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THE ANALYSIS OF PSYCHOPHYSICAL IMPACT OF LEARNERS ON THEIR COGNITIVE DEVELOPMENT AT SECONDARY LEVEL IN KPK

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ABSTRACT

This study explored teachers' views on psychophysical impact of learners on their cognitive development at secondary level in Khyber Pakhtunkhwa, Pakistan. Objectives were to examine psychophysical effects on academic performance, compare academic results with social behavior, investigate the importance of social behavior on academic performance, and suggest steps to improve cognitive development and social behavior. The study used descriptive survey methodology, collecting data from 15 randomly selected schools. A 25-item questionnaire was developed & administered to teachers. The sample included 90 students categorized as high, average, and below-average achievers from both science and arts. Data were analyzed using descriptive statistics. The findings indicate that psychophysical impact and cognitive development are interrelated, with social behavior influencing the academic performance to varying degrees across achievement levels. Similarly, study recommends a holistic approach to education that considers social and academic factors in promoting the student development towards desired success.

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INTRODUCTION

Education is basically supported by three pillars: teachers, learners and educational resources. It catalyzes positive societal change, with teachers guiding learners towards proper developmental paths. Students engage in curricular and co-curricular activities in the school environment, often working collaboratively with peers (Mishra & Aithal, 2023). Individual differences in cognition, habits, and other factors contribute to the variations in personality development and academic and social performances (Hattie & Anderman, 2019). These diverse characteristics are vital in shaping

educational outcomes and personal growth trajectories. The educational process culminates in the observable changes in academic cognitive performances, indicative of the cognitive development (Peng & Kievit, 2020). These outcomes, stemming from the various cognitive levels, are typically evaluated over examinations or continuous assessments as physical activity benefits on cognitive function and psychological health. There is ongoing debate about most effective testing methods and which aspects of the knowledge, like procedural or factual, should be prioritized (Andrade & Brookhart, 2020).

Traditionally, the examinations serve as the primary mechanism for grade promotion and are often viewed as sole means of achieving educational goals within specific timeframes and institutional parameters. The overall aspect of learners' psychophysical state covers a wide spectrum of their social activity, emotional state, and physical health (Rakhimov, 2021). Collectively, these elements play a major role in determining the students' participation level in learning, his or her information processing capability and the knowledge acquisition process including the demonstration of the learning outcomes. Such influence provides necessary educational and governmental strategies to help the children and students become responsible citizens. As was postulated by Piaget, cognitive development is the progressive development of structures that information is incorporated into and used for remembering, problem-solving and decision-making (Piaget, 1976). This analysis often involves examining how psychological and physical factors influence the cognitive growth and academic performance. In this linking, in the second level, the learners are presumed to be in the formal operational stage, where they can do concrete, formal, and hypothetical thinking. However, it is possible to notice that the psychophysical factors influence the rate and quality of cognitive development in students.

The social behavior, a part of psychophysical effects, is significant in cognitive development. In his sociocultural theory, Vygotsky stated that learning happens over activities and communication with other people or cultural tools (Vygotsky & Cole, 1978). In the context of secondary education, peer relations, class and peer grouping, and other relations between the teacher and students other than teaching relations also play their part in social relations that affect cognition growth. The third psychophysical factor that is related to study outcomes is emotive regulation. Emotional regulation is how individuals can regulate their feelings and emotions. A study carried out by Gross (2015) shows that learners who possess good control of their emotions have the potential to register better grades and improve their intelligence. This proves the need to address emotional bits of intelligence when more emphasis is given to academic outcomes in secondary schools. Physical health and diet, sleeping patterns, and physical activity influence learning abilities. Donnelly, Hillman, Castelli, Etnier, Lee, Lambourne and Reed (2016) estimated secondary school students' physical activity and academic achievement and noted that physical activity helped students enhance their knowledge. This growing concern underlines that education should encompass the need to enhance health of a child's body and brain.

Objectives of Study

1. To examine the psychophysical impact or social behavior on the academic and cognitive performance in the context of secondary schools.

2. To compare learners' academic results with social behaviour, investigate the importance of the psychophysical impact or social behaviour on academic performance.
3. To suggest the necessary steps that should be taken to improve cognitive development or academic performance and social behaviour.

LITERATURE REVIEW

As reflected in academic performance, cognitive development is product of a learner's cognitive outcomes within specific educational context, timeframe, and under structured guidance (Aguayo, Ruano & Vallejo, 2021). The assessment methods vary based on students' developmental levels, ranging from observational techniques for the younger learners to formal examinations for older students. In many educational systems, including Pakistan, annual examinations are the primary mechanism for the grade progression. This system, while standardized, may not always accurately reflect a student's true cognitive abilities or potential (Wolgast, Tandler, Harrison & Umlauft, 2020). Learning needs cognitive development among students. In cognitive development, there is greatly stressed on higher order or critical thinking skills as emphasized for twenty-first-century learners. In Pakistani context different studies focus on importance and growth of critical thinking among secondary school students, providing psychological support to address emotional and mental health issues. It has been emphasized about teachers' perspectives (Jamil et al., 2024; Jamil et al., 2021a); teachers' practices (Jamil et al., 2021b); educational policy and curriculum documents (Jamil, Bokhari & Iqbal, 2024; Jamil, Bokhari, & Rafiq, 2024; Jamil, 2024; Jamil et al., 2024; Naseer et al., 2022).

It further emphasized on science and social sciences textbooks (Jamil, Aslam & Ali, 2024; Jamil, Bibi & Shahzadi, 2024; Jamil, Bokhari, & Ahmad, 2024; Jamil et al., 2024; Naseer et al., 2022). Learning outcomes are typically evaluated through tests, examinations, or continuous assessments. However, there is an ongoing debate about the most effective methods for assessing various aspects of learning, including reading comprehension, knowledge retention, and behavior. The individual differences in the mental capacity, interests, and environmental factors contribute to variations in intelligence and personality, influencing academic outcomes. Research on academic socialization emphasizes parents' crucial role in shaping their children's academic outcomes. Parental influence extends to developing children's interests, skills, reading habits, and behaviors. Additionally, early language acquisition, facilitated by parents, is fundamental in helping children meet academic expectations. In a recent study by Sajid, Jamil and Abbas (2022) teachers' work-family conflict has been observed for children performance foster optimal cognitive growth and academic success. The learning environment, encircling social, emotional, ethical, and educational aspects, significantly impacts academic outcomes. A safe, engaging, and respectful atmosphere is conducive to achieving the academic goals.

The high-quality character education is linked to improved academic performance. The motivation and its impact on learning outcomes are complex. While high motivation generally leads to better performance, the relationship between stress and learning is nuanced. Some students thrive under pressure, viewing difficulties as challenges, while others may become discouraged. Research shows a strong correlation between students' socioeconomic backgrounds and academic performance.

Parental education, income and social status significantly affect student academic achievement (Zhang et al., 2020). Analyzing psychophysical impact of learners on their cognitive development at the secondary level requires a comprehensive approach that considers both psychological and physical aspects. Effective teaching strategies, with students' engagement and participation, can enhance academic performance through the cognitive development (Heilporn et al., 2021). These approaches help create engaging learning experiences & promote long-term knowledge retention (Jamil, 2021). In the previous literature, different studies related to the current topic are conducted. For example, a study by Burov et al. (2021) explored cognitive performance degradation. In another study by Sosnich et al. (2022), psychological and pedagogical principles of organization of distance learning among the primary school students' cognitive development disorder were explored in the different contexts.

RESEARCH METHODOLOGY

A descriptive survey research design was adopted to examine psychophysical effects of learners on their formation at the secondary level in Khyber Pakhtunkhwa. The research design was adopted due to the study's ability to collect significant data about teachers' observations and perceptions of students' behavior and performance. The study targeted fifteen random female public secondary schools. The sample included 90 students from ninth standard, half from science and the other half from arts and business backgrounds divided again into high, average, and low performers. Such stratification made it possible to compare the results at various academic performance indexes. The primary data collection instrument was a structured questionnaire of 25 items designed to gather teachers' opinions on various aspects of students' psychophysical behavior and its relationship to academic performance. Questionnaire covered social behavior, emotional regulation & cognitive outcomes. To ensure data accuracy, researcher personally visited selected schools to administer the questionnaires and collect selected student most recent academic performance data. This approach allowed for a direct comparison between observed psychophysical behaviors and actual academic results. Data collected were analyzed using descriptive statistical methods, include percentages, mean differences, and comparative analyses amid different categories of the achievers and across science and arts streams.

RESULTS OF STUDY

Learners Show Integrity at Time of Unwanted Situation

A comparative analysis of science and arts learners revealed different patterns in behavior and academic performance:

Science Learners

1. High achievers: 66% exhibited the good behaviour, with the 67% academic performance.
2. Average achievers: 66% showed the good behaviour, with the 63% academic performance.
3. Below average learners: 46% verified good behaviour, with 62% academic performances.

Arts Learners

1. High achievers: 86% displayed the good behaviour, with the 51% academic performance.

2. Average learners: 40% exhibited the good behaviour, with 50% academic performance.
3. Below average learners: 40% showed good behaviour, with 44% academic performance.

This analysis indicates the remarkable difference between behavior and academic performance, particularly among the arts learners. While science learners showed a more consistent relationship between behavior and academic outcomes, arts learners, especially high achievers, demonstrated a significant discrepancy between their behavioral scores and academic performance as evident from present study.

Learners Feel Proud at Time of Success

The study revealed distinct patterns in the behavior and academic performance among science and arts learners:

Science Learners

1. High achievers: 73% exhibited the good behavior, with the 67% academic performance.
2. Average achievers: 80% demonstrated good behavior, with 63% academic performance.
3. Below average learners: 71% showed good behavior, with the 62% academic performance.

Arts Learners

1. High achievers: 80% displayed the good behavior, with the 51% academic performance.
2. Average learners: 40% exhibited the good behavior, with 50% academic performance.
3. Below average learners: 40% showed good behavior, with 44% academic performance.

This analysis highlights notable difference between behavioral scores and academic performance, particularly among arts learners. The science learners demonstrated a more consistent relationship amid behavior and academic outcomes across achievement levels. In contrast, arts learners showed significant variations, especially among high achievers with the high behavioral scores but lower academic performance.

Learners Preserve Emotions

Science Learners

1. High achievers: 66% exhibited the good behaviour, with the 67% academic performance.
2. Average achievers: 66% demonstrated good behaviour, with 63% academic performance.
3. Below average learners: 35% showed the good behavior, with 62% academic performance.

Arts Learners

1. High achievers: 53% displayed the good behaviour, with the 51% academic performance.
2. Average learners: 42% exhibited the good behaviour, with 50% academic performance.
3. Below average learners: 66% showed good behaviour, with 44% academic performance.

This analysis highlights varying relationships between behavioral scores & academic performance across disciplines and achievement levels. Science learners showed a more consistent correlation between behaviour and academic outcomes for high and average achievers, with a notable drop in

behavioural scores for below-average learners. In contrast, arts learners demonstrated an inverse relationship, with below-average learners exhibiting the highest behavioural scores despite lower academic performance.

Cooperative with Her Classmates

Science Learners

1. High achievers: 86% exhibited the good behaviour, with the 67% academic performance.
2. Average achievers: 80% demonstrated good behaviour, with 63% academic performance.
3. Below average learners: 50% exhibited good behaviour, with 62% academic performance.

Arts Learners

1. High achievers: 80% displayed the good behaviour, with the 51% academic performance.
2. Average learners: 42% displayed the good behaviour, with 50% academic performance.
3. Below average learners: 60% showed good behaviour, with 44% academic performance.

The analysis indicates a stronger correlation between behaviour and academic performance amid science learners, with behavioural scores generally decreasing as academic performance declines. Arts learners, verified a more complex relationship, with high achievers showing good behavior but lower performance and below-average learners exhibiting better behavior than average learners despite lower scores.

Lose Temper at Time of Unwanted Situation

Science Learners

1. High achievers: 73% exhibited the good behaviour, with the 67% academic performance.
2. Average achievers: 40% demonstrated good behaviour, with 63% academic performance.
3. Below average learners: 42% showed good behaviour, with 62% academic performance.

Arts Learners

1. High achievers: 33% displayed the good behaviour, with the 51% academic performance.
2. Average learners: 35% exhibited the good behaviour, with 50% academic performance.
3. Below average learners: 60% showed good behaviour, with 44% academic performance.

The analysis reveals a complex relationship between behaviour and academic performance across disciplines. Science learners showed a more consistent correlation between behavior and academic outcomes for high achievers, with notable drop in behavioral scores for average and below-average learners. In contrast, the arts learners demonstrated an inverse relationship, with below-average learners exhibiting the highest behavioural scores despite lower academic performance. High-achieving arts learners showed the lowest behavioural scores in their group, despite having highest academic performance.

Intelligent but Naughty Learners

Science Learners

1. High achievers: 93% displayed the good behaviour, with 67% academic performance.

2. Average achievers: 33% established good behaviour, with 63% academic performance.
3. Below average learners: 33% showed good behaviour, with 62% academic performance.

Arts Learners

1. High achievers: 73% displayed the good behaviour, with the 51% academic performance.
2. Average learners: 46% exhibited the good behaviour, with 50% academic performance.
3. Below average learners: 46% showed good behaviour, with 44% academic performance.

The analysis highlights a significant difference in behavioural scores between high achievers and other learners in the science stream, with the high achievers demonstrating exceptionally good behaviour. In contrast, arts learners showed more consistent behavioural scores across achievement levels, but with the lower overall academic performance. Notably, the science learners maintained relatively consistent academic performance across all different levels, despite large variations in behavioural scores.

Problematic & Hard Working

Science Learners

1. High achievers: 40% exhibited the good behaviour, with 67% academic performance.
2. Average achievers: 60% established good behaviour, with 63% academic performance.
3. Below average learners: 50% showed good behaviour, with 62% academic performance.

Arts Learners

1. High achievers: 40% displayed the good behaviour, with the 51% academic performance.
2. Average learners: 50% exhibited good behaviour, with the 50% academic performance.
3. Below average learners: 40% showed good behaviour, with 44% academic performance.

The analysis signifies an intricate association between behaviour and academic performance across science and arts students. Despite changing behavioural scores, science students presented higher performance across all levels than arts students. High-achieving science learners established lowest behavioural scores in group despite having highest academic performance. Arts learners showed more consistent behavioural scores across achievement levels but with lower academic performance than science learners.

Showing Patience and Grace in Time of Difficulty

Science Learners

1. High achievers: 40% exhibited the good behaviour, with the 67% academic performance.
2. Average achievers: 26% established good behaviour, with 63% academic performance.
3. Below average learners: 26% showed good behaviour, with 62% academic performance.

Arts Learners

1. High achievers: 33% displayed the good behaviour, with 51% academic performance.
2. Average learners: 57% exhibited good behaviour, with 50% academic performance.

3. Below average learners: 73% presented good behaviour, with 44% academic performance.

Science students sustained comparatively high academic performance despite low behavioural scores across all levels. On the other hand, arts students proved an opposite association between behaviour as well as academic performance. In this connection, this form proposes that aspects persuading behaviour and academic achievement may change meaningfully between science and the arts groups.

DISCUSSION

The current study highlights the significant relationship between social behaviour and academic performance. High achievers constantly established positive social behaviours, such as integrity in challenging circumstances and collaboration with fellows. It is associated with Wentzel et al. (2021) research, which found that socially responsible behaviour was positively associated with academic achievement. Emotional regulation as aspect of cognitive development and academic performance contributed to the results. Overall, it was determined that high achievers were better at controlling their emotions than the average achievers. For example, they were better at maintaining emotions about success or failure and waiting in a certain situation. This finding confirms Halty et al. (2021) study, which demonstrated positive correlation between level of emotion regulation and academic performance. At the same time, my study shows this connection's particularity and inconsistencies in amorphous and low-performing students' emotional regulation. In this linking, this points to the probable development of emotion regulation skills as inconstant and notes potential of beneficial interventions for all achievement levels. Thus, one of the concerning findings was the relationship between intelligence and manners among the high achievers: most were described as 'intelligent but naughty.

This disagrees with belief that students who gain good grades in academic performance behave well in other aspects of their lives. This has made it clear that youth is not a simple developmental phase, and the evidence shows that cognitive development and behavioural development might be miles apart or might develop. The study also showed that, regarding the psychophysical effects on the development of cognitive abilities, the level of differences between students of the scientific and arts streams was high, and this is notable because academic disciplines are likely to interact with students' psychosocial qualities. For example, the science students prevail over those students whose behaviour indicates their achievement level; besides, it is significantly different from the arts stream students. This could be because of variations in general organization of curriculum, approach to instruction or kinds of mental abilities careful in each stream. Several environmental variables, such as the students' punctuality and actual physical presence in the classroom, and engagement in both academic and extra-academic activities were signifying better performance by students at exam time. This tallies with Haverkamp et al. (2020) which showed an effect of physical activity & academic performance. We have expanded our knowledge about this matter for case of Khyber Pakhtunkhwa only.

Thus, we can conclude that increasing students' physical fitness and engagement levels in extra-curricular school activities may benefit the kids' cognitive domain improvement in this region. The

study showed that parent involvement and home situation were equally important determinants of social behaviour and academic achievement. This is supported by the meta-analysis of Jeynes (2024) on the positive impacts of parental involvement in academic achievement. Concerning the cultural and socioeconomic context of the Khyber Pakhtunkhwa, this result indicates the need to develop specific measures to increase the parents' involvement in education. One of the interesting findings was optimism's correlation with academic performance. At same time, high and average achievers Exhibit optimism, and below-average achievers are referred to as pessimists. This might imply a cyclic arrangement where academic results and psychological disposition affect each other, which may inform how best to address the needs of students. Improving growth mindset and teaching the students to become more resilient could be helpful, at least for the students performing worse. In addition, the study also pointed out some rather the peculiar behaviour traits in students' social sphere. Cooperativeness was manifest in the phenomenal group cohesiveness evidenced by a spirit to protect group members from any blame in their group projects especially by the middle and low performers.

CONCLUSION

The findings from this research clarify the relations of the psychophysical aspects with cognitive acquisition among secondary school learners in Khyber Pakhtunkhwa. Thus, the research stresses that the social, emotional, and physical aspects should also be considered in scope of educational interventions. In this regard, when designing interventions at the macro level that can help improve educational achievement for this area's learners, information gathered from such studies can help formulate formative solutions that can encourage the development of young adolescents in their secondary schools.

Recommendations

1. Introduce the components of social-emotional learning alongside curriculum to complement the psychosocial and academic abilities of the second-tier students in Khyber Pakhtunkhwa secondary schools.
2. Develop the teachers' competencies regarding psychophysical conditions affecting young people's cognition, including classroom management and regulating mood and emotions in students.
3. Introduce various approaches for enhancing the parents' participation in students' education, like ordinary and extraordinary parent-teacher meetings or certain workshops, to foster family engagement that, in turn, promotes positive changes in learners' social behaviour and academic achievements.
4. There is a dire need to improve physical and sports activities in schools to meet requisite learning objectives, as health and fitness dramatically impact the children's overall learning capability.
5. To implement various learning-teaching methods focused on the learners' psychophysical characteristics, especially in response to the identified achievements' variations and division into streams based on subjects that characterize sciences and arts in terms of social conduct and cognitive profile.

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