Multiple intelligences and its relationship with academic achievement among Shendi locality secondary schools students

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Abstract

This study is aimed at investigating the relationship between multiple intelligences and academic achievement among secondary school students at Shendi Locality. The researcher used the descriptive method. Participants consisted of (310) students. (120) males and (190) females, chosen by the simple random method. Applied tools were multiple intelligences inventory, and first term students' marks for academic achievement. Data were analyzed descriptively using means and standard deviation, Cornbach Alpha, and inferentially using Person correlations coefficient and t-test. Results showed that:

1.   Interpersonal intelligence is the students' highest intelligence. whereas the musical intelligence is students' lowest intelligence.
2.   There are no statistically significant differences in total multiple intelligences according to gender (males/females), accept the intrapersonal intelligence which showed statistically significant differences favor for females.
3.   There are statistically significant differences in total multiple intelligences according to academic specialization (arts/sciences) favor for science students. But there are no significant differences between them in different types of multiple intelligences..
4.   There is no statistically significant relationship between total multiple intelligences and academic achievement in general. But there are a positive significant relationships in logical/mathematical and intrapersonal intelligences. with academic achievement.

Key words: multiple, intelligences, achievement, relationship, students.

مستخلص

هدفت هذه الدراسة إلى فحص العلاقة بين الذكاءات المتعددة والتحصيل الدراسي لدى عينة من طلاب المرحلة الثانوية بمحلية شندي، استخدم الباحث المنهج الوصفي، شملت العينة (٣١٠) طالبة وطالبة، (١٢٠) منهم ذكور و(١٩٠) إناث، أُخذت بالطريقة العشوائية البسيطة. طُبقت عليهم قائمة الذكاءات المتعددة، وعلامات التحصيل الدراسي من خلال نتائج الفترة الأولى. تم تحليل البيانات وصفياً باستخدام

المتوسطات الحسابية والانحراف المعياري ومعامل ألفا كرونباخ، واستنتاجياً باستخدام معامل ارتباط بيرسون واختبار ت. أظهرت النتائج أن:

١. الذكاء الاجتماعي للطلاب هو الذكاء الأعلى للطلاب، بينما الذكاء الموسيقي هو الأدنى للطلاب.

٢. لا توجد فروق ذات دلالة إحصائية في الذكاءات المتعددة الكلية تعزى للنوع. عدا الذكاء الشخصي الذي كشف عن وجود فروق دالة إحصائياً لصالح الإناث.

٣. توجد فروق ذات دلالة إحصائية بين الذكاءات المتعددة الكلية تعزى للتخصص الدراسي (علمي/أدبي) لصالح العلمي. بينما لا توجد فروق دالة إحصائياً بينهما في مختلف أنواع الذكاءات المتعددة

٤. لا توجد علاقة ارتباطية إحصائية دالة بين الذكاءات المتعددة الكلية والتحصيل الدراسي بصفة عامة. بينما توجد علاقة ارتباطية موجبة دالة بين كل من الذكاء المنطقي/ الرياضي، والذكاء الشخصي كل على حده وبين التحصيل الدراسي.

كلمات مفتاحية: ذكاءات، متعددة، تحصيل، علاقة، طلاب.

Introduction:

Every student may have vary with respect to his academic achievement, we will be mistaken if we think that all students have intellectual and information processing abilities, due to the fact that all of them rarely share same biological, cultural, and personal background. Until this century, the word intelligence has been used primarily by ordinary individual in an effort to describe their own mental powers But now a days, after the ideas inherent in multiple intelligences theory were proposed by Gardner early in 1980s, researchers have been taking up students to identify the profile of multiple intelligences of students belonging to various educational grades to find out the patterns of multiple intelligence and its relationship with academic achievement.

Theoretical framework:

The notion of general intelligence or cognitive ability had long been broadly accepted by psychologists when Howard Gardner introduced multiple intelligences theory 1983, which suggested that " the traditional notion of intelligence as measured by IQ testing is far limited, and there are not just two ways to be intelligent, but many ways (Gardener, 1983). Gardner described intelligence as bio-psychological potential that could be influenced by experience, culture, and motivation factors. According to this theory people are different in their different aspects of special task. Gardner viewed "intelligences as ability to solve problems or to create products that are valued in one or more cultural setting" (Gardner and Hatch, 1989). (Gardner, 1983) initially proposed that there were seven intelligences: Linguistic, Spatial, Logical/ Mathematical, Interpersonal, Intrapersonal, Bodily/Kinesthetic, and Musical. He has more recently added

Naturalistic intelligence, and he had suggested that an Existential intelligence might exist, but that a hypothesized Spiritual intelligence does not (Gardner, 1999). These intelligences are:

Verbal/linguistic intelligence: This intelligence enables a person to use language effectively, achieve certain goals through the use of the language. Speakers, lawyers, poets according to (Gardner, 1983) have high linguistic intelligence.

Logical/mathematical intelligence: This deals with learner's ability to show an aptitude for numbers, reasoning and problem solving. Learners who are good in logical/mathematical intelligence are also good at reasoning, recognizing patterns and logically understanding and analyzing problems, and they prefer to think conceptually about number relationship and patterns (Gardner, 2006).

Visual/spatial intelligence: This is the ability to visualize and see the words through mind's eye. It enables a person to regenerate an experiment through imagination and perception (Shearer and Luzzo, 2009). A person having this type of intelligence watches or observes things and reproduces them through colors, pictures, painting and art work. It enables a person to develop three dimensional images and move them either mentally or concretely (Smith, 2008).

Bodily/kinesthetic intelligence: (Gardner, 1999) describes this intelligence as a potential of using the whole body or parts of the body in problem-solving or the creation of the product. Gardner identified not only dancers, actors and athletes as those who excel in bodily kinesthetic intelligence, but also craft people, surgeons, mechanics and technicians.

Interpersonal intelligence: This deals with learner's communication styles and understanding of feelings of other people. They learn through cooperative learning in groups and they are leaders among their groups (Gray, 2007).

Musical intelligence: This intelligence enables a person to compose or generate music, sweet and melodious voice. A person having this type of intelligence enjoys and appreciates music (Smith, 2008).

Naturalist intelligence: This deals with learner's interest towards outdoor activities, animals and field trips. The traditional classroom has not been accommodating to these students. (Weiten, 2001).

Intrapersonal intelligence: (Gardner, 1999) describes intrapersonal intelligence as ability to understand and to have an effective working model of one's desire, fears, and abilities.

According to (Gardner, 1999), all human beings possess all different intelligences in varying degrees and each individual manifests varying levels of these different intelligences, which are located in different areas of the brain and can either work independently or together. So individuals can vary very high linguistic intelligence, but average musical intelligence (Eid and Alizl, 2004), (Shearer, 2004).

Gardner's ideas were well-received primarily on the ground that they meshed well with parents and researchers (Visser, Ashton and Vernon, 2006), and multiple intelligence theory was enthusiastically welcomed by many educators and parents (Mettetal, Jordan and Harper, 1997).

Academic achievement defines as a formulation of teachers' judgment based on informal observation on student performance on daily tasks, and classroom-based assessment procedures, such as writing samples, weekly assessment and running records (Graney, 2008). Some researchers have found in their

studies, intelligence as a cause of academic performance (Habiballa, et al; 2008). A close connection by some of psychologists between intelligence and academic achievement was discovered. Some say that there is cause and effect relationship between the two variables. According to (Lairda, Pullman and Allik, 2007) academic achievement of students is reliant on their cognitive abilities through all grade levels

Related studies:

Gusnen, et, al (2020): study aimed to investigate the correlation of multiple intelligences and students` academic achievement the population of the study was (205) students 11th grade of senior high school of 03 SELLMA. The data was collected by using total sampling learning English class eleventh senior high school, data was analyzed by descriptive statistic. Person correlation. Results showed that low correlation existed between multiple intelligences and academic performance

Avan et, al, (2016) study attempted to investigate the relationship between the multiple intelligences and academic performance achievement level of high school students based on Gardner`s multiple intelligences theory, this was descriptive correlation study. To accomplish this purpose .(270) students of high school of Bandar Abbas selected  by clustering random sample, Gardner`s multiple intelligences questionnaire was used. Descriptive statistics including means, standard deviation. Person coefficient correlation and regression were used. Findings revealed that moderate inter-correlation exists between verbal-linguistic and visual-spatial intelligence and academic performance achievement p<.05. Multiple intelligences such as logical mathematical visual spatial, verbal –linguistic, intrapersonal, body-kinesthetic, interpersonal and naturalistic have a significant positive relationship with academic performance achievement and they were able to predict academic performance achievement whereas music intelligence was a tunable negative predictor for academic performance achievement of students.

In a descriptive correlational study, Luis, et, al, (2014) attempted to investigate the relation between multiple intelligences and academic achievement and motor performance of (480) secondary school students in Baka Azerbaijan, the revised self – efficacy inventory for (MI), (IAIM-R) and the average, result of academic year were used. Analysis Results showed that: logical/mathematical intelligence has significant relationship with their academic achievement.

Elrasheedi (2014) tied to determine multiple intelligences among college of arts and science students, Alras Governorate the sample consisted of (732) students, Mckenzie1999 list which localized by Abu Hashim, 2007 has been used,. Result showed that multiple intelligences came respectively: social, and lastly musical, also it revealed a significant differences of multiple intelligences according to specialization favor for science students.

Fukhr ulislam, et, al (2014): conducted study to investigate interrelation of multiple intelligences and their correlation to students achievement. Using Armstrong`s standardized multiple intelligences inventory, data was collected randomly from (905) students of secondary school of southern district of Khyber Pakhtunkhwa through proportion allocation technique, mean. Standard deviation, and Person correlation were used for analyzing the data. Result showed that inter-correlation exists between verbal/linguistic and logical/mathematical intelligences and academic achievement.

Rayyan (2013) tried to identify the pattern of multiple intelligences among high school students in Hebron Directorate of Education in Palestine, it also aimed to examine the direction of differentiation in

these intelligences according to these variables: gender, grade, academic track. The sample consisted of (609) male and female students selected in stratified cluster sample manner of all secondary school students in Hebaron Directorate . The results showed that the intelligences common among the students came respectively social, personal, verbal, kinesthetic, musical, mathematical, spatial and natural. Result also showed that there were statically significant differences in verbal and musical intelligences according to gender in favor of female students, and in kinesthetic, and natural for males.

Silvakumar & Arunachalan (2012) reported a paper on multiple intelligences and achievement of high school students. The sample consisted of (200) high school students, percentage, t-test, and Person product moment correlation of coefficient, were used for analyzing dada. The results showed that there is a correlation between multiple intelligences and achievement in science among high school students

The researcher surveyed the literature above and he found that there has been a trend among researchers in identifying the profile of multiple intelligences of secondary school students as well as exploring the relationship between multiple intelligences with academic achievement of students, so they used different tools for measuring multiple intelligences, and different samples ranged from (200 – 905), and most of them used descriptive statistics for data analyzing: mean, standard deviation, t_ test, Person correlation coefficient. Results obtained revealed that multiple intelligences types were differ from one to another but relatively interpersonal, logical/ mathematical intelligences were the students` highest, and musical intelligence was lowest. Majority of relationship between multiple intelligences and academic achievement results were correlated positively with some types. This current study is agree with the above studies in most of scales, and statistical methods that were used, and the results that revealed the highest and the lowest types of multiple intelligences, but it it failed to find out correlations between all multiple intelligences and academic achievements.

Statement of the problem:

Numerous research studied the effect of different variables on student academic achievement. Little attention was paid in Sudan to the interrelationship of multiple intelligences with academic achievement. This current study tries to explore this relationship using secondary school students as participants from Shendi Locality.

Objectives of the study:

1. To determine student's perceived levels of multiple intelligences.
2. To find out the differences in multiple intelligences according to gender (male/female).
1. To determine the differences in multiple intelligences according to specialization (art/science).
3. To identify the relationship between multiple intelligences and academic achievement.

Significance of the study:

1. The study contributes to literature on how multiple intelligences of the students become important resources for enhancing the student's success and quality education.
2. Secondary Education Administration may make change in the approach for preparing students in the area of multiple intelligences.

Questions of the study:

1. What are the levels of multiple intelligences types among secondary school students at Shendi Locality?

2. Are there any significant differences between males and females of Shendi secondary school students in multiple intelligences?
3. Are there any significant differences between science and art students in multiple intelligence?
4. Is there any significant relationship between students' multiple intelligences and academic achievement?

Statistical methods:

Descriptive statistics including mean, standard deviation, Cornbach Alpha coefficient, Person coefficient correlation, t- test, were used.

Methodology

Study Design:

  This study made use of descriptive method of research. This enabled the researcher to describe conditions of relationship that exist, processes that are going on, effects that are being felt, or tends that are developing.

Population:

  Students of all secondary schools 3rd class, of Shendi Locality government and private schools, taken as a population of this study consisted of 3500 students, before the final examinations, from different administrative units of the Locality schools, table 1 show the details.

Table 1, Population of the study

Units	Schools NO.	Students NO.	%
Shendi City unit	9	1472	42%
North Shendi Rural unit	5	440	13%
South Shendi Rural unit	5	595	17%
Hajar Alasal Rural unit	6	635	18%
Kaboshia Rural unit	6	358	10%
Total	31	3500	100%

Participants:

  The participants of this study was chosen by simple random method consisted of 310 student who completed the inventory correctly, 120 males 39%, and 190 were females 61%, and 103 arts 33% and 207 were science 67%. Six secondary schools were selected randomly by simple random method, three of them were for boys, 2018/2019, table 2 show the details.

Table 2, Participants of the study

Schools	Males		females		Total	%
	Science	**Art**	**science**	**Art**		
Shendi boys		40			40	13%
Elmisektab boys		32			32	10%
Abdalla Alhassan boys	48				48	15.5%
Shendi girls			60	20	80	26%
Kamil Ibrahim girls			60		60	19.5%
Elmisektab girls			39	11	50	16%
Total	48	72	159	31	310	100%

Instruments:

Multiple intelligence inventory developed from (McKenzie, 1999), (Chislett and Chapman, 2006), and (Rayyan, 2013), was consisting of (48) items in the form of Likert scale checking, ranged from (1 _ 5) degrees, used as data collection tool, describing Gardner's eight multiple intelligences types: verbal/ linguistic, logical/mathematical, visual/spatial, musical, bodily/ kinesthetic, interpersonal, intrapersonal and naturalistic. Each intelligence was measured through six items, the composite inventory was translated into Arabic with the help of researchers and language expert, in order to make it understandable for students, (see Appendix (5)

Validity and Reliability:

To find out the validity of the instrument, which was arranged logically and was given to 5 specialists in psychology and education, (see appendix (1), to judge items criteria, clarity, affiliation, and the language to check face validity. A sample of fifty students selected to compute validity and reliability, the result of factors analysis by internal consistency of items with the total degree of the scale showed that all of (48) inventory items were correlated significantly, except item No (47) which was deleted, (see appendix (2). An internal consistency validity for intelligences showed: verbal/linguistic, logical/mathematical, visual/spatial, bodily/kinesthetic interpersonal, musical, naturalist, and intrapersonal intelligences were: .73, .62, .65, .70, .62, .56, .71, and .57, respectively (see appendix (3).

In order to find out the reliability, Cronbach Alpha value was found out for different intelligences: verbal/linguistic, logical/mathematical, visual/spatial, bodily/ kinesthetic, interpersonal, musical, naturalist, and intrapersonal intelligences were: .70,.73,.73, .70, .70,.72, .69, and .72 respectively. While the Cronbach Alpha value for the whole inventory was 0.85 (see appendix (4). The overall score of the

students' academic achievement were obtained from their detail of the first term marks certificate, issued by Secondary Education.

Data Analysis:

Data was analyzed descriptively utilizing central tendency, (mean, standard deviation), Cornbach Alpha and inferentially using Person correlations coefficient and t- test for two independent samples, (SPSS 20).

Results

In order to answer the first question, what are the levels of students' multiple intelligences types?. Statistical values were calculated carefully (mean, standard deviation) for multiple intelligence types, the results are presented in table 3.

Table 3, Mean and standard deviation of multiple intelligences
N=310

Intelligences	Mean	Standard deviation
Verbal/linguistic	21.1387	3.7851
Logical/mathematical	22.2129	3.9307
Visual/spatial	19.6258	4.4680
Bodily/kinesthetic	21.1774	3.9215
Interpersonal	23.6540	3.3576
Musical	17.5742	4.2970
Naturalistic	19.1097	4.4736
Intrapersonal	20.0613	3.2314
Total	164.5548	20.0613

As it can be observed in table 3, the highest mean of intelligences belong to interpersonal intelligence (m=23.65), followed by logical/mathematical (m= 22.21), bodily/kinesthetic (m= 21.18), verbal/ linguistic (m=21.14), intrapersonal (m=2o.06), visual (m=19.63), naturalistic (m=19.11), and musical intelligence (m=17.57) respectively.

To answer question number 2, Is there any significant differences between males and females in their multiple intelligences? Independent t-test analysis was applied, the analyzed data can be seen in table 4.

Table 4 Independent t-test of multiple intelligences according to gender

Multiple intelligences	Gender	No	Mean	SD	F. D	T	Sig
Verbal/ linguistic	Males	120	20.3025	3.80355	308	-3.089	.886
	Females	190	21.6526	3.69690			
Logical/ mathematical	Males	120	20.3193	4.14960	308	-3.204	.175
	Females	190	22.7684	3.68309			
Visual/spatial	Males	120	19.2737	4.20436	308	-1.080	.298
	Females	190	19.8421	4.63439			
Bodily/ kinesthetic	Males	120	20.4454	3.68160	308	-2.658	.185
	Females	190	21.6526	4.00732			
Interpersonal	Males	120	23.1261	3.20634	308	-2.159	.866
	Females	190	23.9684	3.41783			
Musical	Males	120	16.6218	4.22661	308	-3.127	.061
	Females	190	18.1737	4.25588			
Natural	Males	120	17.9328	4.96211	308	-3.793	.130
	Females	190	19.8737	3.96877			
Intrapersonal	Males	120	18.9412	3.54940	308	-5.035	.001
	Females	190	20.7737	2.80709			
Total	Males	120	157.9833	20.55408	308	-4.682	.960s
	Females	190	168.7053	19.03902			

As seen in table 4, there is no statistically significant differences between students male and females participants' in total multiple intelligences in general (p=.960), and in each type of intelligences in particular, accept intrapersonal intelligence which revealed that there is a significant difference between males and females favor of females (P=.001).

To answer question number 3, Is there any significant differences between science and arts students in their multiple intelligences? Independent t-test for comparative analysis was carried out. The analyzed data for this purpose can be seen in table 5 below.

Table 5 Independent t-test of multiple intelligences according to academic specialization

intelligence	Specialization	No	Mean	SD	F. D	T	Sig
Verbal/ linguistic	Arts	103	20.4757	3.93786	308	2.189	.247
	Science	207	21.4686	3.67195			
Logical/ mathematical	Arts	103	20.7961	4.17358	308	4.634	.186
	Science	207	22.9179	3.59585			
Visual/ spatial	Arts	103	19.1553	4.10823	308	1.309	.217
	Science	207	19.8599	4.62839			
Bodily/ kinesthetic	Arts	103	19.9903	3.94197	308	3.843	.550
	Science	207	21.7681	3.78350			
Interpersonal	Arts	103	23.4078	3.42550	308	.914	.601
	Science	207	23.7778	3.32523			
Musical	Arts	103	17.1359	3.92341	308	1.268	.081
	Science	207	17.7923	4.46566			
Natural	Arts	103	18.0291	4.44676	308	3.040	.419
	Science	207	19.6473	4.39950			
Intrapersonal	Arts	103	19.3010	4.43521	308	2.959	.126
	Science	207	20.4396	3.06325			
Total	Arts	103	158.2913	18.48795	308	3.922	.028
	Science	207	167.6715	22.31136			

As seen in table 5, there are statistically significant differences between arts and science students, generally in total multiple intelligences (p<0.05) favor of science students, but particularly there are no statistically significant differences between arts and science students' in different types of multiple intelligences at the level (p< 0.05).

To answer question 4. Is there any significant relationship between student' multiple intelligences and their academic achievement? a correlational analysis was run, (Pearson correlation coefficient was computed), to reveal the relationship between multiple intelligences and academic achievement, table 6 below show that.

Table 6, Pearson correlation coefficient for types of multiple intelligences and their relationship to academic achievement.

Intell.	Verb.	Log.	Vis.	Bod.	Inter.	Mus.	Nat.	Intra.	Total	Achi
Verb.	1									
Log.	.490**	1								
Vis.	.393**	.269**	1							
Bod.	.348**	.373**	.441**	1						
Inter.	.443**	.267**	.228**	.378**	1					
mus.	.373**	.141*	.274**	.320**	.292**	1				
Nat.	.427**	.348**	.380**	.475**	.394**	.266**	1			
Intra.	.409**	.356**	.213**	.289**	.287**	.237**	.302**	1		
Total	.725**	.617**	.644**	.702**	.617**	.557**	.712**	.571**	1	
Achi	.053	.227**	-.019	.073	-.042	-.025	.089	.120*	.090	1

** correlation is significant at the 0.01 level (2- tailed)

From The table 6 above, the result of correlation coefficient indicates that there are no statistically significant relationships between students' total multiple intelligences and their academic achievement (r=.090), but in subscales there are some positive significant relationships in logical/ mathematical (r=.227**), and intrapersonal intelligences (r=.120*). Nevertheless, the multiple intelligences for visual/spatial (r=-.019), interpersonal (r=-.042), and musical (r=-025), naturalist (r=.089), bodily/kinesthetic (r=.073), and verbal/linguistic (r=.053), do not show any significant relationships with academic achievement.

Discussion

This study was carried out to explore mainly the relationship between multiple intelligences and academic achievement of secondary school students, and to investigate the levels of these intelligences, and the role of demographic variables such as gender and specialization.

The findings of this study showed that students have multiple intelligences with different levels, it provides evidence that interpersonal intelligence is the students' highest intelligence, and musical intelligence is the students' lowest intelligence. The result of current study do lend support those of (Elrasheedi), 2014), in whose interpersonal was the highest, and musical was the lowest, and it conforms partially with (Rayyan, 2013), where interpersonal was highest and naturalistic was the lowest. But it runs to counter the findings reported in (Visser et al, 2006) in which the mean of bodily/kinesthetic was largest,

The current results may be due to environment and the dominant culture available, and spread of social communications media recently which develops and reinforces interpersonal intelligence particularly among adolescents, whereas other intelligences remain moderately developed, while musical intelligence does not find opportunity to developed because encouraging environment is not available, or to incorporate musical activities in classes . Another reason may be due to the usage of old teaching methods, and absence of educational strategies planning, or the basic facilities like computers, net, multimedia are not available for teachers, so the students have fewer opportunities to develop their multiple intelligences.

Also this study indicates that there are no significant differences in students' multiple intelligences according to gender (males/females) in general, while a significant difference between them in intrapersonal intelligence was found favor for females. These findings are partially conform with the results of (Silvakumar, et, al, (2012), which indicate that there are no significant differences among male and female participants' multiple intelligences in general, and each type of intelligences in particular. These results are inconformity with the results of (Rayyan, 2013), which revealed a significant difference in verbal/linguistic and musical intelligences, subscales of participants according to gender, favor for girls, and in body/kinesthetic, natural favor for men.

These study results may be due to the fact that socialization is equivalent for them. So boys and girls have got same parental care, proper education, opportunity to interact with others and hence girls are at par with boys in multiple intelligences. And the difference of intrapersonal intelligence that favors females, it may be girls who understand their own goals and hobbies, and have effective working model of themselves desire than boys.

Moreover, this study indicates that there are significant differences in students' multiple intelligences according to stream (science/arts) favor of science students. These findings are conformity with the results of (Elrasheedi, 2014), which indicate that there are significant differences among science and arts participants' multiple intelligences in general, and each type of intelligences in particular favor of science students.

The result of the current study may be due to science students' have good logical thinking, problem solving ability, high level of aspiration and high level of metacognitive thinking skills which may support and reinforce multiple intelligences. This result supports (Gardner, 1999) that individuals manifest varying levels of different intelligences which are located indifferent areas of brain which can either work independently or together.

Further, this findings of the current study show that there are no significant correlations between multiple intelligences and academic achievement in general, whereas only (logical/mathematical and

intrapersonal) have a positive significant correlation with their academic achievement. That mean that, other multiple intelligences visual/spatial, interpersonal, musical, verbal/linguistic, bodily/kinesthetic and naturalistic do not show any significant relationship (positive or negative) with academic achievement.

These findings are conformity with the results of (luis, et, al, (2014) which revealed a positive relationship between logical/ mathematical and academic achievement, and the results of (Gusnen, 2014) which revealed a weak and negative correlations. Findings disagree with the results of (Fukhr ulislam, 2014), (Silvack, et al, 2014), which showed a positive relationship in general with academic achievement, but it conform partially with correlation between logical, intrapersonal intelligences with academic achievement, also disagree with the result of (Avav, et, al, (2016), which revealed a significant relationship between all types with academic achievement except natural and musical intelligences.

This study failed to establish a significant correlation between multiple intelligences and academic achievement, it may be due to the traditional education system which relied on the IQ test, and has stressed the importance logical/mathematical and verbal/linguistic intelligences only more rather than others.

Conclusion

This study revealed that interpersonal intelligence is the students' most high dominant, and musical intelligence is students' least dominant intelligences. The evidence proved that the multiple intelligences are interconnected and support each other during performance. The logical/ mathematical and intrapersonal intelligences are correlated to academic achievement. But multiple intelligences as general are not significantly correlated to academic achievement.

M Recommendations:

Teachers should create an environment for multiple intelligences development .
Teachers should encourage students to use their multiple strength to improve their academic achievement.
Teachers can use multiple intelligences effectively in lesson planning, teaching and learning activities.
Awareness programs through workshops and counseling and guidance may be conducted for students to make them aware a bout intelligence and study skills for their success.

Suggestions for further research:

A study can be carried out to know the relationship between multiple intelligences and personality factors.
A study can be carried out of different ages, different localities. Universities.
Multiple intelligences can be woven into curriculum.

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Appendixes:

Appendix No: (1) Staff members (face validity)

N	Name	University
1	Dr. Ahmad Hashim Khalifa	Sudan for Sciences & Technology Univ.
2	Dr. Mohammad Ahmad Karamalla Elhaj	Taif University
3	Dr. Abdelgadir Ali Ahmad	Shendi University
4	Dr. Faisal Hassan Mohammad	Sirte University

Appendix No: (2) internal consistency of items with the total degree of the scale.

N	C. c.	N	C.c.	N	C.c.	N	C.c.	N	C.c.	N	C.c.
1	.385**	9	.425**	17	.318**	25	.424**	33	.382**	41	.376**
2	.314**	10	.403**	18	.324**	26	.385**	34	.499**	42	.248**
3	.237**	11	.456**	19	.276**	27	.423**	35	.399**	43	.470**
4	342**	12	.365**	20	.426**	28	.458**	36	.348**	44	.376**
5	.240**	13	.365**	21	.202**	29	.425**	37	.328**	45	.380**
6	.320**	14	.336**	22	.190*	30	.393**	38	.235**	46	.409**
7	.371**	15	.238**	23	.450**	31	.285**	39	.434**	47	.053
8	.384**	16	.328**	24	.398**	32	.326**	40	.374**	48	.408**

 Appendix No: (3). An internal consistency validity for intelligences.

Intelligences	Internal consistency validity
Verbal/linguistic	.73
Logical/mathematical	.62

Visual	.65
Bodily/kinesthetic	.70
Interpersonal	.62
Musical	.56
Naturalistic	.71
Intrapersonal	.57

Appendix No: (4) Reliability: Alpha Cronbach value for different intelligences:

Intelligences	Reliability
Verbal/linguistic	.70
Logical/mathematical	.73
Visual	.73
Bodily/kinesthetic	.70
Interpersonal	.70
Musical	.72
Naturalistic	.69
Intrapersonal	.72
total inventory	.85

Appendix: (5) multiple intelligences inventory (translated to Arabic language).

<u>قائمة الذكاءات المتعددة (المعرب)</u>

أخي الطالب/ أختي الطالبة:

هذا الاستبيان جزء من دراسة يقوم بها الباحث بهدف التعرف على أنماط الذكاءات المتعددة وعلاقتها بالتحصيل الدراسي، ونظراً لأهمية رأيكم في هذا الموضوع الرجاء قراءته بدقة ووضع علامة ( ) في الخانة التي تعبر عن رأيك أمام كل عبارة، علماً بأنه لا توجد عبارات صحيحة وأخرى خاطئة، فالعبارة الصحيحة هي التي تتفق ورأيك، وأن المقياس معد لأغراض البحث العلمي فقط.

وجزاكم الله خيراً   الباحث،،،،،،،،

البيانات الأولية:

الاسم:.............................. الصف:.............. التخصص علمي ( )، أدبي ( )، الجنس: ذكر ( ) أنثى ( ).

م	العبارة	تنطبق على دائماً	تنطبق على كثيراً	تنطبق على أحياناً	تنطبق على قليلاً	لا تنطبق على إطلاقاً
1	استمتع بقراءة الكتب.					
2	استطيع إجراء العمليات الحسابية بسهولة.					
3	موضوعات الهندسة عندي أسهل من موضوعات الجبر؟					
4	استمتع بالعمل اليدوي في الأنشطة الحرفية مثل الزخرفة والنجارة.					
5	أحب العمل مع آخرين في مجموعات.					
6	أحدد هدفي في الحياة وأفكر فيه بانتظام.					
7	يجذبني الشعر المنتظم في قافية واحدة.					

					أهتم بمتابعة قضايا البيئة.	**8**
					أهتم بألعاب الكلمات المتقاطعة الصعبة المحيرة.	**9**
					أعتقد أن كل شيء له تفسير منطقي.	**10**
					أتذكر بسهولة الأشياء المنظمة في رسومات وأشكال.	**11**
					استمتع بممارسة الألعاب الرياضية.	**12**
					أحب المشاركة في أنشطة الأندية الثقافية والاجتماعية.	**13**
					أخصص وقتاً للتأمل في كافة جوانب حياتي.	**14**
					أهتم بالمسرحيات الموسيقية والغنائية أكثر من المسرحيات الأخرى.	**15**
					أستمتع بالسفر والتجوال وإقامة المخيمات.	**16**
					لدى ذاكرة جيدة للتواريخ وأسماء الأشخاص والأماكن.	**17**
					أستطيع حل المسائل الرياضية بسهولة.	**18**
					أحب الرسم وأفضله على الكتابة.	**19**
					أتعرف على الأشياء عن طريق لمسها.	**20**
					أحرص دائماً على تكوين صداقات جديدة.	**21**
					أشعر بالاستقلالية في تفكيري	**22**
					أستطيع أداء النغمة أو الإيقاع بعد سماعها.	**23**
					أستمتع بدراسة علوم الأحياء والنبات والحيوان.	**24**
					أحرص على تسجيل ملاحظات تساعدني على فهم وتذكر الأشياء التي تعنيني.	**25**
					أفضل التتابع المنطقي والمنظم في فهم الأشياء.	**26**
					أستمتع بحل المتاهات والألغاز البصرية.	**27**
					تتولد لدى أفكار جديدة عندما أقوم بأي نشاط حركي.	**28**
					لدي القدرة على التأثير في الآخرين.	**29**
					لدي القدرة على اتخاذ قراراتي الشخصية.	**30**
					أدندن وأغني عند قيامي بعمل ما.	**31**
					أحب تصنيف الأشياء في مجموعات متشابهة.	**32**
					يسألني الناس عن معاني الكلمات.	**33**
					أستمتع بممارسة الألعاب والألغاز الرياضية التي تتطلب تفكيراً منطقياً.	**34**
					أستطيع قراءة الرسومات والخرائط بدقة وسهولة.	**35**
					أفضل التعليم العملي على التعليم النظري.	**36**
					يسعى الآخرون إلى التقرب مني.	**37**

					عندما أعمل بمفردي أنجز أفضل من العمل في مجموعات مع الآخرين.	38
					لدي القدرة على تمييز ومعرفة المقطوعات الموسيقية وتناسقها.	39
					أهتم بزراعة الإشجار وتربية الحيوانات.	40
					أستطيع التحدث أمام الآخرين ومحاورتهم.	41
					أفضل الرياضيات على المواد الأخرى.	42
					أستمتع برسم وتصميم الأشكال الهندسية.	43
					أستخدم الحركات الجسمية في التعبير عن أفكاري.	44
					أحب أن أكون سبباً في مساعدة الآخرين.	45
					لدي القدرة على تحديد نقاط القوة والضعف في شخصيتي.	46
					أفضل سماع الموسيقى أثناء الدراسة.	47
					أحب جمع عينات من الصخور وأوراق النباتات.	48