

Effectiveness of Remedial Techniques on the Performance of Special Students in the Subject of English

Nabi Bux Jumani

Department of Education, International Islamic university, Islamabad, Pakistan
Email: nbjumani@yahoo.com

Fazalur Rahman

Elementary Teacher Education Department, Allama Iqbal Open University, Islamabad, Pakistan
Email: fazalaiou@yahoo.com

Nadia Dilpazir

Allama Iqbal Open University, Islamabad, Pakistan
Email: roseatheart@hotmail.com

Saeed-ul-Hasan Chishti

Department of Education, International Islamic university, Islamabad, Pakistan
Email: ipd.iiui@iiu.edu.pk

Muhammad Ajmal Chaudry

Distance & Non-formal Education Department, Allama Iqbal Open University, Islamabad, Pakistan
Email: drajmal@aiou.edu.pk

Samina Malik

Department of Education, International Islamic university, Islamabad, Pakistan
Email: samina.malik@iiu.edu.pk

Abstract—The research aimed to find out the effectiveness of remedial techniques on the performance of the students suffering from dyslexia. It was an experimental study which was conducted in institute for special children. The students were first tested for dyslexia through the diagnostic and statistical manual of mental disorders of American psychiatric association (DSM-IV-TR). The identified students were pre-tested and then they were divided in control and experimental group. All the students were kept under same conditions. The students of control group were taught for ten weeks with normal teaching methods while the students of experimental group were taught with remedial techniques along with normal method. Remedial techniques were applied by the teachers having special training in one-to-one teaching, pair reading, and drill of work sheets and activities to improve their behavioral problems. After ten weeks both groups were post-tested twice. It was found that remedial techniques have positive effect on student's performance in the subject of English. The study recommended proper clinics for diagnosing dyslexia among students.

Index Terms—remedial techniques, dyslexia, reading difficulties in English, learning disabilities

I. INTRODUCTION

Dyslexia is a term that is used for reading disability. It is the most common type of learning disability in which students suffer severe difficulty in learning to read. A child with this problem have poor acquisition and use of words skills, might have difficulty in blending sounds into words, suffers with problems in remembering auditory sequences and also manifest more speech and language difficulties. They have great difficulty with spellings. They also have some visual memory disorder and are not able to interpret accurately what they observe. A dyslexic child might see certain letters backward and upside down and also see parts of words in reverse.

Dyslexia can go undetected in the early grades of schooling. The child can become frustrated by the difficulty in learning to read, and other problems can arise that disguise dyslexia. The child may show signs of depression and low self-esteem. Behavior problems at home as well as at school are frequently seen. The child may become unmotivated and develop a dislike for school. The child's success in school may be jeopardized if the problem remains untreated. There is a range of definitions that are currently used to describe dyslexia. Most of the definitions include the following aspects:

- The neurological and genetic causes of dyslexia
- The characteristic difficulties associated with dyslexia, such as phonological, visual and auditory processing difficulties
- The associated characteristics of dyslexia - difficulties relating to memory, , time management, processing speed, organization, and sequencing and planning
- The need for over-learning and specific teaching approaches
- The overlap with other conditions such as dyspraxia, dyscalculia and attention deficit hyperactivity disorder (ADHD) (Reid, 2007, p. 5)

Dyslexia is an impairment of reading ability, such that a person can make little sense of what he or she reads; letters or words often appear to be transposed. Dyslexia is not caused by a sensory defect. It is not vision problem. It's not just that the letters don't make sense or can't be put together to form words. Dyslexic children have difficulty making sense of any conceptual information given to them in written form (Dworetzky, 1996, p. 516). According to Ormrod (2000) students may have trouble recognizing printed words or comprehending what they read. An extreme form of this condition is known as dyslexia. While Martleu (1992, p. 375) states that it was predicted that the dyslexic children would have particular difficulties in writing words to a dictation because of problems in relating phonemes to graphemes and applying orthographic rules.

A. *Researches on Dyslexia*

1. CAUSES OF DYSLEXIA

Exact causes of dyslexia are still a question to be answered by the scientists, psychologists and educationists. It has been proposed that reading disabilities result from independent deficits and orthographic deficits (Castles & Colthert, 1993, p.150) and deficits in rapid naming (Wolf & Bowers, 1999, p.416). Double deficit modules (Wolf & Bowers, 1999, p.417) and triple deficit modules (Badian, 1997, p.69) have also been proposed in which reading disability requires two or three deficits, but these deficits are also implicitly independent.

2. GENETICS

Many studies have focus on the role of genetics in reading, writing and language disabilities. Studies have shown strong evidences that dyslexia is a hereditary disability. The cause of word-blindness has been assumed to be due to hereditary transmission. Research study of family histories of children who displayed substantial learning deficit showed that most of the children had an immediate family member with a reading disorder, and therefore it is suggested to be a hereditary trait.

3. BRAIN DYSFUNCTIONS

The brain is the control center of the body. When something goes wrong with the brain, something happens to any or all of the physical, emotional, and mental functions of the organism. Learning difficulties such as Dyslexia (difficulties with reading), Dysgraphia (difficulties with writing) and Dyscalculia (difficulties with mathematics) are associated with lack of brain access and lack of brain and sensory integration. According to Marshall (2003) scientists studying the brain have found that dyslexic adults who become capable readers use different neural pathways than non-dyslexics. Research shows that there are two independent systems for reading: one that is typical for the majority of readers, and another that is more effective for the dyslexic thinker.

◇ The Corpus Callosum

◇ The Magnocellular

Recent studies have suggested that many of the functional deficits found in dyslexics are processes controlled by the magnocellular pathway. Researchers have found that most dyslexics show reduced contrast sensitivity at low spatial frequencies and low luminance levels. This implies that their visual abilities are impaired in times of low light. Visual motion sensitivity, regardless of the frequency and illumination levels, is also greatly impaired. Recent evidence gathered by both elicited potential and MRI studies have supported this visual motion deficit. All of these deficits indicate a possible disruption to the magnocellular pathway (Stein, 1997, p.147).

4. DIAGNOSIS OF DYSLEXIA

Diagnosis of dyslexia is not an easy task. It is a difficult disorder to be diagnosed. There are many factors that a psychologist, educationist or health professional reviews to diagnose the reading disability. The assessment determines the child's functional reading level and compares it to reading potential, which is evaluated by an intelligence test. All aspects of the reading process are examined to find out where the breakdown is occurring. The assessment also finds that how a child takes in and processes information and what the child does with the information. The tests determine whether a child learns better by hearing information (auditory), looking at information (visual), or by doing something (kinesthetic). The assessment also help in finding that whether a child performs better when allowed to give information (output), by saying something (oral), or by doing something with their hands (tactile-kinesthetic). The assessment also evaluates how all of these sensory systems work in concurrence with each other.

A standard battery of tests (<http://www.medicinenet.com/script/main/hp.asp>) can be used to assess dyslexia and it may include the following tests:

- 1). Wechsler Intelligence Scale for Children-Third Edition (WISC-III)
- 2). Kaufman Assessment Battery for Children (KABC)

- 3). Stanford-Binet Intelligence Scale
 - 4). Woodcock-Johnson Psycho-Educational Battery
 - 5). Peabody Individual Achievement Tests-Revised (PIAT)
 - 6). Wechsler Individual Achievement Tests (WIAT)
 - 7). Kaufman Tests of Educational Achievement (KTEA)
 - 8). Bender Gestalt Test of Visual Motor Perception
 - 9). Beery Developmental Test of Visual-Motor Integration
 - 10). Motor-Free Visual Perception Test
 - 11). Visual Aural Digit Span Test (VADS)
 - 12). Test of Auditory Perception (TAPS)
 - 13). Test of Visual Perception (TVPS)
 - 14). Peabody Picture Vocabulary Test-Revised
 - 15). Expressive One-Word Picture Vocabulary Test
 - 16). Test for Auditory Comprehension of Language
5. TREATMENT OF DYSLLEXIA

Before any treatment is started, an evaluation must be done to determine the child's specific area of disability. There are many theories about successful treatment for dyslexia yet there is no actual cure for it. The school can develop a plan with the parent to meet the child's needs. The plan may be implemented in a Special Education set-up or in the regular classroom. A treatment plan according to the need of child will focus on strengthening the child's weaknesses while utilizing the strengths. A direct approach may include a systematic study of phonics. Special techniques designed can be used to help all the senses work together efficiently. Specific reading approaches that require a child to hear, see, say, and do something (multisensory), such as the Slingerland Method, the Orton-Gillingham Method, or Project READ can be used. Computers are powerful tools for these children and should be utilized as much as possible. The child should be taught compensation and coping skills. Attention should be given to optimum learning conditions and alternative paths for student performance.

There are alternative treatment options also available outside the school setting in addition to school activities. Although alternative treatments are commonly suggested, there is a limited research supporting the effectiveness of these treatments. In account, many of these treatments are very expensive and it may be easy for disturbed parents to be deceived by something that is expensive and sounds attractive.

The most important feature of any treatment plan is attitude. The child will be prejudiced by the attitudes of the adults around him. Dyslexia should not become an excuse for a child to avoid written work. Because the academic demands on a child with dyslexia may be great and the child may exhaust easily, work increments should be broken down into appropriate portions. Frequent breaks should be built into class and homework time. Corroboration should be given for efforts as well as achievements. Substitute to traditional written assignments should be explored and utilized. Teachers are learning to deliver information to students in a variety of ways that are not only more interesting but helpful to students who may learn best by different techniques. Interactive technology is providing interesting ways for students to feedback on what they have learned, in contrast to traditional paper-pencil tasks.

B. Remedial Techniques

There are number of remedial programs available for students suffering from dyslexia. According to Hardman, Drew, and Egan (1996, pp. 287-289) individualized reading instruction is often required for a student with serious reading disabilities. Such individualization may be accomplished with many different materials (e.g., trade books), which are typically selected for reading levels and topics of high interest to the students. The basis for individualization falls on the shoulders of the teacher, who needs to have considerable knowledge of reading skills and procedures for specific, individually tailored instruction.

Depending on the severity of the problem, specific instruction may improve performance, although there may not be significant generalization beyond the limited focus of the training. In some cases if the disability is quite severe, a person must be taught to compensate through alternative means of accessing information and even than used reading sparingly.

Electronic technology can provide an effective means of instruction for some students with learning disabilities. Developmental reading instruction programs are often successful for students with learning disabilities and typically use the approach of introducing controlled sight vocabulary with an analytic phonics emphasis. Individualized reading instruction is often required for a student with serious reading disabilities. Such individualization may be accomplished with many different materials for example trade books which were typically selected for reading levels and topics of high interests to the students. The basis for individualization falls on the shoulder of the teacher, who needs to have considerable knowledge of reading skills and procedures for specific, individually tailored instruction.

According to Dworetzky, (1996, p.517) a number of interesting techniques are used to help dyslexics overcome their difficulties, and they have often proved very effective. Spira, Brackan and Fischels (2005, p.230) states that improvement in reading achievement through elementary school was strongly related to individual linguistic and behavioral attributes that were measured in kindergarten. Simple correlations between kindergarten skills and growth indicated that those children who had a relative strength in phonological awareness, oral language, print knowledge,

letter-word identification, and class room behavior in kindergarten were more likely to show improvement after encountering initial reading difficulties in first grade. In addition, measurement of any remedial instruction received by the children would be useful in determining the effects of special intervention services, tutoring, or any other extra help on children's improvement.

Over the past 20 years, researchers have focused their attention on different aspects of instructional methods that accelerate reading development in young children who are either experiencing or are at risk for reading failure. Within the broad context, perhaps the most important simple conclusion about reading disabilities is that they are most commonly caused by weakness in the ability to process the phonological features of language. The study clearly demonstrated that phonological intervention had influenced the reading competence among the reading disabled readers. The performance of these children has been improved considerably from pre treatment to post treatment condition (Pani, 2004).

Parkay and Stanford (1995, p. 171) stated that classroom teachers play an important role in providing for the education of learning-disabled students. By being alert for students who exhibits several of the following symptoms, teachers can help in the early identification of learning disabled students so that they can receive the special education services they need.

- Short attention span (restless, easily distracted)
- Reverse letters and numbers (sees b for d, 6 or 9)
- Reads poorly, if at all (below age and grade level)
- Often confused about directions and times (right-left, up-down, yesterday-tomorrow)
- Personal disorganization (cannot follow simple schedules)
- Impulsive and inappropriate behavior (poor judgment in social situation, talks and acts before thinking)
- Poor coordination (has trouble in using pencil, scissors, crayons)
- Inconsistent performance (cannot remember today what was learned yesterday)
- Fails written tests but scores high on oral exams (or vice versa)
- Speech problems (immature speech development, has trouble expressing ideas)

After initial referral by a classroom teacher a team consisting a learning disabilities teacher, psychologist, and social worker or nurse evaluate the student to determine if the child has a learning disability. In the event the child does, he or she is usually placed in a classroom with a teacher trained in dealing with learning disabilities. In that classroom, the child is taught through techniques that involved not only the child's sense of hearing and vision but also touch and movement (Hardman, Drew, & Egan, 1996, p. 287-289).

According to Kirk & Gallagher (1986, pp.391-393) some of the remedial techniques are:-

1). The Kinesthetic Method

In this method reading is taught in four developmental stages:

Stage-1. The child traces the form of a known word while saying it, and then writes it from memory, comparing each trial with the original model.

Stage-2. The child looks at the word or phrase while saying it, then tries to write it from memory, comparing each trial with the model.

Stage-3. The child glances at the word and says it once, then produces it from memory.

Stage-4. The child begins to generalize to read new words on the basis of experience with previously learned word.

2). The phonic-grapho-vocal Method

A revised version of this method is 'Phonic Remedial Reading Program'. It is a programmed phonic system that emphasizes sound blending and incorporates kinesthetic experience. The lessons follow the principles of effective programmed learning:

- Minimal change (each lesson incorporating only one new sound)
- Over learning through repetition of each new sound in a variety of settings and frequent review drills
- Prompting and confirmation
- Only one response taught for each symbol
- Self-reinforcement (the student's immediate knowledge of success) and social reinforcement (by the teacher)

3). The Visual-auditory-kinesthetic (VAK) Method

It is a phonic system for the remediation of reading disabilities. In this method children learn both the names and the sounds of the letters. The names are used for spelling; the sounds, for reading. A systematic procedure is followed in which the child is told the name of a letter and then its sound. The child then says the sound and traces it or writes it from memory. After learning some consonants and vowels, the child is required to sound each letter and blend the sounds into a word. Once the child has learned to sound, write, and read three -letter words, the words are used in stories that the child reads silently and a loud.

4). Multi Sensory Approach

Multi Sensory Approach is a variation of VAK method. The program includes a teacher's guide and a set of auxiliary material. The child first hears the sound or letter or word, then sees it on a card, and then traces it with large arm swings. The procedures were designed to teach writing, spelling, and reading to a small group of children in a class room setting.

The purpose of the present study was to find out the effectiveness of remedial techniques on the performance of the students suffering from dyslexia and to find the role of teachers in this regard.

II. OBJECTIVES OF STUDY

The objectives of the study were:

1. To identify the students suffering from dyslexia.
2. To find out the possible causes of dyslexia.
3. To determine the extent to which dyslexia affect student achievement in subject of English.
4. To find out effectiveness of the applied remedial techniques on the performance of the students suffering from dyslexia.

III. HYPOTHESIS

Ho: There is no significant difference between the achievement scores of dyslexic students before and after applying remedial techniques.

H1: There is a significant difference between the achievement scores of dyslexic students before and after applying remedial techniques.

IV. METHOD OF THE STUDY

It was an experimental research. It involved the collection, analysis and interpretation of data collected for the purpose. Due to non-availability of standardized achievement tests in subject of English, researcher made validated achievement tests that were used to measure the achievement level of students. The study was conducted during a period of four months from January 2010 to April 2010 in a school for special children namely "STEP TO LEARN" at Islamabad. All the students enrolled in this institute suffer from different learning disabilities. The students who were unable to work out in main stream sent to this institute for special studies. The successful students were admitted back in ordinary schools after recovery. The students were diagnosed as dyslexic on the basis of criteria of DSM-IV-TR (1994) i.e., current Diagnostic and Statistical Manual of Mental Disorders of American Psychiatric Association, and IQ testing. Thus only ten students were identified with reading disability and were included in study. The ten students [7 (70%) boys and 3 (30%) girls with a mean age 8 years, range 7 to 11] were identified with reading disability and were included in study.

The students were divided into experimental and control group and each group contained five members. Both the groups were taught a common course but with common teaching method. However, the experimental group was then taught with special remedial techniques. In this study teachers used the remedial techniques like one-to-one teaching, pair-reading, phonetic techniques, and drill method. For this purpose the teachers were given training to use remedial techniques to improve behavioral problems of students. After training the teacher's applied the techniques for ten weeks. Thus, the students of experimental group were taught with remedial techniques which included the use of one-to-one teaching, pair reading and work sheet drill to improve the reading disability problem of the dyslexic students. One-to-one instruction is generally considered to be the most effective way of increasing student's achievement as indicated by Elbaum et al (2000). For this a course out-line was designed by researcher followed by training of teachers. Special kinds of work sheets were also prepared that were used with continuous practice and drilling of work sheets.

The students were first subjected to general class activities to improve their behavior problems, to develop their interest and concentration in work, to build their eye contact, to develop or increase gripping such as using pencil, rubber, scale, color pencils or crayons etc. That was done by in-door and out-activities, involving different games like puzzles, races etc.

Since students show very slow change in their performance so they were observed after every fifteen days. An observation sheet was prepared to note down activities of the slow learners. After completing the duration of ten weeks the students were twice post-tested and the results were recorded. After completing the duration two post tests were conducted to find out the achievement level of students after remedial techniques had been applied. Post tests were taken from the students of control group as well. The pre and post test were compared to find out the improvement. Post test of both the groups were also compared.

A. Instruments of Research

Pre-test and post-tests were used as instrument in the study. The tests were constructed on the basis of the course content of English that was taught to both control and experimental group. The pre-test and post-test-1 were of 40 marks. The scores of the students were used to find the achievement level of the students after remedial techniques were applied. Similar pre-test and post-tests were used to test the achievement level of control and experimental group. The students were given one hour to complete the test. The test was collected, scored and then. The post-tests were administered to both groups in same environment as were available for pre-test. Both groups completed their post-tests in allotted time.

B. Analysis of Data

The data collected through tests, observation sheets and questionnaire. A comparative analysis was expressed in terms of mean. The data about students' performance were treated by independent as well as dependent t-test and significant difference was calculated from it. A summary of pre-test of both groups is given in table 1.

TABLE 1
EXPERIMENTAL/CONTROL GROUP PRE-TEST RESULTS

Group	Student-1	Student-2	Student-3	Student-4	Student-5	Mean score
Experimental	9 (23%)	12(30%)	17(43%)	8(20%)	12(30%)	11.6
Control group	8(20%)	18(45%)	12(30%)	9(23%)	11(28%)	11.6

The two groups were taught a common course but with different methods. The experimental group was taught with special remedial techniques while control group student were taught with usual teaching techniques. After completing the duration of ten weeks the students were twice post-tested and the results were recorded as shown in table 2.

TABLE 2
EXPERIMENTAL/CONTROL GROUP POST-TESTS RESULT

Group	Post-test	Student-1	Student-2	Student-3	Student-4	Student-5	Mean score
Experimental	1	23(58%)	29(73%)	35(86%)	25(63%)	33(83%)	29
	2	21(52%)	28(70%)	34(85%)	23(58%)	31(78%)	27
Control	1	10(25%)	12(30%)	11(28%)	10(25%)	13(33%)	11
	2	5 (13%)	9 (23%)	7(18%)	7(18%)	11(28%)	8

The table 2 indicated that mean score of the experimental group was higher than the control group.

C. Testing of Research Hypothesis

t-test was performed to test the hypothesis of the study. Results concluded that the mean score of students taught by the remedial techniques was higher than the mean score of the students taught by ordinary method as indicated in table below:

TABLE 3
COMBINED MEAN SCORE OF STUDENTS

Group	Combined mean	t- value
Experimental group	28	7.5(df 8) at p<0.05
Control group	10	

D. Analysis of Questionnaire

A questionnaire was used to collect information from parents and teachers about dyslexic students. A summary of the analysis is presented in table 4:

TABLE 4
CHARACTERISTIC OF STUDENTS SUFFERING FROM DYSLEXIA

Characteristics	Percentage of Occurrence
Boys	70
Girls	30
Family History Positive for Dyslexia	60
Birth Problems	30
Normal Early Development	90
Use of Drugs	10
Head Injuries	20
Emotional Crises	50
Disturbed Sleeping Habits	10
Wrong Eating Habits	10
Behavioral Problems	90
Aggressive	90
Reading Problems	100
Writing Problems	60
Mathematic Problems	60
Attention Problems	80

The table 4 revealed that 60% students showed positive family history for dyslexia. About 30% dyslexic students have some birth problems but mostly have normal birth. 10% dyslexic students have been given drugs in their lives while 20% suffered from head injuries. 50% students suffering from dyslexia have emotional crises in their early lives. It was found that 10% dyslexic students have sleeping disorders and wrong eating habits. 90% students suffering from dyslexia have behavioral problems and they are aggressive. All dyslexic students have problems in reading while 60% students have problems in writing and mathematics while 80% dyslexic students have attention problems. The general

characteristics shown by dyslexic students are summarized in table 4.14. It was found that most of the dyslexic students showed very slow progress in studies but their behavior problems were recovering a little faster as they were given individual attention. Some of them showed good progress in mathematics, some in English but slow progress in reading.

V. CONCLUSIONS

The following conclusions were drawn from the above study.

- Learning disabilities especially dyslexia goes unobserved in students from parents and teachers and the problem of the students persists.
- Dyslexia is a disability which is a main hindrance in learning and as a result the purpose of education is not achieved.
- Dyslexia affects the achievement level of the students in the subject of English.
- Remedial techniques like one-to-one teaching, pair reading and drilling of course, have a positive effect on dyslexic student's performance.
- Teachers play a key role in solving the problem of dyslexia.

VI. RECOMMENDATIONS

During the research it was found that unfortunately in Islamabad there is no proper institute for the diagnosis and treatment of dyslexia. Most of the teachers and parents did not know about the learning disabilities and the student is blamed for his failure. It is important that Ministry of Education should take the steps to educate the teachers about dyslexia and train them to teach the students. Also there should be proper clinics where students can be diagnosed for dyslexia and to the extent to which it has affected their achievement level. There should be forums where parents can be informed about dyslexia and ways to overcome it as parents can play a key role in solving the problem of dyslexia along with teachers.

It was also recommended that there was a great need of research to be carried out in field of dyslexia. The study further recommended organizing seminars and workshops to create awareness in general public, parents, teachers and students.

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Nabi Bux Jumani has been working as Professor, Department of Education, Faculty of Social Science, International Islamic University Islamabad, Pakistan. His areas of study and specialization have been Teacher Education, Curriculum Development, and Distance Education. Prof Dr Jumani has been widely published in different journals of repute both within Pakistan and outside. His work has got space in the International Journals published not only in Pakistan, also from India, USA, Turkey, Japan, South Africa and Azerbaijan etc. He has written a good number of chapters/units/books on education in general and teacher training in particular. Prof Jumani is on the Editorial Board of Journals of high standards, like IRRODL (International Review of Research in Open and Distance Learning – published from Canada), TOJDE (Turkish online Journal of Distance Education – published from Turkey), Turkish Online Journal of Education Technology (published from Turkey) EJEL (Electronic Journal of E-Learning – published from United Kingdom), Quarterly Review of Distance Education (published by Information Age Publishing, USA), CIER (Contemporary Issues in Education Research – published from USA) etc, in addition to being on the Board for Pakistan Journal of Education and Asian Journal of Distance Education published from Japan.

Fazalur Rahman did his master from University of Peshawar with distinction. His PhD research is on metacognition of science teachers. He started his career as coordination officer in Teacher Training Project (ADB assisted) for two years. Where he associated with a group of experts for devising a national plan of teacher training. In 1999, he Joined Allama Iqbal Open University, Islamabad as lecturer in the department of Teacher education. His areas of interest are teacher training, distance education and science education. Twenty articles have been published in the area of teacher training, distance education and science education. He participated in a number of workshops at national and international level in the area of teacher training and instructional design.

Nadia Dilpazir is working as teacher in Islamabad model school. She did her master from university of arid agriculture, Rawalpindi. Her area of interest is science. She is doing her MPhil from Allama Iqbal Open University Islamabad.

Saeed-ul-Hasan Chishti having 20 years plus Research, Teaching, Administrative level experience worked as Principal and Country Head with The City School for more than 10 years; started professional career as Lecturer Govt. College of Commerce Rawalpindi. Taught Master, MS and PhD classes in the various institutions of national and international repute. Currently working as Project Director/Assistant Professor in the Institute of Professional Development, International Islamic University Islamabad.



Muhammad Ajmal Chaudry holds Ph.D in Education. His carrier spans over 16 years with a vast experience in administration, teacher training, curriculum development, policy planning, measurement and evaluation. Starting his career as a teacher at secondary school in 1993, he joined Allama Iqbal Open University where he initially served as Assistant Regional Director, now serving as Lecturer, Department of Distance Non-formal and Continuing Education, Faculty of Education Allama Iqbal Open University, Islamabad. He has been providing consultancy services to a number of national and international organizations of research and development and the Federal Ministry of Education. His research activities consisted of a wide range area such as Teacher Training, Science Education, Total Quality Management (TQM) in Education and curriculum Development, Attitudinal Psychology, Comparative Education and Assessment. Recently he completed as much as 10 Projects pertaining to teaching learning process, presented 5 papers in national conferences on education, capacity building and quality enhancement in education as key note speaker. He has more than 20 research papers in national and international research journals in his credit.

Samina Malik is currently serving as Assistant Professor and Incharge at Department of Education, International Islamic University Islamabad Pakistan. She is teaching different courses at different levels of Teacher Education. Along with teaching, she is supervising research work at Masters, MS and Ph.D level students. Her special interests include Research Methodology, Educational Psychology and Trends & Issues in Education. She has participated in numerous National and International Conferences and published many articles in National and International Journals.