

Research Study No. 220

**NEED ASSESSMENT OF SECONDARY
SCHOOL TEACHERS' IN-SERVICE TRAINING**

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PREFACE

The Academy of Educational Planning and Management (AEPAM) was established as a professional institution to help in policy formulation, educational planning & management and capacity building. AEPAM has conducted several studies on important issues of education.

This study presents the need assessment of secondary school teachers' in-service training in Pakistan. The focus of the study was to investigate the in-service training needs of secondary school teachers in terms of implementation of curricula of secondary education, methods of teaching and students assessment. This thrust area originates from National Education Policy 1998-2010.

The successive governments have introduced various reforms and innovations to provide quality education in the country, which is pre-requisite for sustainable socio-economic development. But outcomes are still not satisfactory due to lack of related teacher training according to the professional requirements. Teacher training institutes usually arrange refresher courses for teachers hence these courses are designed without considering professional in-depth teaching requirements. This study will be useful in this context.

I would like to express my gratitude to the professionals who contributed to data collection. I am sure this study will be helpful to the Curriculum Wing of the Ministry of Education, Teachers Training Institutions and Bureaus of Curriculum and Extension Centers in the provinces.

Prof. Dr. Haroona Jatoi

EXECUTIVE SUMMARY

The study was designed to investigate "Need Assessment of Secondary School Teachers' In-Service Training". Four provincial headquarters were included in the sample whereas pilot testing of questionnaires was made in Rawalpindi and Islamabad. The main purpose of adopting this procedure was to have representative sample at national level.

The major findings are presented below:

Training Requirements related to Mathematics Textbooks

1. Training requirement of science teachers in Mathematics textbook for class 9th was explored. It was found that 83% of teachers included in the sample required training in Demonstrative Geometry whereas 82% teachers needed training in Fundamental Concepts of Geometry, 80% teachers needed training in Practical Geometry and System of Real Numbers, 77% teachers required training in Matrices and Determinants, 75% in Algebraic Expressions and 74% in Logarithms.

2. Data reveals that 82% of teachers included in this study required training in Mathematics textbook for class 10th in Practical Geometry whereas 81% teachers needed training in Information Handling and 80% in Fundamental concepts of Geometry as well as in Circle Concepts included in the textbook. On the contrary, 79% teachers required training in Trigonometry and 77% in Variation Concepts included in Mathematics textbook.

Training Requirements related to Physics Textbooks

3. It was found that professional teaching training is required by Science Teachers in Physics textbook for class 9th. Data shows that 82% needed training in Heat concepts, 80% needed training in Equilibrium, 78% needed training in Measurement, Circular Motion and Gravitation, 77% needed training in Properties of Matter, 76% needed training in Work, Power, Energy and Kinematics, 74% needed training in Force and Motion and 73% Science Teachers needed training in Simple Machines concepts.

4. Training is needed for capacity building of Science Teachers in concepts of Physics textbook for class 10th. It was found that 88% needed training in Electromagnetism and Electronics, 86% needed training in

Information Technology, 84% required training in Current Electricity, 83% needed training in Nuclear Physics, 81% needed training in Electrostatics, Spherical Mirrors and Lenses and 79% needed training in wave motion included in Physics textbook.

Training Needs for Chemistry Textbooks

5. Science Teachers of secondary schools required training in Chemistry textbook for 9th class as: 87% needed training in Electrochemistry, 82% needed training in Chemical Combination and Chemistry Equations, 80% needed training in Chemical Energy and Periodic Table, 77% needed training in Acids, Bases, Salts and Chemical Bonding, 75% needed training in Atomic Structure, 73% needed training in Solutions and Suspensions and 70% needed training in Chemistry Introduction.

6. As far as Chemistry textbook for class 10th was concerned, it was found that 84% science teachers required training in Chemical Industries, 83% required training in Metals and Metallurgy, 81% required training in Organic Chemistry, 77% required training in Halogens, Carbon, Silicon and their compounds, 76% required training in Sulphur and its compounds and 75% required training in Hydrogen, Nitrogen, Oxygen and Water Formation.

Training Needs for Biology Textbooks

7. Training is required in Biology textbook for class 9th as: 85% science teachers included in the sample needed training in Respiration and Gaseous Exchange, 84% needed training in Food and Nutrition, 83% needed training in Tracheophytes of Vascular Plants, 80% needed training in Virus, Bacteria and Cyan Bacterial, 79% needed training in Bryophytes, 78% needed training in Chordates/Vertebrates and 77% needed training in Fungi & Algae, Organization of Life and Classification of Living organisms.

8. As far as Biology textbook for class 10th was concerned, 90% science teachers needed training in Genes and Inheritance, 84% needed training in Development of Organism and Continuity, 83% needed training in Interrelationship of Organisms with their Environment, 82% needed training in Coordination, 81% needed training in Transport & Living Organisms, Support & Movement, Reproduction and Evolution and 80% needed training in Excretion and Man & Biology.

Training Needs for English Textbooks for Secondary Education

9. It was found that majority of the respondents either did not respond or responded 'No', which indicates that they did not require further training in

prose portion of English textbook for class 9th. Hence, almost one-third of the respondents needed training for teaching English textbook for class 9th.

10. Training needs in the contents of English textbook of class 10th were also explored. Data shows that majority of the teachers included in the sample did not need training for teaching English textbook for class 10th, however, almost one-third of respondents required such training.

Training Needs in Composition & Grammar

11. It was found that 85% of respondents required training in translation techniques, whereas, 82% teachers needed training in teaching Active-Passive Voice, Essay Writing and Vocabulary Enhancing Techniques. On the contrary 80% respondents needed training in teaching comprehension of a passage but 79% required training for teaching narration at secondary level. 75% English teachers required training for teaching Tenses, Story Writing, Letters and Applications.

Methods of Teaching at Secondary Level

12. It was found that majority of the science teachers had not responded as they indicated 'No' Response, which reflects that they did not need training in teaching methods for secondary level. However, 53% teachers needed training in Group Discussion Method, 45% teachers required training in Practical and Drill Method and 42% teachers needed training in Group Projects Methods.

13. As far as English Language Teachers were concerned, data shows that majority of the language teachers included in the sample required training for teaching at secondary level. 80% respondents were of the opinion that they required training in Listening & Observing Method of Teaching, Activity Method and Debate Method, whereas, 77% respondents needed training in Lecture Method and 76% in Group Projects Method.

Conclusions

1. It was concluded that majority of Science Teachers and English Language Teachers had more than 16 years of experience but majority of them could not get In-Service Training, whereas in this period curricula have been improved through various interventions according to National Education Policies and Reforms. In-service training facility for the teachers is essential for implementation of these reforms.

2. There is need of professional training for the teachers in the textbooks of Mathematics, Physics, Chemistry and Biology at secondary level. As majority of teachers indicated that they require training for teaching these subjects.

3. As far as English Language Teachers are concerned, there is no need of providing training in the textbooks. However, in grammar portion, there is need of providing professional training to these teachers.

4. There is also need of providing training in methods of Teaching of various subjects at secondary level, as different subjects demand modern methods of teaching. Only Lecture Method is used for teaching at secondary level which is not compatible to the demand of these subjects.

5. There is need for arranging training for secondary school teachers in student assessment particularly in formulation of questionnaire.

Recommendations

1. It is recommended that in-service training/refresher courses may be designed for capacity building of the teachers whenever any improvement/change is made in the national curricula as well as textbooks.

2. The training course may be designed for secondary school teachers considering content of the textbooks of Mathematics, Physics, Chemistry and Biology.

3. English textbooks and Grammar at secondary school level is very important therefore training courses may be designed for providing in-service training to English Language Teachers for teaching Grammar Portion at secondary level.

4. Different subjects demand modern methods of teaching. Only Lecture Method is used for teaching textbooks at secondary level which is not compatible to the demand of the subject. It is recommended that training facility may be provided to the secondary school teachers in Teaching Methods and Techniques in various textbooks at secondary level.

INTRODUCTION

The socio-economic development of the country depends on education system because human capital can only be produced by providing education to the citizens of the country. Competent and dedicated teachers are an important link in this connection. Teachers have an important role in any society. It is usually believed that teacher is a reformer and catalytic agent in the society. Teachers play vital role in reformation and for bringing changes in behaviour of the individuals. Whenever, change and improvement is to be introduced in education system, it depends upon the competency of the teacher who can translate the objectives in operational terms, which turn into reality.

Recognizing the importance of teacher in education system, almost all National Education Policies stress that training programs for teachers may be designed and teachers may avail the opportunity of these training programs, which enable them to meet needs of the students while teaching in the classroom.

It is a known fact that the quality of our education in our country is not effective. The failures, dropouts and low efficiency are no doubt the main causes. Hence, non-availability of proper teacher training program is one of the major causes of low quality of education. If the teachers are trained and have command on their subject they would be helpful to decrease failure, dropout, and low efficiency of the students. It can be said that teacher training programs have a significant role in education system.

Before joining teaching profession, teachers definitely get pre-service training. However, with the passage of time, various changes are introduced in curricula to cater for the needs of the students as well as of the overall education plan. These reforms are introduced by considering the advancement in science and technology in the world. Due to such developments, teachers' pre-service training needs to be refreshed through in-service training.

The in-service training makes the teachers more effective, efficient and productive in their teaching profession. Training is an important activity for professional development as management control. Training involves acquiring skills or learning concepts to increase performance. Training is the process of changing behavior of teachers, so that they would be able to analyze the requirement of the students for imparting skills to reshape their potentials and

personality development. Therefore, it can be described that training seeks to prepare an individual to understand and perform a job in the most efficient way. Presently teaching at secondary level has become more complex and complicated than the past, because diversification of subjects as well as introduction of new disciplines at this level make teaching profession difficult.

Secondary education plays dual role. On the one hand, it provides middle level workforce for the economy and on the other hand feeding crop is produced for higher education so that highly professional skillful people could be produced for the economy. Therefore, teaching at this level is very important. However, there is no proper system for teachers' in-service training where required teaching skills can be imparted to secondary school teachers for providing quality of education.

Keeping in view the importance of in-service training as important factor for quality of education, the AEPAM planned to undertake a research study to assess needs of secondary school teachers' in-service training.

1.1 Objectives of the Study

The main objectives of this study were to:

1. Investigate the methods of teaching at secondary education.
2. Explore the professional requirements of secondary school teacher in context of content of textbooks, teaching methods and student assessment.
3. Suggest viable measures for policy formulation of training of secondary school teachers.

1.2 Significance of the Study

This study has importance for professional development of secondary school teachers in Pakistan. In fact in-service training is only source for capacity building of secondary school teachers in the country. Pre-service, professional qualification is pre-requisite for joining teaching professions but advancement and changes in curricula demand for in-service training. This research explored the weaknesses in the methods of teaching, difficulties in the contents of the books and student assessment. These factors have substantial contribution for the development of insight not only in the teacher but also in heads of secondary schools. Consequently quality of secondary education is to be improved. The study is helpful for educational planners and policy-makers for designing in-service training of secondary school teachers in Pakistan.

1.3 Delimitation of the Study

This study was delimited to only four provincial headquarters considering time and resource constraints. The study was also further delimited to secondary education and in-service training of the teachers in the public sector.

REVIEW OF RELATED LITERATURE

Education is life long process. It is dynamic not static because of rapid changes in the field of education. It is not enough to provide training to teach once for all bases. In-service training should be given throughout their teaching career. All efforts to improve professional skills by the teachers on the job is called in-service education.

2.1 Meaning of Training

Training is provided for professional development of the teachers. In other words training is the systematic process of changing behavior, knowledge, skills, abilities and attitudes of teachers so that they would be able to improve teaching learning process. As quoted by Chandramohan, A (2007, p. 84). Dale S. Beach "the organized procedure by which people learn knowledge and skills for a definite purpose". Whereas, Edwin B. Flippo, defines that "training is the act of increasing the knowledge and skills of an employee for doing a particular job" Chandramohan, A (2007, P. 84).

2.2 Importance of Training

The importance of training as a means of improving productivity is increasingly recognized.

Changing technology and patterns of work mean that training must be a continuous process throughout a working life. Skills acquired for one job may also be transferred, modified and supplemented for other jobs. Training makes the employees more effective and productive. Training is an important activity of Human resource management. It constitutes a significant part of management control. According to Harris:

"In-service education applies to all school personnel activities, which are designed to increase professional competence. This is a systematic program conducted by local system, regional, national, government professional associations and educational institutions. In-service education has often consisted of survey of practices and opinions. Administrators, teachers, colleges and universities are giving increased attention to workshops, conferences, etc." (Harris 1960, p. 702).

2.3 Aims of In-Service Training

The in-service training program mainly aims at the following, however, the objectives of various levels of courses, differ from one course to another:

- a). Helping working teachers to refresh their knowledge.
- b). Developing their skills to improve class room teaching.
- c). Helping them to improve instructional side with low cost indigenous plans.
- d). Enabling them to formulate instructional objectives for their lesson plans.
- e). Molding their attitude towards accepting changes and innovations in the field of education.

For teachers training a committee was constituted consisting of subject specialists, working teachers, administrators and curriculum planners. They developed training modules of primary, elementary and secondary school teachers. In view of limited resources three to four subjects were grouped together for the purpose of training. Thus the following programs were planned:

1. PTC re-orientation course in the subjects of Urdu, Social Studies, Mathematics and Science.
2. CT/SV re-orientation course in English, Social Studies and Urdu.
3. CT/SV re-orientation course in General Math and General Science.
4. Re-orientation courses in Arabic.
5. Secondary School teachers re-orientation course in the subjects of:
 - a) English, Urdu and Pakistan Studies
 - b) General Science and General Mathematics
 - c) Elective Science and Elective Math

The duration of these courses varies from two weeks to four weeks. The program was mainly aimed at acquainting the teachers with the courses of studies in the new curricula for class IX and the new pedagogical skills to bring in the teaching, learning process.

2.4 Models of Pre-Service Training Program in Pakistan

At present the Government of Pakistan runs different types of teachers training programs at secondary level namely:

1. B.A. /B.Sc. B. Ed. (14+1)

One year B. Ed. Program is offered to prepare teachers for secondary schools after completing 14 years of education. Either B.Sc. or B.A. are eligible to join the program. Institutions where this training is offered are known as Colleges of Education.

2. Bachelor of Science in Education (12+3) Model

Three years B.S.Ed. Program is offered to prepare teachers for secondary schools after competing 12-years of education. Only F.Sc. are eligible to enter this program. Institutions where this training is offered are known as Colleges of Science Education.

2.5 REVIEW OF NATIONAL EDUCATION POLICIES

Since the inception of Pakistan every successive government made efforts to provide quality of education. Teacher plays vital role in imparting education, therefore all National Education Policies emphasized improvement in In-service Teachers Training Programs. Whenever changes are introduced in the textbooks, refresher courses are designed to update knowledge of concerned teachers. This section reveals that almost all policies emphasized on in-service teachers' training.

2.5.1 Report of the Commission on National Education- 1959

The Commission accepted the importance of professional training of teachers and emphasized that untrained teachers may be provided training so that they would be able to improve their knowledge. It states "apart from the fact that large numbers of our teachers at all levels are untrained, and continued and vigorous efforts are thus needed to equip them professionally for their work, it must be recognized that no teacher once trained can throughout his career be regarded as fully competent without periodic refresher courses"

(Government of Pakistan, Report of the Commission on National Education, 1959, p. 264).

It is a fact that the era of advancement in technology has changed the entire world scenario and knowledge is taking place rapidly. This development is brought in textbooks, therefore refresher courses are essential. The Commission further explained that "Refresher courses for teachers are not a luxury but a necessity. Teachers must keep themselves in touch with the latest teaching techniques by attending refresher courses at least once in 5 years, and their increments should be withheld if they do not do so". (Government of Pakistan, Report of the Commission on National Education, 1959, p. 268).

2.5.2 The New Education Policy of the Government of Pakistan - 1970

This policy emphasized that in-service training may be given to improve qualification of the teachers. "A comprehensive program of in-service training of teachers should be launched to up-grade their qualifications and effectiveness as teachers" (Government of Pakistan, The New Education Policy, 1970, p.20).

2.5.3 National Education Policy & Implementation Program - 1979

This policy brought important changes to provide in-service training to teachers and AIOU was strengthened as well as provincial institutions were supported to provide training to teachers, so that they would be able to improve their qualification. The policy emphasizes "Strengthening of the in-service training facilities of the Allama Iqbal Open University so as to enable the University to launch a comprehensive program for the massive training of teachers of all levels through correspondence, radio, television and periodic workshops and seminars. Similar support will also be provided to the provincial Institutes of Education and Research" (Government of Pakistan, National Education Policy & Implementation Program, 1979, p. 63).

2.5.4 The Education Policy 1972-1980

The policy has taken advance steps for providing guidebooks and training material to teachers, in order to increase their reading capability, consequently their professional development would be made. The policy states that "A large-scale in-service teacher-assistance program will be undertaken to enable practicing teachers correctly and effectively to teach the new curricula. In addition, teachers' guidebooks, handbooks and resource materials will be prepared and published" (Government of Pakistan, The Education Policy, 1972, p. 27).

2.5.5 National Education Policy 1992

The geographical location of the country demands to establish mobile training programs for teachers as they are posted in far flung areas of the country. The policy makers accepted this fact and stated "Mobile training units may be set up for on-the-job training of teachers" (Government of Pakistan, National Education Policy, 1992, p. 26).

The establishment of mobile training units for the teachers' in-service training was not considered to be sufficient. The policy makers proposed that efforts would be made to provide training to teachers either through distance education or regular program. The policy states that "A regular in-service training program will be launched for teachers at all levels. Distance Education methods will be used for in-service training. Techniques and methods of community motivation towards education will be emphasized in training programs. Computer education will be a compulsory component of all teacher training programs" (Government of Pakistan, National Education Policy, 1992, p. 26).

2.5.6 National Education Policy 1998-2010

The policy considered the importance of pre-service and in-service training and suggested various measures to address this issue.

- "A comprehensive in-service and pre-service teacher training program shall be launched.
- The teacher training programs have an imbalance among the courses pertaining to academic knowledge of the subject content of the school curriculum, teaching method, teaching practices and curricular activities. This is because of the short duration of most of the existing teacher education programs.
- In-Service training programs for teacher educators are almost non-existent. There is no institutionalized arrangement for providing regular training to teachers and teacher educators. Sporadic training opportunities, if any, lack in quality" (Government of Pakistan, National Education Policy (1998, p.42).

2.5.7 Education Sector Reforms (ESR) 2001-02 and 2005-06

Education Sector Reforms (ESR) was introduced in 2001-2006 and quality of education was one of its thrust areas. Several steps were taken to improve quality of education. Teachers' training is also one of the quality

indicators, therefore this indicators was addressed at grass root level, so that desired results could be achieved. This document describes:

"Improvement in the quality of education is the basic focus of the Education Sector Reforms. Training and support to quality education is an ever increasing demand at the grass-root level. The provision of District/Tehsil resource centers is the means, through decentralized infrastructure, for timely response to the needs of the clientele i.e. teachers, head teachers, supervisors/ learning coordinators and other district education managers. The main functions of the District and Tehsil or Sub-District Resource Centers are teacher training, monthly cluster meeting of teachers to discuss issues related to classroom activities and possibilities for continuous professional development of teachers. These resource centers provide a modality for involving teachers in the process of quality improvement. These resource centers can also provide forum for education managers and NGOs to work closely for school improvement programs including training of school management committees and PTAs. Under this program resource persons are to be trained and resource materials are to be developed for effective pedagogy" Government of Pakistan, (2004, p.65).

PROCEDURES

This section describe procedures adopted for conducting this study which involves qualitative and quantitative analysis.

3.1 Procedure for Sample Selection

This study was conducted at national level. From each provincial headquarter 24 schools were selected randomly for data collection. Details of the sample schools are as under:

CITY	SCHOOLS				TOTAL
	BOYS		GIRLS		
	URBAN	RURAL	URBAN	RURAL	
Peshawar	6	6	6	6	24
Lahore	6	6	6	6	24
Quetta	6	6	6	6	24
Karachi	6	6	6	6	24
TOTAL					96

It was decided that 4 Science Teachers and 2 English Language Teachers would be included in the sample for data collection from each school. The purpose for adoption of these criteria for selection of sample was to have a representative sample at national level. However, in the field it was found that some schools had only two Science Teachers and one English Language Teacher. Therefore the available Science and English Language Teachers in sample schools at time of data collection were included in sample.

District-wise sample distribution is given below:

DISTRICT	NO OF SCIENCE TEACHERS	NO OF LANGUAGE (ENGLISH) TEACHERS	MALE	FEMALE
Lahore	82	44	76	50
Karachi	78	47	63	62
Quetta	64	25	45	44
Peshawar	42	35	38	39
Total	266	151	222	195

3.2 Research Instruments

The following research instruments were developed for data collection:-

- i. One questionnaire (Annex-I) was designed for data collection for Science Teachers. The questionnaire was based on textbooks of Science subjects i.e. Mathematics, Physics, Chemistry and Biology. Methods of teaching were also included in the research instrument so that training requirements in methods of teaching can be assessed in each subject. Student assessment and performance evaluation of secondary school students was also included in the research instrument.
- ii. One separate questionnaire (Annex-II) was also developed for English Language Teachers. The questionnaire was based on textbook for English Subject for both secondary classes' textbooks. Grammar portion was also included in the research instrument. Methods of teaching were also included in the research instrument so that training requirements about methods of teaching could be assessed. Student assessment and evaluation performance of secondary school students was also included in the research instrument.

3.3 Pilot Testing of Research Instruments

Pilot testing of research instruments was completed in Islamabad and Rawalpindi districts. After pilot testing, the questionnaires were revised. Efforts were made to design comprehensive questionnaires to get relevant and precise information from all concerned teachers.

3.4 Procedure of Data Collection

Research team collected the data by visiting each sample district and school. The research team met with the District Education Managers for sample schools. With the help of district management, the team identified schools and localities for inclusion in the sample. After selection of schools and localities, the research team visited each sample school and collected data from Science Teachers as well as English Language Teachers.

3.5 Analysis and Interpretation of Data

Data collected from the field through questionnaires was analyzed by calculating frequencies and percentages.

3.6 Findings, Conclusions and Recommendations

Data analysis was done according to the objectives of the study. On the basis of data, findings were documented, conclusions drawn and recommendations were framed on the basis of conclusions for future policy formulation regarding teachers' in-service training.

DATA ANALYSIS AND INTERPRETATIONS

The data analysis was done in view of the objectives of the study. Two questionnaires were designed for data collection, one questionnaire for Science Teachers whereas second questionnaire for English Language Teachers. Therefore, data analysis was made separately divided into two parts. Training requirements of Science Teachers have been explained in part-I whereas part-II describes training requirement of English Language Teachers. Frequencies and percentages were calculated so that a common reader could understand training requirements of secondary school teachers.

PART-I

ANALYSIS OF QUESTIONNAIRE FOR SCIENCE TEACHERS

4.1 Characteristics of Science Teachers

The characteristics of Science Teachers included in the sample are described in this section. Their characteristics include: gender, academic and professional qualification, experience and in-service training. Details follow:

4.1.1 Gender

Table-1

GENDER	FREQUENCY	%
Male	126	47
Female	140	53
Total	266	100

Table-1 shows that 266 Science Teachers (male 126 and female 140) were included in the sample for data collection.

4.1.2 Qualification

Educational qualification plays vital role for professional development of the teachers. Therefore information was collected about academic as well as

professional qualification of teachers included in the sample. Qualification of teachers is presented in following tables.

A. Academic Qualification of Science Teachers

Table-2

QUALIFICATION	FREQUENCY	%
B.Sc/B.A	88	33
M.Sc/M.A	176	66
M. Phil	2	1
Total	266	100

Table-2 illustrates that 176 Science Teachers had Master degree, whereas 88 Science Teachers had B.Sc degree and only two did M.Phil in the subject.

B. Professional Qualification of Science Teachers

Professional qualification helps in a way teaching can be made easy according to the level of students. Information from teachers was sought about their professional qualification which is presented in table-3.

Table-3

QUALIFICATION	FREQUENCY	%
PTC	6	2
C.T	5	2
B.Ed	138	52
M.Ed	117	44
Total	266	100

Table-3 indicates that 138 teachers had Bachelor degree in education whereas 117 teachers did Master in education. Only 5 teachers had certificate in teaching and 6 teachers had PTC as professional qualification.

4.1.3 Teaching Experience at Secondary Level

Experience is pre-requisite for providing quality education to the students. Every person learns with experience in the field. Teachers were requested to provide information about their experience. Their responses are presented in table - 4.

Table-4

YEARS	FREQUENCY	%
1-5	45	17
6-10	35	13
11-15	50	19
16-above	136	51
Total	266	100

Table-4 shows that majority of the Science Teachers were experienced as 136 teachers in the sample had more than 16 years experience whereas 50 had 11 to 15 years experience 35 had experience between 6 to 10 years and 45 teachers had 1 to 5 years experience.

4.1.4 In-Service Training

In-Service training is provided for professional capacity building of the teachers. Therefore information was sought about in-service training. The responses are reflected in table-5.

Table-5

In-Service Training	YES (%)	NO (%)	Total
	61	39	100

Table-5 indicates that 61% respondents could get in-service training after joining teaching profession whereas 39% Science Teachers could not get in-service training after joining their service as teachers.

4.1.5 Training requirements of Science Teachers related to Mathematics Textbooks

Training requirements of Science Teachers were sought regarding teaching of Mathematics textbooks. Their responses are presented in the following table.

Table-6

S.#	CONCEPTS IN MATHEMATICS TEXT BOOK (9 TH)	YES (%)	NO (%)	TOTAL
1.	Sets	63	37	100
2.	System of Real Numbers	80	20	100
3.	Logarithms	74	26	100
4.	Algebraic Expressions	75	25	100
5.	Factorization, H.C.F., L.C.M., Simplification & Square Reports	73	27	100
6.	Matrices and Determinants	77	23	100
7.	Fundamental Concepts of Geometry	82	18	100
8.	Practical Geometry	80	20	100
9.	Demonstrative Geometry	83	17	100

Table-6 shows that 83% of teachers included in the sample required training in demonstrative geometry whereas 82% teachers needed training in fundamental concepts of geometry. 80% teachers needed training in practical geometry and system of Real Numbers. 77%, teachers required training in Matrices and Determinants, 75% in Algebraic expressions and 74% in logarithms. Training needs of Science Teachers about concept in Mathematics textbook for class 10th were also assessed as following:

Table-7

S.#	CONCEPTS IN MATHEMATICS TEXTBOOK (10 TH)	YES (%)	NO (%)	TOTAL
1.	Algebraic Sentences	74	26	100
2.	Elimination	70	30	100
3.	Variation	77	23	100
4.	Information Handling	81	19	100
5.	Fundamental Concepts of Geometry	80	20	100
6.	Circle	80	20	100
7.	Practical Geometry	82	18	100
8.	Trigonometry	79	21	100

Table-7 depicts that 82% of teachers included in this study required training in Practical Geometry whereas 81% teachers needed training in Information Handling and 80% in Fundamental concepts of Geometry as well as in Circle concepts included in the textbook. On the contrary, 79% teachers

required training in Trigonometry and 77% in Variation concepts included in Mathematics textbook for class 10th.

4.1.6 Training Requirements related to Physics Textbooks

Training needs of Science Teachers for the concepts included in Physics textbook for class 9th were investigated. Results are reflected in table-8.

Table-8

S.#	CONCEPTS IN PHYSICS TEXTBOOK (9 TH)	YES (%)	NO (%)	TOTAL
1.	Physics – An introduction	69	31	100
2.	Measurement	78	22	100
3.	Kinematics	76	24	100
4.	Force and Motion	74	26	100
5.	Vectors	78	22	100
6.	Equilibrium	80	20	100
7.	Circular Motion and Gravitation	78	22	100
8.	Work, Power and Energy	76	24	100
9.	Simple Machines	73	27	100
10.	Properties of Matter	77	23	100
11.	Heat	82	18	100

Table-8 illustrates that Science Teachers required training for teaching the following concepts included in Physics textbook for class 9th.

- 82% needed training in Heat concepts.
- 80% needed training in Equilibrium.
- 78% needed training in Measurement, Circular Motion and Gravitation.
- 77% needed training in Properties of Matter.
- 76% needed training in Work, Power, Energy and Kinematics.
- 74% needed training in Force and Motion.
- 73% Science Teachers needed training in Simple Machines concepts.

Science Teachers were also requested to provide information about their training needs in concepts of Physics textbook for class 10th. Their responses are presented in table-9.

Table-9

S.#	CONCEPTS IN PHYSICS TEXTBOOK (10 TH)	YES (%)	NO (%)	Total
1.	Wave Motion	79	21	100
2.	Sound	77	23	100
3.	Spherical Mirrors and Lenses	81	19	100
4.	Electrostatics	81	19	100
5.	Current Electricity	84	16	100
6.	Electromagnetism	88	12	100
7.	Nuclear Physics	83	17	100
8.	Electronics	88	12	100
9.	Information Technology	86	14	100

Table-9 shows that training is needed for capacity building of Science Teachers in Physics textbook for 10th class as under:

- 88% needed training in Electromagnetism and Electronics.
- 86% needed training in Information Technology.
- 84% required training in Current Electricity.
- 83% needed training in Nuclear Physics.
- 81% needed training in Electrostatics, Spherical Mirrors and Lenses.
- 79% needed training in wave motion.

4.1.7 Training Needs for Chemistry Textbooks

Science Teachers were requested to provide information regarding their training needs in Chemistry of 9th class. Their responses are presented in the following table.

Table-10

S.#	CONCEPTS IN CHEMISTRY TEXTBOOK (9 TH)	YES (%)	NO (%)	TOTAL
1.	Chemistry – An Introduction	70	30	100
2.	Chemical Combination and Chemical Equations	82	18	100
3.	Atomic Structure	75	25	100
4.	Periodicity of Elements and Periodic Table	80	20	100
5.	Chemical Bonding	77	23	100
6.	States of Matter	68	32	100
7.	Solutions and Suspensions	73	27	100
8.	Electrochemistry	87	13	100
9.	Acids, Bases and Salts	77	23	100
10.	Chemical Energy	80	20	100

Table-10 indicates that Science Teachers of secondary education required training in Chemistry textbook for 9th class as indicated below:

- 87% needed training in Electrochemistry.
- 82% needed training in Chemical Combination and Chemical Equations.
- 80% needed training in Chemical Energy and Periodic Table.
- 77% needed training in Acids, Bases, Salts and Chemical Bonding.
- 75% needed training in Atomic Structure.
- 73% needed training in Solutions and Suspensions.
- 70% needed training in Chemistry – An Introduction.

Training needs are also sought regarding concepts in Chemistry textbook for class 10th. The responses are presented in table-11.

Table-11

S.#	CONCEPTS IN CHEMISTRY TEXTBOOK (10 TH)	YES (%)	NO (%)	TOTAL
1.	Hydrogen and Water	75	25	100
2.	Carbon, Silicon and their Compounds	77	23	100
3.	Nitrogen and Oxygen	75	25	100
4.	Sulphur and its Compounds	76	24	100
5.	Halogens	77	23	100
6.	Metals and Metallurgy	83	17	100
7.	Organic Chemistry	81	19	100
8.	Chemical Industries	84	16	100

Table-11 shows that Science Teachers of secondary education required training in Chemistry textbook for class 10th in the following concepts:

- 84% required training in Chemical Industries.
- 83% required training in Metals and Metallurgy.
- 81% required training in Organic Chemistry.
- 77% required training in Halogens, Carbon, Silicon and their Compounds.

- 76% required training in Sulphur and its Compounds.
- 75% required training in Hydrogen, Nitrogen, Oxygen, and water formation.

4.1.8 Training Needs for Biology Textbooks

Biology is taught in secondary education. Training requirements of science teachers were sought in concepts of Biology textbooks. Their responses are presented in table-12.

Table-12

S.#	CONCEPTS IN BIOLOGY TEXTBOOK (9 TH)	YES (%)	NO (%)	TOTAL
1.	ORIGIN OF LIFE			
	i. Introduction to Biology	73	27	100
2.	ORGANIZATION OF LIFE			
	i. Organization of Life	77	23	100
3.	BIODIVERSITY			
	i. Classification of Living Organisms	77	23	100
	ii. Viruses, Bacteria and Cyan bacterial	80	20	100
	iii. Fungi and Algae	77	23	100
	iv. Bryophytes	79	21	100
	v. Tracheophytes of Vascular Plants	83	17	100
	vi. Invertebrates	76	24	100
	vii. Chordates/Vertebrates	78	22	100
4.	MAINTENANCE OF LIFE			
	i. Food and Nutrition	84	16	100
	ii. Respiration and Gaseous Exchange	85	15	100

Table-12 illustrates that Science Teachers included in the sample required training in Biology textbook for class 10th as under:

- 85% needed training in Respiration and Gaseous Exchange.
- 84% needed training in Food and Nutrition.
- 83% needed training in Tracheophytes of Vascular Plants.
- 80% needed training in Virus, Bacteria and Cyan Bacterial.
- 79% needed training in Bryophytes.
- 78% needed training in Chordates/Vertebrates.
- 77% needed training in Fungi & Algae, Organization of Life and Classification of Living organization.

Science Teachers were also requested to provide information about their training requirements in Biology textbook for class 10th. The responses are presented in the following table.

Table-13

S.#	CONCEPTS IN BIOLOGY BOOK (10 TH)	YES (%)	NO (%)	TOTAL
1.	Transport and Living Organisms	81	19	100
2.	Excretion	80	20	100
3.	Support and Movement	81	19	100
4.	Coordination	82	18	100
5.	Reproduction	81	19	100
6.	Genes and Inheritance	90	10	100
7.	Evolution	81	19	100
8.	Environmental Biology	78	22	100
9.	Man and Biology	80	20	100
10.	Development of Organism and Continuity	84	16	100
11.	Interrelationship of Organisms with their Environment	83	17	100

Table-13 illustrates that Science Teachers required training in Biology textbook for class 10th as under:

- 90% needed training in Genes and Inheritance.
- 84% needed training in Development of Organism and Continuity.

- 83% needed training in Interrelationship of Organisms with their Environment.
- 82% needed training in Coordination.
- 81% needed training in Transport & Living Organisms, Support & Movement, Reproduction and Evolution.
- 80% needed training in Excretion and Man & Biology.

4.1.9 Methods of Teaching for Science Textbooks at Secondary Level

Training needs in methods of teaching of the subjects at secondary level were sought from Science Teachers. Their opinions are presented in following table.

Table-14

S. #	METHODS OF TEACHING AT SECONDARY LEVEL			
A.	TEACHER –CENTERED GROUP METHODS	No Response (%)	YES (%)	NO (%)
	i. Lecture Method	41	37	22
B.	STUDENT –CENTERED GROUP METHODS			
	i. Debate	64	21	15
	ii. Group discussion	42	53	5
	iii. Listening and observing	51	41	8
	iv. Group projects	51	42	7
	v. Role playing and simulations	65	27	8
	vi. Visits and field trips	60	33	7
C.	INDIVIDUAL STUDENT –CENTERED METHOD			
	i. Assignment	54	40	6
	ii. Computer assisted learning	56	39	5
	iii. Practical and drill	50	45	5

Table-14 shows that majority of the Science Teachers had not responded as they indicated "No" Response, which reflects that they did not need training in teaching methods for secondary level. However, 53% teachers needed training in group discussion method. 45% teachers required training in practical and drill and 42% teachers needed training in group projects methods.

PART-II

ANALYSIS OF QUESTIONNAIRE FOR ENGLISH LANGUAGE TEACHERS

4.2 Characteristics of English Language Teacher

4.2.1 Gender

Table-15

GENDER	FREQUENCY	%
Male	74	49
Female	77	51
Total	151	100

Table-15 indicates that in total 151 (male 74 and female 77) English Language Teachers were included in the sample of the study.

4.2.2 Educational Qualification

Information about academic and professional qualification of English Language Teachers was collected which is presented in the following tables:

A. Academic Qualification

Table-16

QUALIFICATION	FREQUENCY	%
B.Sc/B.A	34	23
M.Sc/MA	117	77
Total	151	100

Table-16 shows that 77% teachers had master degree whereas 23% were graduates.

B. Professional Qualification

Professional qualification is obtained before joining teaching profession. The teachers were requested to provide information about their professional qualification. Their responses are reflected in the following table.

Table-17

QUALIFICATION	FREQUENCY	%
B.Ed	78	52
C.T	5	3
M.Ed	68	45
Total	151	100

Table-17 shows that 52% teachers included in the sample were having B.Ed degree whereas 45% had achieved master in education.

4.2.3 Experience as English Language Teachers

Teaching experience as English language teachers in secondary education plays vital role in enhancing professional skills for teaching. Language teachers were also requested to provide information about their teaching experience. The collected information is presented in the table.

Table-18

YEARS	FREQUENCY	%
1-5	22	15
6-10	20	17
11-15	26	13
16-above	83	55
Total	151	100

Table-18 depicts that 55% teachers included in the sample of the study have more than 16 years of experience whereas, 13% had 11 to 15 years teaching experience at secondary school level. 17% teachers had 6 to 10 years and 15% teachers had 1 to 5 years teaching experience in their credit.

4.2.4 In-Service Training

Table-19

IN-SERVICE TRAINING	FREQUENCY	%
Yes	36	24
No	115	76
Total	151	100

Table-19 indicates that 76% English Language Teachers included in the sample could not get in-service training after joining as secondary school teacher and only 24% availed such facility.

4.2.5 Training Need for English Textbooks at Secondary Level

Training needs in the contents of English textbook for class 9th were sought from teachers which are presented in table-20.

Table-20

S.#	PROSE-CONTENTS OF ENGLISH BOOK (9 TH)	YES (%)	NO (%)	No Responses	Total
1.	Prophet Muhammad (SAW) The greatest Reformer.	41	25	34	100
2.	Hazrat Khalid Bin Waleed (R.A.)	31	29	40	100
3.	Kindness to Living Things	33	26	41	100
4.	Little Things (Poem)	36	27	37	100
5.	Rural and Urban Life in Pakistan	34	24	42	100
6.	Chinese Wisdom.	30	26	44	100
7.	Women Arise!	31	26	43	100
8.	Evening (Poem)	34	24	42	100
9.	The Chinese New Year	30	28	42	100
10.	Ladies Park- a shambles!	32	28	40	100
11.	Sports and Games	28	30	42	100
12.	Abu Ben Adhem (Poem)	38	22	40	100
13.	Save Nature	34	29	37	100
14.	Bees	32	26	42	100
15.	Form Filling	29	26	45	100
16.	Truth-the Best (Poem)	29	29	42	100
17.	Admission Open	30	26	43	100
18.	What Happens to the Rain	33	24	43	100
19.	Knowledge is Light	30	27	43	100
20.	Doctor's Advice	29	28	43	100
21.	Daffodils (Poem)	34	28	37	100
22.	Road Safety	46	33	21	100

Table-20 shows that majority of the respondents either did not respond or responded as 'No', which indicates that they did not require training in prose portion of English textbook for class 9th. Hence, almost one-third of the respondents needed training for teaching of English textbook for 9th class. Training needs in the contents of English text book for class 10th were also explored. The responses of the teachers are presented in table.

Table-21

S.#	PROSE CONTENTS OF ENGLISH BOOK (10 TH)	YES (%)	NO (%)	No Response	Total
1.	Prophet Muhammad (SAW) as an Educationist	21	29	50	100
2.	Festivals of Pakistan	34	24	42	100
3.	The Difference between a Brain and a Computer	30	27	43	100
4.	Blessings of God (Poem)	31	27	42	100
5.	Hazrat Ayesha	28	30	42	100
6.	Transport	31	26	43	100
7.	Human Rights and Madina Charter	31	27	42	100
8.	A Nation's Strength (Poem)	30	29	41	100
9.	A Father's Advice	28	29	43	100
10.	Hazrat Ali's (R.A) Humanism	32	26	42	100
11.	Handicrafts of Pakistan	40	20	40	100
12.	The Menace of Drugs	35	25	40	100
13.	The Character of a Happy Life (Poem)	34	26	40	100
14.	Simplicity	36	24	40	100
15.	Traffic Education	37	22	41	100
16.	Letter Writing	37	22	41	100
17.	A Fragment (Poem)	34	25	41	100
18.	A Little Word (Poem)	34	24	42	100
19.	Two Wedding Ceremonies	39	21	40	100
20.	My Mother (Poem)	39	21	40	100
21.	The Great Leader	44	20	36	100

Table-21 indicates that majority of the teachers included in the sample did not need training for teaching English textbook to class 10th. Hence, almost one-third of respondents are required to be trained for teaching English textbook to 10th class.

4.2.6 Training Needs in Composition and Grammar at Secondary level

Table-22

S.#	(A) GRAMMAR FOR SECONDARY LEVEL	YES (%)	NO (%)	No Response	Total
1.	Parts of Speech	65	20	15	100
2.	Tenses	75	19	6	100
3.	Voice-Active-Passive	82	11	7	100
4.	Narration-Direct-Indirect	79	14	7	100
5.	Punctuation	76	15	9	100
6.	Pair of Words	72	18	10	100
	(B) COMPOSITION				100
1.	Paragraph Writing	73	14	13	100
2.	Story Writing	75	15	10	100
3.	Letters, Applications, invitations	75	18	7	100
4.	Dialogue Writing	78	14	8	100
5.	Comprehension of a Passage	80	13	7	100
6.	Essay Writing skills	82	13	5	100
7.	Translation Techniques	85	9	6	100
8.	Vocabulary enhancing Technique	82	9	9	100

Table-22 illustrates that 85% respondents required training in translation techniques, whereas, 82% teachers needed training in teaching Active-Passive Voice, Essay writing and vocabulary-enhancing techniques. On the contrary, 80% respondents needed training in teaching comprehension of a passage, but 79% required training for teaching narration at secondary level. 75% English teachers required training for teaching Tenses, Story Writing, Letters and Application.

4.2.7 Training Needs of English Language Teachers in Teaching Methods at Secondary Level

Table-23

S#	METHODS OF TEACHING	YES	NO	No Response	Total
ENGLISH					
A	TEACHER -CENTERED METHODS				
	i. Lecture Method	77	12	11	100
B	STUDENT --CENTERED METHODS				
	i. Debate	79	7	14	100
	ii. Group discussion	84	5	11	100
	iii. Listening and observing	80	7	13	100
	iv. Group projects	76	8	16	100
	v. Role playing and simulations	68	12	20	100
	vi. Visits and field trips	66	10	24	100
C	INDIVIDUAL STUDENT-CENTERED METHOD				
	i. Assigning activity method	79	5	16	100
	ii. Computer assisted learning	75	9	16	100
	iii. Interactive	67	9	24	100
	iv. Practical and drill	73	9	18	100

Table-23 depicts that majority of the English Language Teachers included in the sample required training for teaching at secondary level. As 80% respondents were of the opinion that they required training in listening and observing method of teaching, assigning activity method and debate method, whereas, 77% respondents needed training in Lecture Method and 76% in group projects method.

4.2.8 Student Assessment

Student assessment and performance evaluation has importance for improving quality of education at secondary level. Therefore information was sought from teachers about their training needs. Their responses are reflected in table-24.

Table-24

S #	STUDENT ASSESSMENT	YES	NO	No Response	Total
1.	Development of questions for assessing the students:	59	12	29	100
	i Application	67	14	19	100
	ii Understanding	74	13	13	100
	iii Analysis	72	13	15	100
	iv Evaluation	72	13	15	100
2.	Formulation of question paper	62	13	25	100

Table-24 indicates that 74% teachers required training in student assessment for the development of questions for assessing the students understanding, whereas, 72% needed training in analysis and evaluation. Hence 62% needed training in formulation of question papers.



FINDINGS, CONCLUSIONS AND RECOMENDATIONS**Findings****1. Characteristics of the Respondents**

i. Total 262 Science Teachers (male 126 and female 140) and 151 English Language Teachers were included in the sample. They were highly qualified and experienced teachers. As far as their Academic and Professional qualification is concerned 176 Science Teachers had Master degree, whereas 88 Science Teachers had B.Sc degree and only 02 did M.Phil. Their professional qualification indicated that 138 teachers had Bachelor degree in education whereas 117 teachers had Master in education. Only 5 teachers had certificate in teaching and 6 teachers had PTC as professional qualification in their credit. On the contrary, English Language Teachers' Academic and Professional Qualification indicated that 117 teachers had Master degree whereas 34 were graduates. Professional qualification revealed that out of 151 Language teachers 78 Teachers had done B.Ed whereas 68 had Master degree in Education.

ii. Majority of the Science Teachers were experienced because 136 teachers in the sample had more than 16 years of experience. 50 had 11 to 15 years experience and 45 teachers had 1 to 5 years experience. As far as English Language Teachers are concerned 83 Teachers had more than 16 years experience whereas 26 had 11-15 year experience and 20 Teachers had 6-10 year experience. This indicates that all English Language Teachers were also experienced teachers.

iii. Data indicated that 61% of Science Teachers had received in-service training after joining teaching profession whereas 34% English Language Teachers availed this facility. 39% Science Teachers could not get in-service training after joining their service as Science Teachers and 76% English Language Teachers did not avail this facility.

2. Training Requirements related to Mathematics Textbooks

i. It was found that 83% of teachers included in the sample required training in Mathematics textbook for class 9th in demonstrative geometry whereas 82% teachers needed training in fundamental concepts of geometry. 80% teachers needed training in practical geometry and system of Real Numbers. 77%, teachers required training in Matrices and Determinants, 75% in Algebraic expressions and 74% in logarithms.

ii. Data reveals that 82% of teachers included in this study required training in Mathematics textbook for class 10th in Practical Geometry whereas 81% teachers needed training in Information Handling and 80% in Fundamental concepts of Geometry as well as in Circle concepts included in the textbook. On the contrary 79% teachers required training in Trigonometry and 77% in Variation concepts included in Mathematics textbook for class 10th.

3. Training Requirements related to Physics Textbooks

i. It was found that professional teaching training is required by Science Teachers in concepts of Physics textbook for class 9th as under:

- 82% needed training in Heat concepts.
- 80% needed training in Equilibrium.
- 78% needed training in Measurement, Circular Motion and Gravitation.
- 77% needed training in Properties of Matter.
- 76% needed training in Work, Power, Energy and Kinematics.
- 74% needed training in Force and Motion.
- 73% Science Teachers needed training in Simple Machines concepts.

ii. It was also found that training is needed for capacity building of Science Teachers in concepts of Physics textbook for 10th class.

- 88% needed training in Electromagnetism and Electronics.
- 86% needed training in Information Technology.
- 84% required training in Current Electricity.
- 83% needed training in Nuclear Physics.
- 81% needed training in Electrostatics, Spherical Mirrors and Lenses.
- 79% needed training in wave motion included in textbook of Physics for class 10th.

4. Training Needs for Chemistry Textbooks

i. Science Teachers of secondary education required training in Chemistry textbook for 9th class as:

- 87% needed training in Electrochemistry.
- 82% needed training in Chemical Combination and Chemistry Equations.
- 80% needed training in Chemical Energy and Periodic Table.

- 77% needed training in Acids, Bases, Salts and Chemical Bonding.
- 75% needed training in Atomic Structure.
- 73% needed training in Solutions and Suspensions.
- 70% needed training in Chemistry – An Introduction.

ii. Science Teachers of secondary education required training in Chemistry textbook for class 10th as:

- 84% required training in Chemical Industries.
- 83% required training in Metals and Metallurgy.
- 81% required training in Organic Chemistry.
- 77% required training in Halogens, Carbon, Silicon and their Compounds.
- 76% required training in Sulphur and its Compounds.
- 75% required training in Hydrogen, Nitrogen, Oxygen and water formation.

5. Training Needs for Biology Textbook

i. Science Teachers required training in Biology textbook for class 9th as under:

- 85% needed training in Respiration and Gaseous Exchange.
- 84% needed training in Food and Nutrition.
- 83% needed training in Tracheophytes of Vascular Plants.
- 80% needed training in Virus, Bacteria and Cyan Bacterial.
- 79% needed training in Bryophytes.
- 78% needed training in Chordates/Vertebrates.
- 77% needed training in Fungi & Algae, Organization of Life and Classification of Living Organisms.

ii. Science Teachers required training in Biology textbook for class 10th as under:

- 90% needed training in Genes and Inheritance.
- 84% needed training in Development of Organism and Continuity.

- 83% needed training in Interrelationship of Organisms with their Environment.
- 82% needed training in Coordination.
- 81% needed training in Transport & Living Organisms, Support & Movement, Reproduction and Evolution.
- 80% needed training in Excretion and relation of Man with Biology.

7. Training Need of English Language Teachers for Teaching English Textbooks at Secondary Education

i. It was found that majority of the respondents either did not respond or responded 'No', which indicates that they did not require further training in prose portion English textbook for class 9th. Hence, almost one-third of the respondents needed training for teaching of English textbook for class 9th.

ii. Training needs in the contents of English textbook for class 10th were also explored. Data shows that majority of the teachers included in the sample did not need training for teaching English textbook for class 10th. However, almost one-third of respondents required to be trained for teaching English textbook for class 10th.

8. Training Needs in Composition and Grammar

It was found that 85% respondents required training in translation techniques, whereas, 82% teachers needed training in teaching Active-Passive Voice, Essay writing and vocabulary enhancing techniques. 80% respondents needed training in teaching comprehension of a passage, but 79% required training for teaching narration at secondary level. 75% English teachers required training for teaching tenses, story writing, letters and applications.

6. Methods of Teaching at Secondary Level

It was found that majority of the Science Teachers had not responded as they indicated 'No' Response, which reflects that they did not need training in teaching methods for secondary level. However, 53% teachers needed training in group discussion method. 45% teachers required training in practical and drill method and 42% teachers needed training in group projects methods.

As far as English Language Teachers were concerned, data shows that majority of the English teachers included in the sample required training for

teaching at secondary level. As 80% respondents were of the opinion that they required training in listening and observing method of teaching, activity method

and debate method, whereas, 77% respondents needed training in lecture method and 76% in group projects method.

10. Student Assessment

It was found that 74% of teachers required training in student assessment for the development of questions to assess the students' understanding, whereas, 72% needed training in analysis and evaluation. Hence 62% needed training in formulation of question papers.

Conclusions

1. It was concluded that majority of Science Teachers and English Language Teachers had more than 16 years of experience but majority of them could not get In-Service Training, whereas in this period textbooks have been revised through various interventions according to National Education Policies and Reforms. In-service training facility to the teachers is essential for teaching new concepts included in textbooks through reforms.

2. There is need of professional training for the teachers in the textbooks of Mathematics, Physics, Chemistry and Biology at secondary level.

3. As far as English Language Teachers are concerned, there is no need of providing training in the textbooks of English Language. However, in grammar portion, there is need of providing professional training to these teachers.

4. There is also need of providing training in methods of Teaching for teaching various subjects at secondary education. Different subjects demand modern methods of teaching. Only lecture method is used for teaching all subjects at secondary level which is not compatible with demand of these subjects.

5. There is a need for arranging training for secondary school teachers in student assessment particularly for formulation of questionnaires/ test items.

Recommendations are Suggested:

On the basis of the feed back the following recommendations are suggested:

1. In-service training/refresher courses may be designed for capacity building of the teachers whenever any improvement/change is made in the textbooks.
2. The training course may be designed for secondary school teachers in contents of the subjects of Mathematics, Physics, Chemistry and Biology.
3. English Grammar at secondary school level is very important therefore training courses may be designed for providing in-service training to English Language Teachers for teaching grammar portion at secondary level.
4. Training in methods of teaching should be imparted to teach textbooks of secondary education, as different subjects demand modern methods of teaching.

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**NEED ASSESSMENT OF SECONDARY
SCHOOL TEACHER IN-SERVICE TRAINING**

QUESTIONNAIRE FOR

SCIENCE TEACHER

**ACADEMY OF EDUCATIONAL PLANNING AND MANAGEMENT
MINISTRY OF EDUCATION, GOVERNMENT OF PAKISTAN
TALEEMI CHOWK, G-8/1,
ISLAMABAD
2008**

**GOVERNMENT OF PAKISTAN
ACADEMY OF EDUCATIONAL PLANNING AND MANAGEMENT
MINISTRY OF EDUCATION, TALEEMI CHOWK, G-8/1,
ISLAMABAD**

Computer Code (Official Use)

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**NEED ASSESSMENT OF SECONDARY SCHOOL TEACHER
IN-SERVICE TRAINING**

Questionnaire for Science Teachers

Date _____

1. Name: _____
Name and Address of School: _____

2. Gender: 1. Male 2. Female

3. Qualification (please write the highest qualification)

(a) Academic _____

(b) Professional _____

4. Experience (in years)

Teaching experience as Science Teacher

S.#	YEARS
1.	1-5
2.	6-10
3.	11-15
4.	16-above

5. Did you receive in service training?

1. Yes 2. No

6. If yes, please fill the following table

S. #	DURATION	ORGANIZED BY	TOPICS COVERED
1.			
2.			
3.			
4.			

7. Please identify training needs in the contents of following subjects of class 9th & 10th

S.#	CONCEPTS IN BOOK-MATHEMATICS (9 TH)	YES	NO
1.	Sets		
2.	System of Real Numbers		
3.	Logarithms		
4.	Algebraic Expressions		
5.	Factorization, H.C.F., L.C.M., Simplification & Square Reports		
6.	Matrices and Determinants		
7.	Fundamental Concepts of Geometry		
8.	Practical Geometry		
9.	Demonstrative Geometry		
10.	Any Other (please specify)		

S.#	CONCEPTS IN BOOK-MATHEMATICS (10 TH)	YES	NO
1.	Algebraic Sentences		
2.	Elimination		
3.	Variation		
4.	Information Handling		
5.	Fundamental Concepts of Geometry		
6.	Circle		
7.	Practical Geometry		
8.	Trigonometry		
9.	Any Other (please specify)		

S.#	CONCEPTS IN BOOK-PHYSICS (9 TH)	YES	NO
1.	Physics – An introduction		
2.	Measurement		
3.	Kinematics		
4.	Force and Motion		
5.	Vectors		
6.	Equilibrium		
7.	Circular Motion and Gravitation		
8.	Work, Power and Energy		
9.	Simple Machines		
10.	Properties of Matter		
11.	Heat		
12.	Any Other (please specify)		

S.#	CONCEPTS IN BOOK-PHYSICS (10 TH)	YES	NO
1.	Wave Motion		
2.	Sound		
3.	Spherical Mirrors and Lenses		
4.	Electrostatics		
5.	Current Electricity		
6.	Electromagnetism		
7.	Nuclear Physics		
8.	Electronics		
9.	Information Technology		
10.	Any Other (please specify)		

S.#	CONCEPTS IN BOOK-CHEMISTRY (9 TH)	YES	NO
1.	Chemistry – An Introduction		
2.	Chemical Combination and Chemical Equations		
3.	Atomic Structure		
4.	Periodicity of Elements and Periodic Table		
5.	Chemical Bonding		
6.	States of Matter		
7.	Solution and Suspension		
8.	Electrochemistry		
9.	Acids, Bases and Salts		
10.	Chemical Energetic		
11.	Any Other (please specify)		

S.#	CONCEPTS IN BOOK-CHEMISTRY (10 TH)	YES	NO
1.	Hydrogen and Water		
2.	Carbon, Silicon and their Compounds		
3.	Nitrogen and Oxygen		
4.	Sulphur and its Compounds		
5.	Halogens		
6.	Metals and their Metallurgy		
7.	Organic Chemistry		
8.	Chemical Industries		
9.	Any Other (please specify)		

S.#	CONCEPTS IN BOOK-BIOLOGY (9 TH)	YES	NO
1.	ORIGIN OF LIFE		
	i. Introduction to Biology		
2.	ORGANIZATION OF LIFE		
	i. Organization of Life		
3.	BIODIVERSITY		
	i. Classification of Living Organisms		
	ii. Viruses, Bacteria and Cyan bacterial		
	iii. Fungi and Algae		
	iv. Bryophytes		
	v. Tracheophytes of Vascular Plants		
	vi. Invertebrates		
	vii. Chordates/Vertebrates		
4.	MAINTENANCE OF LIFE		
	i. Food and Nutrition		
	ii. Respiration and Gaseous Exchange		

S.#	CONCEPTS IN BOOK-BIOLOGY (10 TH)	YES	NO
1.	Transport and Living Organisms		
2.	Excretion		
3.	Support and Movement		
4.	Coordination		
5.	Reproduction		
6.	Genes and Inheritance		
7.	Evolution		
8.	Environmental Biology		

9.	Man and Biology		
10.	Development of Organism and Continuity		
11.	Interrelationship of Organisms with their Environment		
12.	Any Other (please specify)		

8. Please identify training needs in methods of teaching of following subjects at secondary level

S. #	METHODS OF TEACHING AT SECONDARY LEVEL	MATHS		PHYSICS		CHEMISTRY		BIOLOGY	
		YES	NO	YES	NO	YES	NO	YES	NO
A.	TEACHER-CENTERED METHODS								
	i. Lecture Method								
	ii. Any other (please specify)								
B.	STUDENT –CENTERED GROUP METHODS								
	i. Debate								
	ii. Group discussion								
	iii. Listening and observing								
	iv. Group projects								
	v. Role playing and simulations								
	vi. Visits and field trips								
	vii. Any other (please specify)								
C.	INDIVIDUAL STUDENT –CENTERED METHOD								
	i. Assignment								
	ii. Computer assisted learning								
	iii. Practical and drill								
	iv. Any other (please specify)								

Thank you for cooperation

**NEED ASSESSMENT OF SECONDARY
SCHOOL TEACHER IN-SERVICE TRAINING**

QUESTIONNAIRE FOR

LANGUAGE TEACHER

**ACADEMY OF EDUCATIONAL PLANNING AND MANAGEMENT
MINISTRY OF EDUCATION, GOVERNMENT OF PAKISTAN
TALEEMI CHOWK, G-8/1,
ISLAMABAD
2008**

GOVERNMENT OF PAKISTAN
ACADEMY OF EDUCATIONAL PLANNING AND MANAGEMENT
MINISTRY OF EDUCATION, TALEEMI CHOWK, G-8/1,
ISLAMABAD

Computer code (official use)

**NEED ASSESSMENT OF SECONDARY SCHOOL TEACHERS
IN-SERVICE TRAINING**

Questionnaire for Language Teachers

Date _____

1. Name _____

Name and Address of School: _____

2. Gender: 1. Male 2. Female

3. Qualification (please write the highest qualification)

(a) Academic _____

(b) Professional _____

4. Experience (in years)

Teaching experience as Language Teacher

S.#	YEARS
1.	1-5
2.	6-10
3.	11-15
4.	16-above

5. Did you receive in-service training after going as English Teachers?

1. Yes 2. No

6. If yes, please fill the following table

S. #	DURATION	ORGANIZED BY	TOPICS COVERED
1.			
2.			
3.			
4.			

7. Do you prepare monthly/quarterly work plan?

1. Yes 2. No

8. If yes, do you get approval by principal?

1. Yes 2. No

9. If no than who gives approval please, please specify.

1.	EDO
2.	DEO
3.	ADEO

10. Do you have scheme of studies?

1. Yes 2. No

11. If yes, who provide you? Please specify.

1.	Principal
2.	EDO
3.	DEO

12. Do you prepare lesson plan for each lesson?

1. Yes 2. No

13. If no why, what are the reasons please explain

1. _____

2. _____

14. Do you think that refresher courses are necessary for secondary school teacher?

1. Yes 2. No

15. If yes, please specify type of these refresher courses.

1. _____

2. _____

3. _____

16. Do you think that present curriculum of English is according to modern requirement?

1. Yes 2. No

17. If no, please give suggestions for improvement

1. _____

2. _____

3. _____

18. Do you think that training is required to secondary school teachers in classroom management techniques?

1. Yes 2. No

19. If yes, please identify these techniques.

1. _____

2. _____

3. _____

20. Please identify training needs in the contents of English book of class 9th for efficient and effective teaching.

S.#	PROSE-CONTENTS OF BOOK ENGLISH (9 TH)	YES	NO
1.	Prophet Muhammad (SAW) The greatest Reformer		
2.	Hazrat Khalid Bin Waleed		
3.	Kindness to Living Things		
4.	Little Things (Poem)		
5.	Rural and Urban Life in Pakistan		
6.	Chinese Wisdom		
7.	Women Arise!		
8.	Evening (Poem)		
9.	The Chinese New Year		
10.	Ladies Park- a shambles!		
11.	Sports and Games		
12.	Abu Ben Adhem (Poem)		
13.	Save Nature		
14.	Bees		
15.	Form Filling		
16.	Truth-the Best (Poem)		
17.	Admission Open!		
18.	What Happens to the Rain		
19.	Knowledge is Light		
20.	Doctor's Advice		
21.	Daffodils (Poem)		
22.	Road Safety		

21. Please identify training needs in the contents of English book of class 10th for efficient and effective teaching.

S.#	PROSE CONTENTS OF BOOK ENGLISH (10 TH)	YES	NO
1.	Prophet Muhammad (SAW) as an Educations		
2.	Festivals of Pakistan		
3.	The Difference between a Brain and a Computer		
4.	Blessings of God (Poem)		
5.	Hazrat Ayesha		
6.	Transport		
7.	Human Rights and Madina Charter		
8.	A Nation's Strength (Poem)		
9.	A Father's Advice		
10.	Hazrat Ali's (R.A) Humanism		
11.	Handicrafts of Pakistan		
12.	The Menace of Drugs		
13.	The Character of a Happy Life (Poem)		
14.	Simplicity		
15.	Traffic Education		
16.	Letter Writing		
17.	A Fragment (Poem)		
18.	A Little Word (Poem)		
19.	Two Wedding Ceremonies		
20.	My Mother (Poem)		
21.	The Great Leader		

(B) Please identify training need in Composition & Grammar of Secondary level

S.#	(A) GRAMMAR FOR SECONDARY LEVEL	YES	NO
1.	Part of Speech		
2.	Tenses		
3.	Voice-Active-Passive		
4.	Narration-Direct-Indirect		
5.	Punctuations		
6.	Pair of Words		
	(B) COMPOSITION		
1.	Paragraph Writing		
2.	Story Writing		
3.	Letters, Applications, invitations		
4.	Dialogue Writing		
5.	Comprehension of a Passage		
6.	Essay Writing skills		
7.	Translation Techniques		
8.	Vocabulary enhancing Technique		

22. Please identify training need methods of teaching of following subjects at secondary level

S#	METHODS OF TEACHING	YES	NO
ENGLISH			
A	TEACHER-CENTERED METHODS		
	i. Lecture Method		
	ii. Any other (please specify)		
B	STUDENT –CENTERED GROUP METHODS		
	i. Debate		
	ii. Group discussion		
	iii. Listening and observing		
	iv. Group projects		
	v. Role playing and simulations		
	vi. Visits and field trips		
	vii. Any other (please specify)		
C	INDIVIDUAL STUDENT –CENTERED METHOD		
	i. Assigning activity method		
	ii. Computer assisted learning		
	iii. Interactive		
	iv. Practical and drill		
	v. Any other (please specify)		

23. Do you need training for student assessment?

S #	STUDENT ASSESSMENT	YES	NO
1.	Development of questions for assessing the students:		
	i Application		
	ii Understanding		
	iii Analysis		
	iv Evaluation		
2.	Formulation of question paper		

Thank you for cooperation

(B) Please identify training need in Composition & Grammar of Secondary level

S.#	(A) GRAMMAR FOR SECONDARY LEVEL	YES	NO
1.	Part of Speech		
2.	Tenses		
3.	Voice-Active-Passive		
4.	Narration-Direct-Indirect		
5.	Punctuations		
6.	Pair of Words		
	(B) COMPOSITION		
1.	Paragraph Writing		
2.	Story Writing		
3.	Letters, Applications, invitations		
4.	Dialogue Writing		
5.	Comprehension of a Passage		
6.	Essay Writing skills		
7.	Translation Techniques		
8.	Vocabulary enhancing Technique		

22. Please identify training need methods of teaching of following subjects at secondary level

S#	METHODS OF TEACHING	YES	NO
ENGLISH			
A	TEACHER-CENTERED METHODS		
	i. Lecture Method		
	ii. Any other (please specify)		
B	STUDENT –CENTERED GROUP METHODS		
	i. Debate		
	ii. Group discussion		
	iii. Listening and observing		
	iv. Group projects		
	v. Role playing and simulations		
	vi. Visits and field trips		
	vii. Any other (please specify)		
C	INDIVIDUAL STUDENT –CENTERED METHOD		
	i. Assigning activity method		
	ii. Computer assisted learning		
	iii. Interactive		
	iv. Practical and drill		
	v. Any other (please specify)		

23. Do you need training for student assessment?

S #	STUDENT ASSESSMENT	YES	NO
1.	Development of questions for assessing the students:		
	i Application		
	ii Understanding		
	iii Analysis		
	iv Evaluation		
2.	Formulation of question paper		

Thank you for cooperation