

# The State of Education in Pakistan: Assessment through Bloom's Taxonomy

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**Abstract:** The quality of education in Pakistan had never been assessed against the ideal objectives set in the educational policies of the country. The current study involved interviews, quizzes, and discussions with 1485 students of elementary, secondary, and higher-secondary levels of education, including girls and boys from play group to class 12. The findings revealed that the educational objectives as described in Bloom's taxonomy had not been satisfactorily achieved in Pakistani education. The study also proposed feasible suggestions to uplift the state of education in Pakistan.

**Keywords:** Bloom taxonomy, quality of education, educational objectives, Pakistan.

## Introduction

Education is a lifelong process of learning (Kadioglu Ates & Kadioglu, 2018). It is the acquisition of art and the utilization of knowledge (Whitehead, 1967) and a fundamental method of social progress and reform (Dewey, 1958). Scholars have been highlighting the objectives of education through a wide variety of educational functions. Education helps in discovering the truth, enhancing intellect, realizing one's potentials, being able for judgment and action, getting wise and respectful learning, being able to practice knowledge in practical situations, bringing positive change in life, developing hope for future, being able to help others, achieving the goals of life, getting ready for social roles, preserving the already established customs, abolishing social evils, ensuring progress in the economy, establishing public goods, bringing a positive change in the society, and refining the society (Beckett, 2013; Camins, 2015; Cookson & Sadovnik, 2002; Dewey, 1966; Imamuddin et al., 2020; Laxton, 2020; Moran, 2018; Smith, 2015; Steinbacher, 2012; Thangeda et al., 2016; Wagner & Benavente-McEnery, 2006; yogi, 2008; Zimmer, 2016).

Many scientists have theorized the process and methods of education (Zhou & Brown, 2015). Behaviorists believe in the association between stimulus and response causing change

in human behavior and considered rewards and punishments important in learning (Shaffer, 2008). They believe that behaviors with positive incentives are adapted and behaviors with unpleasant consequences are avoided (Parkay & Hass, 2000). Cognitive theories give importance to the process of acquiring knowledge that entails internal coding i.e. how information is received, organized, stored, and retrieved in the learner's mind (Ertmer & Newby, 2013). Constructivism implies that the examination of actual experience is necessary to create meaning and that knowledge is not directly transferred in the memories; rather personal interpretation of the world is contextual, based on individual experience and interaction forming a link with the knowledge rooted in it (Anglin, 1995). Adult Learning Theory caters the seven guidelines about teaching learners who are self-directed, according to which, a teacher should provide a learner an effective learning climate to express comfortably, involve him in module planning, make him self-reliant to trigger internal motivation, make him responsible to devise his own learning objectives, involve him to formulate goal achieving, support him in carrying out their plans and make him able for self-evaluation of learning (Kaufman, 2003). Sociocultural theory signifies the macro-social, micro-social, cultural, and lingual influences on cognitive development and learning of an individual, where he acts as an apprentice who

requires guidance, support and facilitation from the learning environment that includes teachers, friends and peers (Zhou & Brown, 2015). Connectionism focuses on formation and reflection of stimulus-response associations in the behavior of an individual, and implies that once this relation is mastered, the person shall succeed (Islam, 2015). Associationism suggests that the complex ideas tend to originate from a combination and association of primitive ideas which represent all the knowledge, and are acquired from our senses (Williams, 2005). Social Learning Theory states that learning occurs by observing others, and this learning is central to the behavioral, personal, and environmental factors all of which determine, influence, and reciprocate each other (Bandura, 2001). Experiential learning theory focuses on experience as the chief source of learning where knowledge is constructed in a cyclical process of goal setting, thoughtfulness, organization, investigation, reflection, observation, and revision (Zhou & Brown, 2015). This ultimately engages a learner in the cognitive, affective, and physical aspects of learning, where he experiences a continuum of apprehension-comprehension (to perceive the experience) and intension-extension (to transform experiences).

Bloom's Taxonomy (Bloom, 1956; Bloom, 2006; Bloom et al., 1984), being an educational classic, defined educational objectives and classified educational goals very impressively. Bloom presented three domains for intellectual behavior important in learning i.e. the cognitive (intellectual) domain, the psychomotor (physical) domain, and the affective (attitudes and emotions) domain. The cognitive domain further included six categories of educational objectives i.e. knowledge (remembering), comprehension (translation, interpretation and extrapolation), application (to solve a problem by using a rule), analysis (the breakdown of the material into parts and detection of their relationship), synthesis (putting the parts together to form the whole), and evaluation (making judgements about the value). Within this taxonomy, the lower categories are subsumed in the higher ones. It means that knowledge, being the lowest category in the cognitive domain, must be mastered before comprehension which is the second level and so forth. Thus, these six categories are considered as six levels which need to be attained step by step; from simple to complex and / or from concrete to abstract. A later revision of the cognitive taxonomy (Anderson & Bloom, 2001) re-labeled the six levels as remember, understand, apply, analyze, evaluate, and create.

More important to the cognitive domain, the affective domain can be considered the actual purpose of the entire educational system. The affective domain is the manner in which we deal with things emotionally, such as feelings, values, appreciation, enthusiasms, motivations, and attitudes (Bloom et al., 1984). Affective domain is comprised of five sub-categories which are receiving (realization of one's feelings, emotions), responding (active participation of learner), valuing (ability to visualizing and expressing the worth of something), organizing (prioritizing), and characterizing (internalization of values and this domain deals with feelings, attitudes and emotions). The psychomotor domain focuses on the physical functions, reflex actions, motor coordination and the interpretive movements (Hoque, 2016). Educationists (Elias et al., 2010; Faize et al., 2017; Hough, 2011; Rogers & Howell, 2004) have significantly realized that the purpose of education should incorporate all the three dimensions i.e. the cognitive domain (dealing with learning, building and use of knowledge), the affective domain (focusing on the development and growth of values, attitudes and emotional characteristics) and the psychomotor domain (understanding to the development of motor skill, physical movement and coordination).

Pakistan, being a developing country, lacks research in many areas. It is the sixth largest population of the world (Ahmed & bin Mohamad, 2014). 40% of its people live below the poverty line (Faize & Akhtar, 2020). The culture is mostly conventional and collectivistic. Resolving day to day problems and psychosocial issues are difficult, even for the educated population (Husain, 2018, 2019; Husain & Faize, 2020; Husain, Gulzar, & Tofail, 2016). Improving the literacy rate through imparting quality education is badly needed to improve the basic cognitive skills of the people, so that they could resolve their problems in the best possible ways available to them. The education system in Pakistan has never been clearly evaluated against the fulfillment of the purpose of education. The National Education Policy 2007 (Aly, 2007) have set some ideal objectives of education for the students by which the students are deemed to be highly knowledgeable, skillful, productive, creative, and confident individuals who have advanced reasoning and perception of problem solving skills; are committed to democratic values and human rights; are open to new ideas; have a sense of personal responsibility; are committed to moral values; have assimilated the national

culture; are able to tolerate and value differences in opinion, faith and culture; have empathy towards all of humanity; and can participate in the productive activities in society for the common good, using social and physical sciences and technology. These objectives are well associated with the principles mentioned in Bloom’s Taxonomy. The on-ground situation, however, has never been tested. The general perception of Pakistani education reflects quite lower standards in this regard which is supported by the scholars of the country. Students in Pakistan are not skilled enough to utilize modern sources of information management (Faize et al., 2018). Students, even in higher educational levels, have difficulties in incorporating ethical standards in life (Faize, 2015). Teachers, on the other hand, possess severe levels of stress, anxiety, and depression (Husain, Gulzar, Aqeel, et al., 2016). The current study, therefore, was the first ever effort in Pakistan to evaluate

the effectiveness of Pakistani education against the educational objectives established in Bloom’s Taxonomy.

**Method**

**Participants**

The participants of the study were 1485 students (447 girls & 1038 boys) of different grades from play group to intermediate (class 12th). They belonged to two highly reputed private schools in Abbottabad, Pakistan. Abbottabad is considered a city famous for schooling and private schools are considered better than the governmental schools in Pakistan (Anwar et al., 2014; Shah & Management, 2003). Participants were analyzed on the bases of gender, academic grades, and educational levels (table 1).

		<i>n</i>	1	2	3	4	5	6	7	8	9	10	11	12	13
<i>Overall</i>		1485	41	69	43	78	30	4	44	54	69	35	52	55	53
<i>Gender</i>	<i>Females</i>	447	35	66	47	76	29	7	43	58	71	39	56	54	55
	<i>Males</i>	1038	43	71	42	79	31	3	45	53	69	34	50	56	52
<i>Level</i>	<i>Elementary</i>	632	23	63	44	71	25	5	39	54	64	30	50	37	47
	<i>Secondary</i>	518	48	71	38	78	40	3	47	55	73	39	52	63	57
	<i>Higher Secondary</i>	335	62	78	49	89	27	4	52	54	74	40	55	77	60
<i>Class</i>	<i>Play Group</i>	5	9	40	38	28	10	11	23	44	50	24	35	55	42
	<i>Nursery</i>	71	13	42	41	60	16	6	30	49	63	25	42	42	44
	<i>Prep</i>	94	15	61	40	72	21	6	36	48	61	27	46	29	42
	<i>One</i>	102	21	63	51	73	26	5	40	57	64	34	58	36	50
	<i>Two</i>	90	24	69	56	76	26	5	43	54	66	31	60	33	49
	<i>Three</i>	64	26	59	54	79	25	7	42	56	68	40	65	43	54
	<i>Four</i>	99	27	69	30	68	32	4	38	55	61	26	40	30	43
	<i>Five</i>	107	31	73	41	72	27	4	42	57	65	31	45	46	49
	<i>Six</i>	112	41	79	27	75	23	4	42	50	70	31	40	48	48
	<i>Seven</i>	118	47	67	43	81	38	3	47	54	73	40	53	67	57
	<i>Eight</i>	84	57	69	40	82	45	4	50	62	77	43	61	65	62
	<i>Nine</i>	129	50	67	35	73	46	3	46	54	75	41	55	69	59
<i>Ten</i>	75	48	75	52	84	49	3	52	58	73	40	55	66	58	
<i>Eleven</i>	177	60	76	49	85	25	2	50	48	75	38	53	74	58	
<i>Twelve</i>	158	65	79	49	93	29	6	54	59	71	41	57	81	62	

**Table 1: Categorized Percentiles of Cognitive and Affective domains and their Sub-domains**

Note. 1=Remembering, 2=Understanding, 3=Applying, 4=Analyzing, 5=Evaluating, 6=Creating, 7=Cognitive Domain Total  
 8=Receiving Phenomenon, 9=Responding to Phenomenon, 10=Valuing, 11=Organization, 12=Internalizes Values,  
 13=Affective Domain Total

### Instrument

A specific Interview schedule was designed for the study which included questions to measure the factors within the cognitive and affective domains of Bloom Taxonomy. The interview schedule was assisted by different cards which were shown to the students to take their responses. These cards consisted of questions, puzzles and pictures which helped the researchers to assess the students' capabilities through the areas defined in Bloom's taxonomy. The students were also asked to speak on a given topic for three minutes so that their speech and communication related skills could be studied. The researchers were teachers themselves and had a vast teaching experience. During the interviews, they evaluated the students through different projective and non-projective techniques to assess the levels of mastery the students had at each factor of the cognitive and affective domains. They finally gave marks to each student for each of the sub-factors of the cognitive and affective domains. Each one of the sub-factors (remembering, understanding, applying, analyzing, evaluating, creating, receiving phenomenon, responding to phenomenon, valuing, organizing, and internalizing values) were given a score out of 10. These scores were converted into percentages during the final analyses.

### Procedure

The researchers took written permission from parents and school management. Only the students who volunteered for the study and had permission from their parents were involved. The participants were interviewed separately. The entire time frame for data collection was 6 months during which the researchers paid daily visits to the schools. Data gathered were analyzed using Statistical Package for Social Sciences (SPSS)

and Microsoft Excel.

### Results

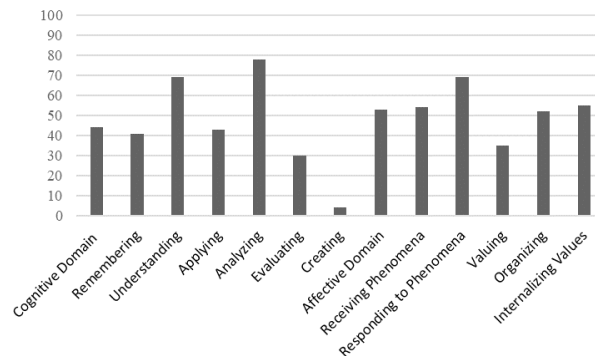


Figure 1: Students' performance in the cognitive and affective domains

The results revealed that the educational objectives as described through Bloom's Taxonomy had not been satisfactorily achieved in Pakistani education. Figure 1 and table 1 both reflect a poor performance of the understudied students (N=1485) in relation to the cognitive and affective domains and their sub-categories. Students' overall score in the cognitive domain was just 44% and in the affective domain it was just 53%. The scores on the sub-categories of cognitive and affective domains were mostly not appreciable i.e. remembering 41%, understanding 69%, applying 43%, analyzing 78%, evaluating 30%, creating 4%, receiving phenomenon 54%, responding to phenomenon 69%, valuing 35%, organizing 52%, and internalizing values 55%. Students' highest score was for analyzing and the lowest score was for creating.

Variable	Cognitive		Affective		t(1483)	p	Cohen's d
	M	SD	M	SD			
Domain	44.35	12.96	53.18	16.16	20.68	.000	0.537

Table 2 : Difference between the cognitive and affective domains

A statistically significant difference with medium effect size was found between the overall scores for cognitive and affective domains (table 2). Scores achieved in the affective

domain (M=53.18; SD=16.16) were comparatively higher (p=.000; Cohen’s d=0.53) than the scores achieved in the cognitive domain (M=44.35; SD=12.96).

Results also revealed significant differences between boys (n=1038) and girls (n=447) on the cognitive and affective domains (table 3). Boys had comparatively higher scores on the overall cognitive domain (M=44.86 vs 43.20; p=.024); and remembering (M=42.94 vs 35.09; p=.000), understanding (M=70.91 vs 65.55; p=.008), and analyzing (M=78.52 vs 75.70; p=.024). Girls, on the other hand, had comparatively higher scores on the overall affective domain (M=55.38 vs 52.24; p=.001); and applying (M=46.69 vs 41.61; p=.000), creating (M=6.84 vs 3.30; p=.000), receiving phenomena (M=57.73 vs 52.68; p=.001), valuing (M=38.76 vs 33.85; p=.000), and organizing (M=56.19 vs 50.15; p=.000).

The study also analyzed the understudied areas of cognitive and affective domains based on the educational level of the students. The elementary level included classes play group to class five (n=632). The secondary level included classes from six to eight (n=518). The higher secondary level included classes from nine to twelve (n=335). These levels are the common levels of education defined in Pakistan. It was

revealed that the students belonging to the higher secondary level of education scored comparatively higher on the overall cognitive domain (M=51.63 vs 46.56 of secondary & 38.70 of elementary level; p<.001), the overall affective domain (M=59.79 vs 56.52 of secondary & 46.96 of elementary level; p<.001), remembering (M=62.42 vs 48.14 of secondary & 22.80 of elementary level; p<.001), understanding (M=77.87 vs 71.06 of secondary & 63.30 of elementary level; p<.001), applying (M=48.84 vs 38.27 of secondary & 44.12 of elementary level; p<.001), analyzing (M=89.12 vs 78.34 of secondary & 71.05 of elementary level; p<.001), responding to phenomena (M=73.52 vs 73.49 of secondary & 63.78 of elementary level; p<.001), valuing (M=39.61 vs 38.89 of secondary & 30.14 of elementary level; p<.001), organizing (M=55.06 vs 52.24 of secondary & 50.10 of elementary level; p<.001), and internalizing values (M=77.37 vs 63.06 of secondary & 36.93 of elementary level; p<.001). Students of secondary level of education scored higher on evaluating (M=39.51 vs 27.01 of higher secondary & 24.94 of elementary level; p<.001). Students of elementary level of education scored higher on creating (M=5.31 vs 3.47 of secondary & 3.96 of elementary level; p<.001).

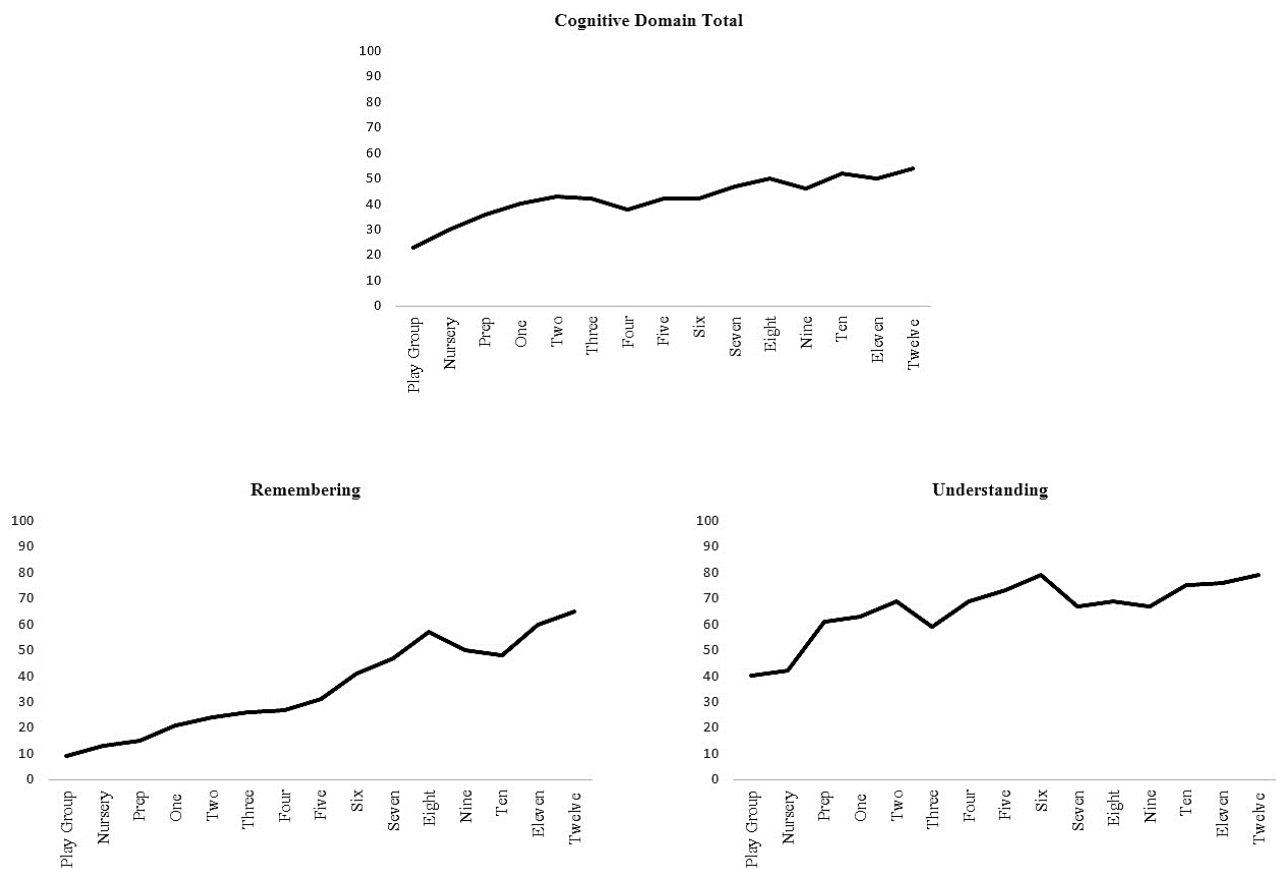
Variable	Girls		Boys		t(1483)	p	Cohen’s d
	M	SD	M	SD			
Cognitive Domain	43.20	13.00	44.86	12.93	2.27	.024	0.128
Remembering	35.09	21.12	42.94	24.04	5.97	.000	0.338
Understanding	65.55	36.36	70.91	35.34	2.66	.008	0.150
Applying	46.69	24.70	41.61	21.67	3.97	.000	0.225
Analyzing	75.70	24.59	78.52	20.76	2.26	.024	0.128
Evaluating	28.77	33.57	31.23	32.97	1.32	.189	0.074
Creating	6.84	9.21	3.30	5.63	9.05	.000	0.513
Affective Domain	55.38	16.24	52.24	16.04	3.45	.001	0.195
Receiving Phenomena	57.73	23.50	52.68	26.52	3.48	.001	0.197
Responding to Phenomena	70.73	19.46	68.77	22.16	1.62	.106	0.092
Valuing	38.76	17.99	33.85	17.32	4.95	.000	0.280
Organizing	56.19	21.35	50.15	22.88	4.76	.000	0.269
Internalizing Values	53.52	41.91	55.88	41.46	1.00	.317	0.057

Table 3: Gender-based differences between cognitive and affective domains

Variable	Elementary		Secondary		Higher Secondary		f(1482)	$\eta^2$
	M	SD	M	SD	M	SD		
Cognitive Domain	38.70	12.93	46.56	12.09	51.63	9.16	143.38***	0.16
Remembering	22.80	14.09	48.14	18.63	62.42	19.25	673.32***	0.48
Understanding	63.30	38.66	71.06	34.50	77.87	29.27	19.68***	0.03
Applying	44.12	24.71	38.27	22.89	48.84	16.17	23.68***	0.03
Analyzing	71.05	22.93	78.34	22.60	89.12	12.42	82.25***	0.10
Evaluating	24.94	30.95	39.51	36.22	27.01	29.11	31.05***	0.04
Creating	5.31	7.80	3.47	5.72	3.96	7.38	10.44***	0.01
Affective Domain	46.96	14.59	56.52	16.57	59.79	14.11	96.90***	0.12
Receiving Phenomena	53.96	20.12	54.92	28.31	53.55	30.65	0.34	0.00
Responding to Phenomena	63.78	20.66	73.49	20.54	73.52	21.73	39.41***	0.05
Valuing	30.14	17.00	38.89	17.91	39.61	15.95	50.91***	0.06
Organizing	50.10	24.79	52.24	22.53	55.06	17.48	5.36***	0.01
Internalizing Values	36.93	37.89	63.06	40.34	77.37	35.16	139.87***	0.16

\*\*\*p < .001.

**Table 4: Analysis of variance between the cognitive and affective domains and their sub-domains by Educational Levels i.e. Elementary, Secondary and Higher Secondary**



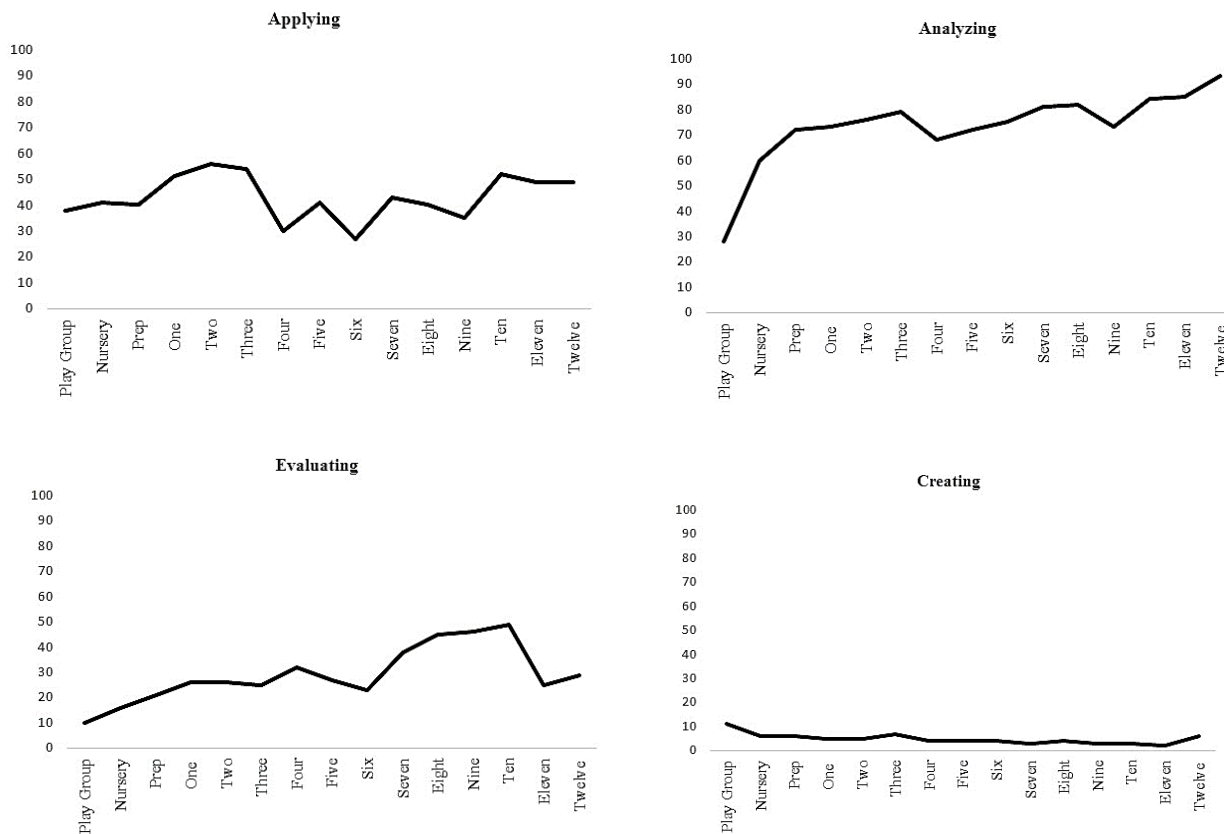


Figure 2. Class-wise performance in Cognitive Domain Total and sub-domains.

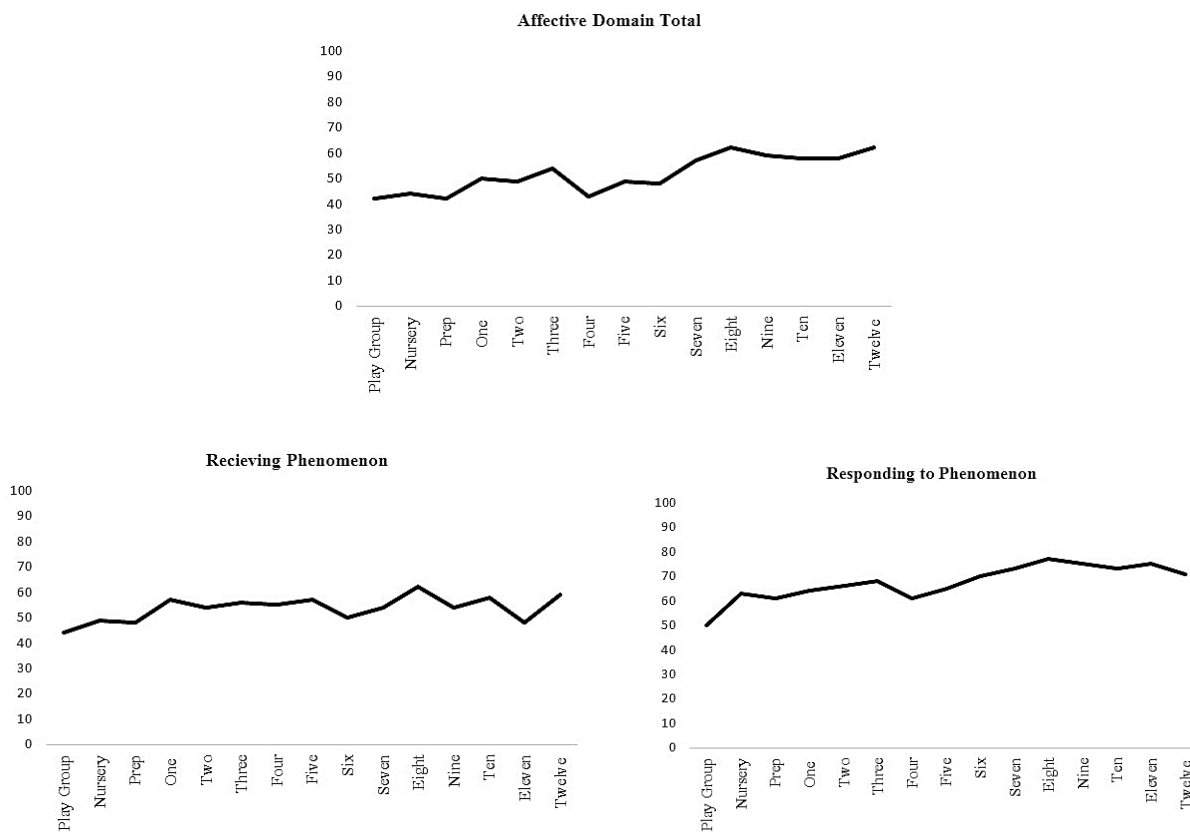




Figure 3. Class-wise Performance in Affective Domain Total and sub-domains.

The class-wise performance of the understudied students (figures 2 & 3; table 4) reflected a gradual class to class incline in all the sub-categories of cognitive and affective domains except evaluating and creating.

### Discussion

The current study examined if the purpose of education is being met in Pakistan by assessing the performance of a sample of students on various indicators from Bloom’s taxonomy. The results revealed that the educational objectives as described through Bloom’s Taxonomy had not been satisfactorily achieved in Pakistani education. The understudied students reflected a poor performance in relation to the cognitive and affective domains and their sub-categories. The performance of the understudied students was better in the affective domain as compared with the cognitive domain. Male students showed comparatively higher scores on the cognitive domain

and female students showed comparatively higher scores on the affective domain. The existing literature does not reflect any earlier studies which could have analyzed gender-based differences on the bases of cognitive and affective domains of Bloom’s taxonomy. Earlier studies on gender-based differences in academic performance have also revealed mixed results. Some studies reported males (Young & Fisler, 2000) and some studies reported females (Conger & Long, 2010; Sax & Harper, 2007; Shibley Hyde & Kling, 2001) to be better performers in academics. Some other studies reported no significant differences in this regard (Lindberg et al., 2010). Female students have been reported to have higher levels of satisfaction with academic life though (Kim & Sax, 2009; Maceli et al., 2011; Tessema et al., 2012). The higher scores on affective domains by Pakistani female students can be correlated with the gender-based values in the country whereby girls are conventionally trained to be ethically better than



boys. Higher scores on the cognitive domain by males, on the other hand, can be correlated with the fact that Pakistani boys are conventionally trained to be the bread earners. Instead of focusing on the moral aspects involved in education, they are groomed in a way that they become more job-oriented and try to perform better in those academic fields which guarantee professional outcomes.

The current study evaluated students' performance through Bloom's Taxonomy which is well-recognized in educational assessments (Eber & Parker, 2007) and well fits in the earlier models (Erikson, 1968; Kohlberg, 1969) of education. Researchers have also defined ways to evaluate students through Bloom's taxonomy (Eber & Parker, 2007). The traditional learning in educational institutions mostly involves recalling the memorized facts (Crooks, 1988); thus, only the first level of learning is assessed, and the higher levels are ignored. This also means that the teachers teach at a lower level of cognition (Whittington & Newcomb, 1993).

The status and structure of education in Pakistan is not encouraging (Memon, 2007). The shortfalls in this structure are reflected through low enrollment at primary level of education, gender-based discrimination in educational facilities, lack of training provided to teachers, deficiency of proper teaching material, poor physical infrastructure of schools, low financial provisions by the government, and poor quality of management, monitoring, supervision, and training (Memon, 2007). The focus of education in the country, as set by the government, revolves around protecting the ideological bases of the country, national unity, individual development, social development, economic progress, equality of opportunity for education, emphasis on vocational education, and improving the quality of education (Khan & Mahmood, 1997). Apart from these ideal standards, no educational assessment in the country, however, was carried out to measure the quality of

education, especially applying the overall principles set in Bloom's Taxonomy and assessing multiple educational levels.

The findings of the current study must sensitize the stakeholders e.g. the policy makers, educational management, teachers, students, and parents to feel a dire need to uplift the educational structure of the country. The foremost principle which must be followed in this regard is to think of a change, a change which could welcome and incorporate the higher objectives of education as described in Bloom's taxonomy. Another core principle which needs special consideration is to correlate educational objectives with the overall psychosocial wellness of the student. To achieve the higher levels of cognition, a moderate level of discomfort must be felt with the current level of cognitive functioning (Evans, 1996). The prime goal of education is to improve the quality of life of an individual and to bring social prosperity. The authors propose the following suggestions to improve the quality of education in Pakistan:

a) The curriculum of different levels of education must incorporate the real-life psychosocial issues of concern and the practical dimensions of the topics being taught.

b) Curriculum should focus on a culture of constant change and progress in knowledge instead of considering the bookish knowledge as ultimate; students should be encouraged to gather knowledge from the Internet, apart from the recommended literature.

c) Activity based learning must be encouraged at all the levels of education instead of memory and retention.

d) Constant capacity building workshops should be organized for the teachers of all educational levels. Teachers should understand both the fundamental and the advanced objectives of education. They should be enabled for the overall psychosocial grooming of the students, including psychological happiness and character building.

## Conclusion

The current study was the first ever effort in Pakistan to evaluate the quality of education being imparted at different academic levels. The principles set in Bloom's taxonomy were utilized to measure student's performance. The findings revealed unsatisfactory performances in the cognitive and affective domains of education. The study proposed feasible actions to improve the educational system in the country e.g. changes in the existing curriculum to incorporate the psychosocial aspects of grooming. The study was limited to only one city of Pakistan and the findings were expected to be generalized further. Future researchers are encouraged to carry out similar studies in other parts of the country too. Studying quality of education in Pakistan is an area which has not yet attracted the researchers and holds serious knowledge-gaps. Instead of focusing merely on student enrollments and the GPA, Pakistani researchers in Education and Educational Psychology are advised to focus more on the qualitative aspects of education. They should be inclined to analyze how well the objectives of education are being gratified and how well the education is playing its role in character building of the students.

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