appendix 1). The first idea is to test students' reactions towards the implemented of the new instructional model. The second issue is meant to identify the students' first three best intelligences (Appendix 2). The last and third issue is used in order to decide about these top intelligences that the teacher is going to address in the classroom. The analysis of the data that results from the collection methods is done in the light of the mixed methods research. Actually, the analysis of the data is based on observation, survey, and interview. Nevertheless, it may be extended to the use of other extra strategies if need be.

However, the above three steps is going to pave the way for the researcher to get great ideas in terms of implementation and validity in order to have a clear image of his students' abilities and try to satisfy them on the educational level. Actually, the more one understands their students, the more willing they are to cooperate and collaborate with them. In this case, the implementation of the MI model will be so easy and at hand for both teachers and students. Hence, the general idea of the analysis starts with the categorization of the data based on the adopted collection method. The ideas are selected, compared, and contrasted. Indeed, great importance is given to every single detail, especially in terms of students' behaviors (observation), perceptions and attitudes (survey), and responses (interview).

Therefore, the data analysis findings will help us find adequate and efficient answers to the research question (s) and frame what can be learned from the data analysis process. These outcomes will help the researcher prepare, teach, and assess his students adequately. Thus, there will be no floor for any interpretations or improvisations from the teacher's part.

5 Discussion Of The Findings

The findings of this study are related to the three subjects under study, namely Mathematics, Language Arts, and Social Studies. The focus is going to be on the first top three intelligences that the sixteen students used in the process of learning in these school subjects. After the identifications of these intelligences (See table 4 and figure 10), the researcher is going to compare and contrast them in such a way as to find out which ones are common among all these students and whether or not these intelligences are related to the nature of the school subjects under study.

5.1 Mathematics

In fact, table 1 shows that the first top three intelligences that are used by all the students in Mathematics are (1) the Logical-Mathematical intelligence, which is used by eleven student (See figure 1) that represents 23 % of the eight intelligences used in this subject (See figure 2), (2) the Visual-Spatial intelligence, which is used by ten students that represents 21 % of the intelligences used, and (3) Bodily-Kinesthetic is the third most important intelligence that is used by nine students with the average of 19 % of the whole intelligences.

However, according to the statistics mentioned in table 1, as well as the figures 1, 2, and 3, one can deduce that other intelligences are used with a closer degree of importance to the students' first top three intelligences. Hence, one should state the example of the Interpersonal intelligence, which is required in most, if not all the school subjects in terms of students' interaction and engagement in the learning process, especially when it has to do with subjects such as Language Arts and Social

Studies where students need to think critically and engage into conversations either with their teachers or classmates. The remaining intelligences are used with a lesser degree in comparison to the first three best ones.

Table 1. Multiple Intelligences (Mathematics)

(1. Verbal-linguistic 2. Logical-mathematical 3. Musical 4. Visual-spatial 5. Bodily-kinesthetic 6. Interpersonal 7. Intrapersonal 8. Naturalist)

Student Name	Multiple Intelligences								Age	Gender	Mother tongue
	1	2	3	4	5	6	7	8			
M. A.		X		X	X				15.2	F	Amazigh*
S. H.		X			X	X			16.1	M	Moroccan Arabic**
I. M.		X		X	X				14.5	F	Moroccan Arabic
M. A.	X			X			X		14.7	F	Moroccan Arabic
A. S.		X		X	X				16.2	M	Moroccan Arabic
H. H.		X		X		X			15.4	F	Amazigh
O. B.	X	X					X		16.2	M	Moroccan Arabic
S. B.	X				X		X		15.3	M	Amazigh
A. A.		X		X	X				14.7	M	Moroccan Arabic
K. E.	X	X				X			15.6	F	Amazigh
F. A.		X			X	X			15.2	M	Moroccan Arabic
R. J.	X			X		X			16.3	F	Amazigh
N. B.				X	X	X			15.4	F	Moroccan Arabic
L. T.	X	X		X					16.4	M	Moroccan Arabic
A. B.	X				X	X			15.7	M	Moroccan Arabic
T. Y.		X		X		X			14.8	F	Amazigh
Score	**7**	**11**	**00**	**10**	**9**	**8**	**3**	**00**	**15.48**	**F: 8 M: 8**	**Amazigh: 6 M. Arabic: 10**

**"Amazigh" is the original spoken language before the spread of the Arabic language.*
***"Moroccan Arabic" or "Moroccan Darija" is dialect which different from the classical Arabic.*

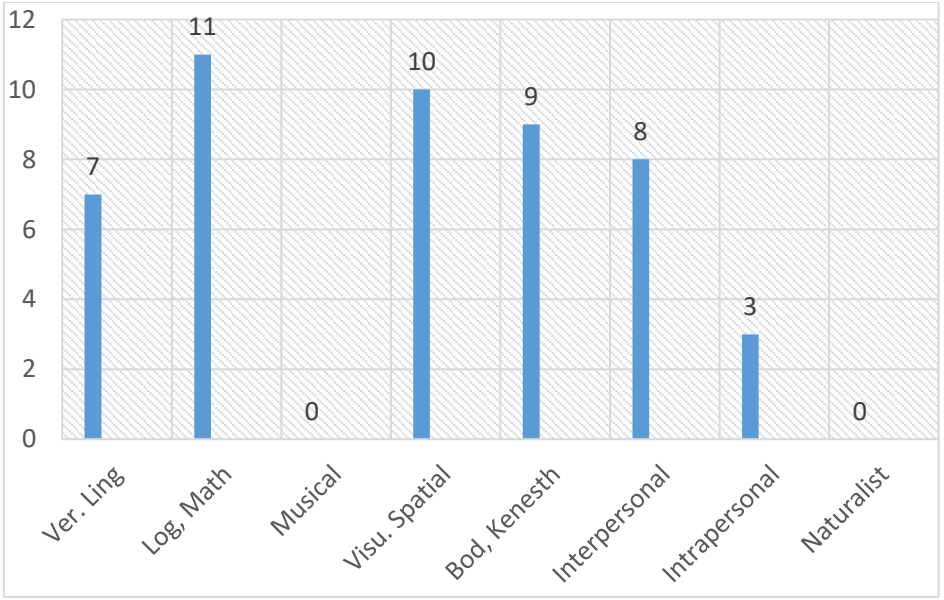

Fig. 1. Multiple Intelligences Chart (Mathematics)

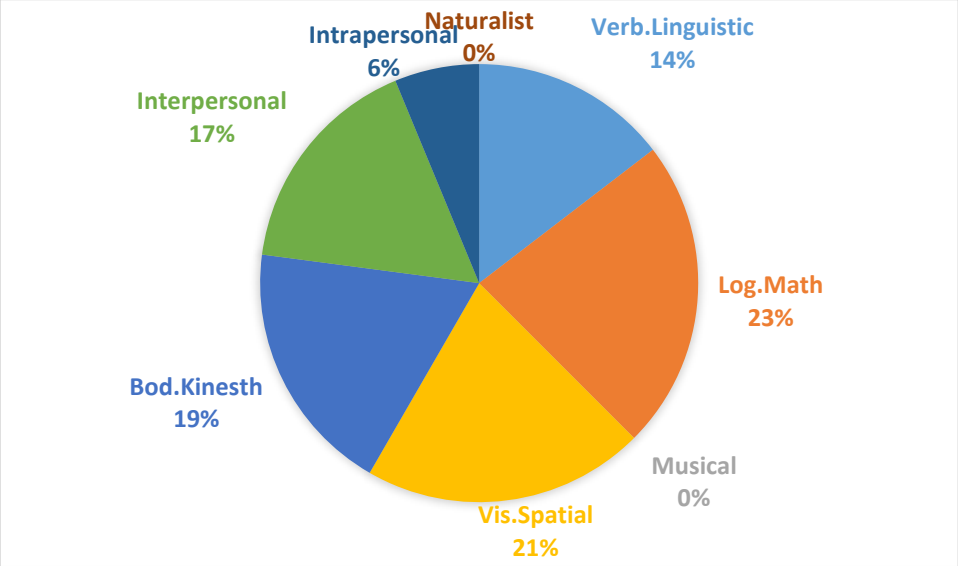

Fig. 2. Multiple Intelligences Chart (Mathematics)

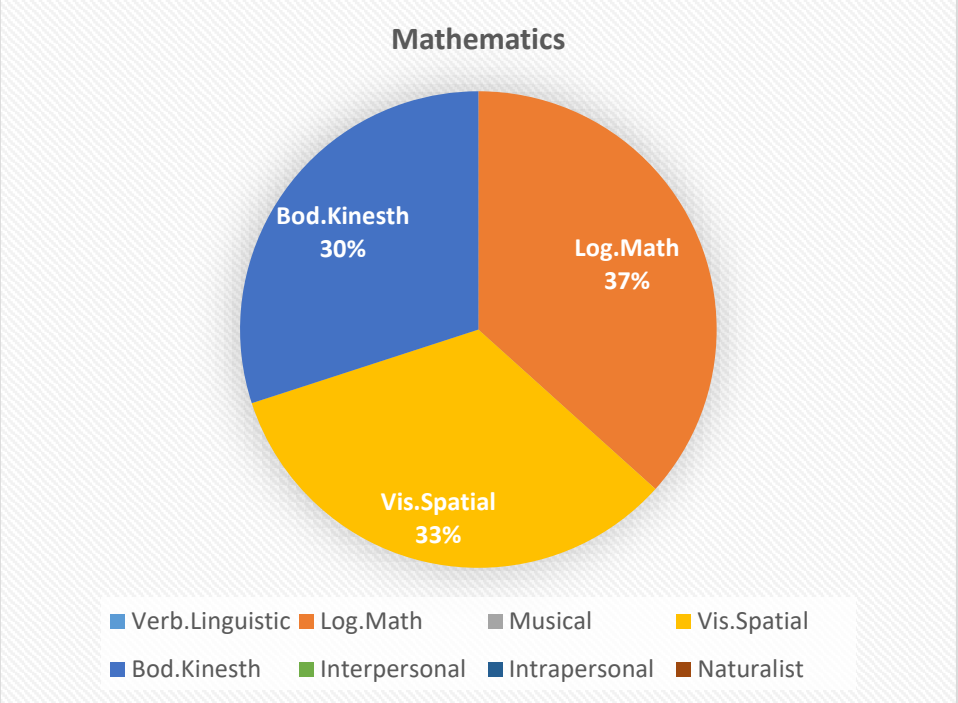

Fig. 3. The students' first top three intelligences in Mathematics

5.2 LANGUAGE ARTS

The statistics related to the Language Arts subject (Table 2) indicate that the students used seven out of the eight Multiple intelligences (Figures 4 & 5). In fact, the first three best intelligences in this subject are (1) Verbal-Linguistic intelligence with twelve intelligences, which represents 25 % of the eight intelligences used, (2) Interpersonal intelligence with nine intelligences, which represents 17 % of the eight intelligences used, and (3) Visual-Spatial intelligence with eight intelligences, which also represents 17 % of the whole intelligences used (See figure 6). The least used intelligences are the Intrapersonal intelligence with two intelligences associated with two students and the Natural intelligence, which is associated to no one of the students.

However, the discovery of the students' top three intelligences in this school subject sounds logical in the sense that Language Arts as a subject in the first place requires students verbal expressions, positive interactions with their colleagues as

well as with their teachers, and the use of facilitator tools such as visuals, authentic objects from the real world, and an appropriate and an anxiety free context where they can move freely and safely.

Table 2. Multiple Intelligences Chart (Language Arts)

(1. Verbal-linguistic 2. Logical-mathematical 3. Musical 4. Visual-spatial 5. Bodily-kinesthetic 6. Interpersonal 7. Intrapersonal 8. Naturalist)

Student Name	Multiple Intelligences								Age	Gender	Mother tongue
	1	2	3	4	5	6	7	8			
M. A.	X			X		X			15.2	F	**Amazigh***
S. H.		X	X				X		16.1	M	**Moroccan Arabic****
I. M.	X	X		X					14.5	F	**Moroccan Arabic**
M. A.		X	X	X					14.7	F	**Moroccan Arabic**
A. S.	X			X		X			16.2	M	**Moroccan Arabic**
H. H.	X			X			X		15.4	F	**Amazigh**
O. B.	X	X			X				16.2	M	**Moroccan Arabic**
S. B.	X		X			X			15.3	M	**Amazigh**
A. A.		X		X	X				14.7	M	**Moroccan Arabic**
K. E.	X				X	X			15.6	F	**Amazigh**
F. A.	X				X	X			15.2	M	**Moroccan Arabic**
R. J.	X	X				X			16.3	F	**Amazigh**
N. B.			X	X		X			15.4	F	**Moroccan Arabic**
L. T.	X				X	X			16.4	M	**Moroccan Arabic**
A. B.	X			X		X			15.7	M	**Moroccan Arabic**
T. Y.	X		X		X				14.8	F	**Amazigh**
Score	**12**	**6**	**5**	**8**	**6**	**8**	**2**	**00**	**15.48**	**F: 8 M: 8**	**Amazigh: 6 M. Arabic: 10**

**"Amazigh" is the original spoken language before the spread of the Arabic language.*
***"Moroccan Arabic" or "Moroccan Darija" is dialect which different from the classical Arabic.*

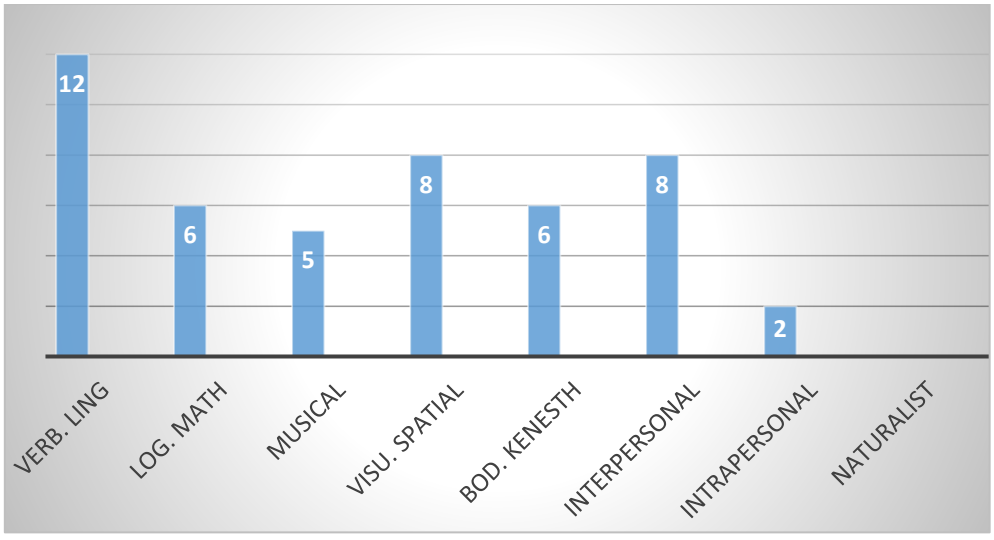

Fig. 4. Multiple Intelligences Chart (Language arts)

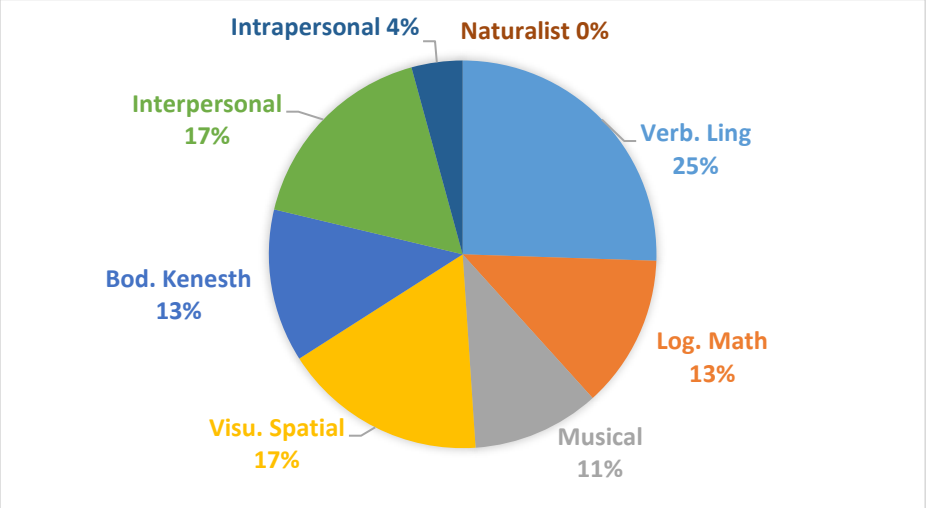

Fig. 5. Multiple Intelligences Chart (Language arts)

Actually, figures 6 and 10 reinforce the idea that the Language Arts school subject is based on intelligences or learning styles that are related to the students' personal abilities to learn a language through the use of verbal expressions, which is identified through different alternative intelligences, namely the Verbal-linguistic intelligence, the Musical intelligence, the Visual-spatial intelligence, the Bodily-kinesthetic intelligence, and the Interpersonal intelligence. Other intelligences are of lesser interest in terms of use such as the use of the Logical-Mathematical and Intrapersonal intelligences in comparison to the first top three intelligences. This, in fact, does not mean that the last two intelligences are not significant in the process of learning. It is just because of the nature of the school subject under study that determines the prioritized intelligences through which the students learn.

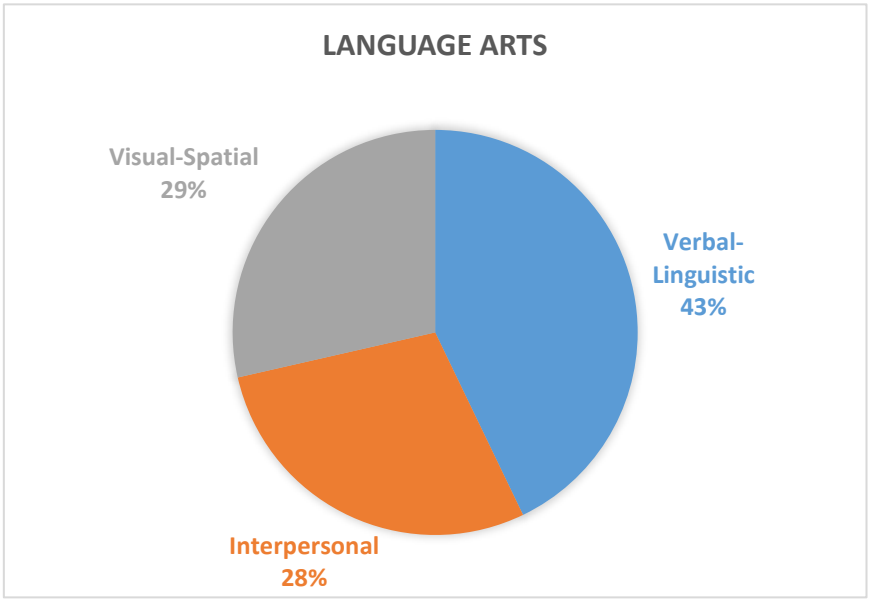

Fig. 6. The students' first top three intelligences in Language Arts

5.3 SOCIAL STUDIES

In what concerns the Social Studies (and figures 7 & 8), the data indicate the use of three intelligences as the students' best learning abilities, namely the Verbal-linguistic intelligence that is considered as the first intelligence used by 13 students, which represents 27% of the whole intelligences used. The second best intelligence is the Logical-Mathematical intelligence that is

used by 10 students with the average of 21% of the intelligences used. The third and last intelligence is the Visual-Spatial intelligence that is used by eight students, which represents a percentile of 17% of the intelligences used.

However, it is noteworthy to mention that two important intelligences come in the fourth position as the most common used intelligences used by seven students in each one, namely Bodily-kinesthetic and Interpersonal intelligences, which means that most of the eight intelligences are used in each school subject but with different degrees. The teachers' emphasis on the students' first top three intelligences in adapting and designing their lessons in terms of instruction and lesson delivery helps them pave the way in front of their students to identify their best intelligences, accept them, and use them in the process of learning.

Table 3. Multiple Intelligences Chart (Social Studies)

(1. Verbal-linguistic 2. Logical-mathematical 3. Musical 4. Visual-spatial 5. Bodily-kinesthetic 6. Interpersonal 7. Intrapersonal 8. Naturalist)

Student Name	Multiple Intelligences								Age	Gender	Mother tongue
	1	2	3	4	5	6	7	8			
M. A.	X	X			X				15.2	F	**Amazigh***
S. H.	X			X			X		16.1	M	**Moroccan Arabic****
I. M.	X	X					X		14.5	F	**Moroccan Arabic**
M. A.	X			X	X				14.7	F	**Moroccan Arabic**
A. S.	X	X			X				16.2	M	**Moroccan Arabic**
H. H.	X			X			X		15.4	F	**Amazigh**
O. B.	X	X			X				16.2	M	**Moroccan Arabic**
S. B.				X	X	X			15.3	M	**Amazigh**
A. A.	X	X		X					14.7	M	**Moroccan Arabic**
K. E.	X	X				X			15.6	F	**Amazigh**
F. A.	X				X	X			15.2	M	**Moroccan Arabic**
R. J.	X	X				X			16.3	F	**Amazigh**
N. B.	X	X		X					15.4	F	**Moroccan Arabic**
L. T.		X			X	X			16.4	M	**Moroccan Arabic**
A. B.	X			X		X			15.7	M	**Moroccan Arabic**
T. Y.		X		X		X			14.8	F	**Amazigh**
Score	**13**	**10**	**00**	**8**	**7**	**7**	**3**	**00**	**15.48**	**F: 8 M: 8**	**Amazigh: 6 M. Arabic: 10**

**"Amazigh" is the original spoken language before the spread of the Arabic language.*

***"Moroccan Arabic" or "Moroccan Darija" is dialect which different from the classical Arabic.*

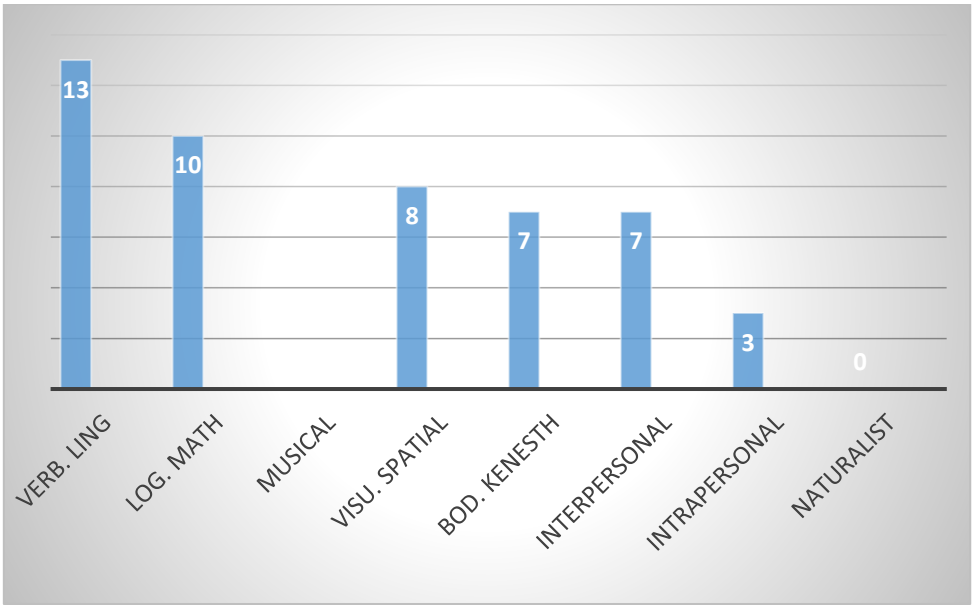

Fig. 7. Multiple Intelligences Chart (Social Studies)

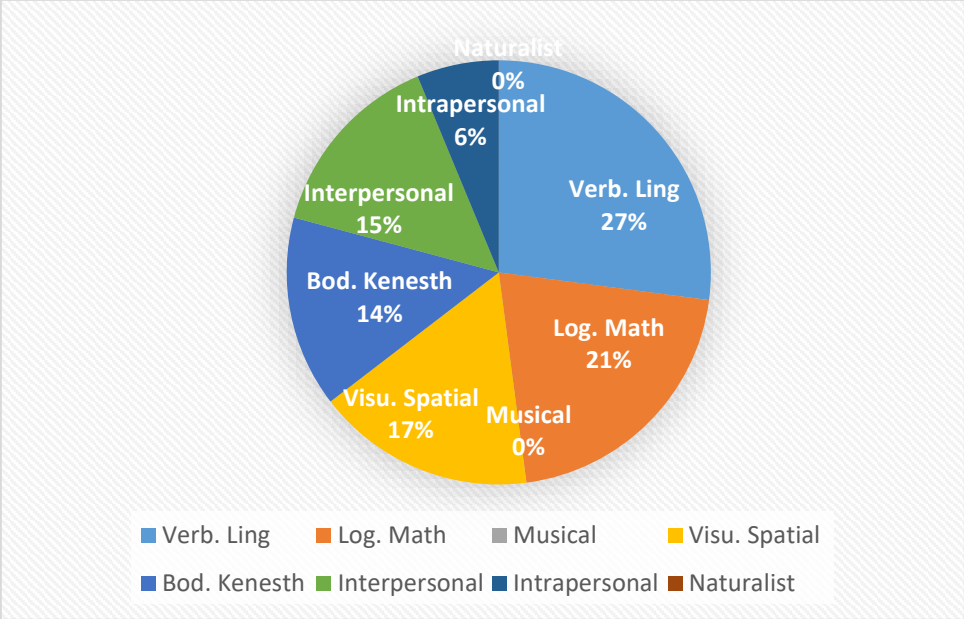

Fig. 8. Multiple Intelligences Chart (Social Studies)

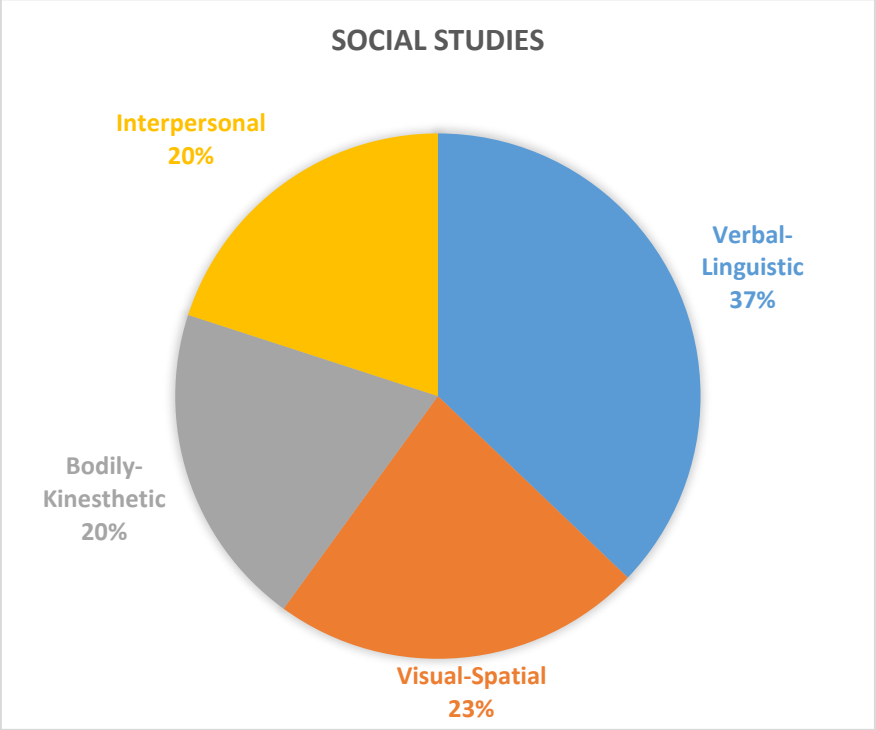

Fig. 9. The students' first top three intelligences in Social Studies

5.4 THE COMPARISION OF THE THREE SUBJECTS UNDER STUDY

The implementation of Gardner's Multiple Intelligences theory in the three subjects under study (Table 4) highlights the idea that the students' best intelligences vary according to the nature of the school subjects they are studying. If one takes the example of the student (O.B., table 4), they will notice that in the three school subjects this students' intelligences are almost the same in Mathematics and Social Studies with an exception in Language Arts where the Bodily-kinesthetic intelligence is his strongest one. In a similar case, the student (K.E., table 4) learns through the same intelligences in both Mathematics and Social Studies. In Language Arts, instead of using the Logical-Mathematical intelligence, he uses the fifth intelligence which is the Bodily-kinesthetic. On the other hand, statistics show a concrete difference between the students in terms of the intelligences used, but none of these students used three different intelligences in the three school subjects.

However, figure 10 shows that all the intelligences are used in the three school subjects under study except for one, which is the Naturalist intelligence. The most striking remark about the intelligences used is that the number of the students using them varies between seven and thirteen, which means that these students are closely related in terms of the intelligences used. This, in fact, will facilitate the teacher's work in the process of learning in terms of lesson design, activity building, and instructions.

Table 4. Multiple Intelligences Chart (The comparison of the three subjects)

(1. Verbal-linguistic 2. Logical-mathematical 3. Musical 4. Visual-spatial 5. Bodily-kinesthetic 6. Interpersonal 7. Intrapersonal 8. Naturalist)

Subj.	MIs	Students' Names															Total
		M.A	S.H	I.M	M.A	A.S	H.H	O.B	S.B	A.A	K.E	F.A	R.J	N.B	L.T	A.B	T.Y	16
Mathematics	1				X			X	X		X		X		X	X		07
	2	X	X	X		X	X	X		X	X	X			X		X	11
	3																	00
	4	X		X	X	X	X			X			X	X	X		X	10
	5	X	X	X		X			X	X		X		X		X		09
	6		X				X				X	X	X	X		X	X	08
	7				X			X	X									03
	8																	00
Language Arts	1	X		X		X	X	X	X		X	X	X		X	X	X	12
	2		X	X	X			X		X			X					06
	3		X		X				X					X			X	05
	4	X		X	X	X	X			X				X		X		08
	5							X		X	X	X			X		X	06
	6	X				X			X		X	X	X	X	X	X		09
	7		X				X											02
	8																	00
Social Studies	1	X	X	X	X	X	X	X		X	X	X	X	X		X		13
	2	X		X		X		X		X	X		X	X	X		X	10
	3																	00
	4		X		X		X		X	X				X		X	X	08
	5	X			X	X		X	X			X			X			07
	6								X		X	X	X		X	X	X	07
	7		X	X			X											03
	8																	00

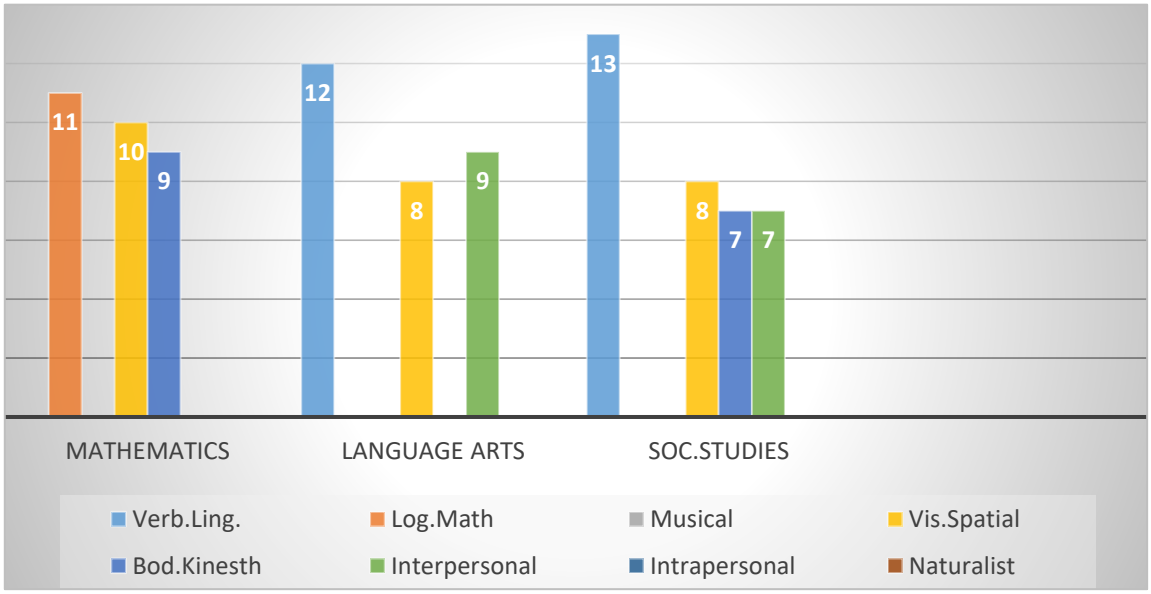

Fig. 10. The comparison of the students' top three intelligences in the three subjects

6 CONCLUSION

Actually, Gardner's [20] idea is to understand one's students' individual needs and build upon them in such a way as to reach their potentials in terms of their learning abilities. The identification of the students' intelligences urges teachers to differentiate their teaching strategies especially while designing their lessons based on appropriate topics and content that suit most of their students. The understanding and acceptance of one's intelligences helps students to use them and benefit from them appropriately.

However, for more than three decades, the Multiple Intelligences theory has undergone different changes in terms of its development as an instructional design model and a language learning theory. Its implementation in various settings exposed its efficiency in the process of learning as adequate. Based on the three different disciplines under study, namely Mathematics, Language Arts, and Social Studies, this study demonstrates how the deciphering of the students' top three intelligences helps them learn at ease. Their acceptance and manipulation of their intelligences paves the way towards a better achievement, which considers the MI theory as an outstanding model that does not fade across ages and time.

ABOUT THE AUTHOR

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REFERENCES

[1] K. Goodnough, "Multiple Intelligences Theory: A framework for Personalizing Science Curricula," *School Science and Mathematics, 101*(4), 180-193, 2001. .

[2] Armstrong, Thomas, 2013, *Multiple Intelligences*.
[Online] Available: http://www.institute4learning.com/multiple_intelligences.php (2013).

[3] T. Jung, & M. H. Kim, "The Application of Multiple Intelligences Theory in South Korea : The Project Spectrum Approach for Young Children", *School Psychology International, 26*(5), 581– 594, 2005. .

[4] H. Gardner, ''Reflections on Multiple Intelligences: Myths and Messages'', *Phi Delta Kappan*, 77(3), 200-209, 1995.

[5] Gardner, Frames of Mind: The Theory of Multiple Intelligences, 2nd ed. New York: Basic Books, 1983.

[6] Gardner, Howard, 2001, *The Three Faces on Intelligence*.
[Online] Available: http://howardgardner01.files.wordpress.com/2012/06/the-three-faces-of-intelligence1.pdf.

[7] N, Ghamrawi, "Multiple intelligences and ESL teaching and learning: An investigation in KG II classrooms in one private school in Beirut, Lebanon", *Journal of Advanced Academics, 25*(1), 25–46, 2013. .

[8] H. C. Pienaar, M. M. Nieman, & G. D. Kamper, "Implementing a Teaching Approach Based on the Multiple Intelligence Theory in a South African School: A Case Study", Africa Education Review 8(2), 267-285, .

[9] R. Akbari, & K. Hossein, "Multiple Intelligences and Language Learning Strategies: Investigating Possible Relations", System 36(2008), 141–155, 2008. .

[10] W. Vialle, "In Australia: Multiple Intelligences in Multiple Settings", Educational Leadership, 55(1), 65- 69, 1997.

[11] Gupton, Brooke, Multiple Intelligences: Implications for Classroom Use.
[Online] Available: http://www.campbellsville.edu/Websites/cu/files/Content/2752287/Brooke_Gupton_Action_Research_Project_Master_Copy_FINAL_5-31-11.doc (2011).

[12] D. B. Bordelon & M. M. Banbury, "Pursuing the Parameters: Validating the Multiple Intelligences Inventory for Teachers", Assessment for Effective Intervention, 30(3), 33-51, 2005.

[13] G. Mettetal, C. Jordan, & S. Harper, "Attitudes Toward a Multiple Intelligences Curriculum", The Journal of Educational Research, 91(2), 115-122, 1997. .

[14] L. Campbell, "How Teachers Interpret MI Theory", Educational Leadership, 55(1), 14-19, 1997.

[15] Z. Ozdilek, "To What Extent Do Different Multiple Intelligences Affect Sixth Grade Students' Achievement Level on the Particle Model of Matter?", Procedia Social and Behavioral Sciences, 2(2010), 4858–4862, 2010.

[16] Campbell, Bruce, Multiple Intelligences in the Classroom.
[Online] Available: http://www.context.org/iclib/ic27/campbell/ (1991).

[17] Gardner, Howard, The Theory of Multiple Intelligences: As Psychology, as Education, as Social Science.
[Online] Available: http://howardgardner01.files.wordpress.com/2012/06/473-madrid-oct-22-2011.pdf (2011).

[18] Kornhaber, Mindy, Psychometric superiority? Check the fact – again.
[Online] Available:https://howardgardner01.files.wordpress.com/2012/06/critique-of-ednext-article1.pdf (August, 2004).

[19] J. Kincheloe, "Multiple Intelligences Reconsidered", New York: Peter Lang, v iii+ 262, pp. Discourse & Society, 17(4), 554-557, 2004.

[20] Gardner, Multiple Intelligences: The First Thirty Years, Harvard Graduate School of Education, 2011.

[21] P. Stanford, "Multiple Intelligence for every Classroom", Intervention in School and Clinic, 39(2), 8085, 2003.

APPENDIX 1. DATA GATHERING INSTRUMENT SURVEY ADOPTED FROM [21]

Please complete the survey below. The areas with the highest point totals indicate a possible strength:

1 = No, this is not me. 2 = I think this is me. 3 = Yes, this is me.

Intelligence Area			Total
Logical / Mathematical Number Smart	I believe that almost everything has a rational explanation. ☐	I easily compute numbers in my head. ☐	
Musical/Rhythmic Music Smart	I play a musical instrument. ☐	I can tell when a note is off key. ☐	
Body/Kinesthetic Body Smart	I prefer active participation in class rather than sitting still. ☐	I enjoy engaging in at least one sport or physical activity regularly. ☐	
Naturalistic Nature Smart	I fin dit easy to grow/nurture species. ☐	I see the natural order of differing species. ☐	
Interpersonal People Smart	I feel comfortable in the midst of crowds ☐	I prefer participating in group activities rather than working by myself. ☐	
Intrapersonal Self Smart	I have opinions that set me apart from the crowd. ☐	I frequently spend time alone meditating, reflecting, or thinking about life issues. ☐	
Visual/Spatial Art Smart	I like to draw or doodle. ☐	I often see clear visual images when I close my eyes. ☐	
Verbal/Linguistic Word Smart	I get more out of listening rather than TV or film. ☐	Books are very important to me. ☐	

APPENDIX 2. TRIANGULATION CHART

Issue	Collection method 1	Collection method 2	Collection method 3
How do students react to the use of the MI strategies?	Observation.	Qualitative observation (audio or videotaping).	Reflection on the findings.
Which are the first three best intelligences of the class?	Initial survey.	The analysis of the questionnaire's data.	Reflection on the findings.
Which teaching strategy (or strategies) is more effective in the classroom?	Interview.	Qualitative and quantitative observation.	Reflection on the findings.