Student's Attitude Toward Science In Madrassa Schools At Secondary Level In Karachi Region

Adeel Zaman[1], Dr Iqbal Shah[2], Ajab Ali Lashari[3]

Department of Education, Allama Iqbal Open University (AIOU) Islamabad Pakistan[1,2], Sindh Madressatul Islam University, Karachi[3]

Abstract:

In the field of education & psychology the attitude of the students toward science had been explored in different research contexts and at different levels of the students. Researchers not only try to find the attitude of the students but also those factors which influence the student's attitude toward specific subject. Attitude of the students can be altered by their environment, experiences, learning methods. But there is a gap for those students who are associated with Madaaris in Pakistan, who have been taught science subjects in Madrassah schools. This study focused to find the attitude of madrassa school students towards science in Karachi region and vertical change in attitude at levels of grade 8, 9, 10. This study was descriptive and cross-sectional in nature, the data was collected using survey method through the questionnaire from the sample. The data was analyzed with descriptive analysis method to find the mean and SD also used ANOVA to find the vertical change in students by using SPSS-22. The major finding of this study was that the Madrassah School students possess the positive attitude toward science. This study, to some extent, discussed the government intentions for reforming the madrassah curriculum by including science subjects at secondary level. The study explored the initiatives taken by the Madaaris to promote scientific literacy and building the positive attitude of the students toward science. Some suggestions have been given for the promotion of scientific literacy through Madrassa schools in Pakistan. This study will help the concern authorities to bridge the gap between traditional educational institutions and Madaaris in Pakistan.

Key Word: Madrassah School, Attitude toward science, Madaaris in Pakistan.

Background of the Study

Common perception about Madaaris in Pakistan

Madrassah is an organized, systematic setup for Islamic/religious studies. Most of the Madaaris in Pakistan are working to prepare students for religious duties. Bashir and Haq (2019) stated, Madrassah system in Pakistan have been isolated and the reason of this isolation is their sole focus only on religious education. Rehman (2015) stated that the current syllabi of Pakistani Madrassahs are not enough to produce scholars with administrative capabilities and cannot fulfill the modern needs. Bashir and Haq (2019) emphasized that the subjects consider to be essential for secondary education, such as Mathematics, English, General science and Pakistan studies in Madrassah curriculum.

Importance of Science Teaching:

Shah and Khan (2015) highlighted the importance of science as the science is the backbone for prosperity of any nation. Shah and Rahat (2014) emphasis that "science teaching is not to make every student scientist but to develop scientific attitude and positive attitude towards science in every student." (p.39).

Science Teaching in Madaaris:

Some of the renowned Madrassahs in Karachi introduced the schooling system with different names like Ibtidaiyah, Idadiyah, etc in their madrassah, for sake of ease researcher named them Madrassah School (Suhag, Lashari, Malik & Memon, 2017)

These Madrassah Schools are the adaptive form of traditional formal schooling system present in Pakistan. where students have been taught science and general science subjects like Chemistry, Physics, Mathematics,

Biology, English, Pakistan Studies and general sciences at secondary level.

Madrassah students' Attitude toward science:
The students of the Madrassah schools have been taught the science subjects and the students of Madrassah schools experiences the science in Madrassah environment which build the attitude of the students toward science

Dearth of research:
The students' attitude toward science has been explored in many contexts and levels but there is a dearth of research to find the attitude of Madrassah school students toward science in Pakistan. Keeping this gap in consideration, this study aimed to find the Student's attitude toward science in madrassa schools at secondary level in Karachi region.

Introduction

students with great Islamic heritage and application of Islam in the modern time along with the scientific and material development

Madrassah Schools
Realizing the need of modern teaching techniques, science and technology in this era, some of the renowned madaaris in Karachi region like Jamia Ulom Islamia Binori Town, Jamia Qurtuba Clifton, Darul Ulom Karachi, Jamia tur Rasheed, Jamia Binoria SITE have introduced the schooling systems with different names like Ibtidaiyah, Idadiyah, etc in their madrassah, for sake of ease researcher named them Madrassah School. Madrassah School which is the adaptive form of formal schooling system (class rooms, white boards, desks, science labs etc) but inside the madrasah environment.

Attitude & Attitude toward science
Eagly and Chaiken (1993) described an attitude: "An attitude is a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (p.1). Attitude is an attribute possess by an individual for something. Attitude themselves are evaluative decisions made by any person for specific circumstances

Madaaris in Pakistan & common perception about their curriculum
At Independence of Pakistan there were only 137 to 245 Madaaris exists in the country, Madaaris surprisingly had reached to 50,000 till 2013, where 1.5 to 2 million students are studying (Anjum, 2017). The syllabus in almost all the traditional madrassas working in Pakistan follows the basic design and structure called Dars-i-Nizami which were first implemented in Darul Ulom Deoband and same followed by Pakistani Madaaris after the independence. (Hussain,2016). Dogar (2010) stated that by "Analysis of the syllabus of Dars-e-Nizami leads to conclusion that the books taught are very old and present-day knowledge has not been allowed any access into the syllabus". Dogar (2010) presented the comparison for modern teaching techniques and traditional techniques adopted in Madaaris. He emphasized that the curriculum and teaching techniques should be changed by proper reform. Rehman (2015) concluded there is an urgent need to revise the syllabi for Madrassah that will produce

(Ajzen, 2001). Attitude is an attribute of any individual and have no physical existence so it is very difficult to measure this trait. It cannot be measure with help of any such measurement which is used for other physical quantities (Reid, 2006; Lashari, Umrani & Buriro, 2021)

Attitudes toward science were defined as "the emotional reactions of students towards science… interest, satisfaction, and enjoyment" (Gardner, 1975b, p. 2). Bennett (2003) students' attitude towards science has been developed by pupils' experiences in different learning environments in the field of science education (Lashari, Mashori, Abbasi & Talpur, 2018).

It is common norm that Madrassa students possess positive attitude toward Islam and Islamic education but there is lack of information about their attitude toward sciences. Madrassa school students have been taught the science subject purely in madrassa environment although they follow the national curriculum up to secondary level. So, during the learning process the attitude of Madrassa school students have been built toward sciences either positive or negative.

Objectives of the study

- To find the Madrassa School students' attitude toward science.
- The tool used in the study to find the attitude consist of different constructs, the 2nd objective of the study was to find the attitude of the madrassa School students' in different constructs.
- The attitude of the students changed with change of their grades from lower to higher grades, the 3rd Objective of the study was to find the Students' attitude toward science in different grade 8th, 9th & 10th individually mean grade wise analysis.
- The 4th objective of the study was the comparison of students' attitude toward science among the grades (8, 9 &10).

Research Methodology

This study is cross-sectional, descriptive and quantitative in nature. Survey method has been used to find the attitude. The population of the study has to cover all the existing students of Madrassah Schools in Karachi region which adapted the formal schooling system. The sample of the study has comprised of four Madrassah of Karachi region which adapted the formal schooling system. The scope of the study has further narrowed down to male students of science disciplines of these Madrassah at secondary level. A sample of 201 students from madrassa schools has been selected. The sample Madrassah has been selected through convenient sampling technique.

Table 1

Table showing the number of students selected as sample grade wise

SNO	Grade	Number of students
1	Grade 8th	79
2	Grade 9th	59
3	Grade 10th	63
	Total	201

Research Tool

The researcher has adapted the original tool named as Science Attitude Scale (SAS) which was developed for western context by (kind, jones & barmby, 2007). The five-point Likert scale (1=strongly disagree to 5= strongly agree) have defined for each item. The Science Attitude

Scale (SAS) had been used by Anwar, N. P., & Bhutta, S. M. (2014). The format of the tool will be kept same in this study; however, changes have been made by the researcher by deleting some of the items irrelevant in context of Madrassah School. The adapted tool has 29 items and consists of five constructs. The data were collected by survey method through a questionnaire

Constructs of the tool

Table Showing Construct Wise Item numbers of the research tool

S.No	Constructs Name	Nos. of items
1	Learning Science in School (LSS)	05
2	Self-Concept in Science (SCS)	07
3	Practical work in science (PWS)	08
4	Science Outside School (SOS)	04
5	Importance of Science (IS)	05
	TOTAL	29

Table 2 Reliability & validity of the tool

The adapted tool was shared with two science education experts of Allama Iqbal Open University Islamabad and faculty panel of two renowned madrassa school namely Jamia Ulom-ul-Islamiyah Binori town and Jamia Qurtuba Clifton Karachi for content validity check in context of Madrassah School. The experts shared their views regarding content, construct and face validity of the tool.

The adapted tool was piloted on 30 students to measure the reliability. Cronbach alpha was calculated. The value of Cronbach alpha found 0.793.

Analytical strategies

For computing Attitude of the student toward science the descriptive analysis method is used for Mean and standard deviation with the help of SPSS-22 software. Kaushik (2015) stated that the One-way ANOVA can be used to find the difference between the Mean score more than three values. One-way ANOVA is robust test for bivariate analysis when dependent variable is of metric type and independent variable of nominal type. So to find the comparison across the grade one-way ANOVA has been implemented.

Finding of the study

Attitude of the Madrassah School students towards science

The results demonstrated that the Mean value of the attitude of whole sample towards science is (M= 3.7065, SD =0.55828). which indicates that the madrasa school students possessed positive attitude towards science also the SD value indicated that the data values were not much dispersed.

Table 3

Mean Value of the Attitude Toward science of the sample

Number of students in grade (8th,9th &10th)	Mean Value (M)	Standard Deviation (SD)
201	3.7065	0.55828

construct-wise attitude towards science.

Table 4

Table Showing Construct Wise Mean Value of the sample.

Constructs	Mean Value	SD
Learning science in school	3.8388	0.66233
Self-concept in science	3.5011	0.68365
Practical work in science	3.8271	0.66153
Science outside the school	3.7649	0.83278
Importance of science.	3.6219	0.81849

*SD stands for standard deviation

It was found that the madrasa school students possessed higher attitude towards science in the constructs named as Learning Science in School & Practical work in science with values (M=3.84, SD=0.6623 & M= 3.83, SD= 0.6615). while students of Madrassah school possessed low attitude toward science in construct named as Self Concept in science with value (M=3.50, SD= 0.6836).

Attitude of Madrasa School students towards science Grade-wise.

Table 5

Students Attitude Toward science Mean Score Value Grade Wise

| Grade	Sample Size (N)	Mean Score(M)	Standard Deviation (SD)
8th	79	3.5325	.50389
9th	59	3.8048	.51440
10th	63	3.8325	.61200
Total	201	3.7065	.55828

The results shown that the students of grade 8th, 9th & 10th of Madrassah school had positive attitude towards science. With vertical change the attitude toward science is increasing one.

Application of One-Way ANOVA to compare the Means

There are following assumptions for applying one-way ANOVA.

The dependent variable should be measured at the interval or ratio level. In this study the dependent variable is "Attitude toward science" 2. The independent variable should consist of two or more categorical independent groups. There are three independent variables as three groups (Grade 8th, 9th & 10th). 3. The independence of observations, which means that there is no relationship between the observations in each group or any relation between the groups themselves 4. The data should not have a significant outlier.

Figure 1
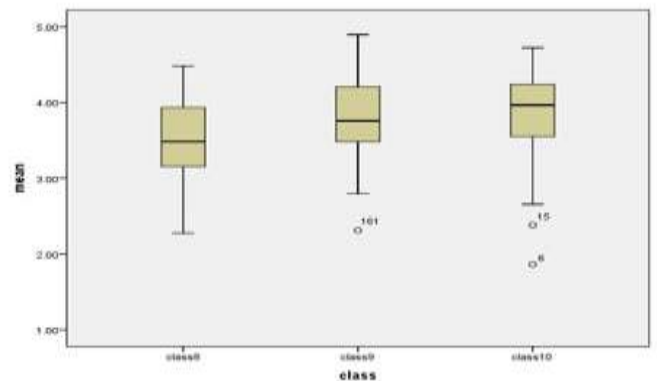
5. The dependent variable should be approximately normally distributed for each category of the independent variable. Shapiro-Wilk test applied to check the normality of the data for each category.

Table 6

Shapiro-Wilk Test for Checking the Normality of Mean Value of Dependent Variable(Attitude toward Science)

Grades	Shapiro-Wilk Test		
	Statistic	DF	Significance Value(P)
8th	.980	79	.243*
9th	.982	59	.535*
10th	.924	63	.001*

P value > α=0.05 for 8th grade students, P value > α=0.05 for 9th Grade students and P value < α=0.05 for 10th Grade students. Means the data is normally distributed for class 8th and 9th but not for class 10th. Jan & Bohnenblust, 2005 p.180) the ANOVA is robust and moderate departures from normality aren't a problem, especially if sample sizes are large and equal or nearly equal.

6. There needs to be homogeneity of variances. (Kaushik, 2015) Explained that for application of ANOVA the homogeneity of variance should be check. For the homogeneity of variance, the Levene's test has been applied

Table 7

Levene's Test for Homogeneity of Variance

Levene Statistic	Sig Value
0.926	0.398

Note. Significance value P > α=0.05

P-value =0.398 > α=0.05 which indicate to accept the null hypothesis Ho: Assumed equal variance.

Results of ANOVA Test

The ANOVA test indicates whether there is a significant different between the Mean value of the independent groups or not.

Table 8

ANOVA Test results Assuming Equal Variance

F-Value	Significance Value (P)
6.719	.002

P-value = 0.002 < α=0.05 indicated to reject the null hypothesis Ho: there is no significant difference in the mean values between the grades and enforce the alternate hypothesis H1: there is a significant difference in at least one grade from the rest

Test for Comparison across the Grades

One-way ANOVA did not explain the difference among the grades. For that purpose, Post Hoc Tukey test used to compare the difference between Mean values of among the grades.

Table 9

Post Hoc Tukey Test Results for Comparison of Mean Value Between the Grades

Grade (a)	Grade(b)	Standard Error	Significance Value(P)
Grade 8th	Grade 9th	.09343	.011
	Grade 10th	.09171	.004
Grade 9th	Grade 8th	.09343	.011
	Grade 10th	.09837	.957
Grade 10th	Grade 8th	.09171	.004
	Grade 9th	.09837	.957

grade 8th and grade 9th the P value is 0.011 < α=0.05 indicate there is a significant difference in Mean value between these two grades. comparing grade 8th and grade 10th students the P value is 0.004 < α=0.05 indicated that there is a significant difference in Mean value between grade 8th and grade 10th. The P-value for comparing class 9th and class 10th is 0.957 > α=0.05 indicate that there is no significant difference in mean score in grade 9th and grade 10th.

Conclusion

The Madaaris in Pakistan are playing their role to promote Islamic education in the society. They are also participating in the socio-economic development of the country by providing free education, accommodation and food to the students. By introducing madrassa schools, they are also participating to promote science learning in their students.

This study also rejected the negative perception about the Madaaris that they are not focusing on the promotion of sciences and technology in the society.

This study also reveals that the learning of science subjects and developing positive attitude towards science to the students of secondary level can be achievable in pure madrassa environment instead of only traditional school system. If text books of science subjects as per national curriculum policy for secondary level are taught to the students in madrassa school environment can result in the same achievement as compared to the traditional school system.

Recommendations

This study reflected that the Madaaris who taught science Subjects to their students promoted positive attitude in their students toward science so to promote the scientific literacy in the madrassa students, every madrassa working in Pakistan should introduce the Madrassa School setup in their institution at secondary level.

The Government should facilitate the Madaaris for setting up madrassa schools in their institutions and allow them to work independently to provide basic scientific literacy to madrassa students at secondary level. For better scientific literacy Government should facilitate the Madrassa schools by providing them upgraded science Lab, computer labs and science library for the students at secondary level.

The Government should offer free scholarships to the teachers of the madrassa schools in best universities to enhance their education level.

This study has delimited to Karachi region only further researches will be conducted to other regions of Pakistan. The researcher selected the Madaaris of only one school of thought, same studies will be conducted in Madaaris of other school of thoughts as well.

References

- Ajzen, I. (2001). Nature and operation of attitude. Annual review of psychology, 27-58.

- Anjum, U. (2017). Needs of Modern Eduction in Madaaris: Case study in Pakistan. Academic journal of Business,Administration,Law and social Science, 3, 239-259.

- Anwar, N. P., & Bhutta, S. M. (2014). Students' attitude towards science in lower secondary classes : Comparison across regions. Journal of Educational Research, 17(1), 77-90.

- Bashir, M., & Haq, S. U. (2019). Why Madrassah Education Reforms Don't Work in Pakistan. third world quartely, 595-611.

- Bennett, J. (2003). Teaching and learning science. London.Newyork: continuum .

- Dogar, N. T. (2010). MADRASSA REFORMS – PROBLEMS AND PROSPECTS. National Defence University Journal, 1-25.

- eagly, A. H., & Chaiken, S. (1993). The psychology of attitudes. Orlando, FL, US: Harcourt Brace Jovanovich College Publishers.

- Hussain, M. A. (n.d.). مدارس دینیہ کا نصاب و نظام. karachi: Maktaba Tul Hirah.

- Jan, K. W., & Bohnenblust, S. E. (2005). Basic Statistics for the Health Sciences (5th ed.). McGraw Hill.

- Kaushik, N. (2015, april 29). Bivariate Analysis one way Anova. India. Retrieved from https://www.youtube.com/watch?v=-2NSUhoRPbE

- Kind, P. M., Jones, K., & barmby, P. (2007). Developing attitude towards science measures. international journal of science education, 871-893.

- Lashari, A. A., Mashori, G. M., Abbasi, A. M., & Talpur, Q. (2018). Motivation to Learn English Language: A Study of Shah Abdul Latif University, Khairpur, Sindh. International Journal of English Linguistics, 8(1), 15-21.

- Lashari, A. A., Umrani, S., & Buriro, G. A. (2021). Learners' Self-regulation and Autonomy in Learning English, Pakistan Languages and Humanities Review, 5(2), 115, 130.

- Rehman, A. (2015). Madrasah Education in Pakistan; Subject or Descipline. weber educational Research & Instructional Studies, 36-40.

- Reid, N. (2006). Thoughts on attitude measurement. Research in Science & Technological Education, 24(1), 3-27.

- Shah, I., & Khan, M. (2015). Impact of Multimedia-aided Teaching on Students' Academic Achievement and Attitude at Elementary Level . US-China Education Review A, 349-360.

- Shah, I., & Rahat, T. (2014). Effect of Activity Based Teaching Method in Science. International Journal of Humanities and Management Sciences (IJHMS), 39-40.

- Suhag, A. K., Lashari, A. A., Malik, A., & Memon, F. A. (2017). Analyzing the effects of science teaching methods on students'achievements: A study of secondary school teachers of district Khairpur Mir's. Journal of Social Sciences and Media Studies, 1(2), 27-33.