APPLICATION OF INNOVATIVE APPROACHES: PROSPECTIVE TEACHER EDUCATION IN PAKISTAN

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Abstract

The focus of study was the application of innovative approaches in prospective teachers' education for many researchers. It helps the investigators to find the aspects that can be intervened to enhance the prospective teachers' professional development. A close relationship has been projected between male and female prospective teachers regarding the application of innovative approaches in their training. The variation in result reported by researchers about the use of innovative approaches in prospective teachers' education indicates that the urban and rural variables might have an influential effect on the application of innovative approaches in prospective teacher training. The purpose of this study was to find the application of innovative approaches in prospective teachers' education in Pakistan. The participants of the study were 941 prospective teachers of 11 government colleges for elementary teachers (GCETs). A questionnaire was developed for prospective teachers on a five point likert scale and three point scales according to the nature of the items. Reliability of questionnaire was 0.874. The findings

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of the study show that there was no significant difference between male and female prospective teachers about the use of innovative approaches. For example, computer assisted instruction, Multimedia, Micro- teaching and other teachers training aids at GCETs in Pakistan.

Keywords: *Innovative Approaches, Investigators, Prospective Teachers, Urban/Rural Variables, Reliability, Micro Teaching, Computer Assisted Instruction and Multimedia*

Introduction

Prospective teachers training needs to improve as per international level in Pakistan. Traditional methods of prospective teachers training to be replaced with innovative methods. According to Tanveer (2000.p.22), Teacher education is that knowledge, skill and ability which is relevant to the life of a teacher, as a teacher. Computer assisted instruction (CAI) is an innovative method of teaching. Bhatt and Sharma (1992) stated that CAI is an interaction between a student, a computer controlled display and a response entry device for achieving educational outcomes. Firstly, this definition indicated, there is interaction between individual student and computer. Secondly, the computer is able to display instructional material to individual students. Thirdly, individual student takes benefit of displayed material and responds to it.

CAI is useful for teaching learning process. It facilitates the teachers in lesson planning, management and evaluation of prospective teachers. According to Rashid, (2001,p. 185), computer assisted instruction has now taken on so many dimensions that it can no longer be considered a simple derivative of the teaching machine or of the kind of programmed learning that skinner introduced. The teaching machine and the linear or branching programmes are to be sure, its immediate ancestors, but it has evolved rapidly.

CAI has various dimensions and has great advantages for education. Approximately 48 institutions in the United States and Canada are using the CAI course in teacher education programme. CAI is being used to impart formal and non-formal education at all levels and some experts described its effective role in teaching learning process.

The impact of the computer on education is significant as it is storage and

calculating device. Thus, the computer provides a flexible presentation of material to the prospective teacher and also keeps track of the progress of a number of prospective teachers at the same time. It has three capacities:

i. In a given subject area, it has as a number of different programmes.
ii. When specifying a programme, it must make use of the student's entering behaviour, general ability and personality characteristics.
iii. It must be able to change programmes during the course of instruction.

Modes of CAI

Computer assisted instruction has the following four modes:

i. The first mode is the tutorial drill and practice procedure which is an outgrowth of programme learning.
ii. The second mode is developed by Atkinson and Suppers at Standford which is commonly used by teachers. The computer has the advantage of individualizing the activities and of introducing greater learning efficiency through the management of learning by computer.
iii. Third mode has been used in teaching of statistics at the University of California at Los Angeles. Prospective Teacher learns a computer language by manipulating large bodies of data.
iv. Fourth mode is used in connection with games that stimulate actual problems of complex decision.

Basic assumptions of CAI

According to Chauhan, (1992, pp.99-100**)**, CAI was developed on three assumptions. First assumption is that CAI can be arranged for 4000 prospective teachers simultaneously. It can cope with the problems of education. Second assumption is that in CAI each prospective teacher performance during the course and on the test is automatically recorded. Third assumption is regarding presentation of variety of subject materials which are used in all types of teaching learning process.

These assumptions project that it is popular in training for different levels and areas of education. It can be arranged for a large number of prospective teachers with scope for maintaining quality education. Computer based programmes

provide the maximum amount of flexibility. Prospective teacher goes at his own pace, receive immediate personalized feedback and freely choose the content.

In CAI, performances of the prospective teachers during the course of instruction and on the test are automatically recorded. Therefore, the performance can be evaluated by the teacher enabling to evolve or design the appropriate teaching strategy for the prospective teachers in the future.

Any lesson material in any subject can be programmed for CAI with defining the strategy to be used and the lesson material to be presented in the form of words, pictures and experiments. Because of the variety and versatility, CAI serves as an effective educational tool to meet the problems of prospective teachers on a sound educational basis and has become a powerful tool for prospective teachers. The teacher has a changing role to play in the new technological society and goes out of his conventional assignment of delivering lectures alone. The teacher takes an active role. It is significant that CAI directly interacts with prospective teachers individually and with the teacher. In the teaching learning process, the teacher employs CAI as a tool to enhance the quality of the instructional process (followed by the teacher) and thereby CAI contributes more to the teaching-learning process.

Limitations of CAI

According to Rashid (2001), considerably more progress has been made with the technical development of CAI than with the problem of writing instructional programmes. The chief unsolved technical problem is how to reduce the cost sufficiently to prevent the bankruptcy of local schools. As in the case of the general development and use of the instructional media, the temptation has been to dazzle the student with an array of visual and auditory stimuli which serve more to impress him with the capabilities of a computer than to provide him with the necessary instruction.

It indicated the following points:

i. Individual differences vary from individual to individual. Therefore, all the differences cannot be accommodated by allowing the computer and to generate sequences on the basis of student response
ii. Individual difference can be classified in terms of learning variables of the prospective teachers

iii. The expectation to eliminate the individual differences by any teaching method becomes unrealistic because of "prior differences in prospective teacher verbal abilities and mental sets

iv. Adaptation to individual differences must prove to be superior to teaching which aims at the group mean

CAI and Evaluation

There are many appropriate approaches to the evaluation of educational endeavours, which are evolving in adding to the usual individual measurement approach. Serivan, M. (1967, pp. 59-83) states clearly that as a matter of terminology, novel terms are worthwhile, to avoid inappropriate connotations, and purpose to use the term "formative" and "summative" to quality evaluation. It refers to the role of evaluation in improving a course, finding the worth of a completed product, course text, instructional package, and so forth. Formative evaluation refers to a prospective teacher learning during a course. Summative refers to evaluation of a prospective teacher's assessment at the end of a course or topic or unit. It should be noted that the word "formative" is not restricted to the meaning of assessing individual student learning in the on-going classroom.

This statement indicated that in CAI formative and summative evaluation is used. Formative is used during the course, whereas summative is used at the end of the course.

Role of the Teacher in CAI

The introduction of computer in general education in advanced countries has created fear in the teacher community that use of CAI in teaching-learning will relegate the place of teacher and to some extent eliminate teachers from teaching scene. But the fear is baseless because as a matter of fact CAI may become a powerful tool for teacher in the instructional process. Doubtless to say, the role of teacher has changed from his conventional assignment of delivering lectures to a guide and a problem solver but fear of elimination of teacher is baseless. The CAI directly interacts with prospective teachers individually and with the teacher. Teachers have to play their role in CAI. They cannot be eliminated from instructional process. Millions of teachers working in schools and colleges constitute a large educational resource. CAI if ever introduced in general education; it should be brought in such a way that it increases the scope and

quality of teachers' contribution to teaching-learning process.

In CAI teacher has the chance to use new tools which will enhance his individual satisfaction and will increase his efficiency. Teacher will be liberated from his routine duty. CAI is a powerful device as it can compute accurately and rapidly the huge data. It can produce elaborate graphs and drawing and can perform sophisticated retrieval of information from large data bank.

CAI is compatible with live teaching. It can be used side by side. It is a flexible system of instruction. It can very promptly evaluate performance of individual students. The teacher can devote his time for more creative work.

Experts needed in CAI

CAI needs the services of the following experts:

i. Computer Engineer**:** He is a technician and knows basic principles, techniques of program and designing all components of a computer.

ii. Lesson Writer**:** He is an expert about the lesson writing. Experienced teacher of several years may work as a lesson writer. He is familiar with the theories of learning applied to human behaviour. He must be acquainted with psychological developments of students at different age levels

iii. System Operator: He is the interface between the whole CAI and each user of the system. He knows the system thoroughly and can cope with all commonly occurring failures of software and hardware in the system

CAl System and its Operations

Basically, CAI system is described in terms of its 'hardware' (the machine) its 'software' (the programme), its communication links (the devices which allow learners to use the hardware and software), and its curriculum (teaching material stored in a computer).

CAI system has been utilized at all levels of education ranging from elementary school to post-graduate study and on the job training in almost all subjects. In the following paragraphs, is described the actual operations of a CAI programme designed to teach reading. CAI system in an elementary school, the student sits in

front of a tube that resembles a television screen and is capable of displaying messages generated by the computer in the forms of number, words or geometrical patterns. In front of the tube is a keyboard that the student can use to respond the problems shown on the screen. The student also has a light pen that permits him to react to stimuli on the tube by touching appropriate portion of the screen. Earphones and microphones are also available so that the computer and the student can communicate with each other.

Objectives

Following were the objectives of the study:

1. To find out the extent of the innovative approaches that is employed in prospective teacher education in Pakistan
2. To compare the attitude of male and a female prospective teacher towards the use of innovative approaches in Pakistan

Hypotheses

Following were the hypotheses of the study:

1. There is no significant difference between using or not using innovative approaches in prospective teachers education in Pakistan
2. There is no significant difference in the attitudes of male and female prospective teachers towards the use of innovative approaches

Methodology

The list of prospective teachers was obtained from Directorate of Staff Development Lahore. The participants of the study were 941 prospective teachers of formal education of 11 Government colleges for elementary teachers of Punjab.

Research instrument development and validation

A questionnaire was developed consisting of 46 items (44 close ended and 2 open ended) for prospective teachers of GCETs. Before actual administration

of the questionnaire, it was validated by ten research experts. Sample for the pilot study was selected randomly from three B.Ed offering institutions (Government College for Elementary Teacher Sargodha, Iqra College of Education Sargodha and University of Sargodha), which were otherwise not part of the main sample. The reliability of questionnaire was 0.88. A questionnaire was administered to the selected respondents of both categories, by mail and in person. In an open ended questionnaire, 13.13 percent prospective teachers suggested that Multimedia and Micro-teaching should be used at each GCET, 13.26 prospective teachers suggested that alternative facility of electricity should be arranged during load shedding. 14.56 percent suggested that innovative approaches should be used properly in the classrooms at GCETs in Pakistan..

Descriptive statistics

Gender-wise detail of GCETs prospective Teachers

Male and female detail of GCETs Prospective Teachers

Table 1 shows gender detail of Prospective Teachers that out of 769 GCETs' prospective teachers, 38 were male and 731 were female. From GCETs Gakkhar, Talagang, Lalamusa and Kamalia all respondents were female respectively, while 58.6 percent prospective teachers were female and 41.4 percent prospective teachers were male from GCET Faisalabad, whereas, GCET Mianwali 94.3 percent was female and 5.7 percent were male prospective teachers. GCET Rawalpindi 15 percent were male and 85 percent were female prospective teachers. The overall ratio of male and female prospective teachers in all GCET was 5 percent and 95 percent respectively.

Table 1: Male and female detail of GCETs Prospective Teachers

GCETs	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Jhelum	5	8.6	53	91.4
Gakkhar	0	0	222	100
Gujrat	4	20	16	80
Talagang	0	0	44	100

Faisalabad	12	41.4	17	58.6
Mianwali	6	5.7	99	94.3
Joharabad	1	2	48	98
Lalamusa	0	0	68	100
Chiniot	4	6.2	60	93.8
Rawalpindi	6	15	34	85
Kamalia	0	0	70	100
Total	38	5	731	95

Figures of prospective Teachers

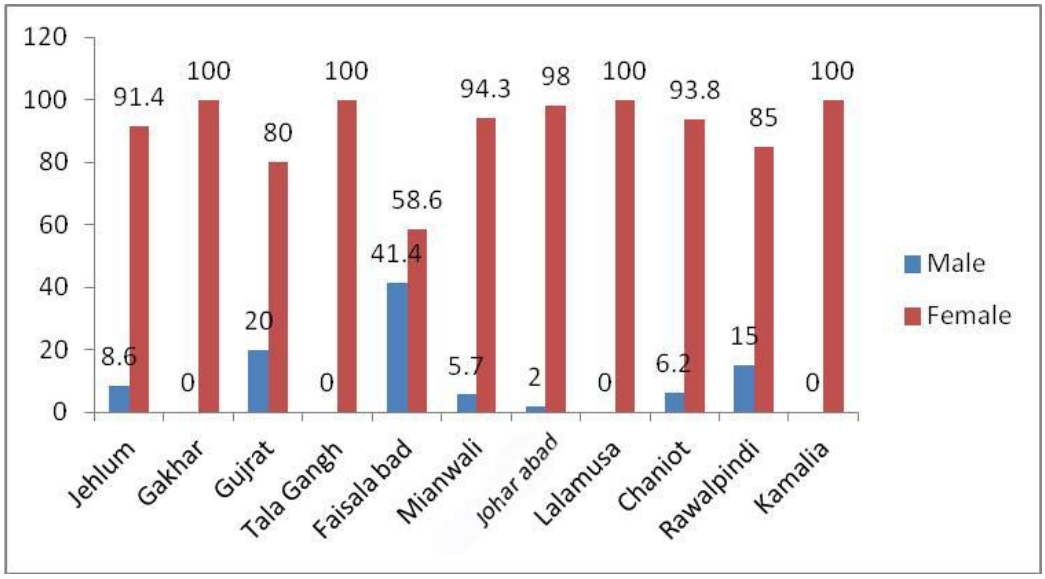


Figure: Male and Female prospective teachers of GCETs (in percentages)

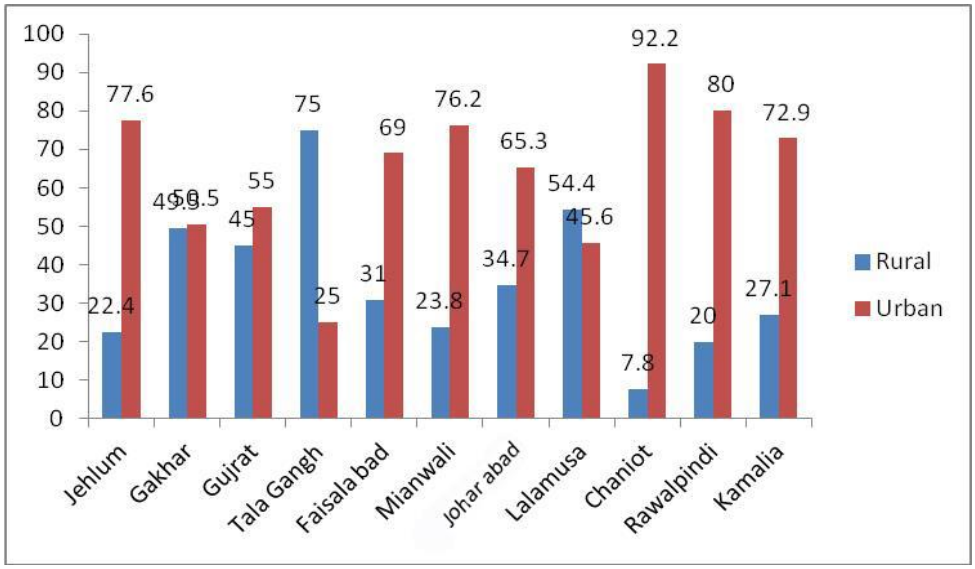
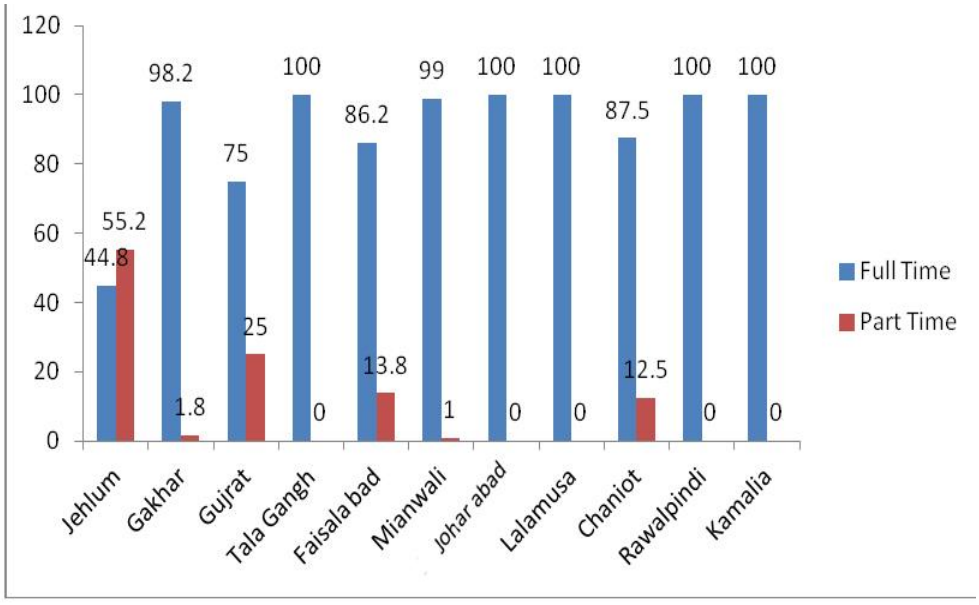


Figure : Rural and Urban Prospective Teachers of GCETs (in percentages)



Full Time and Part Time Prospective teachers of GCETs (in percentages)

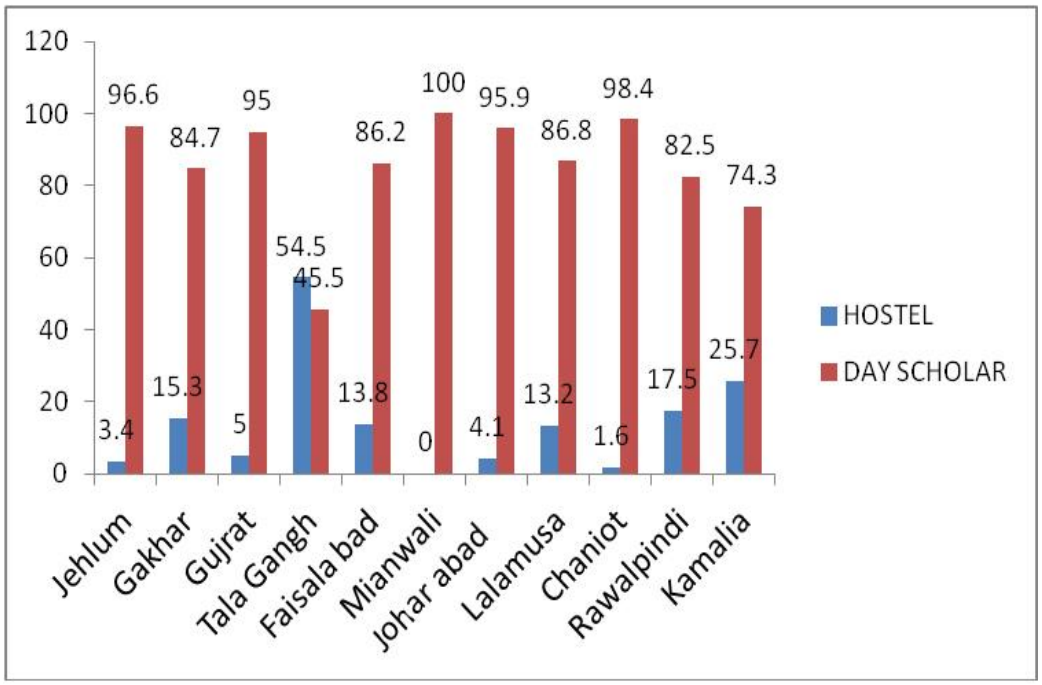


Figure: Day scholar and hostel residence prospective teachers of GCETs (in percentages)

Statistical Analysis

Table 2 reflects the opinion of prospective teachers about the use of innovative approaches on a gender basis.

Availability of teaching aids

Mean scores of male (M=62.73) and female (M=62.30) were not significantly different having t-value 0.246 at $p<.05$ on factor availability of teaching aids. It shows that the male and female prospective teachers were having equal availability of teaching aid at their respective GCETs in their classes.

Awareness of innovative approaches

Mean scores of male (M=33.63) and female (M=34.27) were not significantly different having t-value -0.903 at $p<.05$ on factor awareness of innovative approaches. This implies that the male and female prospective teachers had an equal awareness of innovative approaches at GCET.

Computer assisted instruction (CAI)

Mean scores of male (M=41.15) and female (M=43.28) were significantly different having t-value -2.297 at $p<.05$ on factor "CAI". The higher means value of female prospective teachers shows that they were using more CAI in their classroom as compared to male prospective teachers at GCET.

Multimedia

Mean scores of male (M=25.42) and female (M=27.09) were significantly different having t-value -3.427 at $p<.05$ on factor "Multimedia". The higher mean value of female prospective teachers shows that they were using more Multimedia in their classroom as compared to male prospective teachers.

Micro-Teaching

Mean scores of male (M=43.92) and female (M=45.32) were not significantly different having t-value -1.661 at $p<.05$ on factor "Micro-Teaching". It indicates that the male and female prospective teachers were using MT technique equal in their classes at GCET.

Use of training aids in teaching learning process

Mean scores of male (M=11.28) and female (M=11.80) were not significantly different having t-value -0.978 at $p<.05$ on factor "Use of training aids in teaching learning process". This implies that the male and female prospective teachers were having equal use of training aids in teaching learning process at GCET.

Problems in use of innovative approaches

Mean scores of male (M=28.02) and female (M=28.45) were not significantly different having t-value -0.364 at $p<.05$ on factor "Problems in use of innovative approaches". This shows that male and female prospective teachers were facing equal problems like load shedding and lack of internet facility in the classes at GCET.

Table 2: Opinion about use of innovative approaches on gender basis

Factors	**Prospective Teachers**						
	Male			Female			
	N	Mean	SD	N	Mean	*SD*	*t*
Availability of teaching aids	38	62.73	9.00	731	62.30	10.63	0.246
Awareness of innovative approaches	38	33.63	4.11	731	34.27	4.29	-0.903
CAI	38	41.15	6.59	731	43.28	5.51	-2.297
Multimedia	38	25.42	3.69	731	27.09	2.88	-3.427
Micro-teaching	38	43.92	5.71	731	45.32	5.05	-1.661
Use of training aids in teaching learning process	38	11.28	3.10	731	11.80	3.16	-0.978
Problems in use of innovative approaches	38	28.02	8.66	731	28.45	6.97	-0.364

df=767 $p<.05$ Table value of t=1.96

Findings

Following findings were drawn from results.

Difference between Male and female prospective teachers' attitude regarding use of innovative approaches

Availability of teaching aids

Difference between male and female prospective teachers in use of innovative approaches and different aspects of innovative approach. The mean scores of male

(M=62.73) and female (M=62.30) were not significantly different having *t* values 0.246 at *P*<0.05 on factor " Availability of teaching aids**"** hence Ho 2 was accepted". It means that both male and female teachers were equally availability of teaching aids.

Awareness of innovative approaches

Mean scores of male (M=33.63) and female (M=34.27) were not significantly different having t value -0.903 at *p*<0.05 on factor "Awareness of innovative approaches" hence Ho 2 was accepted. It indicates that male and female GCET teachers were aware equally about innovative approaches.

Computer assisted instruction (CAI)

Mean scores of male (M=41.15) and female (M=43.28) were significantly different having t value – 2.297 at *p*<0.05 on factor "CAI" hence Ho 2 was rejected. It reflects that female prospective teachers were using more CAI as compare to male prospective teachers at GCET.

Multimedia

Mean scores of male (M=52.42) and female (M=27.09) were significantly different having t value – 3.427 at *p*<0.05 on factor Multimedia hence Ho 2 was rejected. This implies that female GCET prospective teachers were using more multimedia as compare to male prospective teachers at GCETs.

Micro Teaching

Mean scores of male (M=43.92) and female (M=45.32) were not significantly different having t value -1.661 at *p*<0.05 on factor "Micro Teaching" hence Ho 2 was accepted. It projects that micro Teaching at GCETs were equally using male and female prospective teachers.

Use of training aids

Mean scores of male (M=11.28) and female (M11.80) were not significantly different having t value - 0.978 at *p*<0.05 on factor "use of training aids" hence Ho 2 was accepted. This shows that both male and female GCETs teachers were using training aids equally.

Problems in use of innovative approaches

Mean scores of male (M=28.02) and female (M=28.45) were not significantly different having t value -0.364 at $p<0.05$ on factor "problems in the use of innovative approaches" hence Ho 2 was accepted. It reflects that male and female prospective teachers had equal problems in the use of these approaches at GCETs in Pakistan.

Conclusions

The focus of this study was to analyze the application of innovative approaches in prospective teacher training in Pakistan. Male 38 (5 percent) and female 731 (95 percent) GCETs prospective teacher were found consistent in their opinion regarding the use of teaching aids and training aids as well as different aspects of innovative approaches including awareness about the use of innovative approaches, Computer assisted instructions, Micro-teaching, Multimedia, and problems in the use of innovative approaches.

Discussion

In this study, prospective teachers had a different demographic situation. All prospective teachers, including male and female, belonging to rural and urban area, were aware about the innovative approaches which were being used in GCET. Full time prospective teachers were more aware about innovative approaches and teaching aids as compared to part time prospective teachers, whereas, part time prospective teachers were more inclined towards Micro Teaching technique than full time prospective teachers. It revealed that the teaching, learning environment of all the GCETs was about the same. The training facilities like Computer assisted instruction (CAI), multimedia and other relevant teaching and training aids were common and same among all GCETs (Iqbal, 2011).

It also reflects that all prospective teachers of GCETs were well versed with the importance of innovative approaches applied to the teaching in training institutions in Pakistan. It also indicates that different demographic variables do not seem to affect the use of innovative approaches among GCETs teacher educators (Aisha,2002). The prospective teachers also suggested for the use of multimedia and MT in their classes at GCET (Kaleem, 2010).

Prospective teachers of GCET Gakkhar, Kamalia, Rawalpindi, Chiniot, Lalamusa, Faisalabad, Talagang, Gujrat and Jhelum were more inclined towards CAI and MT as compared to their teacher educators. Ratio of training imparting male teacher educators was 65 % and female teacher educators were 35 %. On the other hand trainee prospective teachers were 95% female and only 5 % were male. It seems difficult for male teacher educators to teach female prospective teachers easily by using various innovative approaches in the classroom. In the same manner female prospective teachers hesitate to ask the proper use of innovative approaches from male teacher educators. Moreover, the curriculum is more and academic duration is less. Our examination system demands theoretical work more than practical work. Energy crises are the main hindrance in the use of innovative approaches and shortage of trained teacher educators at GCETs. Anyhow innovative approaches are useful for prospective teacher training throughout the country.

Suggestions

There is a dire need of in detail study of application of innovative approaches in prospective teacher education in Pakistan. The result of that study can be used for enhancing the professional development of prospective teachers that will increase their skills and produce creativity among the prospective teachers. It will enable prospective teachers to overcome rote learning. The government should provide requisite funds to the heads of prospective teacher training institutions for purchasing of innovative teaching materials. The heads of all GCETs should arrange prospective teacher education, keeping in view future need of learners and society.

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