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Comparative Analysis of Learning Styles and Academic Stress Among HSSC, A Level, and IBDP Students in Punjab, Pakistan

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Abstract

This study was conducted to examine the learning styles and the status of academic stress prevalent among Higher Secondary School Certificate (HSSC), Advanced Level (A Level), and International Baccalaureate Diploma Programme (IBDP) students hailing from Punjab, Pakistan – methodologically entailing a 'descriptive research using a survey design' framework. Data was gathered from 983 students enrolled in the local HSSC, A Level and IBDP streams employing a systematic random sampling technique via a self-developed questionnaire. This input was organized, coded, and analysed using SPSS software, applying both inferential and descriptive statistics, with the results revealing significant differences in the learning styles among the three student cohorts. Most of the pupils in the HSSC stream consistently adopted surface learning style, while most A Level student deployed strategic learning style. The majority of IBDP students, however, regularly adopted both strategic and deep learning styles. Moreover, a significant difference in academic stress levels was found between the three groups, with HSSC students experiencing more perceived stress compared to A Level and IBDP students. Education stakeholders have, therefore, been recommended to train students to adopt appropriate learning styles to improve their academic performance and reduce concurrent academic stress.

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Introduction

Broadly speaking, Pakistan offers a diversity in access to the quality and kinds of education available to its population (Brody & Dwyer, 2018). Even though the constitution requires the state to provide free and compulsory education to all children between the ages of five and 16, the country's adult literacy rate, defined

as "the percentage of people ages 15 and above who can both read and write with understanding a short simple statement about their everyday life", as of 2019, only encompasses 58% of the total population (Macro & Trends, 2023). According to Brody and Dwyer (2018), a much lesser number rises above this base literacy level to complete secondary schooling.

Pakistan's education system comprises several programmes, including the local Intermediate and Secondary Education System, Ordinary and Advanced Level (O- and A Level) certifications, and the International Baccalaureate (IB) Programme. Each of these streams equips students with distinct educational experiences and aims to prepare them for higher education (Raudeliunaite & Volff, 2020). Starting with their necessary antecedent learning prerequisites, these three routes offer Higher Secondary School Certificate (HSSC), Advanced Level (A Level) and International Baccalaureate Diploma Programme (IBDP) accreditations, respectively, as formal higher secondary education attestation for individuals aged between 16 and 19.

Of these systems, the traditional, oldest, most affordable, and publicly accessible is the HSSC stream. The General Certificate of Education (GCE) examinations conducted by way of Advanced Level (A Level) certifications has been in place in Pakistan since 1951 (Ishfaq, 2019), while the newest and relatively most expensive, International Baccalaureate Diploma Programme (IBDP), offering was introduced in 1996 (International Baccalaureate Organization, 2005). All these streams provide certification of completion of 12 years of education to the students in various subjects and disciplines. (Bedewy & Gabriel, 2023).

The HSSC is a two-year programme offered by the Board of Intermediate and Secondary Education (BISE) in Pakistan (Rehan, 2019). It is designed for students who have completed their secondary education and want to pursue higher education. This system provides a general education to students that includes cultivating cognisance of a wide range of subjects, such as Mathematics, Science, Social Studies, and Arts. Learners take exams at the end of each academic year, and the final exam is conducted as a comprehensive evaluation of all the subjects administered. (Ahmad & Usman, 2022).

As apprised by Bedewy & Gabriel (2018), the Cambridge A Level certification is implemented as a two-year programme offered by the University of Cambridge International Examinations (CIE). Cohen (2014) states that the programme is designed for students who wish to pursue higher education either in Pakistan or abroad. The Cambridge A Level route provides a more specialized education than the local HSSC system, allowing students to focus on specific subjects of their interest. It features two evaluation stages, AS and A2, requiring learners to take

examinations at the end of each stage. It has been deemed 'an excellent option' for students desirous of taking up higher education abroad (Aina & Wijayanti, 2019). Additionally, the programme focuses on critical thinking, problem-solving skills, and research, which are highly valued by local nd foreign universities. However, it is more expensive than the HSSC system, and students must meet specific requirements for admission. (Rustam & Tentama, 2020).

The IBDP is a two-year programme offered by the International Baccalaureate Organization (IBO) (Dusselier, Shelley, & Wang, 2018; Whalen, 2016; McKean & Misra, 2014). It is designed for students who want to pursue higher education in Pakistan or abroad. Six subject categories are offered in the programme: languages, social sciences, mathematics, experimental sciences, arts, and a core section that consists of extended essays, activities, the Theory of Knowledge, and Creativity, Action, and Service (CAS).

When The International School in Karachi launched IB system in 1996, followed by Beaconhouse School System's The New School in Lahore in early 2000s, IB became a popular stream of education in Pakistan. Over the past 20 years, various schools across Pakistan have made enormous expenditures in campus administration and teacher preparation to implement IB education, yet IB's success and popularity has been limited. The primary reason for this outcome is that the IB evaluates skill application, whereas the majority of local educators charged with its dissemination have gained their knowledge from programmes like Matriculation and O Level, which place a greater emphasis on the repetition and retention of the study materials. (Sinha, Sharma, & Vibha, 2022). Hence, finding trained staff to implement the IB program in classrooms has been challenging for many schools. Additionally, IB teacher training programs are costly and often require teachers to sign long-term contracts, presenting further financial and managerial challenges for schools.

Agolla and Ongori (2019) have stated that understanding learning styles may have a significant positive impact on education, as they are vital to the learning process. There are many kinds of learning styles, and the idea of unique learning approaches has been widely accepted in classroom management techniques and educational philosophy. Students' learning styles are influenced by their past experiences, as well as their cognitive, emotional, and contextual vantages (Chawla & Sachdeve, 2018). To put it another way, each person is unique. In order to incorporate best practice tactics into their trainings, curricula, and assessments, educators need to be aware of the variances in their students' learning styles (Dedrick & Shaunessy, 2017). A lot of courses of study, especially more advanced ones at the higher secondary level incorporate diverse learning

styles and address barriers to education directly within the curriculum. (Thakkar, 2023).

Humans, especially students, are required and must face stress on account of environmental exigencies. If students believe they are unable to fulfil their academic obligations, they will get stressed. According to Aina and Wijayanti (2019) and Agolla and Ongori (2016), stress has become a major concern academic circles in recent years. Numerous nations, civilizations, and ethnic groups continue to recognise academic stress as a harmful issue (Wong et al., 2018). Academic stress is the result of students' perceptions of their workload, academic pressure, and deadlines for completing assignments (Bedewy & Gabriel, 2019).

According to Bedewy & Gabriel (2018), academic stress is defined as the 'judgments of students of the demands they are under, the amount of work they have to do, the deadlines for assignments, their workload, diagnostic or summative assessments, and their perception of their own academic performance'. It is brought on by assignments, mishandled study techniques, and issues with time management (Hill et al., 2021). Academic assignments, further, may include extremely challenging activities or projects (Pascoe et al., 2020).

Apart from the pressure resulting from academic work, social and emotional issues also contribute to learner stress. These elements include conflict or situations involving classmates, instructors, and students from other educational streams (e.g., HSSC, A Level, and IBDP) or topic courses (Agolla & Ongori, 2019). (Pascoe et al., 2023). The course content of these three streams varies considerably. The HSSC pathway is focused on set syllabi with students required to reproduce memorized content in their examinations. In A Levels, students are given resource books, and examination questions test their knowledge application. In IBDP, however, the learners lead their own knowledge discovery pathway and research-based learning is encouraged. These pedagogical differences unsurprisingly result in differences in student responses to their learning regimens.

Numerous studies have been conducted to look at various dimensions of learning styles and student engagement with educational content (Aina & Wijayanti, 2019; Bedewy & Gabriel, 2019; Agolla & Ongori, 2016). Any attempt to learn by

students is aimed at achieving some set number of academic goals. Stress arises when learners are unable to attain these goals despite their available internal and external resources, including cognitive ability, self-efficacy, motivation, physiological adeptness, social support, and several environmental factors.

Differences in educational pathways can result in major differences in how these factors interact. This study forms a part of the author's doctoral research conducted at University of the Punjab, fulfilling the requirements for the completion of the PhD program and is aimed to examine the interplay of learning styles and academic stress among the students from three different higher secondary education pathways namely HSSC, A Level and IBDP in Punjab, Pakistan.

Statement of the Problem

It has been observed that the educational opportunities available to students (prospective learners) within communities are not equitable because of the social context they are based in. The fact that students enrolled in HSSC vastly outnumber those enrolled in A Level and IBDP is illustrative of the social class disparities present in Pakistan.

Given these differences, education is generally perceived to be a promising route to social mobility, defined as the movement from one social class or status to another (Macionis, 2021). That is why every year, hundreds of thousands of students appear in the HSSC examinations from all social backgrounds especially in the pre-medical and pre-engineering categories, in hopes of securing enough marks to be able to get merit-based admissions at public-sector engineering and medical universities; hence opening doors to a brighter, potentially more financially secure, future. Moreover, the higher number of student enrolment in HSSC is also because of its affordability and accessibility to learners across the country. The emphasis on social mobility, particularly through meritocracy, is prevalent among A Level and IBDP students as well. Their primary objective is to gain admission to prestigious private universities locally or world-class institutions abroad, rather than public universities in Pakistan.

Since students' future is considered at stake, academic achievement is significant. Based on the variations outlined earlier, it was expected that the learning styles an stressors, may differ among these three streams of students. This study was therefore planned to examine and compare the learning styles and academic stress levels among the students of HSSC, A Level and IBDP hailing from Punjab, Pakistan

Research Objectives

1. To compare types of learning styles adopted by the students enrolled in HSSC, A Levels, and IBDP;
2. To evaluate the levels of academic stress experienced by students of HSSC, A Levels, and IBDP.

Research Questions

1. What types of learning styles do students adopt while being enrolled in HSSC, A Levels, and IBDP?
2. Is there any difference in the adoption of learning styles employed by the students enrolled in HSSC, A Levels, and IBDP?
3. What levels of academic stress do the students of HSSC, A Levels, and IBDP typically experience?

Significance of the Study

It is hoped that the results of this study may facilitate stakeholders by providing them with an authoritative comparison of the students of three systems of education in Pakistan (HSSC, A Level, and IBDP) about the learning styles and levels of academic stress among them. This study can also serve to guide parents and students in the choice of educational pathway best suited by giving them accurate information about the learning styles and academic stress among the existing students of these three cohorts: useful for determining the future prospects and appealing to the personal interests and tendendencies of prospective learners.

The results of this research might provide valuable information to teachers of the HSSC, A Level, and IBDP education streams about the types of learning styles their students adopt. This knowledge can help educators create classroom environments that support these learning styles, making the teaching and learning process more effective. Additionally, the study's findings may inform teachers about the academic stress experienced by students in these education streams. By understanding the types of stress students face, teachers can work to minimize it and help learners achieve their educational goals more effectively.

This study can also be significant for educational policymakers in Pakistan by highlighting how to tailor educational approaches and support systems to enhance students' learning experiences and reduce academic stress. Further, it can prove instructive for the school education departments of HSSC, A Level, and IBDP administering institutes by providing a comprehensive understanding of how

students in these pathways differ in terms of learning styles and academic stress levels.

A comparative analysis, as detailed below, of students across the three different educational pathways of HSSC, A Levels, and IBDP allows for a thorough understanding of these distinctions, which might also be significant in the cultural context of Punjab, Pakistan.

This research specifically focuses on local students, contributing to the body of knowledge on learning styles and academic stress within the Pakistani cultural context; filling gaps in the literature and providing a deeper understanding of the unique factors that influence students' educational experiences in the country.

Research Methodology

This study utilises descriptive research based on survey design. The researchers adopted a quantitative cross-sectional approach for the collection of data from the respondents. To draw the sample, the Punjab province was divided into three zones: North (Rawalpindi, Sargodha divisions), Central (Lahore, Faisalabad, Gujranwala, Sahiwal divisions) and South (DG Khan, Bahawalpur, Multan divisions). By applying a random sampling technique, 128 HSSC administering schools were selected from these three zones. In the case of the A Level and IBDP education streams, 17 CIE-affiliated and 8 IBDP administering institutes were selected from across the country. Data was collected from 983 students enrolled in these three (HSSC, A Level, and IBDP) streams by applying a systematic random sampling technique via self-developed questionnaire. The collected data was arranged, coded, and digitised for statistical treatment; being further analysed with the aid of SPSS software by applying inferential and descriptive statistics. The results are shown in the following tables:

Results and Findings

Differences in the Types of Learning Styles Adopted by the Students of HSSC, A Level, and IBDP Streams of Education

Table 1: Variance Analysis to Determine Stream-of-Education-Wise Adopted Learning Styles

		SS	***df***	***MS***	***F***	***Sig.***

Surface Learning	Between Groups	2189.84	2	1094.92	13.82	.000
	Within Groups	77625.98	980	79.210		
	Total	79815.82	982			
Strategic Learning	Between Groups	676.19	2	338.09	14.60	.010
	Within Groups	71970.94	980	73.44		
	Total	72647.13	982			
Deep Approach Learning	Between Groups	526.57	2	263.287	4.50	.022
	Within Groups	172241.58	980	175.757		
	Total	172768.15	982			

The data in Table 1 reveals that the *F*-value for surface learning is 13.82, which is significantly higher than the critical value of 3.00 at 2, 980 degrees of freedom. The corresponding *p*-value is .000, well below the α level of .05, indicating a significant difference in the adoption of the surface learning style among students in the HSSC, A Level, and IBDP streams. Similarly, the *F*-value for strategic learning is 14.60, also exceeding the critical value of 3.00, with a *p*-value of .010, demonstrating noticeable variation among the groups. For the deep learning approach, the *F*-value is 4.50, again surpassing the critical threshold, with a *p*-value of .022, confirming significant differences in how students from these educational streams adopt the deep learning approach.

To further investigate students of which stream of education adopted differently to the surface learning, strategic learning, and deep learning approach, a Post-Hoc test was conducted, as detailed in Table 2.

Difference in the adoption of surface learning, strategic learning, and deep approach of learning style

Table 2: Post-Hoc Analysis to Find out Stream-of-Education-Wise Difference in the Surface Learning, Strategic Learning, and Deep Learning Styles

Dependent Variable	**(I) Stream of Education**	**(J) Stream of Education**	***MD (I-J)***	***SE***	***Sig.***
Surface	HSSC	A – Level	3.432(*)	.803	.000

Learning		IBDP	3.999(*)	1.134	.000
Strategic Learning	A – Level	HSSC	2.057(*)	.774	.008
		IBDP	3.145	1.265	.090
Deep Approach Learning	IBDP	HSSC	3.631 (*)	.689	.008
		A- Level	9.285(*)	1.956	.024

α =.05

Table 2 reveals that students in the HSSC stream of education adopted the surface learning style differently compared to other streams. A Level students showed a distinct approach to strategic learning compared to HSSC students but were similar to IBDP students. Furthermore, IBDP students adopted the deep learning approach differently from students in the other educational streams.

To further explore how students from the HSSC, A Level, and IBDP streams adopted different learning styles, a chi-square test was applied, as shown in Table 3.

Differences in the Adoption of Learning Style (Surface, Strategic, Deep) among the Students of HSSC, A Level, and IBDP Streams of Education

Table 3: Chi-Square Analysis to Determine How Students of HSSC, A Level, and IBDP Streams Adopted Learning Styles

Stream Education	Surface Learning	Strategic Learning	Deep Approach Learning
HSSC	71.2% (548)	21.8%(168)	7.0%(54)
A – Level	8.3%(12)	57.8%(84)	33.9%(50)
IBDP	5.9%(4)	46.8%(31)	47.6%(32)

Table 3 shows that 71.2% (548) of HSSC students adopted the surface learning style, while only 8.3% (12) of A Level students and 5.9% (4) of IBDP students used this approach. In terms of strategic learning, 21.8% (168) of HSSC students preferred this style, compared to 57.8% (84) of A Level students and 46.8% (31) of IBDP students. For the deep learning style, only 7.0% (54) of HSSC students adopted it, whereas 33.9% (50) of A Level students and 47.6% (32) of IBDP students did so. This data indicates that most HSSC students favoured the surface learning style, A

Level students predominantly adopted the strategic learning style, and IBDP students preferred both the strategic and deep learning approaches.

Level of Academic Stress Among the Students of HSSC, A Level, and IBDP Streams of Education

Table 4: Analysis of the Variance to Determine Stream-of-Education-Wise Level of Academic Stress

	SS	***Df***	***MS***	***F***	***Sig.***
Between Groups	1936.88	2	968.44	4.369	.013
Within Groups	217204.21	980	221.64		
Total	219141.09	982			

α =.05

Table 4 shows that the *F*-value generated was 4.369, which exceeds the critical value of 3.00 at 2, 980 degrees of freedom. The *p*-value was .013, which is less than the α level of .05. This indicates that there is a significant difference in the level of academic stress among students from the HSSC, A Level, and IBDP streams.

To further explore which specific groups experienced what levels of academic stress, a Post-Hoc test was conducted, as detailed in Table 5.

Stream-of-Education-Wise Level of Academic Stress Among Students

Table 5: Post-Hoc Test to Analyze How Stream-of-Education-Wise Students Differ in the Level of Academic Stress

(I) Stream of Education	**(J) Stream of Education**	***MD (I-J)***	***SE***	***Sig.***
HSSC	A – Level	2.921(*)	.947	.000
	IBDP	3.023(*)	1.632	.000

Table 5 reveals that students in the HSSC stream experienced higher levels of academic stress compared to students in the other educational streams. To further examine the specific levels of academic stress faced by HSSC, A Level and IBDP students, a chi-square test was applied, as detailed in Table 6.

Level of Academic Stress Among the Students of HSSC, A Level, and IBDP stream of education

Table 6: Chi-Square Analysis to Find Difference in the Level of Academic Stress Among the Students of HSSC, A Level and IBDP Streams of Education

Stream of education	Count	Level of Stress				
		Experienced No Stress	Experienced Low Stress	Experienced Average Stress	Experienced High Stress	Experienced Very High Stress
HSSC	Count	8	113	61	203	385
	% within Stream of education	1.0%	14.7%	7.9%	26.4%	50.0%
	% within L of Stress	53.3%	59.2%	40.9%	86.0%	98.2%
A Level	Count	0	40	66	33	7
	% within Stream of education	.0%	27.4%	45.2%	22.6%	4.8%
	% within L of Stress	.0%	20.9%	44.3%	14.0%	1.8%
IBDP	Count	7	38	22	0	0
	% within Stream of education	10.4%	56.7%	32.8%	.0%	.0%
	% within L of Stress	46.7%	19.9%	14.8%	.0%	.0%

$\chi 2 = 25.747$, df = 8, sig = .001

Table 6 shows that the generated χ^2 statistic was 25.747, which is greater than the critical value of 15.507 at 8 degrees of freedom. The p-value was .001, which is less than the α level of .05. This indicates that students in the HSSC, A Level, and IBDP streams experienced different levels of academic stress.

Furthermore, Table 6 reveals that the majority of HSSC students (50.0%, 385) experienced very high academic stress. Most A Level students (45.2%, 66) reported average academic stress, while the majority of IBDP students (56.7%, 38) experienced low levels of academic stress. In conclusion, HSSC students experienced the highest levels of academic stress compared to those in the A Level and IBDP streams.

Conclusion and Discussion

The aim of this research was to study the learning styles and academic stress among HSSC, A Level and IBDP students from Punjab, Pakistan. For this purpose, data was gathered from the students of these streams of education and was analyzed to draw conclusions.

Significant difference was found in the learning styles among the students of HSSC, A Level, and IBDP streams of education. Most of the students of the HSSC stream were seen to adopt a surface learning style, most of the A Level students exhibited strategic learning style, while most of the students of the IBDP utilized both strategic and deep learning styles. Moureen (2023) has claimed that students typically adopt the surface approach when they do not want to understand the meaning or when they are not willing to understand what their teachers want them to learn. They also found that most motivated students always employed the deep learning approach for memorization purposes.

Anas and Latif (2024) have stated that the IBDP is designed to foster disciplinary and interdisciplinary knowledge in line with the rigorous standards set by institutions of higher learning around the world. This is why students of IDBP stream of education are seen to utilise the deep approach of learning in their course work. Moreover, significant difference was found in the level of academic stress among the students of HSSC, A Level, and IBDP streams of education. It was also found that most of the students of the HSSC stream of education experienced more stress than most of the students of A Level and IBDP.

Yumba (2023) has observed that students of the HSSC stream are seen to experience the highest stress levels because of their increased class workload, parental pressure, many hours of studies, financial difficulties, and having no proper educational facilities at home. Most of the students of A Level stream of education experienced average academic stress while most of the students of the IBDP stream of education exhibited only low levels of stress.

Rauf (2023) has found that at the higher secondary school level, students suffer from examination-related stress, financial stress, teachers' expectations, and peer-

related pressure, while the A Level students experience different types of stress, excluding financial burden.

Based on the research findings, it is recommended that students from different educational streams identify and adopt the learning style most appropriate for their learning objectives. It is also recommended that teachers adapt their teaching strategies to align with the learning styles preferred by students. Additionally, educators from any educational stream should receive training on learning styles to create a conducive classroom environment for effective teaching and learning. To reduce academic stress among students, various stakeholders may adopt different strategies in their capacity to accommodate students. The tutors may consider balancing study hours and projects to avoid overburdening students. They may also train students in time management, which is key to reducing stress. Parents, on their end, can help reduce their children's stress by maintaining contact with their schools or colleges and assisting them in managing academic pressures. Teachers at the HSSC level may reduce stress among students by encouraging them to adopt appropriate learning styles by using modern teaching techniques.

For future research, it is recommended that similar studies be conducted in other provinces of Pakistan. Moreover, new studies can explore additional factors beyond learning styles and academic stress and examine their effects on the academic performance of students in these educational streams.

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