

Attitude of Public High School Students towards the Subject of Chemistry and Their Relationship to Academic Achievement in District Toba Tek Singh

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Abstract:

Since the previous four decades, attitudes about chemistry have been a focus of study, attracting the attention of numerous educational studies. This pressing issue had prompted educational experts to unravel the chemistry enigma in terms of comprehension and perception. The goal of this investigation was to find out how public high school pupils in Toba Tek Singh felt about the topic of chemistry. The study's population was made up of all public high school pupils. Through the propionate sampling technique, 300 kids were chosen from a total of 13,099 students, with 6790 boys and 6309 girls. The data was collected using a questionnaire, and the data was analysed using mean, median, frequency, percentage, and standard deviation. Respondents recognised the importance of the chemistry discipline and respected chemistry's utility to humanity. Although chemistry is an interesting subject, I am hesitant to recommend it as a career. Fortunately, responders enjoy performing and prefer theory-based experiments, which have proven to be the most effective way of remembering chemical information. Using cutting-edge educational strategies, the teacher helps pupils develop a favourable attitude toward chemistry.

Keywords: Attitude, educational studies, Public School, Chemistry, Toba Tek Singh

1. Introduction:

The word attitude is made up of two words originating from the French and Latin languages: "Aptus," which refers to the suitability and adjustment of behaviour in response to the demands of the situation. As an alternative to motivation and interest, Ramsden (1998) used the term attitude. For educators, the attitude of students is a hot topic. Students' enthusiasm and attitude in science and scientific learning have a big impact on their involvement and performance. The attitude of students is used to assess their involvement in coursework, course material, and consequent achievement. In every sector of human interest, attitude is seen as a critical aspect that determines success. . There is a clear link between attitude and achievement. Attitude is the cause, and success is the result (Shah et al., 2013).

Attitude determines success. A positive mindset leads to favourable results, whereas a negative attitude leads to poor results. In any sphere of human activity, attitude is a critical aspect in achieving high levels of performance. Attitude is influenced by a variety of circumstances, including demographic shifts. Many demographic factors such as gender (male/ female), location (rural/ urban), indoctrination, beliefs, social issues, cultural constraints, socioeconomic status, parental

education, parental profession, family size, school environment, government oriented educational policies, educational theories, curriculum, peer company, grades, instructional material, web based learning, project based learning, laboratory organs influence attitudes toward subjects such as science (Miller et al., 1996).

In the context of Pakistan's underdevelopment, it is critical to instil in children a favourable attitude toward science topics such as chemistry, physics, mathematics, and biology. The development of a positive attitude toward teaching and studying chemistry is a primary goal of instructors and educators. Increasing the positive attitude of science students toward learning science subjects is critical since the value of a nation is measured not by its assets, such as money, but by the quality of youth it passes down through generations (Zacharia and Barton, 2004).

Nations can maintain their viability through producing intellectual minds in the form of young people. With their knowledge and intelligence, these competent kids act as both a background and front motivating force to uplift these ostentatiously expensive and luxurious resources. These educated minds seek to propel the country's economy forward. These young pupils are seen as a valuable resource that contributes to a country's long-term development and viability, among other things. As a

result, The goal of this study is to assess students' attitudes toward Chemistry, the primary subject of basic science that deals with the constitution, make-up, properties, and reactivity of materials. Chemical education deals with every part of our lives, whether it is in the form of bio molecules (life's ingredients) or other molecules (non-living) that are directly or indirectly connected to our lives. Consider the value of petrochemicals, soap, detergents, paper, plastics, paints, pigments, pesticides, and insecticides, all of which are the result of chemists' labour. qualified students are essential for any country's success if it wishes to achieve its goal of standing out among other countries (Ratnasiri, 2006). Food and agriculture, medicine and medicines, nuclear energy, and space science were all controlled by chemistry. Chemistry also provides methods for bettering our health and the environment. It teaches people how to use radioactive carbon dating to learn about fossils and their lives, as well as how to conserve natural resources (Shah et al., 2013).

1.1 Problem Statement:

We live in a world where nonrenewable energy sources, such as fossil fuels, pose insurmountable obstacles. To fulfil the demands of the twenty-first century, it is critical to encourage students to pursue chemical studies. Students' academic achievement is heavily influenced by their attitudes. All of a student's activities revolve around his or her attitude. The purpose of this study is to assess public high school students' attitudes regarding the topic of chemistry and their relationship to academic accomplishment in the district of Toba Tek Singh.

1.2. Objectives of Study:

The following goals are the focus of this research.

1. Assess the students' level of anxiety, enjoyment, and confidence in the chemistry class.
2. Chemistry is a study of the relationship between a student's attitude and their academic accomplishment.

1.3. Significance of the study:

Positive attitude is directly related to better academic achievement in science topics, particularly in chemistry. Students will be unable to succeed in this aspect of life and in the future if their attitude does not conform to the requirements specified by that subject. The concept of a positive motivational behavioural attitude is more appealing and one step ahead in terms of understudies' scholarly progress in

terms of improved academic performance and achievement.

1.4. Delimitations of Study.

1. Due to time and financial constraints, the researcher has confined the scope of this study to only one Tehsil in the district of Toba Tek Singh.
2. The current study focused solely on students' attitudes toward the science subject of chemistry.

2. REVIEW OF LITERATURE:

2.1 Theoretical Framework:

Smithers and Robinson (1988) stated that students' attitudes have been studied extensively for the past 30-40 years. A huge number of researchers, educators, and psychologists are devoting their time and effort to researching attitudes. To come to a conclusion on a student's academic progress, a lot of research is done on their attitude. Cheung Cheung Cheung (2009). An effort is made to uncover critical elements that contribute to greater academic results and better performance by researching attitude, interest, motivation, and behaviour.

Aside from other aspects, attitude is regarded as a powerful motivator and a gauge of academic accomplishment. According to Zacharia and Barton (2004), student attitudes toward science have been a source of dispute for the past three to four decades and have recently become a hot topic.

Due to a lack of sufficient direction, students have developed negative attitudes about science topics such as mathematics, physics, chemistry, and biology, resulting in a gradual fall in science enrollment (Koballa and Glynn, 2007; Holstein and Lunetta, 2004). Improved study habits lead to improved performance, which is dependent on a happy attitude. Proper and affective motivation and supervision can help students develop a positive attitude toward scientific learning. Ruthven (2011) identified a significant drop in student enrollment in science topics, particularly chemistry, prompting educational and research agencies to study the primary likely sources and roadblocks in this regard. Gender, location, and socioeconomic level are all possible causes, as are siblings, family size, school, teacher, classroom management, and parental education as well as parental occupation. According to Osborne et al. (2003), attitude is not a single term in and of itself, but rather a collection of factors that come together to form an attitude, which in turn shapes a person's attitude. Different educationists

have argued various components (affective, behavioural, and cognitive components of science attitude) (Cawley and Black, 1992; Gardner, 1975; Koballa, 1998; Oliver and Simpson, 1988 Salta and Tzougarki, 2004). In the context of education, Sozer (1991) found that attitude is very significant and meaningful. Success in schooling necessitates a thorough understanding of attitude.

2.2 What is Attitude?

As an alternative to attitude, Ramsden (1998) used the words motivation and interest. The word "attitude" is derived from the French and Latin words "aptitude" and "aptus," which imply "suited, acceptable, changeable, and fit." It is a psychological phrase that is displayed by considering a certain item, body, or situation as giving favour or disfavour (Ajzen and Fishbein, 1980). Attitude is an intrinsic quality of an individual that originates from our beliefs, concepts, and actions (Ajzen and Fishbein, 1980; Eagly and Chaiken, 1993).

2.3 Scientific Attitude:

In North California, Oliver and Simpson (1984) found that when discussing academic scores and achievements, the scientific mindset takes precedence. Oliver and Simpson conducted their research on 5,000 children in grades six through ten. Their studies came to the well-known conclusion that pupils who have a more positive scientific attitude and are more interested in scientific research do better.

2.4 Importance of Attitude in Education:

Smithers and Robinson (1988) found a significant drop in student interest in science education. This frightening situation is supported by information released by the Department of Education in 1994, which found a significant drop in the number of people choosing science as a career topic. Nowadays, students are less likely to choose a scientific job (Zacharia and Barton 2004). Goal achievement is determined by one's attitude. The easier it is to achieve goals with a positive attitude, and vice versa (Germann, 1988). Weinburgh, 1995; Koballa, Crawley, and Shringley, 1990; Oliver and Simpson, 1988; Koballa, Crawley, and Shringley, 1990). Developing a positive attitude is beneficial not just in the context of schooling, but also in facing problems. In developing countries like Pakistan and India, education quality is measured in terms of percentages and grades. Academic achievement is defined as a student's improved

performance during a study term (Lumsden, 1994; Wilson, 1983; Oliver and Simpson, 1988).

2.5 Students' Attitude towards Chemistry:

Chemistry, as a connecting science for major subjects such as medicine, pharmacology, genetic engineering, and ecology, necessitates immediate attention to its knowledge. According to Pickens (2005), statistical research demonstrates that the majority of students find chemistry to be an interesting and preferred topic. The other pupils, on the other hand, believe that chemistry is a mind-numbing and laborious topic to understand yet a fun subject. Chemistry is a difficult subject, but there are a number of variables that can help to make it easier and more fascinating.

2.6 Development of Scale to Measure Attitude:

According to Freedman (1997), educational objectives are divided into three categories: affective, behavioral, and cognitive devised an attitude measurement system based on the affective behavioural scale. Developed a scale based on scheme, which includes seven different aspects of science-related attitudes, including societal use of science, seeking scientific knowledge, developing scientific attitudes, interest in science lessons, studying science in free time, normalcy of scientists, and taking science as a future profession.

2.7 Factors Shaping the Attitude:

According to Ramsden (1998), attitude is a multidimensional phrase that is difficult to define in a single sentence. As a result, attitude is not the only factor that influences the quality of a student's performance; there are a number of other factors that must be considered as well.

Mahdi (2014) identified a number of aspects that influence one's mindset. Students' attitudes toward specific subjects are influenced by a variety of elements that function as stimulants to increase or diminish interest in those fields. Many elements influence attitude formation, including parental occupation, parental education, family size, indoctrination, values, culture, social values, school environment, classroom management, and, most importantly, the role of teachers in creating attitudes

3. MATERIALS AND METHODS:

3.1 Location of Study:

The purpose of this study was to look into the attitudes of public high school students in the district of Toba Tek Singh about the topic of chemistry and

how they relate to academic accomplishment. Pir Mahal, Toba Tek Sing, Gojra, and Kamalia are the four tehsils that make up the district of Toba Tek Singh. The current study was conducted in only one Tehsil of Toba Tek Singh. Toba Tek Singh is one of Pakistan's top 10 cities, with a literacy rate of 60-70 percent. GGHS 361GB Toba Tek Singh, GHS 361GB Toba Tek Singh, GGHS No.1 Toba Tek Singh, and GISS Toba Tek Singh were chosen for this study from Tehsil Toba Tek Singh.

3.2. Target Population and Sampling Procedure:

Toba Tek Singh District has 77 public high schools, 40 of which are male and 47 of which are female. In District Toba Tek Singh, there are 13099 pupils in grades 9 and 10 (6790 boys and 6309 girls). The study took place in Tehsil Toba Tek Singh, which was chosen at random. The target population was all 9th and 10th grade boys and girls in Tehsil Toba Tek Sing. A proportionate sampling strategy was used to choose a 10% sample of 300 students from a total of 13099 students. Random sampling was used to pick the sample size of 156 boys and 144 girls, for a total of 300 respondents.

3.3. Sample Size and Sampling Procedure:

Kamalia, Toba Tek Singh, Gojra, and Pir Mahal are the four tehsils that make up the district Toba Tek Singh. Tehsil Toba Tek Singh was chosen with care. A 10% sample of 156 boys and 144 girls was chosen from 13099 pupils (including boys and girls in grades 9 and 10) in Tehsil Toba Tek Singh, resulting in a sample size of 300 respondents. Proportional sampling was used to choose a sample of 144 girls from four public high schools. 156 boys and 72 girls from rural and urban schools (36 females in grade 9th and 36 girls in grade 10) A total of 300 boys (39 from grade 9th and 39 from grade 10) were chosen at random from rural and urban schools (39 from grade 9th and 39 from grade 10th).

3.4. Research Design:

The investigation began with a descriptive approach. This study looked at how public high school students felt about the topic of chemistry and how it affected their academic performance. This study also looked at science students' anxiety, enjoyment, and confidence in the topic of chemistry. A self-prepared questionnaire was used to collect data on students' attitudes regarding chemistry.

3.5. Development of Data Collection Instrument

The research tool (questionnaire) was synthesized by the researcher under the supreme guidance of related

searches and skilled persons of related fields. The researcher conducted the contemplate from the respondents. The questionnaire developed to study the student's attitude towards chemistry subject and their relationship to academic achievement comprised of 45 statements. All the items in the questionnaire was developed and analyzed on the basis of five- point likert rating scale. For each statement, the five options with their marking points were as under:

Strongly Agree	1
Agree	2
Undecided	3
Disagree	4
Strongly Disagree	5

3.6. Validity of Research Instrument:

All the 45 statements included in the questionnaire research tool were validated under the direction of five prowess's that were proficient in the concerned field. The research tool was also redesigned and modified under the outlook of adept and pundit persons as well as resource persons. All the persons were competent in this filed.

3.7. Reliability of Research Instrument:

Research tool has the reliability of 0.79 as gauged by the cronbach α on SPSS.

3.8. Distribution of Research Instrument:

Researchers herself distributed the questionnaire to the respondents.

3.9. Data Collection Procedure:

Data was gathered by the researcher on visiting the concerned sample respondent following the administration of questionnaire.

3.10. Data analysis:

The data obtained was inspected through computer generated software SPSS (Statistical Package for Social Science) and pursued data was exhibited and shown as mean, median, percentage and standard deviation to evaluate the attitude of public high school students and their relationship to academic

achievement in district Toba Tek Singh under inferential and statistical analysis.

4.RESULTS AND DISCUSSION:

Response students regarding their attitude towards the subject of chemistry and their relationship to academic achievement is studied and the results are described below:

Graph 4.1. Response of respondents regarding the statement “Purpose of chemical education is to make students aware about importance of chemistry”.

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 84.4% (SA+A) respondents admit the importance of chemistry as purpose of chemical education is to make students aware about the importance of chemistry while 13.6% disagree, followed by 2% undecided.

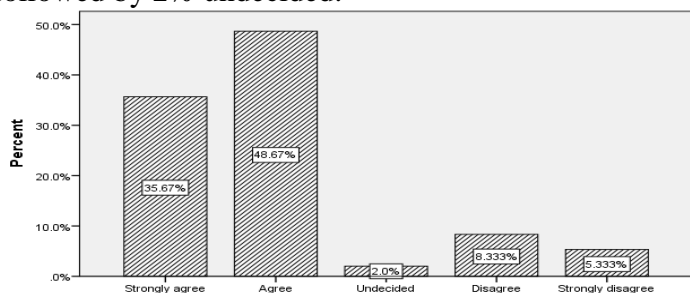


Fig.1: Purpose of chemical education is to make students aware about importance of Chemistry.

Fig.4.1. Graphical representation of the respondent’s point of view regarding statement “Purpose of Chemical education is to make students aware about the importance of chemistry”.

Graph .4.2. Response of respondents regarding the statement “Chemical education enables its learners to develop chemical concepts”.

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 24.7% respondents are strongly agree and 48.0% agree (SA+A=72.7%) that chemical education enable its learners to develop chemical concepts. Other 26% respondent’s (SD=12.3%+ D= 13.7%) are disagree to the statement and remaining 1.3% shared no opinion at all in this regard.

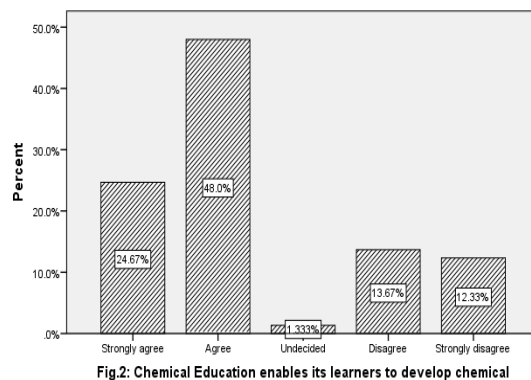


Fig.2: Chemical Education enables its learners to develop chemical concepts.

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g.4.2. Graphical representation of the respondent’s point of view regarding statement “Chemical education enable its learners to develop chemical concepts”.

Graph 4.3. Response of respondents regarding statement “Chemical education enables its learners to become confident and proficient towards chemical concepts”.

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 24.7% respondents are strongly agree and 48.0% agree (SA+A=72.7%) that chemistry subject provide the basis to understand and develop chemical concepts. Other 26% respondent’s (SD=12.3%+ D= 13.7%) are disagree to the statement and remaining 1.3% shared no opinion at all in this regard.

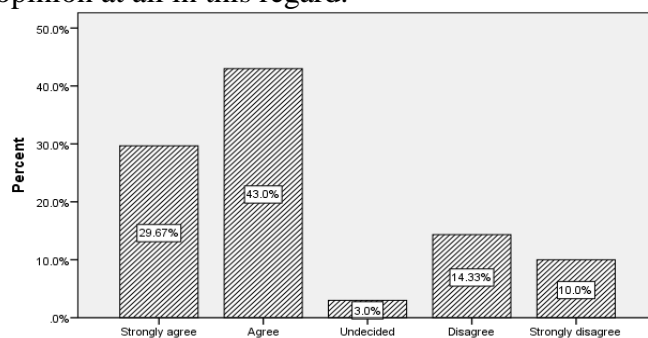


Fig.3: Chemical education enables its learners to become confident and proficient towards chemical concepts.

Fig.4.3. Graphical representation of the respondents regarding the statement “Chemical education enables its learners to become confident and proficient towards chemical concepts”.

Graph 4.4. Response of respondents regarding the statement “Teaching and learning chemistry provides foundation that holds the economy of nations”.

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 31.0% respondents are strongly agree and 43.7% agree (SA+A=74.7%) that teaching and learning chemistry provides basis that

hold the economy of nations. Other 24.3% respondent's (SD=11.0%+ D= 13.3%) are disagree to the statement and remaining 3% shared no opinion at all in this regard.

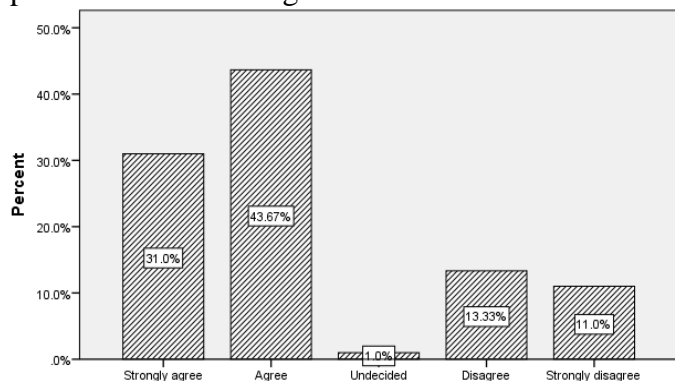


Fig.4: Teaching and learning chemistry provides foundation that holds the economy of nations.

Fig.4.4. Graphical representation of the respondents point of view regarding the statement “Teaching and learning chemistry provides foundation that holds the economy of nations”.

Graph 4.5. Resonce of respondents regarding statement “Chemical education enables its learners to play their active role in nation’s economic strength”

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 29.0% respondents are strongly agree and 44.3% agree (SA+A=73.3%) that chemical education enables its learners to play their active role in nations economical strength. Other 24.7% respondent’s (SD=10.0%+ D= 14.7%) are disagree to the statement and remaining 2.0% shared no opinion at all in this regard.

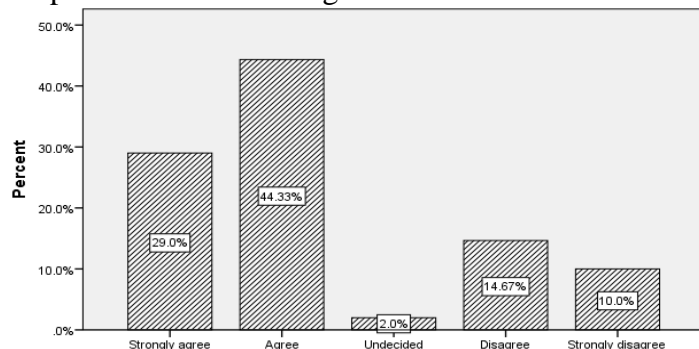


Fig.5: Chemical education enables its learners to play their active role in nation’s economic strength

Fig. 4.5. Graphical representation of the respondent’s point of view regarding the statement “Chemical education enables its learners to play their active role in nation’s economic strength”.

Graph 4.6: Response of respondents regarding the statement “I like chemistry because it has a direct concern to humans”.

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 35.7% respondents are strongly agree and 36.3% agree (SA+A=72.0%) that I like chemistry because it has a direct concern to humans. Other 26% respondent’s (SD=12.7%+ D= 13.3%) are disagree to the statement and remaining 2.0% shared no opinion at all in this regard.

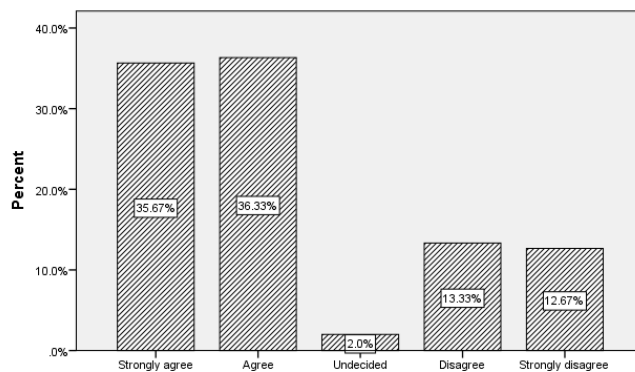


Fig.6: I like chemistry because it has a direct concern to humans.

Fig. 4.6: Graphical representation of the respondent’s point of view regarding the statement “I like chemistry because it has a direct concern to humans”. **Graph 4.7:** Response of respondents regarding the statement “People must understand chemistry because it affects their lives”.

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 32.7% respondents are strongly agree and 45.0% agree (SA+A=77.7%) that people must understand chemistry because it affects their lives. Other 21% respondent’s (SD=6.3%+ D= 14.7%) are disagree to the statement and remaining 1.3% shared no opinion at all in this regard.

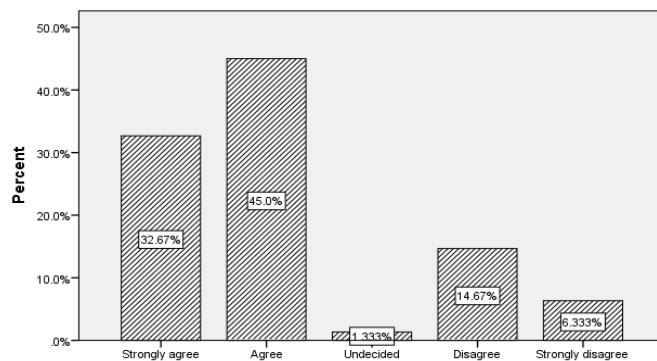


Fig.7: People must understand chemistry because it affects their lives.

Fig. 4.7. Graphical representation of the respondent’s point of view regarding the statement

“People must understand chemistry because it affects their lives”.

Graph 4.8. Response of respondents regarding the statement “Chemistry is useful for solving everyday problems”.

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 29.3% respondents are strongly agree and 49.0% agree (SA+A=78.3%) that chemistry is useful to solve everyday problems. Other 19.6% respondent’s (SD=7.3%+ D= 12.3%) are disagree to the statement and remaining 2.0% shared no opinion at all in this regard.

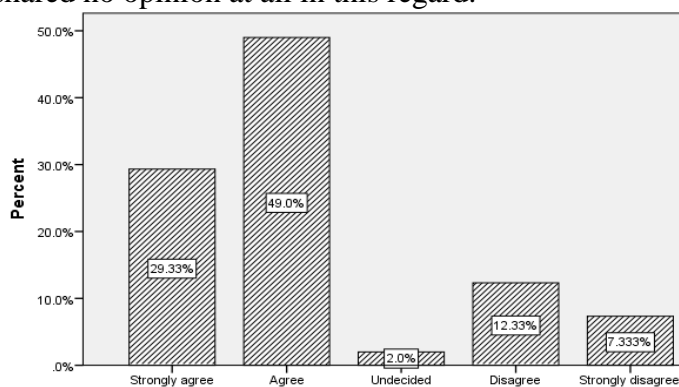


Fig.8: Chemistry is useful for solving everyday problems.

Fig. 4.8. Graphical representation of the respondent’s point of view regarding the statement “Chemistry is useful for solving everyday problems”.

Graph 4.9: Response of respondents regarding the statement “Chemistry is one of the most important subjects for people to study”.

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 23.0% respondents are strongly agree and 31.7% agree (SA+A=54.7%) that chemistry is one of the most important subject for the people to study. Other 41.4% respondent’s (SD=16.7%+ D= 24.3%) are disagree to the statement and remaining 4.0% shared no opinion at all in this regard.

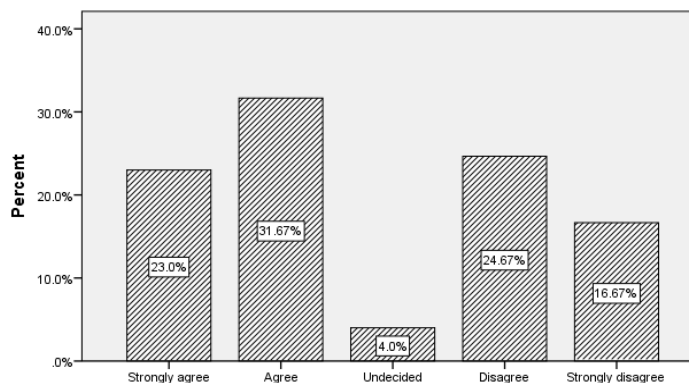


Fig.9: Chemistry is one of the most important subjects for people to study.

Fig. 4.9. Graphical representation of the respondent’s point of view regarding the statement “Chemistry is one of the most important subjects for people to study”.

Graph 4.10. Response of respondents regarding the statement “Only brilliant students should study Chemistry”.

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 16.0% respondents are strongly agree and 35.0% agree (SA+A=51.0%) that only brilliant students should study chemistry. Other 45.6% respondent’s (SD=14.3%+ D= 31.3%) are disagree to the statement and remaining 3.3% shared no opinion at all in this regard.

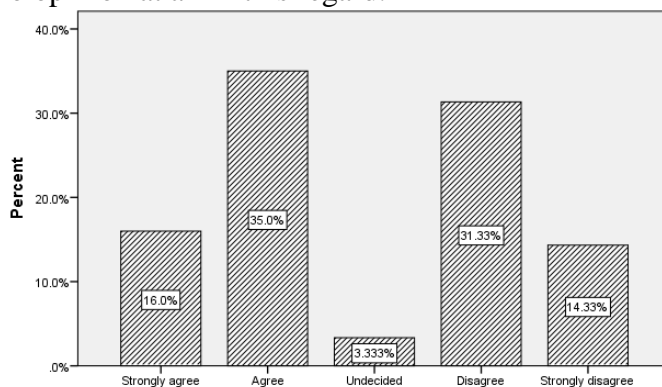


Fig.10: Only brilliant students should study Chemistry.

Fig. 4.10: Graphical representation of the respondent’s point of view regarding the statement “Only brilliant students should study Chemistry”.

Graph 4.11. Response of respondents regarding the statement “Chemistry is a difficult subject”.

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 5.3% respondents are strongly agree and 35.7% agree (SA+A=41.0%) that chemistry is difficult subject. Other 49.7%

respondent's (SD=36.0%+ D= 13.7%) are disagree to the statement and remaining 9.3% shared no opinion at all in this regard.

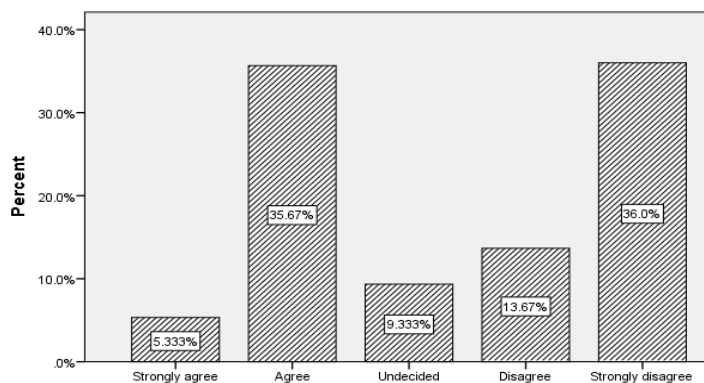


Fig.11: Chemistry is a difficult subject.

Fig. 4.11. Graphical representation of the respondent's point of view regarding the statement "Chemistry is a difficult subject".

Graph 4.12. Response of the respondents regarding the statement "Chemistry is an easy subject".

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 43.7% respondents are strongly agree and 6.0% agree (SA+A=49.7%) that chemistry is an easy subject. Other 41.0% respondent's (SD=5.3%+ D= 35.7%) are disagree to the statement and remaining 9.3% shared no opinion at all in this regard.

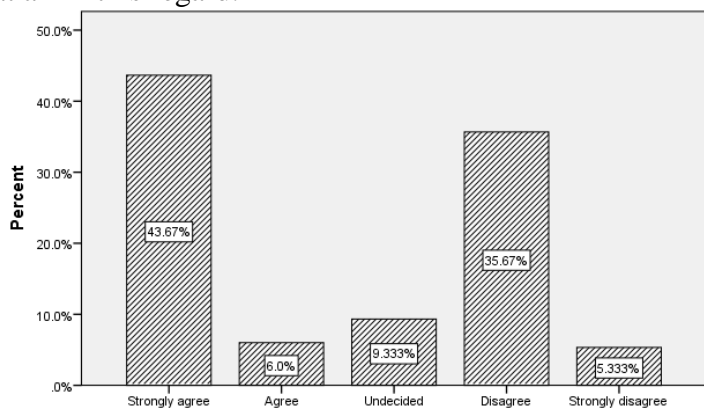


Fig.12: Chemistry is an easy subject.

Fig. 4.12. Graphical representation of the respondent's point of view regarding the statement "Chemistry is an easy subject".

Graph 4.13. Response of the respondents regarding the statement "I m willing to spend more time reading chemistry books".

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 24.0% respondents are strongly agree and 28.3% agree (SA+A=52.3%) that

I m willing to spend more time reading chemistry books. Other 45.0% respondent's (SD=17.3%+ D= 27.7%) are disagree to the statement and remaining 2.7% shared no opinion at all in this regard.

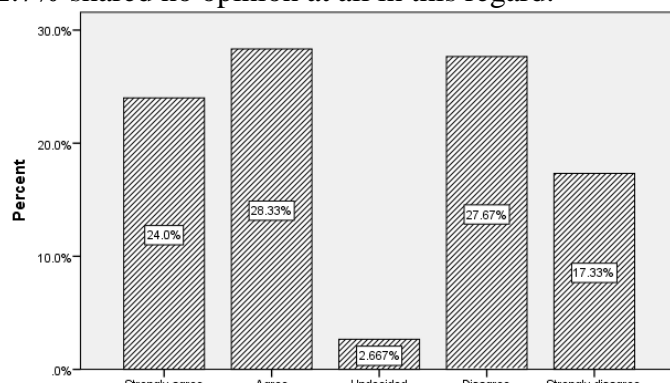


Fig.13: Willing to spend more time reading chemistry books.

Fig.4.13. Graphical representation of the respondent's point of view regarding the statement "I m willing to spend more time reading chemistry books".

Graph 4.14. Response of the respondents regarding the statement "I like trying to solve new problems in chemistry".

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 15.7% respondents are strongly agree and 15.3% agree (SA+A=31.0%) that I like to trying solve new problems in chemistry. Other 69.0% respondent's (SD=25.3%+ D= 43.7%) are disagree to the statement and remaining 0.0% shared no opinion at all in this regard.

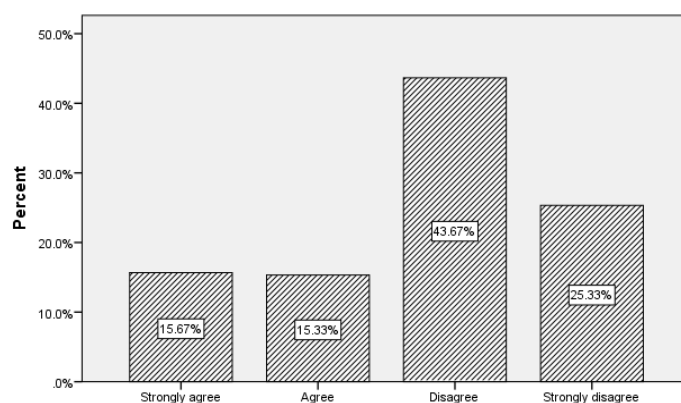


Fig.14: Like trying to solve new problems in chemistry.

Fig.4.14. Graphical representation of the respondent's point of view regarding the statement "I like trying to solve new problems in chemistry".

Graph 4.15. Response of respondents regarding the statement "If I had a chance, would do a project in chemistry".

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 8.3% respondents are strongly agree and 17.0% agree (SA+A=25.3%) that if I had a chance would do a project in chemistry. Other 69.4% respondent's (SD=25.7%+ D= 42.7%) are disagree to the statement and remaining 6.3% shared no opinion at all in this regard.

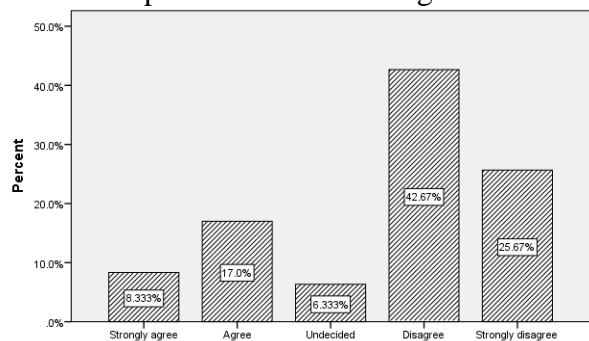


Fig.15: Had a chance, would do a project in chemistry.

4.15. Graphical representation of the respondent's point of view regarding the statement "If I had a chance, would do a project in chemistry".

Graph 4.16. Response of respondents regarding statement "Chemistry lessons are interesting".

Response of students was analyzed using mean, median and standard deviation on 5 point likert scale (SA, A, UD, D and SD). 8.3% respondents are strongly agree and 38.0% agree (SA+A=46.3%) that chemistry lessons are interesting. (SD=22.3%+ D= 28.0%) are disagree to the statement and remaining 3.3% shared no opinion at all in this regard.

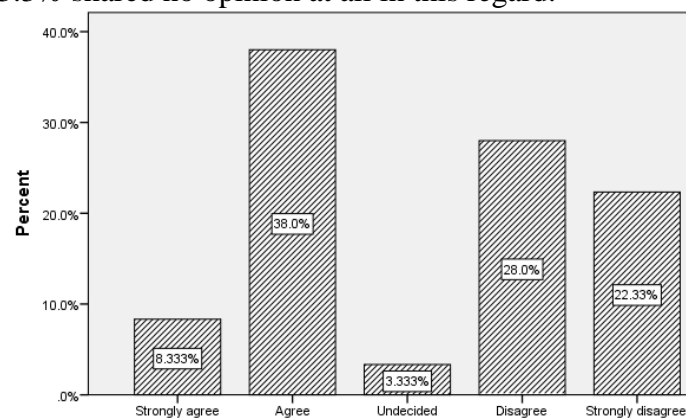


Fig.16: Chemistry lessons are interesting.

Fig. 4.16. Graphical representation of the respondent's point of view regarding the statement "Chemistry lessons are interesting".

Conclusion and Discussion:

Personality is reflected in one's attitude. People are known by their personalities, which are the result of their activities. The attitude has an impact on behaviour, beliefs, motivation, and interest.

Individuals' attitudes are innate characteristics that influence every area of human life. Attitude is a panorama that changes as the circumstance changes, not the end result of the impacts imposed by numerous causes defining attitude. As a result, attitude is defined as the adjustment and fit of conduct to a given environment. As a result, attitude formation is a reversible rather than permanent process. With correct guidance, one may mould and shape one's attitude to fit the surroundings. Attitude is a living quality shared by all living species, from minuscule microorganisms to the highest form of creation, humans. In whatever sphere of life, success is determined by the quantity and quality of sincerity and passion in that field. This sincerity stems from a person's beliefs and enthusiasm for the vocation. Every human endeavour is fueled by one's attitude. Humans are confronted with the world's most difficult problem in the form of an energy crisis and the depletion of fossil fuels. These nonrenewable resources necessitate a thorough understanding of science disciplines, particularly chemistry, in order to develop fresh solutions to the issues of the twenty-first century. Chemistry is so deeply ingrained in our lives that it's worth asking, "What on earth isn't chemistry?" The goal of this study is to see how public high school students feel about chemistry, which is a core scientific subject. Past studies conducted over a 30- to 40-year span described the horrible state of the chemistry subject in terms of enrollment. The majority of students were no longer eager to enrol in chemistry as a career subject. Chemistry is regarded as a mysterious science, hence an effort is made to unravel this hidden secret by investigating students' attitudes toward chemistry and their subsequent triumphs and achievements in relation to their attitudes. Students' socioeconomic status, parental qualification and profession, class mates, classroom ecology, school environment, technological innovations and advanced pedagogical theories, curriculum, social issues, beliefs, norms, and values, cultural constraints, gender, locality, grades, practical performance, and teachers' role at the top are just some of the factors that shape their attitudes. These are all stimulants that change students' attitudes and influence their achievement in this area. The district of Toba Tek Singh was chosen as a study sample by the researchers. For the research, a 10% sample of 13099 public high school students was chosen, with 300 respondents (156 boys and 144 girls) from both

urban and rural areas. biochemistry, organic chemistry, and nuclear chemistry delivering incalculable benefits to future generations. Still, there are two groups of students: one enjoys chemistry as a favourite and potential profession topic, while the other dislikes it because it involves a lot of mathematical operations, computations, and exceedingly long equations. Fortunately, respondents showed a favourable attitude toward practical performance.

Majority of respondents admit the importance of chemistry subject. They believe chemistry provides foundation to hold nations economical strength. Peoples must prefer to choose chemistry due to its deep concern to humanity as biochemistry, organic chemistry and nuclear chemistry providing unspeakable benefits for the generations to come. Still there are two strata of students one peak prefers and the other one dislikes adopting chemistry as their favorite and future career subject, having fare of mathematical operations, calculations and extremely long equations. Luckily respondents exhibited their positive attitude towards practical performance. Chemical reagents, apparatus settings and learning by doing draw their interest towards chemistry. Teachers equipped with latest teaching techniques also motivate students to learn chemistry. There is no significant relation between academic achievement and attitude.

5.3 Recommendations

In the light of above said conclusion the following results were drawn:

- The chemistry teacher needs more focus on academic problems faced by science students by reducing complexity in terms of chemical terminologies.
- Chemistry teachers should be given regular training for better communication skills to improve his or her counseling technique to have a thorough knowledge regarding socially and emotionally disturbed students and finding ways to solve their problems in order to convert student's negative attitude into positive attitude towards the subject of chemistry.
- Chemistry teachers should involve other community and children parents in the various activities carried out at public high school level in order to give

awareness about the importance of chemistry knowledge.

- The capacity of chemistry teacher is to design, sort out and manage activities that should be in commensurate with the needs of chemical education and will profit student in each outlook concerned to their chemical life.
- The recent study would be fruitful for those people who involved in developing of research policy at national level.
- This study would facilitate the curriculum developers with regard to curricula in teaching learning environment.
- This study will also be helpful for teachers and students as well as the need society demands or requirements.
- This study would provide the feedback in teaching learning environment.

5.4 Further Suggestions

- The current study will also provide a feedback to young graduates who want to seek education in higher education.
- This study will also provide a feedback to teacher training program.

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