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Abstract - Study was designed to investigate the relationship of multiple intelligence and effective study skills with the academic achievement among the university students. It was descriptive correlational in nature in which scientific method was used to achieve the research objectives. The first objective of this study was to investigate the relationship of multiple intelligence , effective study skills and academic achievement of university students, second objective was to measure the impact of multiple intelligence and effective study skills on the academic achievement of university students and the third objective was to investigate the role of demographic variation such as gender, discipline, birth order and family income in determining the levels and dimensions of multiple intelligence, effective study skills and academic achievement. In this study a stratified random sample of 250 male (104) and female (146) university students were collected from 4 selected private and public sector universities of Rawalpindi and Islamabad. Family income of Students ranged from 50,000 to 150,000. The study was delimited to Master level students studying in the fourth semester only. In this research for the measurement of multiple intelligence "Simple Multiple Intelligence Inventory" based on 80 items developed by Gardner was used and for the measurement of effective study skills an inventory named as," Study Skills" based on 51 items developed by Congos was used.

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The Relationship of Multiple Intelligence and Effective Study Skills with Academic Achievement Among University Students

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Abstract - Study was designed to investigate the relationship of multiple intelligence and effective study skills with the academic achievement among the university students. It was descriptive correlational in nature in which scientific method was used to achieve the research objectives. The first objective of this study was to investigate the relationship of multiple intelligence , effective study skills and academic achievement of university students, second objective was to measure the impact of multiple intelligence and effective study skills on the academic achievement of university students and the third objective was to investigate the role of demographic variation such as gender, discipline, birth order and family income in determining the levels and dimensions of multiple intelligence, effective study skills and academic achievement. In this study a stratified random sample of 250 male (104) and female (146) university students were collected from 4 selected private and public sector universities of Rawalpindi and Islamabad. Family income of Students ranged from 50,000 to 150,000. The study was delimited to Master level students studying in the fourth semester only. In this research for the measurement of multiple intelligence "Simple Multiple Intelligence Inventory" based on 80 items developed by Gardner was used and for the measurement of effective study skills an inventory named as," Study Skills" based on 51 items developed by Congos was used. The students' academic achievement was measured through their results of first three semesters (students result was taken as measure their academic achievement). After data collection it was analyzed with the help of SPSS 16 by applying various statistical tests such as, Mean, SD and Pearson Correlation. On the basis of findings, it was found that there is positive relationship between multiple intelligence, study skills and academic achievement in the context of Master level university students. The students of private sector universities possessed more effective study skills and higher score on the academic achievement as compared to the students of public sector universities. Present research is significant due to its uniqueness it can bring new avenues in the teaching learning process. University management can provide creative competitive environment to the learner so learner can develop their intelligence and exercise study skill in their course of studies.

I. Introduction

Students as individuals respond to the stimuli around them in a unique way, due to their mental capabilities which help them to hold unique perception of knowledge and skills. We will be mistaken if we think that all students come to educational institutions with equal intellectual and information processing abilities, due to the fact that all of them rarely share same biological, cultural and personal backgrounds. The concept of individual differences grew out in the second half of the 20th century, welcoming values and differences typical of individuals with an ever-lasting interest (Akbari & Hosseini, 2008). This drew the attention of educators and led to a renewed view of their educational practice. Following this shift of attention in teaching/learning circles, the unsettled concept of what distinguishes one person from another has been the center of discussions. Differences between individuals can be described in innumerable ways which can accordingly categorize each person on the basis of his/her particularly prominent intelligence types (Yenice & Aktamis, 2010).

According to Gardner's (1983) Multiple Intelligences (MI) theory, subsequent to century-long educational and psychological debates on traditional concepts regarding intelligence, a substantial change of view seemed inevitable. Enjoying a high level of Intelligence Quotient (IQ) would facilitate achieving success, according to conventional wisdom. That is, there was only one dimension of mental ability, along which everyone could be sorted out. With a moment of in-depth consideration, though, this concept of a 'pure' intelligence measurable by a single IQ score can be labeled inaccurate.

Gardner (1999) presented the concept of multiple intelligence; his theory of multiple intelligence is based on skills and abilities of the learner. Gardner's theory of multiple intelligences is based on studies not only of normal children and adults but also by studies of gifted individuals who have suffered brain damage, of experts and of individuals from diverse cultures. This led Gardner to break intelligence down into at least nine types such as visual intelligence, linguistic intelligence, logical intelligence, kinesthetic intelligence, musical intelligence, interpersonal intelligence, intrapersonal intelligence, naturalist intelligence and existentialist intelligence.

Visual intelligence deals with learner's ability to learn best by visualizing and organizing things spatially.

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Visual intelligence deals with learner's ability to learn best by visualizing and organizing things spatially. The learners' are interested in charts, graphs, maps, tables, illustrations, art, puzzles, anything that is eye catching. Learners' who are strong in visual-spatial intelligence are also good in visualizing things.

Verbal Linguistic intelligence deals with learner's interest in language such as, interest in speaking, writing, reading and listening. The learners' who are strong in verbal -linguistic intelligence are able to use words while they are writing and speaking. These learners' are typically very good at writing stories, memorizing information and reading.

Mathematical or Logical intelligence deals with learner's ability to show an aptitude for numbers, reasoning and problem solving. Learners' who are good in logical-mathematical intelligence are also good at reasoning, recognizing patterns and logically understand and analyze problems. These individuals prefer to think conceptually about numbers, relationships and patterns (Gardner, 2006).

Bodily Kinesthetic intelligence deals with learner's experience through activity like games, movement, and hands-on tasks building. Those learners' who have high bodily-kinesthetic intelligence are said to be good at body movement, performing actions and physical control. Musical Rhythmic intelligence deals with learner's musical ability. The learners' who have strong musical intelligence are good at thinking in patterns, rhythms and sound. Interpersonal intelligence deals with learner's communication styles and understanding of feelings of other people. They learn through cooperative learning in groups and they are leaders among their groups.

Learners' who have strong interpersonal intelligence are good at understanding and interacting with other people. Intrapersonal intelligence deals with learners' awareness of their feelings, emotions and motivation (Gray, 2007). Naturalist intelligence deals with learner's interest towards outdoors activities, animals and field trips. The traditional classroom has not been accommodating to these students (Weiten, 2001). Existentialist intelligence explains learner interest in spiritual and philosophical aspects of life, in which learner learns in the context of "What is the purpose of existence of human beings?" and "what is our role in world?"

If learner's intelligence can be identified, then the teachers can teach different learners successfully according to their unique orientation towards learning. Intelligence also plays a very important role in academic achievement. Only Intelligence cannot provide assurance of academic achievement, study skills are also necessary for getting good grades in academics.

Study skills play an important role in determining academic achievement of students. Study skills differ from one individual to other because every individual cannot learn in the same way; different students have different capacities and their willingness for learning. Study skills are abilities and approaches that are applied to learning. "Study skills are learning strategies that help students' to organize, process, and use information effectively."

The study skills are essential for acquiring good grades, and are useful for learning throughout one's learner life because it comprises of a broad range of skills and abilities, which includes time management, reading, writing, listening, planning, goal setting, memorization, note-taking and preparation for exams (Cottrell, 2003).

Obviously study skills are strategies and techniques that enable the learner to make the most efficient use of their time, resources, and academic potential abilities. To develop and to improve the study skills can help the learner to make more efficient use of their study time and to get more work done in less time. Study skills can make learning easier and help to retain what the learners have learned for long and feel the work and effort that is involved over all. Anyone who is engaged in the field of learning can benefit from developing his or her study skills.

Regardless of whether the students are going to school, universities have already started on a course of study, they can always improve their ability to learn, retain, and retrieve information. During studying the quality and quantity both are important, when learners using the right techniques then they can get the desired results in half of the time. The mastering of the study skills makes study more enjoyable and effective which in turn strengthens the learner's interest so he/she spends more time studying. The results of poor study skills are wastage of time, frustration, and poor grades.

Every individual learn in different ways such as, some individual learn best by doing; others prefer to learn by listening or reading, some individual work best in group situations, while others learn best when alone. The secret is to find the methods and techniques that are most effective for them. Essentially having well developed study skills will help learner to become a more confident, effective, productive and intelligent person in both their personal and professional throughout one's life.

A study method is a formalized learning process or procedure of study. In 1941 Robinson developed a study method (SQ3R) Survey, Question, Read, Recite and Review which is still popular. SQ3R is a four-step strategy for reading and taking notes from chapters of textbook. It is a very effective note taking and study method which can be used in a variety of ways. Later in 1976 Rowntree worked on this method and advocates a systematic method of surveying (or skimming) a text, thinking of questions the learner want answered, and then reading, reviewing and revisiting the text (as cited in VanBlerkom,1994).

Planning and preparation are of great importance learners must set one's goals, and then prepare to develop the required skills for the attainment of those goals. Teachers can also set goals for learners according to the importance of the content which are related with students' success. Goals can be set for one day, one week, or one month so that the learners can easily achieve their set targets. The goals must be within the skills and abilities of learners and must be realistic, flexible, and measurable and within the control of learner (Maddox, 1988).

After planning and goal setting motivation is also important for good studying. The motivation will help the learners to remain focused on their study over a period of time. Motivation can be increased if the learners study with their friends and they remember their long-term goals, it eliminate distractions that occur during study time. Managing the time is important factor that help the learner to prioritize things and to understand the importance of time.

The learners must organize their things, resources, environment and they must know how to study and where to study. They must study in a quiet place that is free from distractions and interruptions. Learners try to create a space designated solely for studying. Beside these all things he/she must be good at listening. Listening is a cognitive act that requires the learner to pay attention and think about and mentally process to what they hear. As teacher's lecture is very valuable so learner can remove their doubts about different things by asking questions during lecture and may also take class notes in their own words.

The purpose of note-making is not to copy great chunks of information from books but it should only act as a trigger to help the learner to remember what they have read. Key words are more easily remembered than long sentences. Notes should be short, to the point, well-organized and easily read. The techniques of note-making can be mind-maps, keywords and brain storming. For reading the learner can do flipping through a book to get a quick idea, scanning the content, skimming the text to get the overview and concentration on detailed reading (Van Blerkom, 1994). Learners will make a plan depending on how much time they will give to each subject. The plan should have outline of time, as time will differ from subject to subject depending on the quality of lecture, difficulty level and interest of the learner in revision. The learner can do effective revision of notes by using different techniques like the information can be broken into chunks, flash cards, mnemonics and memorizing after learning.

Academic achievement is dependent upon intelligence and study skills of the learner. It is defined"an excellence in all academic disciplines, in class as well as in extracurricular activities", for successfulness in academics learner must have certain level of intelligence and well-planned study habits. The goal of education is that the students can improve their academic achievement by developing their study skills. Each student has a chance to fulfill their education that improves their self -confidence and self – efficiency. They deserve a teacher that is fair and understands the different ability levels of each student of their class. Some students learn the information by seeing, some learn through listening and others learn through their experiences.

This study was carried out to investigate the relationship of multiple intelligence and effective study skills with academic achievement. It was conducted to find out the role of various levels of intelligence in the development of effective study skills. Demographic variation plays a very important role in determining human behavior, through this study an attempt was made to uncover the role of various demographic variables such as gender, discipline, birth order, and family income, parents' profession and qualification in determining the level of academic achievement and the relationship with multiple intelligence and study skills.

a) Statement of the Problem

The problem under consideration is to explore the relationship of multiple intelligence and effective study skills with academic achievement of the university students, it further aims to investigate the role of certain biographical variables such as gender, discipline, family income and birth order in determining the levels and dimension of multiple intelligence, effective study skills and academic achievement.

II. Objectives of the Study

The objectives of the study are as under:

1. To investigate the relationship of multiple intelligence, effective study skills and academic achievement in the context of university students.
2. To measure the impact of multiple intelligence and effective study skills on the academic achievement of university students.
3. To investigate the role of demographic variations such as gender, discipline, family income and birth order in determining the levels and dimensions of multiple intelligence, effective study skills and academic achievement in the context of university students.

III. Hypotheses

1. There is a positive relationship between multiple intelligence, study skills and academic achievement.
2. There is a positive relationship between the effective study skills and higher academic achievement.

3. There is a positive relationship between multiple intelligence and higher academic achievement.
4. Students of the private sector universities score higher on multiple intelligence inventory as compared to the students of the public sector universities.
5. Students of the private sector universities possess more effective study skills as compared to the students of the public sector universities
6. Students of the private sector universities score higher on academic as compared to the students of the public sector universities.
7. Female university student's verbal/ linguistic abilities are more developed as compared to male university students.
8. Male university student's logical-mathematical abilities are more developed as compared to female university students.
9. Students from higher income families score higher on multiple intelligence inventory as compared with students from less income families.
10. First born child has higher score on intelligence, study skill and academic achievement as compared to students with other birth orders.
11. Students from less income families have developed study skills and academic achievement as compared with students from higher income families.
12. The students of management sciences have higher verbal/linguistic abilities and visual/spatial abilities as compared to students of humanities and social sciences.
13. The students of management sciences have a developed interpersonal intelligence as compared to students of humanities and social sciences.
14. The students of management sciences have higher logical-mathematical ability as compared to students of social sciences and humanities.

IV. Research Instruments

In this study for the measurement of multiple intelligence, Simple Multiple Intelligence Inventory developed by Gardner consisting of 80 items and 8 sub-scales was taken as research instrument. For the measurement of study skills, "Study Skills Inventory" developed Congos, consisting of 51 items and 6 sub-scales were taken as research instruments. For the measurement of academic achievement the results of last 3 semesters were taken as an students'achievement score.

V. Pilot-Testing

This testing was conducted to see the cultural relevance of the research instruments with the population and to measure the constructs. The main objective of pilot testing was to determine the psychometrics properties of research questionnaires i.e., reliability and validity. A random sample of 81 university students (16 males and 65 females) was collected from four leading universities of Islamabad. Data was collected from the students of Social Sciences, Humanities and Management Sciences.

The panel of experts such as heads and teachers were contacted for the estimation of face validity. To check whether the inventories were measuring the target variables and it also serve the purpose. The reliability analysis of the inventory was checked through Alpha reliability coefficient and Split half reliability analysis. The construct validity was examined through computation of Item Total Correlation and Inter-Scale Correlation and Percentile ranking of the scores. The purpose of percentile analysis was to establish the norms for the test. After pilot testing the items of simple multiple intelligence inventory were reduced to 58 items from 80 items and study skill inventory were reduced to 49 items from 51items. Rests of the items are suitable for the measurement of intelligence and study skills.

VI. Methodology

Main study was carried out to accomplish research objectives; population of the study was comprised of all Master level students studying at private and public sector universities.

a) Sample

The total sample of the main study consisted of 250 university students. The sample consisted of 104 males and 146 females of fourth semester of master level. The data was collected from the following 2 private and 2 public sector universities of Rawalpindi and Islamabad such as National University of Modern Languages, International Islamic University, Women Institute for Science and Humanities and Foundation University. The department ranged from Education, Economics, English and Management Sciences. A stratified random sampling of 250 students was collected after seeking permission from the Dean and HODs of respective department.

VII. Results

After completing data collection, the whole data was transferred to the computer and with the help of SPSS data was analyzed with suitable statistical techniques such as alpha reliability coefficient, percentile ranks, coefficients of correlation, percentiles, mean, S.D, linear regression and analysis of variance.

Cronbach's Alpha Coefficients of Multiple Intelligence was yielded an internal consistency coefficient of .637 for entire 58 items. Cronbach's Alpha Coefficients of Academic Achievement was yielded an internal consistency coefficient of .814 for 3 semesters.

Table 1 : Inter -Scales Correlation of Multiple Intelligence, Study Skills with Academic Achievement

Subscales	Ling	Log	Spat	Bodily	Music	Inter	Intra	Natural	Memo	Test-prep	Concentra	Time	Note	Textbook	A.A
Linguistic															
Logical	.30														
Spatial	.39	.45													
Bodily	.38	.48	.41												
Musical	.30	.37	.27	.30											
Interpers	.45	.38	.39	.32	.32										
Intrapers	.26	.29	.34	.30	.22	.29									
Natural	.23	.24	.29	.35	.24	.25	.26								
Memory	.57	.60	.40	.25	.15	.42	.39	.28							
Test-Prep	.55	.62	.45	.19	.17	.45	.19	.18							
Concern	.45	.55	.59	.29	.19	.30	.39	.17	.51	.60					
TimeMgmt	.40	.48	.26	.19	.17	.46	.20	.17	.52	.63	.61				
Note-taking	.55	.50	.38	.26	.17	.30	.25	.15	.55	.64	.53	.61			
Text book	.46	.33	.25	.21	.15	.17	.16	.14	.35	.59	.50	.45	.40		
Academic Achievement	.61	.72	.25	.20	-.25	.35	.30	.22	.65	.70	.66	.61	.51		

Table 1 indicates the results of Inter scale correlation of the subscales of multiple intelligence inventory, study skills with academic achievement. From this table it can be seen that academic achievement has high correlation with Logical .72, Linguistic .61, Interpersonal .46, intrapersonal .30, Spatial .25, Bodily .20, Natural .22, Musical -.25. As far as relationship of study skill and academic achievement is concerned, all subscales are significantly correlated with academic achievement, memory .77, test-preparation .70, concentration .66, time- management .61 and note-taking .51. As far as the inter subscales correlation between the subscales of multiple intelligence and study skills are concerned it was found that linguistic intelligence has high intelligence correlation with memory, logical intelligence has higher correlation with test preparations, spatial higher correlation with concentrations, bodily intelligence has higher correlation with note taking skill, Musical intelligence has slight correlation with all subscale of study skills, high correlation with, interpersonal intelligence has a higher relationship with time management, and intrapersonal intelligence deals with memory and concentrations whereas natural intelligence has no significant relationship with most of the subscales of study skills. On the basis of the inter correlations it can say that there is a positive relationship between multiple intelligence, study skills and academic achievement.

Table 2 : Comparison of Public and Private Sector Universities on Multiple Intelligence Subscales

Subscales	Public		Private	
	M	SD	M	SD
Linguistic	23.41	3.81	22.96	3.64
Logical	27.55	4.25	28.65	3.87
Spatial	27.14	4.22	28.33	4.20
Bodily	32.38	4.57	32.21	4.61
Musical	19.72	5.28	19.62	4.82
Interpersonal	27.04	4.61	26.84	5.18
Intrapersonal	26.87	3.87	26.42	3.29
Natural	19.68	3.17	19.31	3.05
Total	203.79	33.78	204.34	32.66

Table 2 indicates the result of comparison of the public and private sector universities with subscales of the multiple intelligence. The results confirm the research hypothesis that students of the private sector universities score higher on multiple intelligence as compared to the students of public sector universities (Public M=203.79 , Private M=204.34).

Table 3 : Comparison of public and private sector universities with study skills subscales

Subscales	Public		Private	
	M	SD	M	SD
Memory	31.50	6.72	32.09	6.88
Text-Preparation	43.92	8.98	46.67	6.98
Concentration	29.20	5.09	30.64	4.98
Time-Management	15.68	5.47	16.87	5.79
Note-Taking	17.64	4.37	18.27	4.43
Text-book Reading	26.72	5.70	26.67	5.11
Total	164.66	36.33	171.21	34.17

Table 3 indicates the results of comparison of the public and private sector universities with subscales of the study skills. The results confirm the research hypothesis that students of the private sector universities possess more effective study skills as compared to the students of public sector universities (Public M=164.66 , Private M=171.21).

Table 4 : Comparison of Public and Private Sector Universities with Academic Achievement

Dimension variables	Public		Private	
	M	SD	M	SD
Semester 1	68.85	8.18	76.78	9.33
Semester 2	69.61	8.47	78.77	9.70
Semester 3	70.99	9.05	78.82	9.44
Total	209.45	25.7	234.37	28.47

Table 4 indicates the results of comparison of the public and private sector universities with academic achievement. The results confirm the research hypothesis that students of the private sector universities score higher on academic achievement as compared to the students of public sector universities (Public M=209.45 , Private M=234.37).

Table 5 : Gender Wise Comparison on Multiple Intelligence Inventory (N=250)

Dimension Variables	Male		Female	
	M	SD	M	SD
Linguistic	23.18	3.83	23.27	3.69
Logical	28.25	3.99	27.79	4.23
Spatial	27.13	4.23	27.95	4.24
Bodily	33.08	4.80	31.77	4.34
Musical	19.97	4.88	19.47	5.25
Interpersonal	28.01	5.19	26.21	4.42
Intrapersonal	26.72	4.15	26.68	3.26
Natural	19.43	3.25	19.61	3.03
Total	205.77	34.32	202.75	32.46

Table 5 shows the gender wise comparison of students' scores on multiple intelligence inventory. However, the male university students show higher scores as compared to the female university students (Male M=205.77, Female M=202.75).

Table 6 : Gender Wise Comparison on Study Skills Inventory (N=250)

Dimension Variables	Male		Female	
	M	SD	M	SD
Memory	32.35	6.09	31.29	7.22
Test-Prep	44.74	8.85	45.20	7.99
Concentration	29.26	5.19	30.13	5.00
Time-Mgmt	16.06	5.34	16.21	5.83
Note-Taking	17.72	4.24	18.01	4.52
Text book	27.24	5.24	26.32	5.60
Total of Study Skills	167.37	34.95	167.16	36.16

Table 6 shows the gender wise comparison of respondents' scores on study skills inventory. However, the male university students show higher scores as compared to the female university students (Female M=167.16, Male M=167.37).

Table 7 : Gender Wise Comparison on Students' Academic Achievement (N=250)

Dimension Variables	Male		Female	
	M	SD	M	SD
Semester1	70.94	9.07	72.73	9.70
Semester2	72.98	10.31	73.42	9.84
Semester3	73.90	10.03	74.23	9.93
Total	217.82	29.41	220.38	29.47

Table 7 shows the gender wise comparison of students' scores on academic achievement. However, the female university students show higher scores as compared to the male university students (Male M=217.82, Female M=220.38).

Table 8 : Birth Order Wise Comparison on Multiple Intelligence Inventory (N=250)

Dimension Variables	First		Second		Third		Fourth		Fifth		Only	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Linguistic	23.16	4.28	22.40	3.36	23.16	3.25	24.05	3.81	24.36	2.61	23.27	3.94
Logical	27.86	4.31	28.05	3.68	27.67	4.23	28.23	3.93	28.05	3.92	28.32	4.54
Spatial	28.33	4.16	26.95	3.54	26.70	4.84	27.27	5.10	27.77	3.54	27.98	4.23
Bodily	32.54	4.80	32.21	4.51	32.44	5.38	32.64	3.81	32.41	3.43	31.63	4.39
Musical	19.94	4.77	20.60	4.07	19.63	5.86	20.50	4.87	18.41	5.07	18.49	5.84
Interpersonal	27.25	5.19	26.70	4.72	26.33	5.50	27.45	5.46	28.14	3.48	26.44	3.72
Intrapersonal	26.75	3.92	25.98	3.42	26.60	3.54	26.64	3.33	26.91	3.06	27.37	3.96
Natural	20.01	2.93	19.70	3.09	19.23	3.25	19.09	4.01	18.91	2.50	19.34	3.19
Total	205.8	34.3	202.5	30.3	201.7	35.8	205.8	34.3	204.9	27.6	202.8	33.8

Table 8 shows difference in the intelligence level of respondents due to birth order of variations. It can be seen from the table that the students' who born at first birth order in their family have higher intelligence level (M = 205.8) as compared to others birth orders while the only child in the family have lower score on multiple intelligence inventory (M = 202.8). As far as last born is concerned results shows that they also score higher on multiple intelligence inventory (M=205.8 and M = 204.9).

Table 9 : Birth Order Wise Comparison on Study Skills Inventory (N=250)

Dimension Variables	First		Second		Third		Fourth		Fifth		Only	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Memory	30.67	7.28	30.70	6.80	32.23	6.31	32.64	9.78	32.77	5.78	31.93	5.67
Test-Prep	46.60	10.11	42.95	6.80	44.77	8.57	45.95	7.99	45.05	8.61	45.46	7.41
Concentration	31.19	4.68	28.51	6.33	29.94	5.33	29.32	4.82	29.59	4.37	29.61	3.80
Time-Mgmt.	17.60	6.18	16.16	4.96	15.86	5.60	15.59	6.33	16.64	5.01	15.20	5.63
Note-Taking	17.58	4.75	18.05	4.44	17.71	4.42	18.91	4.74	18.27	4.73	17.66	3.68
Text book	27.12	5.57	25.60	5.69	26.38	4.93	26.00	5.16	27.36	5.80	28.05	6.02
Total	170.7	38.5	161.9	35.0	166.8	35.1	168.4	38.8	169.6	34.3	167.9	32.2

Table 9 shows difference in the study skills aptitude level of respondents due to birth order of variations. The table shows that the students in first birth order in their family have well-developed study skills (M =170.7) as compared to others while the second child in the family have less-developed study skills (M =161.9). As far as last born is concerned results shows that they also score higher on study skills (M = 168.4 and M =169.6).

Table 10 : Birth Order Wise Comparison on Students' Academic Achievement (N=250)

Dimension Variables	First		Second		Third		Fourth		Fifth		Only	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Semester1	74.34	8.74	70.63	8.74	69.68	10.40	72.27	8.85	72.28	10.57	71.91	9.48
Semester2	76.46	8.87	72.33	9.66	71.14	8.88	72.64	8.30	74.16	10.25	72.30	11.18
Semester3	77.49	8.82	72.95	10.86	72.45	11.30	72.64	7.66	75.42	10.06	73.09	9.90
Total	228.2	26.4	215.9	29.2	213.2	30.5	217.5	24.8	221.8	30.8	217.3	30.5

Table 10 shows difference in the academic achievement of respondents' due to birth order of variations. The table shows that the first child scores higher in their academic achievement (M =228.2) as compared to others while the fourth child in the family scores less in their academic achievement (M =213.2). As far as last born is concerned, results shows that they also score higher on academic achievement (M=217.5 and 221.8).

Table 11 : Family Income Wise Comparison on Multiple Intelligence Inventory (N=250)

Dimension Variables	Less than 50000		50000-75000		75000-1000000		1000000 and above	
	M	SD	M	SD	M	SD	M	SD
Linguistic	22.76	3.39	23.39	4.06	22.84	4.15	24.62	3.03
Logical	27.90	4.15	27.84	4.07	28.26	4.44	28.69	4.24
Spatial	27.78	3.88	27.81	4. 32	6.16	4.83	27.19	4.81
Bodily	32.31	4.13	32.36	4.86	32.47	5.00	32.04	4.89
Musical	19.28	5.04	19.93	4.92	19.68	4.17	20.12	6.61
Interpersonal	26.74	4.30	26.75	4.84	26.68	5.29	28.85	6.05
Intrapersonal	26.80	3.36	26.67	3.91	26.42	3.70	26.62	3.72
Natural	19.64	2.84	19.53	3.22	19.89	2.64	18.92	4.00
Total	203.21	31.09	204.28	34.20	202.40	34.22	207.05	37.35

Table 11 shows comparison between university students for variable family income. It can be seen from the table that income also affects the level of intelligence. Respondents having higher family income scored higher on multiple intelligence inventory (M=207.05) as compared to others respondents.

Table 12 : Family Income Wise Comparison on Study Skills Inventory (N=250)

Dimension Variables	Less than 50000		50000-75000		75000-1000000		1000000 and above	
	M	SD	M	SD	M	SD	M	SD
Memory	31.19	6.49	31.86	7.16	32.37	6.13	32.77	6.82
Test- Prep	45.68	8.59	44.73	8.06	44.32	7.97	44.12	9.16
Concentration	30.16	4.93	29.60	5.12	29.79	5.67	28.96	5.27
Time-Mgmt	16.30	5.63	16.06	5.70	16.95	5.75	15.38	5.36
Note-Taking	18.06	4.21	18.06	4.53	17.63	4.11	16.77	4.81
Text book	27.25	5.46	26.02	5.42	26.95	6.21	27.31	5.10
Total	168.64	35.31	166.33	35.99	168.01	35.84	165.31	36.52

Table 12 shows comparison of the total family income and its impact on the study skills of the respondents'. It is seen from the table that those respondents who are having less family income scored high on study skills inventory (M=168.64) as compared to others respondents. Those respondents who are having family income above than 1Lac they scored less on study skills inventory (M =165.31).

Table 13 : Family Income Wise Comparison on Students' Academic Achievement (N=250)

Dimension Variables	Less than 50000		50000-75000		75000-1000000		1000000- and above	
	M	SD	M	SD	M	SD	M	SD
Semester1	72.30	8.94	71.89	10.01	71.42	9.58	71.74	9.45
Semester2	73.44	9.61	73.26	10.39	73.85	8.62	71.21	12.11
Semester3	74.77	8.72	73.77	11.22	73.46	8.26	73.32	10.83
Total	220.51	27.27	218.92	31.62	218.73	26.46	216.27	32.39

Table 13 shows comparison of the total family income and its impact on the academic achievement of the respondents'. It is seen from the table that those respondents who are having less family income scored higher in academic achievement (M=220.52) as compared to others respondents. Those respondents who are having family income above than 1Lac they scored less in their academic achievement (M =216.27).

Table 14 : Department Wise Comparison on Multiple Intelligence Inventory (N=250)

Dimension Variables	Social Sciences		Humanities		Management Sciences	
	M	SD	M	SD	M	SD
Linguistic	23.27	3.20	23.02	4.01	23.33	4.06
Logical	27.92	4.31	27.35	4.16	28.45	3.92
Spatial	26.76	4.24	28.08	4.25	28.13	4.16
Bodily	31.58	4.65	32.52	4.37	32.90	4.59
Musical	19.29	5.11	20.52	4.64	19.50	5.34
Interpersonal	26.11	4.34	27.24	5.24	27.59	4.93
Intrapersonal	25.86	4.02	28.32	2.85	26.45	3.43
Natural	19.24	3.09	19.73	3.07	19.70	3.19
Total	200.03	32.96	206.78	32.59	206.05	33.62

Table 14 shows the department wise comparison of students' scores on multiple intelligence inventory. It can be seen from the table that there is a negligible difference between the scores of the students on multiple intelligence inventory. However, the students of Humanities (M=206.78) show higher scores as compared to the students of Social Sciences (M=200.03) and Management Sciences (M=206.05).

Table 15 : Department Wise Comparison on Study Skills Inventory (N=250)

Dimension Variables	Social Sciences		Humanities		Management Sciences	
	M	SD	M	SD	M	SD
Memory	30.59	6.86	31.60	6.55	32.92	6.71
Test-Prep	44.89	7.61	43.41	9.09	46.15	8.44
Concentration	29.04	4.81	30.84	5.11	29.77	5.26
Time-Mgmt	16.77	5.07	14.66	6.08	16.51	5.70
Note-Taking	18.12	4.39	18.21	4.30	17.47	4.48
Text book	26.59	5.41	26.35	4.91	27.03	5.88
Total	166.00	34.15	165.07	36.04	169.85	36.47

Table 15 shows the department wise comparison of the respondents' scores on study skills inventory. Therefore, the students of Management Sciences (M= 169.85) show higher scores as compared to the students of Social Sciences (M=166.00) and Humanities (M=165.07).

Table 16 : Department Wise Comparison on Students' Academic Achievement (N=250)

Dimension Variables	Social Sciences		Humanities		Management Sciences	
	M	SD	M	SD	M	SD
Semester 1	71.79	9.30	67.63	9.52	74.99	8.51
Semester 2	74.14	8.72	67.58	8.42	76.02	10.74
Semester 3	75.18	10.47	68.48	7.15	76.67	9.66
Total	221.11	28.49	203.69	25.09	227.68	28.91

Table 16 shows the department wise comparison of the students' scores on academic achievement. However, the students of Management Sciences (M=227.68) have higher scores as compared to the students of Social Sciences (M=221.11) and Humanities (M=203.69).

VIII. Discussion

The study was carried out to explore the relationship between multiple intelligence and study skills with academic achievement among university students. The major objectives of the study were to investigate the relationship between multiple intelligence and effective study skills, to weigh the impact of multiple intelligence and effective study skills on academic achievement of university students and to investigate the role of demographic variables such as gender, discipline, family income and birth order, in determining the levels and dimensions of multiple intelligence, effective study skills and academic achievement. The

study was comprised of two parts. First part consisted of pilot study and the sample size was 81.The second part consisted of main study and the sample size was 250 university students. The two public and two private universities of Rawalpindi and Islamabad were selected for the data collection. In this research the measurement of multiple intelligence "Simple Multiple Intelligence Inventory" based on 80 items developed by Gardner was used and for the measurement of effective study skills an inventory named as "Study Skills" based on 51 items developed by Congos used. After pilot testing the items of Multiple Intelligence Inventory were reduced to 58 items from 80 items and study skill inventory were reduced to 49 items from 51 items.

Data was analyzed by using SPSS 16 and different statistics tests like Mean, S.D, and percentile analysis, Linear Regression and Pearson Correlation was used to analyze the data. The result of the study revealed that there was positive relationship between multiple intelligence and study skills with academic achievement. The impact of different demographic variables on the three variables was measured. It was found that almost all the demographic variables effect on the multiple intelligence, study skills and academic achievement.

IX. Conclusions

In the light of the analysis and interpretation of data, it reveals that the multiple intelligence, study skills and academic achievement are interrelated constructs in the teaching learning environment. Based on the findings of the study following conclusions were drawn:

1. Multiple intelligence, study skills and academic achievement are significantly positively correlated with each other.
2. The verbal / linguistic abilities and visual /spatial intelligence of the students of Management Sciences were higher as compared to students of humanities and social sciences.
3. The interpersonal intelligence skills of students of management sciences were more developed as compared to students of humanities and social sciences.
4. The logical-mathematical abilities of the students of management sciences were higher as compared to students of social sciences and humanities.
5. The verbal/linguistic abilities of the female university students were more developed as compared to male university students.
6. The logical–mathematical abilities of male university students were more developed as compared to female university students.
7. There was a negligible difference between the multiple intelligence of public and private sector universities' students. The students of Private Sector University possessed higher multiple intelligence than the students of public sector universities. There was a significant difference in the study skills possessed by students of public and private sector university students. The students of private sector universities possessed more effective study skills as compared to the students of public sector universities. There was a significant difference between the students of public and private sector universities on the basis of scores of academics. The students of private sector universities scored higher in academics as compared to public sector universities.
8. The students of humanities and management sciences had higher score on the multiple intelligence inventory than the students of social sciences. While on study skills students of management sciences scored higher than students of other departments.
9. Male students had higher score on multiple intelligence and study skills while female students had higher score in academic achievement.
10. Students from higher income families have higher scores on multiple intelligence inventory.
11. The students from low income families have had higher score on study skills and academic achievement as compared with students with higher income families.

X. Recommendations

1. Efficient study habits can increases students' academic achievements, teaching studying skills increases academic achievements of students. So public sector universities may adopt such strategies and measures through which study habits of students can be flourished.
2. Selection of curriculum can play an important role for development of efficient studying skills which enables students to organize the study environment and to use some specific methods effectively such as efficient reading, listening lectures, note-taking, efficient writing and doing homework.
3. University teachers by providing opportunities for polishing their knowledge as well as skills for this management can organize teacher training program in which they can train teachers through information concerning individual differences and how to teach efficient studying skills to adult learners (pedagogical techniques).
4. The male students may work hard to increase their academic achievement and pay more attention towards their studies, if they need extra help they may not feel any hesitation to discuss their problems with their teachers.
5. Government and universities can adopt such parameter such as curriculum may be designed

and organized in an creative way around seven capacities of intelligence through which multiple intelligence and study skills of the students can be enhanced which will eventually result in their increased academic achievement.

6. Teachers can use specific strategies that can enhance the linguistic, logical, spatial, bodily-kinesthetic, musical, intrapersonal, interpersonal and naturalist abilities of students, especially more attention may be given to the students of social sciences. Teacher may communicate the importance of study skills of the learner and try to teach them various strategies through which students can enhance their study skills which consequently affect the goal that is academic achievement of the learner, especially the students of social sciences and humanities.
7. Awareness programs through workshops and counseling and guidance may be conducted for students to make them aware about their intelligence and study skills for their success in academic social and professional life.
8. Individual differences and variations are there in the students so teachers may respect and consider these differences and should try to adopt the teaching strategies accordingly.
9. University management can provide creative competitive environment to the learner so learner can develop their intelligence and exhibit serious attitudes towards studies. Students may also be taught the importance of proactive behaviour so they may face the challenges of life effectively and successfully.
10. Home environment, parental care and support can play an important role in improving the academic achievement of the learners through polishing intelligence and study habits. It is recommended in university there may be a system of awareness for the parents and caretakers through which parents can be informed about the ways to develop knowledge and skills their offspring.
11. Teachers play an important role in the process of education, in order to impart quality education to students, it is recommended that teachers may train and teach reflective teaching practices so they can constantly improve their teaching in order to accommodate the needs of learner in a creative competitive learning environment.

XI. Applied Significance

Present research is significant due to its uniqueness in teaching learning process as learning takes place through experiences influencing psychological functions which leads to differences in behaviour. Generally there are five elements in learning which are learner, learning, learnt, teacher, and learning environment. Taking these five elements in terms of influencing learning shows that last two elements do not affect learning directly but they have an indirect effect since they influence other elements. In the past, people used to think that efficient learning depends mainly on teacher's teaching methods. However, today it is a commonly accepted fact that permanent and significant learning can be achieved only through learner efforts and contributions (Benson, 2001). From this point of view, learners can catch up with the intended achievement standards only by perceiving the given information accurately, analyzing, and internalizing them.

Results of the study can provide opportunity for the teachers to become aware of the level of intelligence and level of preparation of their learners. Now the teachers can better guide their students to improve study skills and academic achievement. The study will help the teachers and parents to understand various levels and dimensions of intelligence in the development of effective study skills. After learning the weak areas of their personality students can work hard in that dimension which will help them to enhance their academic scores. Moreover, relationship of multiple intelligence and study skills with academic achievement will help the educationalists to make the curriculum of students accordingly. The study can be considered as a pioneering research in Pakistan because no study was conducted previously that directly address these relationships at university level. Before this research, empirical evidence was needed to unravel the relationship of multiple intelligence and study skills with academic achievement among university students.

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