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Epistemological Access to Higher Education and Service Quality in Pakistan: Students Perspective

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Abstract

The objective of this research was to investigate the extent to which higher education institutions facilitate epistemological access to students, to promote their personal and professional achievements. The scholar examined the issue of access in the field of higher education and redefined access as "epistemological access." This concept posits that admission to a university is merely a component of the access process, rather than the entirety of it, as it fails to provide insight into the ultimate outcomes of such access. Furthermore, the research investigated the relative impact of different factors, namely: 1) institutional initiatives, 2) instructional strategies employed by educators, 3) individual exertions, 4) epistemological accessibility, and 5) academic achievement of students. The research conducted was quantitative and utilized a correlational methodology within the framework of the positivist paradigm. The study employed a multistage technique for sample selection. The study involved a sample of 1600 undergraduate students in their 6th semester, drawn from two faculties, namely Information and Technology, and Business School, across eight universities in the province of Punjab and Islamabad, Pakistan. The universities were a mix of both private and public institutions. The data was obtained via a survey administered during the academic term of Fall 2018-2019. The data underwent cleaning, organization, and storage using SPSS version 21. Sophisticated statistical methodologies such as ANOVA, correlation analysis, step-wise regression, mediation analysis, and structural equation modeling were employed to address research inquiries through the utilization of suitable statistical software. Research has verified that individuals involved in education, pedagogy, and policy-making must adopt a broad and unrestricted understanding of epistemological access to progress from access to success. The research has additionally validated that the theoreticalmodel put forth in the conceptual framework aligns with a comprehensive methodology for assessing epistemological entry into post-secondary education.

Keywords: Epistemological access, quality, equity, pedagogic quality, teacher-student relationship, personal competency, and student success

Introduction

The contemporary societies characterized by postmodernism, globalization, and technological advancements have led to a shift in focus from physical capital to intellectual capital. This shift has contributed to the growth of higher education institutions worldwide (Zubair, Haider, and Dilshad, 2015; Gubareva and Kovalenko (2018). Jibeen and Khan (2015) argue that the internationalization of education has expanded opportunities for both public and private sectors to pursue higher education, thereby contributing to the economic advancement of both developed and developing nations.

The Higher Education System of Pakistan has faced various challenges such as political reluctance, inadequate resources, deficient infrastructure, traditional values, inadequate planning and service delivery, and insufficient funding. As a result, the system's sustainability remains uncertain (Usman, 2014; Osman & Subhani, 2016).

According to Omar, the Pakistan Economic Survey 2014-2015 (Population Statistics) reveals that the projected population of individuals aged 15-24 in 2015 was 39.92 million, while the estimated enrollment in higher education was 2.6 million (Pakistan Today, 2016, p.na). According to statistical data, the Net Enrolment Rate (NER) for higher education in Pakistan wasonly 6.51 percent in the year 2015. Who bears responsibility for the situation in which only 6% of the eligible population are granted access to higher education? The present analysis does not address the issue of the repercussions of missed opportunities by the underprivileged, which is a matter of great concern for the country's economy. Instead, it highlights the impact of 6%who were granted physical entry into the university but were unable to obtain meaningful access to itsresources. According to Sehoole and Adeyemo (2016), despite being granted access to the facility, students are not receiving adequate attention to achieve meaningful results. The questions of what is learned, how physical access is experienced, and the ability to translate academic experience into purposeful professional experiences to achieve satisfaction from the provided access remain unanswered, as noted by McCowan (2013) and Elvira, Imants, Dankbaar, and Segers (2017).

Literature Review

The concept of 'access' in higher education can be understood as the attainment of a place within a higher education institution. However, 'epistemological accesses refers to the meaningfulaccess to resources such as infrastructure, university services, teacher efforts, and the learning environment. This access is crucial in transforming the educational experiences of students into meaningful opportunities at a broader level. Scholars such as Wheelahan (2007), Morrow (2009), Motala, Dieltiens & Sayed (2009), Clegg (2011), Sehoole & Adeyemo (2016), and Pitsoe & Letseka (2018) have explored this concept. According to McCowan's (2016) assertion, obtaining admission into a higher education institution is merely the first step, and it is crucial to consider factors such as the knowledge gained from this opportunity, the individual's experience

throughout the process, and their ability to effectively utilize the resulting qualifications to create meaningful opportunities. The issue of epistemological confusion is not only a difficulty faced by South Africa, but also by the global community in the context of deliberate education (Letseka & Pitsoe, 2014; Lotz-Sisitka, Wals, Kronlid, & McGarry, 2015).

While no specific research has been conducted on epistemological access in Pakistan, several studies have explored this concept of quality education, quality services, job mismatch, and customer satisfaction (Farooq, Chaudhry, Shafiq, & Berhanu, 2011; Arif, Ilyas, & Hameed, 2017). The present research contends that the success of students cannot be guaranteed solely by providing them with physical or formal access. Instead, it is imperative to address epistemological access, which contradicts physical access, to facilitate genuine learning (du Plooy & Zilindile, 2014; Muller, 2014).

Quality of Higher Education: An Epistemological Lens

There are various perspectives to examine the contributions of intellectuals who have enhanced the discourse on the standard of higher education. The terms "quality of higher education" and "epistemological access" are interrelated (Baily & Holmarsdottir, 2015) in the academic literature.

According to Kok and McDonald (2017), the prevailing notions of quality in higher education (HE) are centered on the concepts of "improvement" and "excellence." According to Harvey and his colleagues, the concept of "quality as transformation" represents the highest level of achievement that every higher education institution should strive for. This idea has been discussed in various publications by Harvey and Knight (1996), Harvey and Williams (2010), and Williams and Harvey (2015). The approach proposed by Elassy (2015) advocates for achieving a balance between enhancement and maintenance.

The study has employed five distinct conceptions of quality, namely, quality as improvement, quality as excellence, quality as transformation, quality for establishing requirements, norms, and criteria, and quality as fulfillment, as identified by Harvey and Green (1993), to assess the quality of university efforts.

Teachers' Pedagogic Efforts to Assure Epistemological Access

Despite the increase in physical expansion of Higher Education Institutions (HEIs), limited access to knowledge has hindered epistemological access to these institutions. The inquirypertains to the correlation between alterations in the epistemological framework and the requisitemodifications in pedagogical strategies that educators must undertake to facilitate epistemological accessibility (Lotz-Sisitka, 2009; Lotz-Sisitka, Wals, Kronlid, & McGarry, 2015).

The concept of epistemological access holds significant implications for educators in terms of avoiding erroneous teaching, inadequate teaching, and lack of teaching. To enhance student engagement, teachers must provide authentic learning environments and opportunities for practical experience (Zepke, 2018). The discontentment of students regarding the facilities

offered at institutions of higher education has led to the squandering of both tangible andintangible resources (Omar & Arif, 2020). Additionally, it has impeded the students' eagerness to avail themselves of the opportunities provided. The creation of a conducive learning environment that enhances academic experiences and translates them into successful life-long learning experiences is contingent upon the collaborative efforts of management and teachers (Claxton & Carr, 2004). This assertion is supported by the works of Yang, Schneller, and Roche (2015) as well as Becker (2017).

The standard of curriculum may restrict the extent of epistemological access with regard to pedagogical quality. The current pedagogical methods have been observed to yield substandard outcomes in terms of the academic output of students, as indicated by the research conducted by Khan and Usman (2015) and Omar and Chaudhry (2019). This has led to a sense of discontent among the student population. The literature suggests that despite recent research findings (Saunders & Ramírez, 2017; Gourlay & Stevenson, 2017; Omar, Asif, & Madad, 2020), a significant number of individuals continue to adhere to conventional methods of education, which prioritize the memorization of information through repetitive learning techniques. When educators accept assignments that are below the expected level and reduce the assessmentcriteria, it can have a negative impact on the quality of the content produced. This can ultimately lead to a lack of access to the intellectual resources provided to students, which can hinder their ability to gain knowledge and understanding.

The researcher has investigated the epistemological pedagogical access to higher education through the utilization of two pertinent constructs, namely, Teacher Pedagogic Quality (TPQ) and Teacher-Student Relationship (TSR).

Personal Factors Affecting Epistemological Access to Higher Education

Epistemology, similar to the domain of education, has undergone a developmental process, (Arslantaş,2015). The phenomenon is distinguished by the existence of cognitive convictionsthat exert an influence on the acquisition of knowledge. The preexisting epistemological beliefs of students can influence their response to instruction, and any modification in these beliefs can lead to a corresponding change in the interpretation of the instruction. This has been noted in studies conducted by Hofer and Pintrich (2004), Hofer and Sinatra (2010), and Hofer (2016). It has been observed that the beliefs of students are frequently underestimated by faculty members and higher education institutions (Becker, 2017 and Bowen 2018). The imposition of organizational epistemology may impede academic autonomy and adversely affect the quality of learning (Willingham-McLain, 2015; Khawar & Arif, 2019). The notion of personal epistemology is a crucial foundation for continuous learning, which in turn promotes self- directed learning (Bryson, 2014, 2016). The current study presents a conceptualization of the construct of "personal effort" utilizing Smith and Spurling's (1999) comprehensive viewpoint of life-long learning. The constructs of the study are based on personal competency, participation inuniversity activities, personal effort towards improvement, and personal willingness.

Epistemological Access Leading to Success

There is a significant discourse among scholars regarding strategies to guarantee academic achievement among students in tertiary education. The significance of educational success, as measured by academic achievement, has been emphasized in the scholarly literature (Oh & Kim, 2016; Nyström, Jackson, & SalminenKarlsson, 2019). The notion of meritocracy has beenwidely accepted as a prevailing perspective on student success in higher education (Beilin, 2016). The concept under consideration is complex and challenging to delineate. The scholar hasendeavored to investigate the achievement of students by examining their level of involvement and contentment. Specifically, the researcher has operationalized student satisfaction as a measure of the caliber of services provided, which in turn fosters student engagement. The latter is characterized as a voluntary commitment to participate in all educational activities, both insideand outside of the classroom. According to Kahu and Nelson (2018), the involvement of studentsis a crucial factor in achieving success, and institutional efforts to promote student engagement serve as intermediary mechanisms to ensure success. According to Day, van Blankenstein,Westenberg, and Admiraal (2018), the success of students is impacted by the environment of the university, and it is the duty of the management to establish and maintain an environment that maximizes student success. The matter at hand encompasses both the interplay amongst students (Coates & Matthews, 2018) as well as the dynamic between students and educators.

In order to enhance the educational experience and promote academic achievement, institutional leadership often seeks to improve the cultural and epistemological accessibility of higher education establishments. According to Michalski, Cunningham, and Henry (2017), the campus atmosphere and the demeanor of professors are purportedly conducive to fostering a sense of inclusion and enabling students to engage in academic pursuits. The considerate demeanor of instructors, coupled with their care, empathy, and promptness, fosters a feeling of affiliation among students towards the university.

The Research Model

The research framework has been constructed on two basic assumptions:

University efforts + Teachers' pedagogic efforts = Epistemological access

Epistemological access + Personal efforts = Student success

After conducting a thorough analysis of the relevant literature, the researchers arrived at the conclusion that the provision of high-quality services by higher education institutions, including the efforts of both the university and its faculty, is essential for facilitating purposeful learning among students and preparing them to tackle the challenges of the job market. Moreover,individual factors such as personal competence, involvement in academic pursuits, self-directed endeavors for advancement, and personal motivation are essential constituents in attaining epistemic accessibility to existing resources. These factors contribute to student satisfaction and engagement, ultimately leading to student success (Morrow, 2009). The objective of this investigation was to analyze the interaction among different variables that affect epistemological access. These variables encompass university programs aimed at promoting equity and quality, pedagogical strategies employed by teachers, and individual factors such as personal competence, involvement in university activities, self-directed efforts for improvement, and

willingness to learn. The study further aimed to explore how these factors collectively contribute to student success, as measured by student satisfaction and engagement. Therefore, the conceptual model was ultimately concluded as:

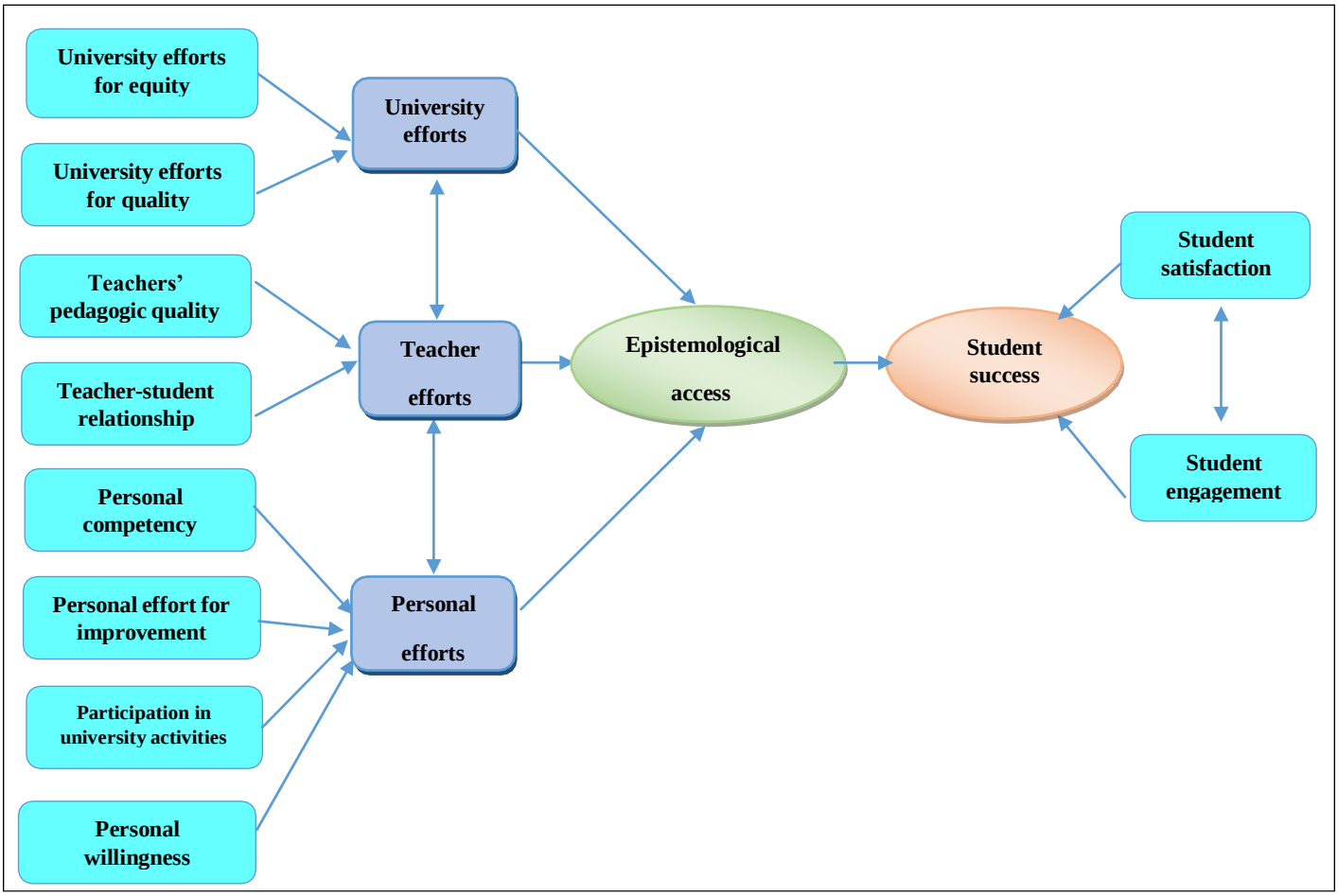

Figure 1: Conceptual framework of the study

Research Questions

The research was framed the following questions to seek answers for the study while using a quantitative research method.

1. What is the contribution of university efforts, teacher efforts, and personal efforts in providing epistemological access as perceived by the students of public and private universities of Pakistan?

2. What is the interactive effect of university efforts, teacher efforts, and personal efforts on epistemological access as perceived by the students of public and private universities of Pakistan?

3. What is the predictive value of epistemological access leading to ultimate student success as perceived by the students of public and private universities of Pakistan?

Methodology

The study was quantitative in nature and relied heavily on a positivist paradigm. To find answers to the research questions, correlational research design and survey research methods were used.

Population and Sampling

The study's population consisted of male and female students from both public and private universities and higher education institutions in Punjab and Islamabad. The study sample consisted of eight universities, four of which were public and four were private. The selected methodology for sampling employed by the researcher was the multistage sampling technique. The study employed criterion sampling to select two faculties, namely, Information and Technology, and Business School, from each university. The criteria for selection were based on the faculties' age, establishment, and provision of professional education. The study's sample consisted of undergraduate students in their sixth semester, and a random sampling method was employed to select sections from each faculty. In total, 1600 students were selected for the study, with 800 students chosen from each of the faculties across eight universities, comprising four private and four public institutions.

Instrumentation

A self-constructed questionnaire comprising closed-ended items (101) was administered to record perceptions of the students.

Data Analysis

To address each question, a particular type of analysis— confirmatory factor analysis, descriptive analysis, correlation analysis, multiple linear stepwise regression analysis, and structure equation modeling—was performed.

Confirmatory Factor Analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy was applied after calculating Cronbach Alpha. The results are mentioned in the table below:

Table 1
KMO and Bartlett's Test for Sampling Adequacy

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.903
Bartlett's Test of Sphericity	Approx. Chi-Square	68787.6
	Df	6105
	Sig.	.000

The questionnaire items that assess diverse facets of epistemological access to higher education were subjected to common factor analysis for factorization. In total, 29 components were

extracted through 25 iterations. The Screen plot indicated the extraction of ten factors, which accounted for 60.91% of the overall variance. The researchers assessed the internal consistency of each subscale or factor through the utilization of Cronbach's alpha. The results indicated that all factors met the minimum cut point, with a value of more than 0.6, as reported by Wang (2003).

Table 2

Confirmatory Factor Analysis

No	Factors	Cronbach Alpha
1	University efforts for equity (UEE)	0.649
2	University efforts for quality (UEQ)	0.758
3	Teacher pedagogic quality (TPQ)	0.735
4	Teacher-student relationship (TSR)	0.719
5	Personal Competency (PCOM)	0.882
6	Personal efforts for improvement (PEI	0.783
7	Participation in university activities (PUA)	0.837
8	Personal willingness (PW)	0.650
9	Epistemological access (EA)	0.849
10	Student success (SS)	0.916

Findings and Conclusions

Research Question1: What is the contribution of university efforts, teacher efforts, and personal efforts in providing epistemological access as perceived by the students of public and private universities of Pakistan?

To get answers to the question, descriptive statistics was applied which resulted in the following percentage for each factor and subfactor reflected in the table:

Table 3

Descriptive Statistics of all Factors and Sub-factors

FACTOR	DISAGREEMENT	AGREEMENT	GAP
UEE	34	58	-24
UEQ	64	25	-39
TPQ	53	39	-14
TSR	48	44	-4
PCOM	46	46	-
PUA	72	15	-75
PEI	61	25	-36
PW	38	55	-17
EA	56	36	-20
SS	56	34	-22

Overall, descriptive analysis of the ten factors—UEE, UEQ, TPQ, TSR, PCOM, PUA, PEI, PW, EA, SS—showed that the mean score for dissatisfaction was 34,64,53,48,46,72,61,38,56, and 56; whereas, mean score for satisfaction was 58,25,39,44,46,15,25,55,36, and 34. The mean score for dissatisfaction was higher than that of satisfaction for all factors, except for PCOM. In the case of PCOM, the mean score for dissatisfaction was equal to that of satisfaction, resulting in no difference in the gap points. There was a strong gap of -75 points for PUA, proceeded by a moderate gap of -24, -39, -36, -20, -22 points for UEE, UEQ, PEI, EA, and SS signaling immediate attention; however, there was a low gap of -14 and -17 points for TPQ and PW followed by a negligible gap of -4 point for TSR.

Regarding university efforts, measured through two sub-variables: university efforts for equity and university efforts for quality, the highest gap between satisfaction score and dissatisfaction score was found among the items regarding financial aid, economic facilitation, and fee concession. It showed that high fee dues did not go parallel with the income of parents and limited the options for students in selecting the university. It was observed that students exhibited a decreased inclination toward pursuing readmission in their respective academicinstitutions. Additionally, a deficiency in mathematical and statistical proficiencies, which are fundamental skills required for business and IT programs, was noted among the students.

Regarding teachers' pedagogic efforts, measured through two sub-variables: teacher pedagogic quality and teacher-student relationship, it was deduced from the findings that teachers' pedagogic efforts were playing a key role in providing epistemological access. Authentic pedagogy was creating excellence in learning while personal care, empathy, and responsiveness were motivating the students to make purposive use of the physical and intellectual resources available in the university. However, descriptive analysis of the factors revealed that authentic pedagogy was missing; many teachers neither refreshed their content regularly nor emphasized on submitting un-plagiarized original assignments. Students also complained about the lack of effective feedback from their teachers to improve their work and their unavailability after the class.

Regarding personal factors, as evaluated through four sub-factors including personal competency, personal effort towards improvement, participation in university activities, and student willingness, the descriptive analysis indicated that the students did not effectively utilize accessible resources and demonstrated a decreased level of dedication towards self- improvement.

About epistemological access, it was determined that a smaller proportion of students from both public and private universities perceived their access to universities as meaningful. Students reported feeling inadequate in their ability to engage in deep learning, problem-solving, achieving lesson objectives, and fostering creativity. They were also found dissatisfied with learning outcomes, meaningful lessons, and practical approaches to learning: this dissatisfaction needs serious effort on the part of teachers, management, and policymakers.

Regarding student success, it was inferred that most of the students did not spread positive word of mouth about their academic experiences and they found the activities less engaging in terms of cognitive development, which resulted in a lack of association with campus life.

The Pearson product moment correlation was utilized to establish the relationship between the extracted factors, namely UEE, UEQ, TPQ, TSR, PCOM, PUA, PEI, PW, EA, and SS. The majority of the factors examined exhibited a positive and statistically significant correlation with one another. Further elaboration is provided in the following section.

Table 4
Correlation matrix of factors influencing epistemological access to higher education in Pakistan

	PW	PCOM	PEI	PUA	UEE	UEQ	TPQ	TSR	EPA	SSE
PW	1	.286**	.080**	.092**	.207**	.072**	.243**	.244**	.212**	.288**
PCOM		1	.166**	.382**	.072**	.179**	.336**	.364**	.328**	.427**
PEI			1	.286**	-.169**	.306**	.294**	.256**	.341**	.246**
PUA				1	-.059*	.170**	.205**	.193**	.223**	.262**
UEE					1	-.037	.029	.053*	.025	.082**
UEQ						1	.481**	.310**	.506**	.416**
TPQ							1	.609**	.706**	.562**
TSR								1	.528**	.608**
EA									1	.563**
SS										1

Pearson product moment correlation was applied to determine the relation among all extracted factors and sub-factors. The findings reflected that the highest positive correlation was found between teachers' pedagogic quality and epistemological access (r=.706**; p<.000), which revealed that improving pedagogic quality was imperative for purposeful access to higher education. Similarly, a high correlation was found between teacher-student relationship and student success (r=.608**; p<.000) which spotlighted to develop an effective and supportive relation between teachers and students (Heikkilä, Lonka, Nieminen, & Niemivirta, 2012).

University efforts for quality were moderately associated with epistemological access and student success (r=.506**; p<.000; r=.416**; p<.000) respectively, which showed that educational experiences of the students could be transformed into purposeful opportunities for professional proceedings by maintaining and enhancing quality of physical and intellectual resources. Epistemological access also had a moderate relationship with student success (r=.563**; p<.000), which showed that organizational philosophy affected the support services offered by the universities, which influenced the success of the students. Personal competency was also moderately and significantly correlated with student success (r=.427**; p<.000), which showed that students' facilitation in improving skills helped them to be successful learners. The

results also demonstrated that student engagement and student satisfaction led to epistemic success.

Research Question 2: What is the interactive effect of university efforts, teacher efforts, and personal factors on epistemological access as perceived by the students of public and private universities of Pakistan?

As the results cited in the correlation analysis portend that most of the factors were found to be positively and significantly correlated with each other, multiple linear regression using stepwise method was applied to identify the strong predictors of epistemological access to higher education. The conceptual framework specified five major variables out of which three variables— university effort, teachers' pedagogic effort, and personal factors—were treated as independent variables, and two variables—epistemological access, and student success—were treated as dependent variables. A total of ten factors and sub factors—UEE, UEQ, TPQ, TSR, PCOM, PUA, PEI, PW, EA, SS —were added in the model to further manipulate the results.

Multiple Linear Regression using Step-wise Method with Dependent Variable 1: Epistemological Access

Overall, five models were generated with five leading factors: TPQ, UEQ, TSR, PEI, and PCOM; whereas, four factors—PW, PUA, UEE, SS—were excluded from the model because they could not fetch significant results. The results of the model are depicted below:

Table 5
Multiple Linear Regression using stepwise Methods (Epistemological Access as Dependent Variable)

	Model	B	t-value	p-value
1	(Constant)		7.620	.000
	TPQ	.706	39.852	.000
2	(Constant)		2.189	.029
	TPQ	.602	30.894	.000
	UEQ	.217	11.124	.000
3	(Constant)		.322	.747
	TPQ	.512	22.267	.000
	UEQ	.213	11.114	.000
	TSR	.150	7.078	.000
4	(Constant)		-1.730	.084
	TPQ	.500	21.848	.000
	UEQ	.192	9.916	.000
	TSR	.138	6.560	.000
	PEI	.100	5.573	.000
5	(Constant)		-2.778	.006

TPQ	.488	21.251	.000
UEQ	.192	9.935	.000
TSR	.121	5.645	.000
PEI	.096	5.389	.000
PCOM	.070	3.850	.000

The results of multiple linear regression analysis (Epistemological Access as Dependent Variable) demonstrated that the constructed teachers' effort (TE) was the most powerful predictor of epistemological access (EA); however, teacher pedagogic quality (TPQ), a subfactor, strongly predicted (r=.706; P =.000) epistemological access (EA). Teacher- student relationship (TSR), the second sub factor, was the third most powerful predictor of epistemological access (EA) as model 3 explained that TPQ, UEQ, and TSR were collectively responsible for 87% variation in epistemological access to higher education (TPQ: r=.512,P=.000; UEQ: r=.213, P=.000; TSR: r=.150, P=.000).

There was no predictive relationship between university efforts for equity (UEE) and epistemological access (EA). UEE was not a distinguishing variable for EA and the reason was that all universities followed HEC guidelines uniformly for equitable access. Personal competency (PCOM) and personal effort for improvement (PEI) were found as weak predictors of epistemological access (EA).

In order to visualize epistemological access at public and private universities in Pakistan: student perspective, structure equation modeling (SEM) was implemented using R software (version 3.5.2). Path analysis was carried out to determine the impact of research variables on each other and to identify their individual and interactive effects. All effects (individual and interactive) are reported in terms of standardized regression coefficients that are referred as path coefficients. Two models were generated separately: one for key research factors only and the other including sub factors as well.

Structure Equation Modeling (SEM): Model-one

All 3 key variables—University effort (UE), teachers' pedagogic effort (TE), and personal effort (PE)—were plotted against epistemological access (EA) and student success (SS) to determine their individual and interactive effects.

The results of the path analysis with the standardized regression coefficients for key factors (key variables) have been presented below in Figure 4.14 and Table 4.37. The model fitted the data well with Chi-square= 9.443; p-value=0.009, RMSEA=0.048, CFI=0.996, and TLI=0.987. According to this path analysis, university efforts (both UEE and UEQ) had no director indirect effect either on epistemological access (EA) or student success (SS). Teachers' effortshad the strongest direct effect (0.75 and 0.37) on epistemological access (EA) and student success (SS), respectively; teachers' efforts also had an indirect effect on student success (SS) through epistemological access (EA). Personal efforts had a direct effect (0.16) on epistemological access (EA) and an indirect effect on student success (SS) through epistemological access (EA).

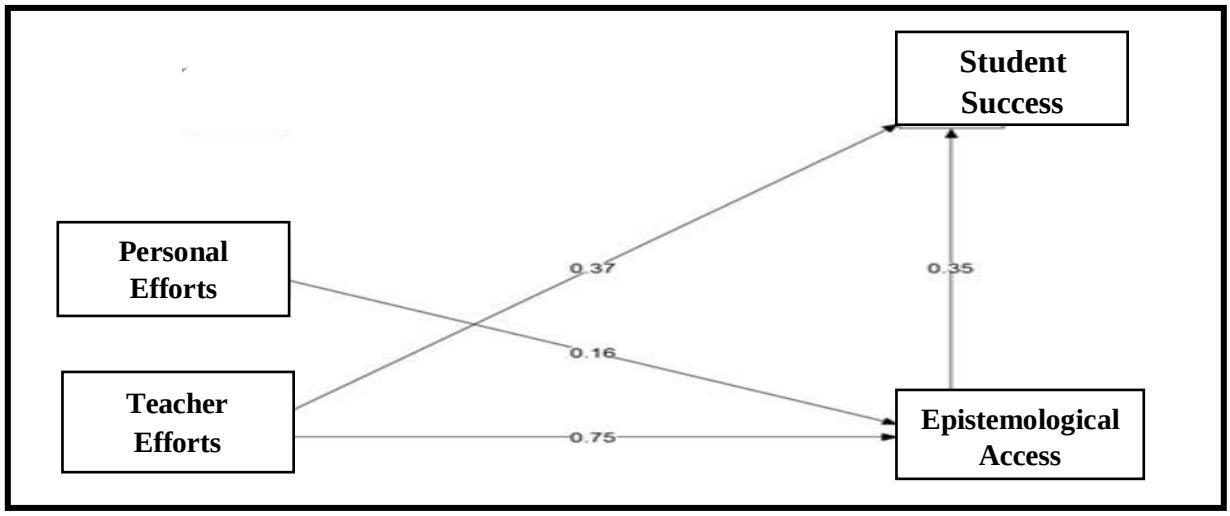

Figure 2: SEM: Direct and Indirect Effect of Key Factors on EA and SS (Model-1)

Table 6

Path Coefficients for Model-1

Regressions	Estimate	SE	P(> |z|)
Epistemological Access~			
Teachers' Pedagogic Efforts	0.753	0.021	0.000
Personal Efforts	0.161	0.022	0.000
Student Success~			
Epistemological Access	0.346	0.033	0.000
Teachers' Pedagogic Efforts	0.371	0.037	0.000

The results of path analysis for key factors illustrated that teachers' effort (TE) had a strong direct effect on exogenous variables EA (0.75) and SS (0.37). It showed that teachers' efforts through authentic pedagogy and technological pedagogical content knowledge along with the soft side of quality dimensions (responsiveness, empathy, and assurance) played a vital role in epistemological access to the provided intellectual resources, which led to student satisfaction and student engagement.

Structure Equation Modeling (SEM): Model-two

A total of 8 factors— UEE, UEQ, TPQ, TSR, PCOM, PEI, PEI, PUA, and PW—as endogenous variables were added with two factors—EA) and SS—as exogenous variables to determine their individual and interactive effects. The model results are shared in Figure 3.

Path coefficients were computed by a series of multiple regression analyses using the hypothesized model for sub factors. The results are presented in Table 7. The model had a good fit with chi-square = 11.496, p-value =0.009, CFI=0.997, TLI=0.985, and RMSEA=0.042. The model excluded university efforts for equity (UEE) from University efforts (UE) and participation in university activities (PUA) from personal efforts (PE).

Factors related to teachers' efforts had a strong effect on exogenous variables (EA and SS): teacher pedagogic quality (TPQ) had the strongest effect (0.55) on epistemological access (EA) followed by teacher-student relationship (TSR) with a stronger effect (0.37) on student success (SS). Regarding university efforts, only the subfactor university efforts for quality(UEQ) had a moderate effect (0.21) on both EA and SS. Regarding personal factors, personal willingness (PW) had a direct effect on student success (SS) only; whereas, both personal competency (PCOM) and teacher-student relationship (TSR) had weaker roles to play in EA and SS.

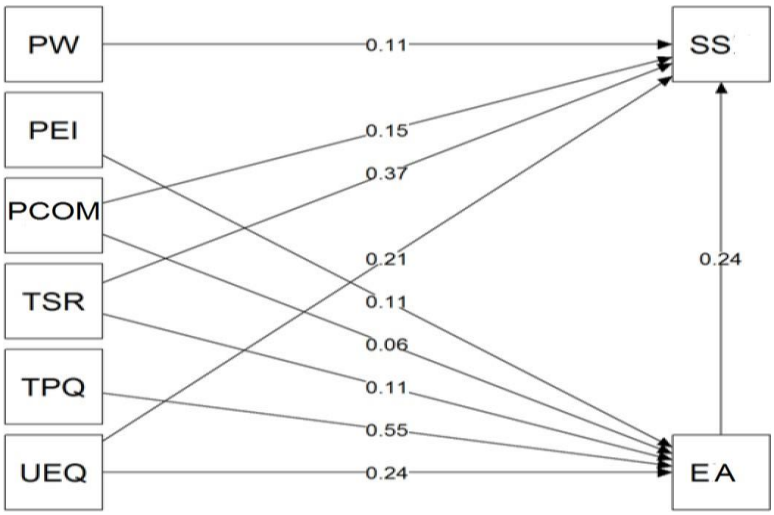

Figure 3: SEM: Direct and Indirect Effect of Sub-Factors on EA and SS (Model-2)

The results of structure equation modeling: direct and indirect effects of subfactor on EA and SS (Model-2) further supported the above findings in SEM: Model-1as teacher-student relationship (TSR) had a strong effect on exogenous variables (EA and SS). Teacher-student relations had a direct effect on both epistemological access (EA) and student success (SS), which showed that if teachers worked on the effective and support dimension of TSR, they could have improved the overall experience of the students on campus. Student satisfaction and student engagement increased with positive and productive interaction between the two, which resulted in increased academic achievement and thus success of the students. Teacher-student relationship also had an indirect effect on student success through epistemological access, which showed that the more the quality of this relationship improved, the more the success of students was predicted.

Table 7
Path Coefficients for Model-2

Regressions		Estimate	SE	P(> |z|)
Epistemological Access~				
	University efforts for quality	0.240	0.024	0.000
	Teacher pedagogic quality	0.555	0.028	0.000
	Teacher-student relationship	0.115	0.021	0.000
	Personal competency	0.058	0.014	0.000
	Personal efforts for improvement	0.106	0.020	0.000
Student Success~				
	Personal willingness	0.112	0.022	0.000
	Epistemological access	0.236	0.027	0.000
	Teacher-student relationship	0.369	0.024	0.000
	Personal competency	0.153	0.018	0.000
	University efforts for quality	0.213	0.029	0.000

The results of path analysis for sub factors complemented the results of path analysis for key factors such as teacher pedagogic quality (TPQ) had the strongest effect (0.55) on epistemological access (EA) followed by teacher-student relationship (TSR), which had a strong and direct effect (0.37, 0.11) on both SS & EA respectively. The findings concluded that if teachers worked on the effective and support dimension of TSR, they could improve the overall experience of the students on campus. TSR also had an indirect effect on SS through EA, which showed that the more the quality of this relationship improved, the more the success of students could be predicted.

Regarding the interactive effects of university efforts, pedagogical efforts, and personal factors on epistemological access, it was concluded that both hard (UEQ) and soft (TSR) aspects of university efforts were required leading to meaningful access of structural and pedagogic resources for ultimate student success (student satisfaction + student engagement). Notwithstanding, the aforementioned factors would lack significance in the absence of students' perception of competence and self-efficacy. The presence of low personal motivation was found to be a potential indicator of inadequate self-efficacy beliefs. Thus, unless the endeavours of the university are deemed equitable, that is, catering to the unique and varied needs of students, the desire for education and self-improvement is unlikely to progress significantly. Students still seem to rely on teachers' pedagogic content than taking self-regulated learning as a path to success, which is a norm of the 21st century.

Research Question 3: What is the predictive value of epistemological access leading to ultimate student success as perceived by the students of public and private universities of Pakistan?

Multiple linear regression using stepwise method was applied to identify the strong predictors of student success in higher education.

	Model	B	t-value	p-value
1	(Constant)		14.198	.000
	TSR	.608	30.589	.000
2	(Constant)		6.615	.000
	TSR	.431	19.720	.000
	EA	.335	15.330	.000
3	(Constant)		2.441	.015
	TSR	.381	17.402	.000
	EA	.299	13.877	.000
	PCOM	.190	9.671	.000
4	(Constant)		-1.052	.293
	TSR	.372	17.246	.000
	EA	.227	9.736	.000
	PCOM	.190	9.812	.000
	UEQ	.151	7.337	.000
5	(Constant)		-3.773	.000
	TSR	.359	16.702	.000
	EA	.218	9.362	.000
	PCOM	.169	8.634	.000
	UEQ	.157	7.653	.000
	PW	.095	5.069	.000
6	(Constant)		-4.169	.000
	TSR	.334	14.533	.000
	EA	.180	6.837	.000
	PCOM	.166	8.483	.000
	UEQ	.144	6.906	.000
	PW	.090	4.827	.000
	TPQ	.085	3.056	.002
7	(Constant)		-4.675	.000
	TSR	.334	14.534	.000
	EA	.176	6.703	.000
	PCOM	.148	7.162	.000
	UEQ	.141	6.737	.000
	PW	.092	4.923	.000
	TPQ	.084	3.051	.002
	PUA	.052	2.714	.007

8	(Constant)		-4.953	.000
	TSR	.333	14.509	.000
	EA	.176	6.696	.000
	PCOM	.146	7.064	.000
	UEQ	.142	6.827	.000
	PW	.084	4.446	.000
	TPQ	.085	3.074	.002
	PUA	.055	2.888	.004
	UEE	.037	2.075	.038

Multiple Linear Regression using Step-wise Method with Dependent Variable 2: Student Success

Overall, eight models were generated with eight leading factors: TSR, EA, PCOM, UEQ, PW, TPQ, PUA, and UEQ; whereas, one factor—PEI—was excluded from the model because it could not fetch a significant result. The results of the model are depicted below:

Table 8
Multiple Linear Regression using Step-wise Method (Student Success as Dependent Variable)

Multiple linear regression analysis results (Student Success as Dependent Variable) complemented the correlation results and illustrated that teacher-student relationship was singularly responsible for 60% of the variance in student success in higher education; moreover, teacher student relationship and epistemological access collectively influenced 76% of the variance in student success in higher education.

The results of this study confirmed that personal willingness (PW) was a weak predictor, which showed that our students were fixated on teacher-centered learning. It was hard for the students to shift from teacher-dependent learning to self-regulated learning, a norm for higher education. Personal competency (PCOM) emerged as the third most powerful predictor of SS.

Regarding how epistemological access would lead to ultimate student success, it was concluded that epistemological access (EA) strongly predicted student success (SS) in both types of universities, public and private, as Model 2 explicated that TSR, and EA collectively influenced 76% of the variance in student success in higher education (TSR: r=.431, P=.000; EA: r=.335, P=.000). This finding matched with previous research (Bhandari, Mousavi, Sadeghifar& Haghi, 2013; Shaari, 2014).

DISCUSSION

Although the correlation results showed a strong and positive relationship between the constructs (UEQ, EA & SS), the descriptive analysis told us that disagreement scores were higher than the agreement scores; it meant there was an urgent need to enhance the soft interpersonal dimensions of quality, especially managerial support and responsiveness of the staff (Papanthymou & Darra, 2017; 2018).

The findings revealed a discrepancy between the concepts of re-culturing and restructuring in relation to UEQ. The restructuring approach was more aligned with the established standards of HEC, while the re-culturing approach was found to be lacking. This was evident in the traditional attitudes and beliefs of both students and teachers, who prioritized the transmission of content over transformative learning (Fullan, Quinn & McEachen, 2018). The involvement of students in extracurricular activities facilitated the development of diverse personalities among them. This enabled even those who may have struggled academically to showcase their strengths in other areas. The adoption of an ontological philosophy resulted in an increase in moraleamong the individuals, leading to a perceived improvement in their overall competency in various skills. This, in turn, contributed to a reduction in the disparity between those who were successful and those who were not (Díaz-Iso, Eizaguirre & García-Olalla, 2019; Jackson & Bridgstock, 2020).

There was a strong relationship between teacher student relationship and student success, which confirmed the previous findings (Tartwijk, 2018; Aldrup, Klusmann, Lüdtke, Göllner & Trautwein, 2018) that TSR cannot be detached from pedagogical efforts at higher education; rather it works as a pre-condition of quality in the teaching and learning process (Roorda, Jak, Zee, Oort, & Koomen, 2017). The findings validated the existing literature (Muller, 2014) that teachers in developing countries were not used to plan for authentic pedagogy, and still practiced the conventional drills using information that already existed in the text books which resulted in the lack of engagement and interest of the students in the learning activities.

Most of the students reported that they could not approach the teachers after the class and this lack of connectedness and belongingness affected their learning negatively; as they found the teachers less supportive, they were less engaged in the projects offered.

Integration of technology into teaching as an upcoming pedagogic skill promoting deep learning needs to be adopted by faculty. University management should not leave it to the personal choice of faculty, nor these skills could be intuitively developed through experience (Mckenney, Kali, Markauskaite, & Voogt, 2015) without supportive frameworks provided by higher education institutions.

The findings confirmed prior research (Nold, 2017; Fullan, Gardner, & Drummy, 2019) indicating that students attending private universities relied heavily on their instructors for academic guidance, often being provided with excessive support to navigate assessments and examinations. The practice of spoon feeding has been observed to impede the development of cognitive thinking and hinder the internalization of knowledge.

In the context of the teaching-learning process, it is crucial to take into account the perceptions of students regarding their definition of success (Nyström, Jackson, & Salminen Karlsson, 2019), given that they are active participants in this process. Higher education institutions (HEIs) should prioritize efforts to gain a deeper understanding of students' perspectives and utilize this information as a means of identifying areas for potential improvement in service quality that align with the needs of students (Kahu & Nelson, 2018).

The adoption of a business-oriented model by private universities has facilitated access to higher education for underprepared students. However, due to their lack of necessary skills, these students have either dropped out or failed to translate their access into academic success.

Abbreviation	**Meaning**
(UEE).	University efforts for equity
(UEQ).	University efforts for quality
(TPQ).	Teacher pedagogic quality
(TSR).	Teacher-student relationship
(PCOM).	Personal Competency
(PEI).	Personal efforts for improvement
(PUA).	Participation in university activities
(PW).	Personal willingness
(EA).	Epistemological access
(SS).	Student success

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