

Effect of Classroom Physical Environment and Teaching Methods on Learning Experiences of Secondary School Biology Students

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Abstract

This study was designed to explore the effect of classroom physical environment and teaching methods on the learning experiences of secondary school biology students. The objectives of the study were to find out students' learning experiences regarding the physical environment of biology classrooms at the secondary level and to determine students' learning experiences about different teaching methods used in biology classrooms at the secondary level. This study was descriptive and quantitative, in which a questionnaire was developed. The study population consisted of 5669 of the 10th class with 3203 male students and 2466 female students of districts Bahawalpur (Tehsil Bwp) and Bahawalnagar (Tehsil Bwn) of Pakistan. The total sample was 800 students (400 males and 400 females). The samples were selected by using simple random sampling techniques. A questionnaire was self-developed and used as a tool for data collection, and every question was answered in the form of multiple responses. Data was analyzed using the Statistical Package for Social Sciences (SPSS-21). Crosstabs in the analysis were applied on every variable set compared with the gender, providing results in frequency and percentage of every response. Most respondents agreed that the proper sitting space is most suitable for their work in their biology classroom, and most agreed that the lecture method is most effective in learning biology. It was suggested that the learning of students in biology subject could be enhanced by providing a better classroom physical environment and using different teaching methods in teaching biology subjects at the secondary level.

Keywords: Classroom Physical Environment, Teaching Methods, Learning Experiences

1. Introduction and Literature Review

The learning experiences come from any interaction, program, course, or other experience that involves learning, whether it is in traditional educational settings (schools, classrooms) or non-traditional settings (out-of-school places, outdoor environments) are either traditional learning interactions (students learning from teachers and professors) or non-traditional learning interactions (students learning through games and interactive software applications). The principles of learning experience are how students learn effectively (Davies & Mangan, 2007). Experiences must be strongly related to educational goals and result in a behavior change. Comprehensiveness requires that all stated objectives have appropriate experience and present

various learning opportunities. Learning experiences must be closely matched to the learners' requirements, capacities, and interests, balanced with external and internal experiences, and relevant to learning experiences in practical life. Learning activities allow students to engage actively with content. Skills necessary for pupils may be included (Whalen et al., 1998).

Students may enhance their learning experience through extra-curricular activities. Students' acceptance of learning environments can significantly encourage them to become involved in the learning process (Chen et al., 2016). Recent research has revealed that the educational environment affects academic performance (Farley, 2002) and that students observe the numerous numerical tools used in classrooms, such as the Internet, as sources to provision their work, which does not change how learning takes place (Domingo & Garganté, 2016). School is a learning place where students gain knowledge through their educational experiences. They learn from their teachers, peers, the school environment, extracurricular activities, and laboratory instruments. Students also learn from their non-traditional settings, such as the home environment, the street environment, society, their family, their elders, and playgrounds (Domingo & Garganté, 2016). In addition, such spaces are built on diverse approaches to learning and teaching. A wide range of experiences in diverse contexts and environments change student perceptions, facilitate conceptual understanding, acquire emotional qualities, and acquire knowledge, skills, and attitudes. Learning experiences in an educational environment are theoretically challenging, engaging, meaningful, interesting, and tailored to students' desires. Former learning experiences are key factors in expecting additional learning.

In Pakistan, the school education system taken on from colonial has been defined as one of the underdeveloped in the world. Pakistan's school education system is divided into primary, middle, and secondary (Khan & Kusakabe, 2023). These schools are very large in number as compared to middle and secondary schools. The strength of primary school students is also very high compared to the other two school education levels. Approximately 60% of children complete grades 1 to 5 in primary school. Public and private primary schools mostly exist in Pakistan's cities, towns, and villages (Kerssens & Van Dijck, 2023). Middle schools follow with classes 6 to 8. In rural areas, mostly male and female, separate education is preferred in Pakistan. Subjects including English, Urdu, Islamic studies, Mathematics, Science, Arts, Social studies, and Computer science are taught at the middle level (Thomas & Larwin, 2023). The senior school covers classes from 9 to 12 with an annual examination system.

Suppose students pass examinations of 9 and 10, then they will receive a Board of Intermediate and Secondary Education secondary school certificate. After getting a secondary school certificate, the students are eligible for admission in intermediate classes F.A, ICS, F.Sc, or equivalent. After passing intermediate, the students adopt professional or nonprofessional education. The biology subject is offered to students in grade 9th in Pakistan. Biology is optional as it is parallel to computer/electrical wiring, etc. Biology should be taught in school because it prepares students with the knowledge necessary to make informed decisions about their future. Biology is an essential part of comprehensive education, and it also gives an understanding of living things, provides us insight into the environment, and inspires critical thinking. It also gives an understanding of plants, animals, and life processes and helps people develop healthy relationships with the natural world (Inogamova & Shigakova, 2023).

Audio-visual Aids is a mixture of sound and video materials that help a teacher and students in learning biology. Mostly, biology teachers used charts and models for their students' comprehension learning of biology students at the school level. Some biology teachers also used

projectors, videos, images, sound clips, mobile animation, and microscopes to study actual comprehension of natural plants and animals (Kenni et al., 2023).

The term physical environment of the classroom refers to the overall layout and design of the respective classroom. Teachers should design the environment by furnishing, lighting in the classroom, moderate temperature, proper ventilation, and organizing sitting spaces and materials to maximize the learning opportunities and the engagement of every student (Møgelvang et al., 2023). The term teaching method refers to the pedagogy, management strategies, and general principles used for classroom instruction. Teaching methods also help the students understand the content in the classroom. The best teaching strategies always allow the students to convey information clearly and concisely, and the learning is comprehensive and durable (Sofi-Karim et al., 2023). The main objective of teaching at any level of education is to bring revolutionary changes in the learner (Tebabal & Kahssay, 2011). Teachers should always use suitable teaching methods that are specific and appropriate at the secondary school level. Many teachers mostly used lecture methods, demonstration methods, laboratory methods, project methods, biology-centered field trip, cooperative learning, and discussion method at the level of secondary schools. The teaching methods have always positive effect on learning if these are very suitable according to the requirement of condition in classroom and required objectives (Wang & Wong, 2023).

2. Objectives of the Study

The current study was designed:

1. Exploring biology students' learning experiences of physical internal environment of the classroom at the secondary level.
2. To determine students' learning experiences of different teaching methods used in the classroom in biology subject at the secondary level.

2.1. Research Questions

1. What are biology students' learning experiences of physical internal environment of the classroom at the secondary level?
2. What are the students learning experiences of different teaching methods used in the classroom in biology subject at the secondary level?

3. Research Methodology

Research methodology is a method to answer the research problem scientifically (Matić & Čargo, 2024). This study was descriptive and quantitative. The population from which the researcher can practically select subjects for a sample and to which the researcher can generalize findings (Fraenkel & Wallen, 1990). Population can be characterized as the composition of individuals or persons to whom the results of the study are universal (Veugelers & Cassiman, 2005). Students of the 10th class from the science group (passed 9th class) with the subject of Biology from public secondary schools (male and female) in Bahawalpur district (Tehsil Bahawalpur) and Bahawalnagar district (Tehsil Bahawalnagar) were selected as the population of the study. Details of the population are given in the table below.

Table 1

Population details students who passed 9th class with biology subject in Public Secondary schools of Districts Bahawalpur(Tehsil Bwp) and Bahawalnagar(Tehsil Bwn)

Tehsil	Gender	Urban Schools	Urban Students	Rural Schools	Rural Students	Total Schools	Total Students
Bahawalpur	Boys	20	996	15	534	35	1530
	Girls	19	888	18	588	37	1476

Bahawalnagar	Boys	10	675	22	998	32	1673
	Girls	08	669	14	321	22	990
Total	Boys	30	1671	37	1532	67	3203
	Girls	27	1557	32	909	59	2466

Source: www.school.punjab.gov.pk

4. Sample and Sampling Techniques

The sample size must be large enough to get information from rich cases of interest and address the research questions effectively, fully involved and committed (Eatough & Smith, 2017). A simple random sampling method was adopted for a research study. The study sample consisted of 800 students (400 male and 400 female) who were selected through simple random sampling techniques. The details of the sample are given below:

Table 2

Sample detail of students who passed 9th class with biology subject in Public Secondary schools of Districts Bahawalpur (Tehsil Bwp) and Bahawalnagar(Tehsil Bwn)

Tehsil	Gender	Urban Schools	Urban Students	Rural Schools	Rural Students	Total Schools	Total Students
Bahawalpur	Boys	04	100(4x25)	04	100(4x25)	08	200
	Girls	04	100(4x25)	04	100(4x25)	08	200
Bahawalnagar	Boys	04	100(4x25)	04	100(4x25)	08	200
	Girls	04	100(4x25)	04	100(4x25)	08	200
	Boys	08	200	08	200	16	400
	Girls	08	200	08	200	16	400
Total		16	400	16	400	32	800

Source: www.school.punjab.gov.pk

Table 2 shows that two equal boys groups (Urban and rural Schools) were formed using the simple random technique in which each group had an equal strength of 25 students in each school. In this way, equal groups (Urban and rural Schools) were constructed to examine the accurate effect of the required study. A total of 200 male students were selected from district Bahawalpur(Tehsil Bahawalpur) which 100 students(25 students from each school and a total of 04 schools selected from urban schools) from urban schools, 100 students(25 students from each school and total 04 schools selected from rural schools) from rural schools and in the same way 200 males students selected from district Bahawalnagar(Tehsil Bahawalnagar) in which 100 students(25 students from each school and total 04 schools selected from urban schools) from urban schools, 100 students(25 students from each schools and total 04 schools selected from rural schools) from rural schools. Similarly, two equal girls groups (Urban and rural Schools) were formed using the simple random technique in which each group had an equal strength of 25 students in each school. In this way, equal groups (Urban and rural Schools) were constructed to examine the accurate effect of the required study. A total of 200 female students were selected from district Bahawalpur(Tehsil Bahawalpur) in which 100 students(25 students from each school and total 04 schools selected from urban schools) from urban schools, 100 students (25 students from each school and total of 04 schools selected from rural schools) from rural schools and in the same way 200 females students selected from district Bahawalnagar(Tehsil Bahawalnagar) in which 100 students(25 students from each school and total 04 schools selected from urban schools) from urban schools, 100 students(25 students from each school and total 04 schools selected from rural schools) from rural schools.

5. Data Analysis

After collecting data, a data sheet was first prepared according to the requirement of the questionnaire variable. Then data was entered in that data sheet and analyzed through the Statistical Package for Social Sciences (SPSS-21).

The steps of the procedure of data analysis consisted of: Select analyze → select multiple responses select define variable sets → prepare a variable set of each question → again select analyze → select multiple response → select crosstabs → shift gender variable in row box → shift one by one each set in column box and then select ok. After that, the results are displayed as a table of every question. A detailed elaboration of the results of each table is given below of respective table. Findings, conclusions, and recommendations were drawn based on data analysis.

Q1. Which of the following are suitable for proper sitting and working in your classroom?

- Sitting space
- Light
- Ventilation
- Temperature (during winter and summer)

Table 3 Gender-wise detail of responses about suitable for proper sitting and working in the classroom (Multiple Responses)

Gender	Q1a (Sitting Space)		Q1b (Light)		Q1c (Ventilation)		Q1d (Temperature)		Total Students	
	<i>f</i>	%	<i>F</i>	%	<i>F</i>	%	<i>F</i>	%		
Male	263	33.2%	199	25.1%	176	22.2%	131	16.2%	400	50%
Female	287	36.2%	193	24.4%	184	23.2%	161	20.3%	400	50%
Total	550	69.4%	392	49.5%	360	45.5%	292	36.5%	800	100%

Percentages and totals are based on respondents. Dichotomy group tabulated at value 1.

Table 1 presents data about “Which of the following are suitable for proper sitting and working in your classroom?”. It is evident from the table above that the majority of the respondents male 263(33.2%) and female 287(36.2%), and their total 550(69.4%) agreed that they feel that the proper sitting space is most suitable for their working in their classroom. At the same time, males 199(25.1%) and females 193(24.4%), and their total 392(49.5%) agreed that they feel that the proper light is most suitable for their working in their classroom. Meanwhile, 176(22.2%) and 184(23.2%) and their total 360(45.5%) agreed that they feel that proper ventilation is most suitable for their working in their classroom. At the same time, male 131(16.2%) and female 161(20.3%), and their total 292(36.5%) agreed that they felt that the proper temperature was most suitable for their working in their classroom.

Q2 Which learning aids do your biology teachers use in teaching biology?

- Whiteboard
- Charts
- Models
- Projectors
- Material or specimen available in the surrounding
- Only books
- Guides available in the market

Table 4: Gender-wise detail of responses about learning aids that biology teachers use in teaching biology (Multiple Responses)

Gender	Q2a (Whiteboard)		Q2b (Charts)		Q2c (Models)		Q2d (Projectors)		Q2e (Material)		Q2f (books)		Q2g (Guides)		Total Students	
	F	%	F	%	F	%	F	%	f	%	F	%	f	%	F	%
Male	315	39.9%	45	5.7%	55	7.0%	53	6.7%	34	4.3%	95	12.0%	9	1.1%	400	50%
Female	236	29.9%	85	10.8%	67	8.5%	52	6.6%	28	3.5%	55	7.0%	29	3.7%	400	50%
Total	551	69.8%	130	16.5%	122	15.5%	105	13.3%	62	7.9%	150	19.0%	38	4.9%	800	100%

Percentages and totals are based on respondents. Dichotomy group tabulated at value 1.

In Table 2, data about “Which of the following learning aids do your biology teachers use in teaching biology?” is presented. It is evident from the table above that the respondents 315(39.9%) and 236 (29.9%) and their total 551(69.8%) agreed that the whiteboard learning aids that their biology teachers use in teaching biology. Of the respondents, 45(5.7%) were male and female, 85(10.8%), and a total of 130(16.5%) agreed that the charts are learning aids that their biology teachers use in teaching biology. The respondents, male, 55(7%) and female 67(8.5%), and their total 122(15.5%), agreed that the models learning aids that their biology teachers use in teaching biology. In contrast, 53(6.7%) of the respondents were male, 52(6.6%) were female, and 105(13.3%) agreed that the projectors are learning aids that their biology teachers use in teaching biology. At the same time, the respondents, 34(4.3%) male and 28(3.5%) female, a total of 62(7.9%) agreed that the materials or specimens available in the surrounding learning aids that their biology teachers use in teaching biology. Meanwhile, 95(12%) and 55(7%) and their total 150(19%) agreed that the only books are learning aids that their biology teachers use in teaching biology. Meanwhile, nine male respondents (1.1%), 29 female respondents (3.7%), and a total of 38(4.8%) agreed that the guides available in the market are learning aids that their biology teachers use in teaching biology.

Q3 What is the impact of Av-Aids on biology learning?

- | | |
|--|---|
| a) Always increases my comprehension level | b) Mostly increases my comprehension level |
| c) Sometimes, it increases my comprehension level. | d) Rarely increases my comprehension level. |
| e) Never increases my comprehension level. | |

Table 5: Gender-wise detail of responses about the impact of Av-Aids on biology learning (Multiple Responses)

Gender	Q3a (Always increase)		Q3b (Mostly increase)		Q3c (Sometime increase)		Q3d (Rarely increase)		Q3e (Never increase)		Total Students	
	f	%	F	%	F	%	f	%	f	%	F	%
Male	134	16.9%	161	20.3%	55	6.9%	29	3.7%	21	2.2%	400	50%
Female	181	22.8%	102	12.9%	82	10.3%	25	2.8%	10	1.2%	400	50%
Total	315	39.7%	263	33.2%	137	17.3%	54	6.5%	31	3.4%	800	100%

percentages and totals are based on respondents., Dichotomy group tabulated at value 1.

Table 3 presents data about “What is the impact of Av-Aids on biology learning?”. It is evident from the table above that the respondents, males 134(16.9%) and females 181(22.8%), and their total 315(39.7%), agreed that they feel that the impact of Av-Aids on biology learning always increases their comprehension level. Whereas the respondents, 161 males (20.3%) and female 102(12.9%), and their total 263(33.2%), agreed that they feel that the impact of Av-Aids on

biology learning mostly increases their comprehension level. Whereas the male respondents, 55(6.9%) and 82(10.3%), and their total 137(17.3%) agreed that they feel that the impact of Av-Aids in biology learning sometimes increases their comprehension level. Of the respondents, 29 males (3.7%), 25 females (2.8%), and a total of 54(6.5%) agreed that they feel that the impact of Av-Aids on biology learning rarely increases their comprehension level. Of the respondents, male, 21(2.2%) and female 10(1.2%), and a total of 31(3.4%) agreed that they feel that the impact of Av-Aids on biology learning never increases their comprehension level.

Q4 Which teaching methods does your teacher use in teaching biology?

- a) Lecture
- b) Demonstration
- c) Laboratory Method
- d) Project method
- e) Biology-centred field trip
- f) Cooperative Learning
- g) Discussion

Table 6: Gender-wise detail of responses about teaching methods that teachers use in teaching biology (Multiple Response)

Gender	Q4a (Lecture)		Q4b (Demonstration)		Q4c (Laboratory Method)		Q4d (Project method)		Q4e (Biology centered field trip)		Q4f (Cooperative Learning)		Q4g (Discussion)		St
	<i>F</i>	%	<i>f</i>	%	<i>F</i>	%	<i>f</i>	%	<i>F</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>
Male	285	36.1%	79	10.0%	67	8.5%	48	6.1%	19	2.4%	58	7.3%	180	22.8%	400
Female	190	24.1%	177	22.4%	73	9.2%	51	6.5%	68	8.6%	75	9.5%	166	21.0%	400
Total	475	60.2%	256	32.4%	140	17.7%	99	12.5%	87	11.0%	133	16.8%	346	43.8%	800

Percentages and totals are based on respondents. Dichotomy group tabulated at value 1.

Table 4 presents data about “Which of the following teaching methods does your teacher use in teaching biology?”. It is evident from the table above that the respondents were 285(36.1%) males, 190(24.1%), and their total 475(60.2%) agreed that their teacher used the lecture method in teaching biology. Males 79 (10%) and females 177(22.4%), and a total of 256(32.4%) agreed that their teacher used the demonstration method in teaching biology. Meanwhile, 67(8.5%) males, 73(9.2%) females, and a total of 140(17.7%) agreed that their teacher used laboratory methods in teaching biology. Meanwhile, male 48(6.1%) and female 51(6.5%), and a total of 99(12.5%) agreed that their teacher used the project method in teaching biology. Meanwhile, 19 males (2.4%) and females, 68(8.6%) and 87(11%) agreed that their teacher used the biology-centered trip method in teaching biology. Meanwhile, 58(7.3%) males, 75(9.5%) females, and a total of 133(16.8%) agreed that their teacher used a cooperative learning method in teaching biology. At the same time, male 180(22.8%) and female 166(21%), and their total 346(43.8%) agreed that their teacher used the discussion method in teaching biology.

Q5 According to your experience, which teaching method is most effective in learning biology?

- a) Lecture
- b) Demonstration
- c) Laboratory Method
- d) Project method

- e) Biology-centered field trip
- f) Cooperative Learning
- g) Discussion

Table 7: Gender-wise detail of responses about, according to experiences, of students which teaching method is most effective in learning biology (Multiple Responses)

Gender	Q5a (Lecture)		Q5b (Demonstration)		Q5c (Laboratory Method)		Q5d (Project method)		Q5e (Biology centered field trip)		Q5f (Cooperative Learning)		Q5g (Discussion)		T
	<i>f</i>	%	<i>f</i>	%	<i>F</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>
Male	144	18.2%	66	8.3%	168	21.2%	64	8.1%	51	6.4%	81	10.2%	168	21.2%	400
Female	179	22.6%	127	16.0%	126	15.9%	67	8.4%	56	7.1%	85	10.7%	94	11.9%	400
Total	323	40.7%	193	24.3%	294	37.1%	131	16.5%	107	13.5%	166	20.9%	262	33.0%	800

Percentages and totals are based on respondents. Dichotomy group tabulated at value 1.

Table 5 presents data about “According to your experience, which teaching method is most effective in learning biology?”. It is evident from the table above that the respondents, males 144(18.2%) and females 179(22.6%) and their total 223(40.7%), agreed that the lecture method is most effective in learning biology. Meanwhile, 66 males (8.3%) and 127 females (16%), and a total of 193(24.3%) agreed that the demonstration method is most effective in learning biology. Meanwhile, 168 males (21.2%) and 126 females (15.9%), and a total of 294(37.1%) agreed that the laboratory method is most effective in learning biology. Meanwhile, 64 males (8.1%) and 67 females (8.4%), and their total 131(16.5%) agreed that the project method is most effective in learning biology. Meanwhile, 51 males (6.4%) and 56 females (7.1%) and their total 107(13.5%) agreed that the biology-centered trip method is most effective in learning biology. Whereas male 81(10.2%) and female 85(10.7%) and their total 166(20.9%) agreed that the cooperative learning method is most effective in learning biology. At the same time, males 168(21.2%) and females 94(11.9%), and a total of 262(33.%) agreed that the discussion method is most effective in learning biology.

6. Findings

It is proved that 550 (69.4%) males and females agreed that the proper sitting space is most suitable for working in their classroom. At the same time, 392(49.5%) males and females agreed that the proper light is most suitable for working in their classroom. In contrast, 360(45.5%) males and females agreed that proper ventilation is most suitable for classroom work. In contrast, 292(36.5%) males and females agreed that the proper temperature is most suitable for working in their classroom.

It is proved that 551(69.8%) males and females agreed that their biology teacher uses whiteboard learning aids in teaching biology. Meanwhile, 130(16.5%) males and females agreed that their biology teacher uses charts as learning aids in teaching biology. At the same time, 122(15.5%) males and females agreed that their biology teacher uses model learning aids in teaching biology. Meanwhile, 105(13.3%) males and females agreed that their biology teacher uses projector learning aids in teaching biology. Meanwhile, 62(7.9%) males and females agreed that their biology teacher used materials or specimens available in the surrounding learning aids in teaching biology. Whereas 150(19%) males and females agreed that their biology teacher uses books as learning aids in teaching biology. Whereas 38 (4.8%) males and females agreed that their biology teacher uses guides available in the market as learning aids in teaching biology.

It is proved that 315(39.7%) males and females agreed that Av-Aids' impact on biology learning always increases their comprehension level. Meanwhile, 263(33.2%) males and females agreed that Av-Aids' impact on biology learning mostly increases their comprehension level. Meanwhile, 137(17.3%) males and females agreed that Av-Aids' impact on biology learning sometimes increases their comprehension level. Meanwhile, 54(6.5%) males and females agreed that Av-Aids' impact on biology learning rarely increases their comprehension level. Meanwhile, 31(3.4%) males and females agreed that Av-Aids' impact on biology learning never increases their comprehension level.

It is proved that 475(60.2%) males and females agreed that their teacher used the lecture method in teaching biology. At the same time, 256 (32.4%) males and females agreed that their teacher used demonstration methods in teaching biology. At the same time, 140(17.7%) males and females agreed that their teacher used laboratory methods in teaching biology. Meanwhile, 99(12.5%) males and females agreed that their teacher used the project method in teaching biology. At the same time, 187(11%) males and females agreed that their teacher uses the centered trip method in teaching biology. Meanwhile, 133 (16.8%) males and females agreed that their teachers use cooperative learning methods in teaching biology. Meanwhile, 346 (43.8%) males and females agreed that their teacher uses the discussion method in teaching biology.

It is proved that 323 (40.7%) males and females agreed that the lecture method is most effective in learning biology. At the same time, 193 (24.3%) males and females agreed that the demonstration method is most effective in learning biology. Meanwhile, 294 (37.1%) males and females agreed that the laboratory method is most effective in learning biology. At the same time, 131 (16.5%) males and females agreed that the project method is most effective in learning biology. Meanwhile, 10 (13.5%) males and females agreed that the biology-centered trip method is most effective in learning biology. 166 (20.9%) males and females agreed that the cooperative learning method is most effective in learning biology. On the other hand, 262(33.%) males and females agreed that the discussion method is most effective in learning biology.

7. Conclusion

1. Most respondents, 550 (69.4%), agreed that the proper sitting space is most suitable for working in their classroom.
2. Most of the respondents, 551 (69.8%), agreed that their biology teacher uses whiteboard learning aids in teaching biology.
3. The majority of the respondents, 315 (39.7%), agreed that Av-Aids' impact on biology learning always increases their comprehension level.
4. The majority of the respondents, 475 (60.2%), agreed that their teacher used lecture methods in teaching biology.
5. Most respondents, 323 (40.7%), agreed that the lecture method is most effective in learning biology.

8. Discussion

The main purpose of this study is to investigate how secondary the physical classroom environment and teaching methods impact school biology students. In this particular context, most participants stated that they have a proper sitting space and other components of the classroom for their learning in the biology subject. However, Cimer (2012) states that the best way to overcome learning challenges in biology is to construct curriculum, resources, textbooks, teaching activities, and teaching education procedures (Cimer, 2012). Taraban (2007) also states that the teachers in their classrooms can lead to increased use of student-centered instructional particulars and enhanced content knowledge, teaching methods, and learning processes for their students

(Taraban, 2007). Current research indicates that the majority of students believe that using Av-Aids to learn biology always raises their comprehension level. In contrast, Gillani's (2005) findings show that when instructional technology is used as a supplemental approach in biology instruction, students in the experimental group contribute closer attention because it increases their motivation and attracts their interest. (Gillani, 2005). According to government of Pakistan (1998) the importance of teaching methods is not known practically in teaching training institutes of Pakistan. It is also not being adequately responsive to the demands for equality in the school system. Application of all techniques and method are very compulsory for skill and competency, equality training, and developing confidence which are very supportive in transfer of knowledge and learning comprehensively. But in current situation teaching methods is based on conventional style. Many departments and intuitions are not adopting latest method and techniques and also not providing AV-aids and other helping materials.(Gujjar,2010)

9. Recommendations

In light of the findings, the following recommendations were made:

- i. The proper physical environment of the classroom plays a very important role in learning biology, so it may be enhanced by providing a better physical environment at the secondary school level.
- ii. The Directorate of Staff Development should arrange training for biology teachers to use different teaching methods in teaching biology subjects at the secondary level.

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