Scenario of Girls' Enrolment in Science at Secondary Level in District Bannu

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Abstract

Science education plays a vital role in the development of a county. Economic and social development is based on the advancement in the field of science & technology. Equal participation of female in education can ensure the development in real spirit. Bannu is one of the district of Khyber Pakhtunkhwa Province which still demands more female participation in Science Education. Such ignorance of female in the field of science was the major thrust to undergo the specific research study with objectives to explore the girls' enrolment towards Science Education, study management and their preferences of opting science group. The research was descriptive in nature and survey design was applied. The target population comprised of all the science female students of ten Govt. Girls Secondary schools in Bannu city. Twenty five students from each school were selected purposively. A structured questionnaire was used as a tool of research. It was found that enrollment in science group for class 9th and 10th remained consistently increasing with growing and positive trend of girls' enrolment towards science education from year 2009 to 2014. Deficiency in supporting environment at homes was reported by respondents.

Keywords*: Trends, science education, female enrolment, Bannu, KP*

1. Introduction

Science is the investigation of universe. It is a learning, which can be soundly clarified. It is a sorted out collection of learning and data. Everything is set deliberately in its circle. Science finds and examines the things as well as deciphers them experimentally. Our perspectives and pondering our general

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surroundings and ourselves are moulded by the new and propelled disclosures of science. Today science has revolutionized our lives. Our reality is altered by the new revelations and progression in this field. The headways and disclosures changed our way of life. It appears we cannot make even a stride without it. Science has extraordinary commitment to our industry with great quality items, expanded rural yields, water system framework, recorded of solution, and interchanges. It is a direct result of the headway of science that today we have quick method for correspondences and data. Individuals are educated inside a flicker of an eye about any occurrence or news from the other corner of the world.

Education has powerful effect on human's mind, character and physical capability. Education is a life-long process and activity through which any society shares its skills, values, traditions, information and knowledge from generation to generation. An educated person has always a positive and balanced approach towards every situation in life. Educational progress and development of any country is interlinked with each other (Malik, 1991). There is no doubt that both men and women get benefits from education. It is education which enables them to earn in a respectful way to improve the standard of its people. Education gives innovative ideas, speeds up the process of development and ensures effectiveness and ability. It puts the people in order, an organized way for a better life. It is also the single most powerful way to change the status in a society and lift people out of poverty. Yet, many people especially women are still left out from education all- round the world (Ramesh, 2000).

Education with quality to our youngsters and youth must be guaranteed. So they will be empowered to understand their capacities and potential which will help them to play and add to build up a positive society. Quality in instruction helps in advancement of resilience, patriotism, social equity and tolerance for each other confidence. None of us can prevent the essential rights from securing a person to get training and to enhance one's financial condition through it. Proficiency rate in Pakistan is low however with section of time it is making strides. There are distinctive variables which are in charge of low proficiency rate in our nation. It is a decent sign that in spite of the way that insufficient assets have been distributed for instruction segment, yet at the same time there has been change in late decades (Filmer, 2000).

2. Review of Literature

Pardh (2005) had the view that today success and failure of any nation is based on its advancement in the field of science. A country which has strong foundation in science is more developed than that who has weak foundation in science education. The revolution in the field of science has changed the whole picture of the world. New advancement and discoveries are shaping the world in different ways every day. Today is a changed day than yesterday and tomorrow will be a new day than today. These all are the miracle of science.

Faize (2011) has the view that new doors are discovered through science. The miracles of science can be easily seen around. To be aware of the new discoveries and new concept introduced by science is the need of time. Today everyone, even a lay man or high qualified, skilled man, both are enjoining and take advantage of scientific invention. History has witnessed that Muslims became a powerful force between the eight to thirteenth centuries because of their advancement in the field of science. Similarly it was the advancement in field of science which turned the European counties into powerful nations of the world after the dark ages.

Females have a very important part in the progress of any nation. An educated woman plays her role much better and in a very productive way for the welfare of her family and nation as well. It is a requirement for the development of society that a platform must be provided to women to play their role in the progress of society. To educate our female and guide them in right direction should be our top priority because it is one of the most important key of present-day problems faced by us (Hussain, 2003).

Government of Pakistan is currently spending 2.1 percent of its GDP on education sector and according to the latest Pakistan Social and Living Standards Measurement (PSLM) Survey 2013- 14, literacy remains higher in urban areas (74 percent) than in rural areas (49 percent), and is more prevalent for men (81.0 percent) compared to women (66.0 percent) in urban areas ("Highlights, Pakistan Economic Survey: 2014-15", 2015).

Gender disparity indicates the gap between males and females in all aspects of life. In the context of education, gender disparity refers to the gap between enrolment of male and female students in educational institutions. Gender parity and equality in education constitute a basic human right, as well as

an important means of improving other social and economic outcomes (Unterhalter, 2006).

UNESCO (2010) report states that Pakistan ranked 120 in 146 countries in terms of Gender-related Development Index (GDI), and in terms of Gender Empowerment Measurement (GEM) ranking, it ranked 92 in 94 countries. Every society and culture has different norms and set of values followed by the people in that society and culture. Cultural norms in many parts of Pakistani society do not allow the girls to go outside of the house. They are bound to stay within the walls and are discouraged to take part in any activity outside the wall. In case if she is permitted then she must be accompanied by a male, whether husband or brother (Jejeebhoy & Sathar, 2001). Living in such society with less opportunities of movement outside walls of the home, it is quite difficult for girls to step outside their home and get education. With passage of time these cultural values are going to be changed but still it is slow in progress.

Women as girl-child are living a lower rank and are enjoying less rights, opportunities and benefits as compared to a boy-child in those societies which are immature yet in their thinking. Women are facing inequality from very beginning stage and with passage of time they face difficulty to overcome it (Rizvi, 1980).

Education is considered to have a strong association and is interlinked with social and economic development of any country. In present-day situation when the 'knowledge economy' is the crucial point, the role of education becomes more important in the development of human capital. In fact a society which has more literate and skilled citizens has more chances of development at the economic and social levels. Education can reduce poverty and social injustice by providing the resources and opportunities for upward social mobility and social inclusion. Education is known as a primary means to promote economic development (Malik, 2007).

Bils and Klenow (2000) said that countries having high rate of enrolment in schools made faster development in per capita income because high enrolment rate causes rapid improvement in productivity. Hanushek and Kimko (2000) supported the view that quality of education has a remarkable impact on productivity and national growth rates.

Khyber Pakhtunkhwa with area of 74,521 sq. km is one the most important strategically located province of Pakistan. KP is playing an important

role in the economic development of Pakistan. Its population is comprised of 26.62 million people which is growing at the rate of 2.8% every year. Less than 30% of female are literate in KP. Furthermore, KP is facing different challenges like worse law and order situation and low social development indicators further affected by floods, which cause serious development challenges for the government and its people (FATA Research Centre, 2014).

According to the Pakistan Social and Living Standards Measurement (PSLM) Survey 2013-14, the literacy rate of the population (10 years and above) is 58% as compared to 60 % in 2012-13 showing a decline of 2.0 %. . Province wise literacy rate is given in the following table which depicts a clear picture of our slow progress in the field of education.

Literacy Rate

Provinces	2012-13	2013-14
Punjab	62	61
Sindh	60	56
Khyber Pakhtunkhwa	52	53
Baluchistan	44	43

Khyber Pakhtunkhwa being a front line province in the war against terrorism has performed poor in terms of law and order situation. Since 2005, there have been more than 12000 people killed in the province of which 4,739 were civilians, 1699 security forces personnel while a total of 6,517 militants have also been killed in different operations. The year 2008 was the deadliest with a total of 2201 casualties, mostly civilians. The next year the fatalities again rose to 936 with more than 600 civilians. Civilians have been killed in different incidents of violence (FATA Research Centre, 2014). Former Federal Minister Sattar viewed that there is deep link between unemployment and terrorism in Pakistan ("Unemployment leads to terrorism, extremism: Farooq Sattar - The Express Tribune", 2012).

The present wave of militancy in FATA and its effects on the stability of Pakistan, specifically the Khyber Pakhtunkhwa, is an alarming situation not only for Pakistan but for the world too. The wave of terror, which hit this province

soon after 9/11, did not only affect the economy of the province, but also damaged its educational foundations. The province that was famous to be the land of hospitality but unfortunately which has transformed into a home for militancy. Schools were blown up and students were threatened not to pursue education. This was the outcome of the Taliban's version that discouraged attainment of worldly education, particularly for females (FATA Research Centre, 2014).

Region-wise Data of Destructed School in KP

Regions	Boys	Girls	Total
Bajaur	68	95	95
Mohmand	66	22	88
Khyber	31	27	58
Kurram	45	16	61
Orakzai	23	11	34
North Waziristan	23	9	32
South Waziristan	29	6	35
FR Peshawar	11	4	15
FR Kohat	17	15	32
FR Tank	2	2	4
FR Lakki	2	2	4
Total	317	141	458

Science is derived from the Latin word 'scientia' meaning 'knowledge' or 'understanding'. It is a field of knowledge concerned with sharing of scientific content. It is an on-going process which involved its learning not only with its content but also with its methodology. Mohanty (2004) viewed that a good and well planned science education program plays a very significant role in social

and economic development of any country. Science education based on quality program helps in the social and economic development of a country. It provides the students with the necessary scientific knowledge, which may help them in finding solutions to most of the socio-economic and environmental problems. Science education provides a sound and sufficient knowledge base to the students in the area of agriculture, environmental problems and issues, nutrition and diet along with the necessary scientific skills for the job.

After completing eight years education, students start their secondary education. Secondary education duration is of two years which covers grade IX and X followed by higher secondary education consisting of grade XI and XII. Science subjects which are taught at secondary level are Physics, Chemistry, Biology and Mathematics. Now Government of KP started to introduce ICTs, computer education at the secondary level in educational institutions of KP. Students have choice to choose science or arts subjects when they enter in class 9^{th}.

Educational Institutions of KP

Area	No. of High Schools		No. of Higher Secondary Schools	
	Girls	Boys	Girls	Boys
KPK	676	1351	120	241
Bannu	39	56	9	10

Source: EMIS 2013

The quality of science education in the government schools is not very much satisfactory. Quality of education is measured and judged by students' learning achievements. Quality is also linked with the relevance. Relevance in a sense what is being taught in the classroom and what is being learnt by the students, that is how well it matches with the present and future needs of the learners. Quality of education also refers to the important changes in the educational system itself, the kind of inputs, its objectives, curriculum and educational technologies; and its socioeconomic, cultural and political

environment. On the other hand quality of science education at secondary level in KP is not up to the mark and standard. Teacher is the centre of knowledge and has a central role in the quality of education, according to Education Management Information System of Khyber Pakhtunkhwa, currently there are only 1369 male and 547 female SST-Science (EMIS, 2013). The vacant posts of SST-Science teachers definitely affect the quality of education.

Objectives of the Study

The major objectives of the study were:-

1. To explore the girls' enrolment towards Science Education in District Bannu
2. To highlight the study routine of science students at home
3. To find out preferences of opting science group

3. Research Methodology

3.1 Research Design

The research was descriptive in nature and survey was conducted to explore perspectives of female enrolment towards science education at secondary level in Bannu district.

3.2 Population

The population of the study was comprised of all the science female students of secondary schools for girls in District Bannu. There were 39 high schools and 9 higher secondary schools for girls in district Bannu. Target population comprised of girls schools of Bannu city.

3.3 Delimitation of the Study

Study was delimited to:

- The Govt. Secondary and Higher Secondary schools for girls in Bannu city.
- Science students of session 2014.

3.4 Sample

Ten girls' schools of public sector in Banuu city were considered for sample of study. Twenty five students were selected from each school purposively and in this way a total number of 250 female science students were available for conduct of study.

3.5 Instrument

A structured questionnaire was developed to get the opinion of female science students of class 9th and 10th about science education.

3.6 Data Collection

Data were collected in an organized way. Annual results from 2009-2014, of class 9th and 10th respectively were collected from Board of Intermediate and Secondary Education (BISE) Bannu.

4. Results and Discussion

Table 1

Year wise candidates in science group class 9th & 10th at BISE, Bannu

Years	Class 9th		Class 10th	
	Girls	Boys	Girls	Boys
2009	927	3470	910	3932
2010	1128	4340	936	4159
2012	1548	4565	1379	5240
2013	1765	5671	1602	6386
2014	2195	6109	1707	7473

Table 1 depicts the enrolment of students appearing in class 9th and 10th examination conducted by Board of Intermediate and Secondary Education, Bannu. A positive trend towards science education is obvious in both genders. Gender wise rate of increase in number of candidates appearing in Science subject in BISE examination is comparatively at the similar ratio. Still the gap between girls enrolment towards science is demanding as compared to male enrolment.

Table 2
Frequencies and percentages of respondents about home environment

Items	Responses			
	No		Yes	
	f	%	f	%
having peaceful corner for study at home	90	36	160	64
parents keep an eye while studying	84	33.6	166	66.4
have study timetable at home	119	47.6	131	52.4

Table 2 presents the data about the supporting home environment for female science students of class 9th and 10th to manage their studies at home. It is generally assumed that science students have to go for intensive studies as compared to other students of Arts and Humanities. In this regard at their homes, a peaceful reading environment, schedule and proper monitoring by the parents are considered helpful for improved performance of science students. One third of the female science students among our sample reported to have deficiency in supporting environment available to them for managing their studies at home.

Table 3
Frequencies and percentages of respondents about the facilities at home

Items	Responses			
	No		Yes	
	f	%	f	%
TV/ dish Antenna/ cable	132	52.8	118	47.2
I have a computer	127	50.8	123	49.2
I have internet at home	144	57.6	106	42.4
I have scientific calculator	143	57.2	107	42.4

We are living in era of advanced technology. Today learning is not only linked with books and copies. Students have different requirements to fulfill their learning curiosity. Usage of different and advanced scientific applications is part and parcel of students' learning. And at secondary level the most important of these is scientific calculator.

Table 3 is linked with all those scientific facilities at home which are important for students in their studies. Fifty-three percent female students don't

have TV/ dish antenna/ cable at home. While forty-seven percent have this facility at home. Fifty percent respondents have computers and are using internet at home.

Table 4

Science Students Study Management by taking help

	Parents	Siblings	Tuition	Self-study
Frequency	25	43	74	108
Percentage	10	17	30	43

Reinforcement is part of learning. Assignments assigned by the schools play an important role to improve the academic performance of the students. Table 4 reveals the fact about the study management by the female science students at secondary level. It revealed that forty-three percent students are doing self-study and complete their assignments given by the school. Almost thirty percent students prefer to go to different tuition academy to complete their school tasks.

Table 5

Frequencies and percentages of respondents about parents' level of education?

Level of Education	Mother		Father	
	F	%	F	%
Illiterate	80	32	14	5.6
Primary	34	13.6	9	3.4
Middle	41	16.4	26	11
Matric	58	23	49	20
Above matric	37	15	152	60

Parents' level of education plays vital role in their children up-bringing and education. Parents wish to fulfill their dream through their children and this is only possible to educate their children. Table 5 is about the responses of female science students about their parents' level of education. Majority of the female students responded that their fathers' education is above matric. While thirty-two percent of mothers are illiterate.

Table 6
Girls Science Students' Preferences for Opting Science Group

Items	Frequency	Percentage
Own interest in Science education	119	48
Teacher encouraged	14	6
Parents encouraged	45	18
Considering Science education scope for higher education	35	14
Family inspiration	37	15

Table 6 shows the opinions of female science students about the selection of science subject. Different factors are involved in selection of science education. Forty-seven percent students were of the opinion that they selected science education due to their own interest. Five percent students are encouraged by their teacher and Eighteen percent by their parents. Fourteen percent students have the opinion that they can get better grades in science. Fifteen percent students are inspired by their family members.

5. Findings

1. The findings drawn out from the data analysis are as under:
2. Female enrollment in science group for class 9^{th} and 10^{th} was found consistently increasing from year 2009 to 2014 at district Bannu. Annual results 9^{th} and 10^{th} examination 2014 at BISE, Bannu, revealed that it is a growing and positive trend towards science education among females.
3. While observing the total number of students appearing in 9^{th} and 10^{th} examination 2014 at BISE, Bannu, it was observed that 1707 girls appeared in class 10^{th} annual exams whereas enrollment for 9^{th} class was also increased i.e. 2195 female students appeared in science group.
4. Majority of the respondents are using facilities e.g. TV/cable, dish, computer and internet, available at their homes.
5. Majority of the female students of class 9^{th} and 10^{th} from science group preferred to do self-study to complete the home task assigned by the schools. While 30% students consulted tuition centers to manage their studies.
6. One third of the female science students reported to have deficiency in supporting environment available to them for managing their studies at home.
7. Majority of the fathers of the respondents were literate whereas only 32% mothers were reported as illiterate. Therefore, educational level of parents

especially of father was obvious for the girls' enrollment in science education at secondary level.

8. The choice for selecting the area of subject as Science, 48% students choose the science education at their own interest for science, whereas 14% students preferred such choice upon possibilities of having better grades in science as compared to other streams of subjects.

6. Discussion

Science education is very important for the development of any nation in today's world. That is the reason that every nation is taking science education very serious and working hard for its development. The developed countries of the world achieved so much in the field of science and technology because of science education. In every part of the world, the talent of women is being tapped in certain study fields, but not to the same extent in the Science. The education of girls in science is very important as it relates to future equality of the next generation of women and many of the problems faced by girls in science were identified decades ago.

Girls do not pursue science and technical studies at the same rate as boys in KP and in Bannu. Societal and parental attitudes toward boys' and girls' abilities play vital role here, and their access to resources. In the context of female enrolment in science education at secondary level, research results indicated that female enrolment in science education increased every year. More females were enrolled in science education at secondary level in district Bannu. The trend of female enrolment in science education was observed positive in past years.

Jan (1992) in her research study: Breaking the barrier: Girls in Science Education, commented that in seventeenth century when modern science was going to shape the lives of men, it was common thinking that women should not take their part in the study of science. She talked about science education and the access of girls to science and technology in her studies.

Findings of the present study revealed that now the trend of science education for female is positive and the number of female enrolment in science education is increasing every year at secondary level in district Bannu. Furthermore, the present study also explored that more boys were enrolled in science education as compared to girls in class 9^{th} and 10th.

There might be different reasons behind this fact. One of the main reasons might be that parents thought that there was no need of science education for girls. It is common thinking regarding parents that science education was

considered more important for boys, especially to pursue professional degrees like medicine, engineering etc. Parents had the mind-set that girls didn't need to have professional education. So it is better that girls should get education in arts subjects.

7. Conclusion

In the light of findings, it was observed that 1707 girls appeared in class 10^{th} annual exams whereas enrolment for 9^{th} class was found in increased number of female

2195 female students appeared in science group. Different reasons might be behind to this difference. Migration of families from one city to another, early marriages of girls is the cultural part of the area, socioeconomic problems, pass % , and dropout of female also affected the enrolment at class 10^{th} level.

Majority of the female students of class 9^{th} and 10^{th} from science group preferred to do self-study to complete the home task assigned by the schools. The choice for selecting the area of subjects as Science, 47.6% students choose the science education at their own interest for science, whereas 14% students preferred such choice upon possibilities of having better grades in science as compared to other streams of subjects

8. Recommendations

Here are some recommendations which are based on the findings and feedback from the respondents. These recommendations are both, for the government of KP and schools as well. The number of students is increasing positively every year. A large number of female students were enrolled in science education at secondary level but on the other hand, the quality of science education is not satisfactory. Government must ensure the quality of science education by adopting different strategies. Science exhibition must be the part of academic year. ICTs should be introduced for the academic year 2015-16. Proper maintenance and utilizations of computer lab must be ensured by the government through continuous monitoring system.

Schools must ensure more utilization of science lab by the students to understand the science topics. Proper counselling should be provided to students for selection of subjects according to their aptitude. By establishing a student council may play a positive role in this regard to help the students to choose the subjects according to their interest.

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