



Research Article

Higher secondary school teachers' attitude towards second degree in physics: the case of Eastern part of Ethiopia

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The goal of this paper is to understand the attitude of teachers for second degree in physics in Eastern part of Ethiopia. This study adopts a qualitative approach. Questionnaires written for open-ended responses were administered to a sample of 100 high school teachers. Content analysis was used to interpret diverse responses pertaining to teachers who want to continue further education on their first background. Both descriptive and quantitative methods were used to discuss the result. The study revealed that there is significant number of teachers who doesn't want to pursue higher education in physics. Although the obtained result shows that most of the respondents are interested to upgrade their academic qualification, the number of teachers' who lost interest for further education in their first background is very significant, more than 20% of the total number of respondents, which is an alarming quantity and shows the threat that research and postgraduate program in this field are facing.

Keywords: Attitude, second degree, education, physics, teaching profession

INTRODUCTION

Studies reveal that educational attainment of students depends to a large extent on the attitude of the teachers to their profession. According to, Encyclopedia Britannica "Attitude is a word having no precise technical meaning when used to describe human beings psychologically. It refers, in a general way, to inclinations, presumed to be enduring, to react in a certain way in response to certain kinds of situations, to see and interpret events according to some predisposition and to organize opinions into coherent interrelated clusters". Attitude is a noun and it means "a way of thinking", "a way in which body is held" and in informal sense "self-confident or aggressive behavior" (Shahla, 2015). In simple words attitude is one's inclination towards something. It is thought to be something inside the person and may be positive or negative towards a particular thing or object. Therefore, it is supposed that a teacher with a good attitude towards his/her profession would produce right type of youth (Shaheen, 2014), while a teacher's negative attitude

towards teaching profession, no matter the levels of subject knowledge and professional training s/he has, may affect students' performance negatively.

The present study is aimed at comparing Attitude of Secondary school teachers towards the second degree. The main objective of this study is to understand the attitude of teachers for second degree in physics in Eastern part of Ethiopia high schools and preparatory schools in Dire Dawa, Chiro, Harar, Babile and Jijiga.

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The organization of this paper is as follows. The second section describes the related literature review of attitudes and education policy of Ethiopia, the third section describes the research methodology and research questions, the fourth section describes the results and discussions, Our final conclusion is stated in Section 5.

Review of Related Literature

Attitude is a hypothetical construct that indicates an individual like and dislike towards an item. It may positive, negative or neutral. Attitude is an approach, temperament, sensation, situation, etc. with regard to a person or thing: inclination or course, especially of the mind. Attitude is a way of looking at things (Muellerleile, 2005);(Oskamp and Schultz, 2005) described that there are three major theoretical viewpoints about the nature of attitudes that have been proposed by social psychologists: the tri-component point of view, the separate entities point of view, and the latent process perspective (Oskamp and Schultz, 2005). Affect, behavior, and cognition are the three components of attitude which is a single entity the tri-component viewpoint holds. The thoughts and emotions one has toward an attitude object such as physics lessons and physics subject are referred to as affective point of view. The individual's explicit events and reactions to the attitude object is referred to behavior component of attitude, while the cognitive factor is the thinking or belief that someone has about the attitude object.

The three components; affect, behavior and cognition, are unique and separate objects, the second theoretical viewpoint about the nature of attitude assumed. The term attitude reserves the affective component only. Cognition and behavior are considered as determinants instead of components of an attitude. This point of view has been described by investigators such as (Thurstone, 1931); (Fishbein and Aizen , 1975). They have described attitude as the sum of affect for or in opposition to an object. It is also acceptable for teaching profession, because the attitudes and perceptions of a profession affects the perceptions of professional competence and achievement, teachers' attitudes towards their profession have a great importance in fulfilling the requirements of the profession(Akbulut and Karakus, 2011).

As (Bersissa 2012), described the attitude developed toward the profession is one of the most important determinants of significant achievement of the individual in that profession. If teachers have positive attitudes toward teaching profession, it will positively influence their professional lives. On the contrary, if teachers have negative attitudes toward teaching profession, this will negatively influence their professional achievement.

However, some researchers (Oskamp and Schultz, 2005); (Zanna and Rempel, 1988) distrust this simple

speculative view of attitudes. (Akbulut and Karakus, 2011) also admitted that this standpoint does not take into custody the full complexity of the attitude impression. The third theoretical point of view views attitude as a latent variable that can explain the connection between certain observable stimulus events and behaviors. Attitude can be formed from cognitive, affective and/or behavioral information about the attitude and that can be expressed through cognitive, affective, and/or behavioral responses existing attitude researchers agreed (Eagly and Chaiken, 2005); (Fabrigar, MacDonald and Wegener, 2005); (Zanna and Rempel, 1988). According to (Zanna and Rempel, 1988), the latent process viewpoint is better than the tri-component viewpoint or the separate entities viewpoint because it is more consistent with findings of contemporary attitude research.

Paces in human development and the progress made by human society over the past thirty years highlight the role that science and technology plays in meeting the challenges of an ever-transforming society. Nations that have set global economic standards have invested, and continue to invest, a substantial portion of their human and financial resources into science and technology, including education and training, research and development, technology acquisition and adaptation, and the development of physical infrastructures to support science and technology. The experience of industrialized nations has shown that a critical mass of scientists, researchers, engineers, and technicians will propel a country towards the next stage of modernization. By nurturing a "culture of science", this socio economic breakthrough could be achieved with a citizenry equipped with the knowledge, skills, values, and attitudes made keener by quality education in science and technology. Ethiopia also diverts its attention on the development of human capital. Because of this for the last twenty years, government builds more than 30 University across the country and more than 10000 high schools across the regions.

An understanding of the nature of science is an important objective in a science education curriculum that intends to promote scientific literacy. (Lederman, 1992), noted that the development of an adequate understanding of the nature of science and an understanding of science as a way of knowing is a desired outcome of science teaching.

According to Ethiopian education policy school education is classified in to four levels; there is some pre-primary education for children aged 4 to 6 years but provision is patchy. Primary school education has two cycles from age 7 to 10 years (grades 1 to 4) and from age 11 to 14 years (grades 5 to 8). Regional exams are taken at the end of grade 8 (Primary school certificate exam). Secondary education has two cycles from age 15 to 16

years (grades 9 and 10) and from age 17 to 18 years (grades 11 to 12) leading up to the national exams. The Ethiopian General Secondary Education Certificate Examination (EGSECE) is taken at the end of grade 10 and requires a pass in at least 5 subjects to pass to the next level. The Ethiopian Higher Education Entrance Examination (EHEEE) is taken at the end of grade 12. Students passing the EHEEE are eligible for university if their grades are sufficiently high.

A student who wants to graduate from University, in fields other than Engineering, Medicine and Law, should learn for three consecutive years in the University and finally will obtain BA/BSc degree in a particular discipline. The policy clearly put what the qualification of teachers should be in each of the above mentioned four levels. Teachers of the first cycle should obtain certificate from teachers training institute; for the second cycle they should hold diploma from recognized colleges; for the high school they should obtain BSc/BA degree in related field from a recognized college or University and for the preparatory school they should hold MSc degree in related field from a recognized University.

The policy enforces to cover all subjects at the preparatory school by teachers holding second degree in related field. The reality in the ground is contrary to the policy which shows there is high demand for teachers holding second degree in their subject area. To train and produce suitable and qualified manpower the market demands is the responsibility of higher education institutions. Dire Dawa University, one of the Universities opened in 2007 G.C. has the same responsibility, especially to serve the society of the Eastern part of the country. Initially this study was designed just to assess the gap between the demand and supply of teachers holding second degree in this region. Later on we extend the purpose of this study and try to investigate teacher's attitude towards higher education in the area of their first degree, especially in physics.

It is obvious that teachers' attitude towards their profession and subject area have significant and direct effect on their students' achievement in the subject mentioned. Teachers' attitude can play a vital role for their students' achievement and interest towards a particular discipline. Students' attitude towards science have been extensively studied by different researchers, but attitude of teachers for further education and towards their major subject doesn't well studied as far as we are concerned, especially in Ethiopia. This research was initially focused greatly on launching MSc degree program in physics in Dire Dawa University.

Research Questions and Methodology

This study addresses the following questions:

1. What are teachers' attitudes towards higher education in Physics?
2. What is the demand of this subject in the market?

METHODOLOGY

We prepare questioner which try to address the research questions. The questionnaire addresses three main issues teachers' beliefs about teaching physics with qualified status and further education. After the necessary data were collected and coded, quantitative analyses were performed using SPSS 16.01 (Statistical Package for the Social Sciences) for windows. Descriptive statistics were used in the analysis. Descriptive statistics was used to determine the attitude of prospective teachers towards second degree.

Study Design –Sample and Sampling Technique

The study is a descriptive study of survey type. The sample for this study comprises of 100 physics teachers who obtain their first degree from different university at different time and they are teaching in high schools and preparatory schools in the Eastern part of the. The reason behind this number is, all schools are preparatory and they have trained students for university system with two years program. The sample comprise of 90 males and 10 females.

RESULTS AND DISCUSSION

For this study respondents are selected from different organizations, predominantly from education sector. All respondents are graduates of physics. In this study we try to consider different types of respondents in terms of age, gender, service year and the like. The proportion of types of respondents is summarized in Table 1 and Fig 1 distribution of respondents in terms of their age, Table 2 and Fig 2 summary of distribution of respondents in terms of their experience.

As it seen clearly seen from Table 1 and 2, the proportion of types of respondents are summarized

As it is clearly seen from Fig 1 and Table 1 the study involves employees of different age, starting from very young up to old people who are on the verge of their retirement, though the proportion is different. Most of the respondents, about 70% of the total respondents, are at their age of in the range 25 - 40. Unfortunately we couldn't balance between the number of male and female respondents which happens because we found only few female physics graduates in schools and education bureaus. Actually it is a visible fact that only few female students are joining physics department in higher

Table 1. The summary of distribution of respondents in terms of their age.

Age	Below 25	25-30	30-39	40-49	Above 50	Total
Female	2.04	3.06	3.06	3.06	1.02	12.24
Male	5.10	28.57	37.26	13.27	3.06	87.76

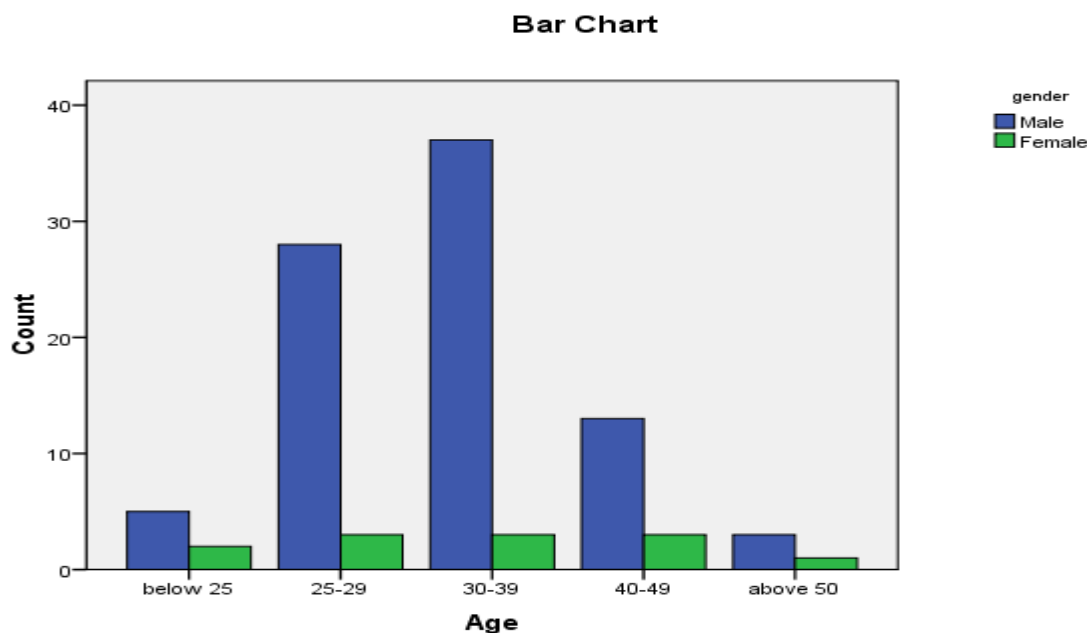


Figure 1. The summary of respondents in terms of their age and gender

Table 2. The summary of distribution of respondents in terms of their experience

Service year	Below 5	5-10	11-15	16-20	Above 20	Total
Female	2.04	3.06	2.04	2.04	2.04	12.24
Male	20.41	28.57	19.39	8.16	11.23	87.76

education institutions. We ourselves witness the same problem since majority of the students we are teaching in our department are male. There are also different study results reporting the same problem (Srijita and Santosh, 2014) though further study may require assessing the level of the problem and its possible cause.

Fig 2 and Table 2 show the distribution of respondents in terms of their experience and it is clear that the study involves respondents of different work experience ranging from just beginners up to those who have experience of more than 20 years. Moreover this study is carried out involving different organizations which include

Preparatory schools, high schools and educational bureaus selected from five cities located in the eastern part of the country. Thus the survey can be said broader enough to provide relevant information for the intended purpose.

In general most, or almost all, of the respondents agree on the demand of the program. As one can easily notice from figure 1 respondents of different years of experience, starting from beginners up to those who has more than twenty years of experience, believe that there is a high need for MSc program in physics. The level of the need is summarized in Table 3. Given the summation

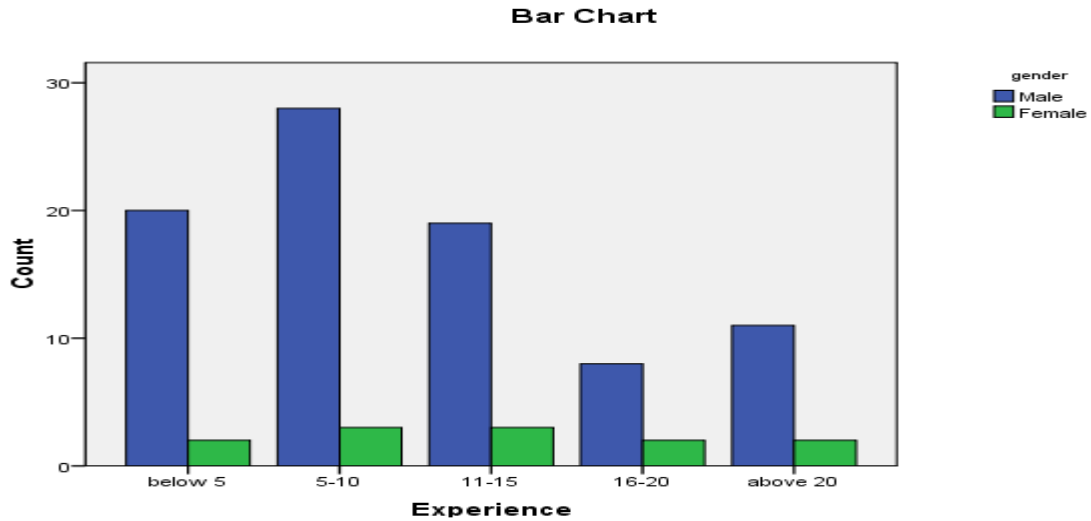


Figure 2. The summary of distribution of respondents in terms of their experience

Table 3. The level of demand for the program.

Level of demand	High	Medium	Low	Total
Percentage	60.53	35.53	3.94	100

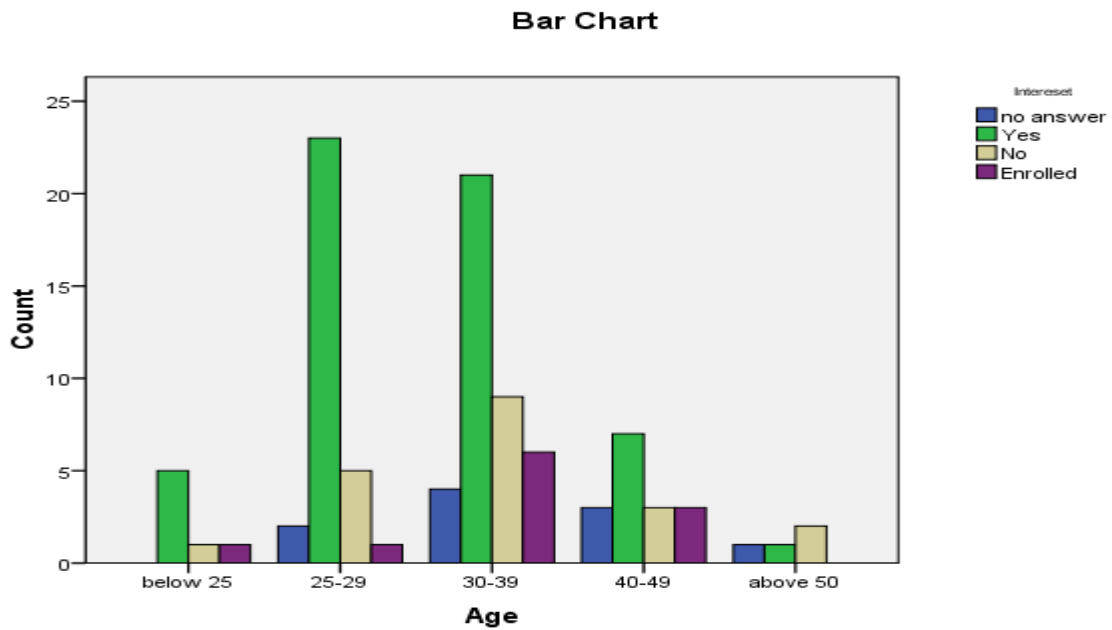


Figure 3. A bar chart showing the interest of High school physics teachers to pursue second degree level education in Physics.

of the percentage of the respondents who stated there is a need for the program about 96% of them states the level of the need is high and medium. Only about 4% of these respondents say the need is low. This shows the majority of the respondents favor the commencement of the MSc program in Physics bearing in mind that the program can play significant role in gearing the

development of the country, solving societal problems, filling the gap between the demand and supply of the qualified manpower in the field and also it can be a fortune for those who want to develop their academic career but couldn't get the access.

Table 3 is the level of need for the program. The result of

the survey shows more than 60% of the respondents who says there is a need for the program evaluate the level of the need as high, about 35% of them say the need is at medium level, the rest of them, about only 4%, says the level of the need is low.

Attitude of high school teachers for higher education in physics has been investigated through questionnaires to respondents selected from the sample areas we consider. To undertake this study, an attempt was made to consider sample of respondents from selected cities of three regions (Oromiya, Harari and Ethiopian Somalia) and one city administrations (Dire-Dawa). The data required for the study is gathered through questionnaires and personal contacts. Despite the fact that the sample area could not reach all the corners and places of the country, 5 cities of the country which are selected based on their geographical proximity to the University were reached. Of these 5 cities, different high schools and preparatory schools, from which respondents were selected, were taken in to account.

It is shown that many of the respondents show interest for further education in physics. However, still significant number of them lost interest for higher education in physics. More than 20% of the total number of respondents says they have no any interest to upgrade their education level in physics and even to stay in teaching profession for long time.

The study revealed that there is significant number of teachers who doesn't want to pursue higher education in physics. Fig 3 exhibits that there are large number of high school physics teachers who are interested to upgrade their academic qualification, however, the number of teachers who lost interest for further education in their first background is also very significant, more than 20% of the total number of respondents. By any type of measurement this quantity cannot take to be small rather it is an alarming quantity. The result can also shows the risk and threat on the fate of research and postgraduate program in physics across the country. Authors of this paper have a fear that in near future the country may face a drought of researcher and highly qualified manpower in physics, unless some corrective measurement is taken soon, despite the fact that the economic and technology development of the country demands large number of highly qualified science researchers and technologists. Our dread comes from the real situation western countries facing right now. In those countries most students have no interest to science and mathematics which prompt shortage of science scholars in those countries (Voltaire, 2007). The existing policy which allows special incentive for science students (Voltaire, 2007). Shows how much the problem is deep and serious in those countries.

In this study we try to assess the basic reasons responsible for the negative attitude developed in physics teachers towards higher education. Open ended question addressing this point was included in the questionnaire administered to respondents. Some of the reasons mentioned by respondents as possible cause for their loss of interest for higher education in physics include

- Unable to recognize the contribution of Physics, Science in general, for the development of the country.
- Financial problem. Almost all high school teachers have fixed monthly income, usually monthly salary. Hence they are unable to cover their educational and living cost.
- They believe that 'it doesn't payback'; monthly income of physics professionals is very small as compared to other professions.
- There is no conducive working environment, job satisfaction and economic benefit.
- Obtaining higher degree in Physics can bring no change to one's own life, especially economically.
- Lack of alternative specialization areas. Universities are commencing MSc degree program in physics in very few and common specialization areas, probably due to lack of resources and qualified man power required to run the program in variety of specialization areas.
- No interest to stay in teaching profession, however, the curriculum for postgraduate programs are designed in such a way that the graduates forced to stick with the profession. Almost all physics postgraduate programs in the country has no any linkage with industries, hence they are not equipping their graduates with skills relevant to industries or other non-education sectors.
- Unfair and discouraging selection criteria in schools and education bureaus to get the grant for postgraduate study given by regional education bureaus for high school teachers. Usually the selection is done based on ethnic background, blood relation and political commitment instead of individual academic merit and work performance.

The most frequently mentioned factors behind the negative attitude towards higher education are those related with economy, job opportunity, and satisfaction and the education system. According to the respondents learning physics is not profitable, hence instead of pursuing higher education in physics it is better to start some business or enrolled for other discipline out of teaching, which, they believe, they are economically more advantageous and give satisfaction for their life. The other factor mentioned here is job opportunity since

physics graduates have almost only one option, joining the education sector as a teacher. Those who love physics but not teaching profession have no any other alternative to sustain their life. They are forced to join Education sector which does not have interest. There are also respondents who blame the education system for their loss of interest for higher education stating "There is no real Physics education in Ethiopia" which must directly be related with the existing curriculum and mode of delivery in higher education institutes.

CONCLUSION

We try to investigate the attitude of high school teachers towards higher education in physics. The study is limited to high schools and preparatory schools in the eastern part of Ethiopia. Questionnaire containing both open ended and closed ended questions are administered to respondents from the selected schools in the region. The study revealed that there are many physics teachers in schools who has no interest to upgrade their academic qualification in the same field. This can be taken as an indicator for the development of negative attitude towards higher education (in physics) among high school teachers.

A number of factors have been identified as related to teachers' attitude towards second degree in physics; such factors include salary, professional respect, and teachers' attitude towards the profession, working environment, and societal impacts.

The negative attitude developed within teachers towards upgrading their academic qualification should be one of the challenges the education sector facing in enhancing and ensuring education quality. It is obvious that attitude takes the major part in one's own personal and professional achievement. It is indispensable fact that teacher' attitude towards their profession and their academic qualification plays a crucial role in the quality of education.

Limitations of the study

Though a thorough and sincere investigation has been attempted, the present investigation has some limitations, those are as follows:

1. The present study was conducted only at surface level. It was not extensive and "in depth" study.
2. This study was conducted only in a particular Eastern part of Ethiopia.
3. The total number of teachers participated is not enough relative to the total number of teachers' across the region.
4. No intensive interview with the teachers was held for knowing their real attitude towards their second degree.

5. No intensive interview with the teachers was held for knowing their real attitude towards their second degree.

Recommendations for further study

1. This study suggests that the attitude of teachers towards second degree must be tested on some other variables like pay structure, and teaching experience, it is also recommended that such type of study must be investigated in the other part of Ethiopia for its rationality.
2. Similar studies can be done at other departments in Dire Dawa University.
3. Comparative surveys on this problem can be undertaken in different parts of the country.
4. In-depth" studies may be conducted in order to know real attitude of the second degree. A team-work may be required for the purpose with other University.
5. Causal studies may be undertaken to know the reasons behind unfavorable attitude.
6. Selection criteria for MSc program in each schools and education Bureau should be based on merit and their performance
7. This study is very much essential for development of professional efficiency and quality education of school teachers

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REFERENCES

- Akbulut ÖE, Karakus F (2011). The investigation of secondary school science and mathematics pre-service teachers' attitudes towards teaching profession, Educational Research and Reviews Vol. 6 (6), pp. 489-496, June 2011
- Bersissa A (2012). Assessment of the Attitude of Prospective Teachers Enrolled in Postgraduate Diploma in Teaching: The Case of Wollega University, Science, Technology and Arts Research Journal
- Eagly AH, Chaiken S (2005). Attitude research in the 21st century: The current state of knowledge. In D. Albarracin, B. T. Johnson, MP, Zanna (Eds.), *The*

- handbook of attitudes* (pp. 743–767). Mahwah, NJ: Lawrence Erlbaum Associates.
- Fabrigar LR, MacDonald TK, Wegener DT (2005). The structure of attitudes. In D. Albarracin, B. T. Johnson, and M.P. Zanna (Eds.), *The handbook of attitudes* (pp. 79–124). Mahwah, NJ: Lawrence Erlbaum Associates.
- Fishbein M, Aizen I (1975). *Belief, attitude, intention, and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Lederman N (1992). Students' and teachers' conceptions on the nature of science: a review of research, *Journal of Research in Science Teaching*, 29, 331-359
- Muellerleile J (2005). Attitudes aptitude Retrived October 2011 from http://www.4vqp.com/images/062305_attitude_vs_apititude.pdf
- Oskamp S, Schultz PW (2005). *Attitudes and opinions* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum Associates
- Shahla SS(2015).Attitude towards Teaching Profession: A Comparative Study among Secondary School Working Teachers of Aligarh Muslim University belonging to Early Adulthood and Late Adulthood Stage, European Academic Research
- Shaheen SS (2014).Eligibility versus Entrance test. *Asian Journal of Multidisciplinary Studies*, 2(10) October, 2014. p.170
- Srijita B, Santosh KB (2014). An Investigation into the Attitude of Secondary School Teachers towards Teaching Profession in Purulia District of West Bengal, India, *International Journal of Academic Research in Education and Review*
- Thurstone LL (1931). The measurement of social attitudes.*Journal of Abnormal and Social Psychology*, 26, 249–269.<http://dx.doi.org/10.1037/h0070363>
- Voltaire MM, (2007). Profiling Secondary School Teachers' Attitudes towards Learning Physics, *Journal of Education and Human Development*
- Zanna MP, Rempel JK (1988). Attitudes: A new look at an old concept. In D. Bar-Tal, A.W. Kruglanski (Eds.), *The social psychology of knowledge* (pp. 315–334). New York: Cambridge University Press.

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