Influence of Parental Educational Levels on Children's Hard Skills Development

ABSTRACT

Aims: The primary objective of this study is to investigate the intricate connection between parental educational levels and the development of hard skills among secondary school children in Sri Lanka. Specifically, the study aims to explore the disparities in hard skills based on both fathers' and mothers' highest educational levels, considering the nuanced interplay between these factors

Study design: The research employs a Two-Way Multivariate Analysis of Variance (MANOVA) to examine the relationships between parental educational levels and hard skills development in secondary school children. The study utilizes a sample of 1350 participants, selected through stratified random sampling to ensure a diverse socioeconomic representation. The research design incorporates a structured questionnaire, validated for reliability, to assess students' perceptions of the enhancement of hard skills and socioeconomic status.The study is conducted in secondary schools across Sri Lanka. The duration of data collection spans a specified period to ensure comprehensive insights into the nuanced relationship between parental education and hard skills development among students.

Methodology: The research methodology involves administering a structured questionnaire to the selected sample, probing into students' perceptions of hard skills development and their socioeconomic backgrounds. Two-Way Multivariate Analysis of Variance (MANOVA) is employed to analyze the data, allowing for a detailed examination of disparities in hard skills based on both fathers' and mothers' highest educational levels.

Results: The findings reveal significant differences in students' hard skills based on the educational level of fathers, with those having tertiary-educated fathers exhibiting the highest mean scores. Surprisingly, the mother's highest education level does not yield significant differences in hard skills. Importantly, a significant interaction is observed between fathers' and mothers' educational levels, emphasizing their joint influence on students' educational well-being and the enhancement of hard skills.

Conclusion: This study underscores the crucial role of both parents' educational backgrounds in shaping the development of hard skills among secondary school children in Sri Lanka.

Keywords: Parental Education, Hard Skills Development, Two-Way MANOVA, Secondary Education, Sri Lanka

1. INTRODUCTION

Education is a fundamental cornerstone of individual development and societal progress, serving as a catalyst for economic growth, social mobility, and the cultivation of essential skills. In the context of secondary education, the multifaceted interplay between parental educational levels and the acquisition of hard skills among students emerges as a crucial area of investigation. Sri Lanka, with its rich cultural heritage and diverse educational landscape, provides an intriguing backdrop for examining the intricate dynamics that shape the educational outcomes of secondary school children. The relationship between parental educational attainment and the academic achievements of their offspring has long been a subject of scholarly inquiry. Numerous studies have explored the impact of parental involvement, socioeconomic status, and educational background on various facets of a child's educational journey. However, the specific focus on hard skills development in the Sri Lankan secondary education system remains relatively underexplored.

Hard skills encompass the tangible and quantifiable abilities that are typically acquired through formal education and training, such as mathematical proficiency, scientific knowledge, and language proficiency. Understanding the nuanced ways in which parental educational levels influence the acquisition of these skills is imperative for devising targeted

interventions and educational policies that can address disparities and enhance overall educational outcomes. This research seeks to bridge the existing gap in the literature by employing a Two-Way Multivariate Analysis of Variance (MANOVA) to examine the joint influence of parental educational levels on the development of hard skills among secondary school children in Sri Lanka. By adopting a multivariate approach, we aim to unravel the interconnected effects of parental educational levels on multiple dimensions of hard skills, providing a more comprehensive understanding of the intricate relationships at play.

The significance of this study extends beyond academic curiosity, as the findings hold the potential to inform educational policies, school curricula, and parental involvement programs in Sri Lanka. Additionally, the insights gained from this research may contribute to the broader global discourse on the complex interplay between parental influences and educational outcomes, with implications for educational systems worldwide. In the subsequent sections of this paper, this paper delves into underpinning the study, reviews relevant literature, outlines the research methodology, presents the results of the Two-Way MANOVA analysis, and discusses the implications of our findings. Through this comprehensive exploration, this study endeavors to shed light on the intricate relationship between parental educational levels and hard skills development, contributing to the advancement of knowledge in the field of education and fostering positive educational reform.

2. LITERATURE REVIEW

The discourse on hard skills encompasses various domains, ranging from academic qualifications to vocational training, certificates, diplomas, and degrees. Crady (2015) defines hard skills as tangible and quantifiable abilities such as foreign language proficiency, typing speed, machine operation, and computer programming. These skills are often rooted in academic qualifications like Mathematics, Physics, Accounting, Programming, Finance, Biology, Chemistry, and Statistics, which remain constant across different contexts (Sedere, 2019). Hard skills are considered learning competencies and are associated with an individual's cognitive abilities or intelligence, as reflected in the Cognitive Domain of Bloom's Classification (Bloom, 1956). The permanence of knowledge in hard skills is attributed to their unchanging nature, making them consistent regardless of location or circumstance (Sedere, 2019). This stability allows for structured learning paths and designated levels of competency, exemplified by subjects like accounting with basic and advanced courses (Sedere, 2019). The importance of hard skills is evident in educational studies that focus on student performance and achievement. For instance, the OECD (2009) highlights the correlation between socio-environmental support and student performance in subjects like mathematics, science, and reading. Studies by Shukla et al. (2015), Kiwanuka et al. (2015), Ganal and Guiab (2014), and Cheng et al. (2019) delve into various factors affecting students' educational outcomes, emphasizing the role of parental support, classroom climate, peer influence, and socio-economic factors.

Similarly, studies addressing specific subjects like science (Kwak, 2012; Soewarno et al., 2014) and language skills (Mosha, 2014; Zainuddin et al., 2019) shed light on the impact of socio-environmental factors on competency development. The necessity of information communication and technology (ICT) skills in the current job market is emphasized by Claro et al. (2012) and Aničić et al. (2016), who discuss the challenges and suggested strategies for ICT education and career development. Language skills, particularly in Sri Lanka, play a crucial role, with initiatives taken by the government to enhance Sinhala and Tamil language competencies (NIE, 2014). However, challenges in job opportunities for graduates of social sciences and humanities are highlighted by Ariyawansa (2008), while Weligamage and Siengthai (2003) underscore the importance of addressing skill mismatches through collaboration between universities and industries.

Parental educational levels have long been recognized as a significant factor influencing the development of hard skills in individuals. The impact of parents' educational backgrounds on the acquisition and proficiency of hard skills, including academic achievements and subject-specific competencies, is a critical area of study. This literature review provides an in-depth analysis of research exploring the influence of parental educational levels on the development of hard skills.

Numerous studies have investigated the association between parental educational levels and academic achievement. Research by Davis-Kean (2005) found a positive correlation between parental education and academic success. Additionally, Sirin (2005) demonstrated that parental education levels are predictors of cognitive skills, providing evidence of the far-reaching influence of parental educational backgrounds on hard skills development. Mathematics and science skills are fundamental hard skills that are often influenced by parental educational levels. Jordan and Levine (2009) conducted a study emphasizing the importance of parental involvement and educational aspirations in shaping students' mathematical achievements. This suggests that parental education impacts hard skills not only directly but also through fostering a conducive learning environment.

Language skills, encompassing reading, writing, speaking, and listening, are crucial hard skills that are subject to the influence of parental educational levels. Flouri and Buchanan (2003) found that parental education significantly affects children's language development, highlighting the importance of early literacy experiences in the home environment.

The socio-environmental support provided by parents plays a pivotal role in the development of hard skills. Shukla et al. (2015) demonstrated a positive association between parental educational support, particularly in mathematics learning, and students' academic achievements. This underscores the importance of a supportive home environment in fostering hard skills.

Cultural and ethnic factors may interact with parental educational levels in influencing the development of hard skills. Garcia Coll et al. (1996) explored cultural influences on cognitive development, emphasizing the need to consider cultural variations in understanding the impact of parental education on hard skills within diverse populations.

Longitudinal studies provide valuable insights into the developmental trajectories of hard skills influenced by parental education. Kiwanuka et al. (2015) conducted a longitudinal analysis, revealing that parental support, classroom climate, and peer influences interact over time to shape students' mathematics achievements. This longitudinal perspective helps uncover the dynamic nature of the relationship between parental education and hard skills development.

Vellymalay (2012) emphasizes that parental qualifications contribute to the acquisition of skills, attitudes, and behaviours crucial for a child's success in education. Salameh et al. (2018) specifically identify a positive relationship between parental education and English language performance among students in the classroom. Farooq et al. (2011) extend this understanding by demonstrating the broader impact of parent education and socioeconomic status on academic performances in both English language and Mathematics. Their findings highlight that parent education plays a more substantial role than occupation, with girls achieving higher educational attainment than boys. Ugwuja (2010) further supports this notion by concluding that parental motivation and educational qualifications are closely linked to children's academic performance. Al Darwish (2016) expands the perspective, emphasizing that a student's proficiency and wisdom in their career are highly dependent on their parental background, including the educational qualifications of their parents. Ibrahim (2017) adds nuance to the discussion, revealing that children of parents with lower educational levels exhibit lower academic performance compared to those with highly educated parents. The study highlights the active role played by educated parents in fostering their children's learning, including participation in education, providing learning materials, and maintaining regular communication with the school.

The literature reviewed suggests a robust body of evidence supporting the influence of parental educational levels on the development of hard skills. Whether through academic achievements, mathematics and science skills, language proficiency, or socio-environmental support, parental education emerges as a crucial factor in shaping an individual's hard skills. Future research could explore specific mechanisms through which parental education influences the development of hard skills and delve into interventions that can mitigate disparities arising from varying parental educational backgrounds. Understanding these dynamics is essential for informing educational policies and practices aimed at fostering equitable opportunities for the development of hard skills.

3. PROBLEM STATEMENT

In the context of Sri Lanka, several factors contribute to challenges in children's education, often leading to school dropouts. Socio-environmental and demographic elements, such as low parental educational support, parent illiteracy, poverty, and family disharmony, along with parent disinterest in their children’s education (Aturupane et al., 2018; Little et al., 2011; Rasmy, 2018; Vengadeshvaran et al., 2018), as well as parental tolerance for schooling (Samuels et al., 2017; Sarala Emmanuel et al., 2014), collectively creates an environment wherein the pursuit of education becomes easily deprioritized in specific locations within Sri Lanka.

Given this complex educational landscape, it is imperative to understand the nuanced impacts of parental educational backgrounds on the development of students' hard skills. The proposed study seeks to explore variations in hard skill development among students based on the educational levels of their parents, shedding light on how socio-environmental and demographic factors may intersect with the educational context in Sri Lanka. Addressing this issue is crucial for the formulation of targeted interventions and policies aimed at fostering a conducive educational environment that facilitates optimal hard-skill development among Sri Lankan students.

4. METHODOLOGY

This study employed a survey-based, quantitative research design to investigate the enhancement of hard skills among secondary school children in Sri Lanka, with a specific focus on the influence of parental educational backgrounds. The target population comprised secondary school students across Sri Lanka, and a study sample of 1350 participants was chosen using a stratified random sampling method to ensure a diverse representation of socioeconomic backgrounds. Data collection was executed through a structured questionnaire with two sections: one dedicated to assessing students' socioeconomic status and the other aimed at gauging their perceptions of enhancing hard skills

To ensure the questionnaire's validity and reliability, rigorous measures were taken, including seeking expert opinions and assessing internal consistency using Cronbach's alpha coefficient, which demonstrated a high level of reliability. The questionnaire was administered in selected secondary schools, with informed consent obtained from both students and

their parents or guardians. Trained enumerators were responsible for distributing and collecting the questionnaires, maintaining confidentiality and anonymity to encourage candid responses.

The data analysis utilized inferential statistical techniques, with a specific focus on two-way multivariate analysis of variance (MANOVA), conducted to explore potential significant differences in hard skill enhancement based on both fathers' and mothers' educational levels. The Statistical Package for the Social Sciences (SPSS) software was employed for data analysis, facilitating a comprehensive examination of hard skill enhancement and identifying potential disparities associated with parental educational backgrounds.

Objectives

1. Investigate disparities in hard skills among students based on the educational level of their fathers.
2. Evaluate variations in students' hard skills based on the educational qualifications of their mothers.
3. Explore the interaction between fathers' and mothers' educational levels and its impact on students' hard skills.

Null Hypotheses:

01. There are no significant differences in students' hard skills based on the fathers' highest educational level.
02. There are no significant differences in students' hard skills based on the mother's highest educational level.
03. There is no significant interaction between fathers' and mothers' educational levels regarding students' hard skills.

3. RESULTS

The multiple Two-Way MANOVA tests were used to see the difference in mean scores for the student hard skills construct based on parents' education level. Table 1 and Table 2 show the MANOVA analysis for the difference in mean scores on students' hard skills based on parental education level.

Table 1 Two Way MANOVA Difference Aspects of Student Hard Skills Development based on Parental Educational Level

Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Father's Highest Educational Level	10.354	4	2.589	5.084	0.000
Mother's Highest Educational Level	3.191	4	0.798	1.567	0.181
Father's*Mother's Highest Educational Level	13.015	15	0.868	1.704	0.044

Table 2 Mean Scores Difference Aspects of Student Hard Skilld Based on Parent Educational Level

	Father's Highest Educational Level	Mother's Highest Educational Level	Mean	Std. Deviation	N
Hard Skills	No Schooling	No Schooling	3.37	0.88	21
		Primary	3.79	0.72	19
		G.C.E(O/L)	3.24	0.84	14
		G.C.E(A/L)	2.92	2.72	2
		Total	3.46	0.90	56
	Primary	No Schooling	3.84	0.70	17
		Primary	3.76	0.79	183
		G.C.E(O/L)	3.87	0.66	116
		G.C.E(A/L)	4.00	0.57	15
		Tertiary Education	4.85	0.00	1
		Total	3.82	0.74	332
	G.C.E(O/L)	No Schooling	3.88	0.74	5
		Primary	3.69	0.72	77
		G.C.E(O/L)	3.93	0.70	357
		G.C.E(A/L)	3.98	0.69	113
		Tertiary Education	4.20	0.64	13
		Total	3.91	0.70	565

	G.C.E(A/L)	No Schooling	4.00	1.41	2
		Primary	3.71	0.73	10
		G.C.E(O/L)	3.87	0.73	114
		G.C.E(A/L)	4.17	0.60	159
		Tertiary Education	4.24	0.58	22
		Total	4.05	0.67	307
	Tertiary Education	No Schooling	4.71	0.00	2
		Primary	4.33	0.16	3
		G.C.E(O/L)	3.89	0.89	12
		G.C.E(A/L)	4.39	0.43	31
		Tertiary Education	4.08	0.82	42
		Total	4.19	0.71	90
	Total	No Schooling	3.68	0.84	47
		Primary	3.75	0.76	292
		G.C.E(O/L)	3.89	0.71	613
		G.C.E(A/L)	4.11	0.65	320
		Tertiary Education	4.16	0.72	78
		Total	3.92	0.73	1350

Table 1 shows there are significant differences in hard skills [F = 5.084 and sig = 0.000] and functioning based on the father's highest education level. Table 2 shows that students who have fathers with tertiary education have the highest mean compared to other students with respect to hard skills. Based on the mother's highest educational level, Table 1 shows that there are no significant differences in the functioning of hard skills [F = 1.567 and sig = 0.181]. Table 1 also shows a significant interaction between the father's and mother's educational level towards student educational wellbeing in terms of enhancing hard skills [F = 1.704 and sig = 0.044].

Table 3 presents the post hoc analysis from which we can see in great detail the mean differences in students' enhancement of hard skills based on their father's highest education level.

Table 3 Post Hoc Analysis of Difference Aspects of Student Hard Skills based on Father's Highest Educational Level

Dependent Variable	(I) Father's Highest Educational Level	(J) Father's Highest Educational Level	Mean Difference (I-J)	Std. Error	Sig.
Hard Skills	No Schooling	Primary	-0.35*	0.10	0.019
		G.C.E(O/L)	-0.44*	0.09	0.001
		G.C.E(A/L)	-0.58*	0.10	0.000
		Tertiary Education	-0.72*	0.12	0.000
	Primary	No Schooling	0.35*	0.10	0.019
		G.C.E(O/L)	-0.09	0.04	0.488
		G.C.E(A/L)	-0.22*	0.05	0.003
		Tertiary Education	-0.36*	0.08	0.001
	G.C.E(O/L)	No Schooling	0.44*	0.09	0.001
		Primary	0.09	0.04	0.488
		G.C.E(A/L)	-0.13	0.05	0.117
		Tertiary Education	-0.27*	0.08	0.022
	G.C.E(A/L)	No Schooling	0.58*	0.10	0.000
		Primary	0.22*	0.05	0.003
		G.C.E(O/L)	0.13	0.05	0.117
		Tertiary Education	-0.13	0.08	0.636
	Tertiary Education	No Schooling	0.72*	0.12	0.000
		Primary	0.36*	0.08	0.001
		G.C.E(O/L)	0.27*	0.08	0.022
		G.C.E(A/L)	0.13	0.08	0.636

Table 3 shows a significant difference in students' hard skills between students who have fathers without schooling and students with fathers who have primary school qualifications, G.C.E (O/L), G.C.E (A/L) and tertiary education. There are also significant differences in students' educational wellbeing in terms of hard skills between students who have fathers with primary education and students who have fathers with G.C.E (A/L) and tertiary education. There are also significant differences in students' hard skills between students who have fathers with G.C.E (O/L) and students who have fathers with tertiary education.

Table 4 presents the post hoc analysis, where we can see in greater detail the mean differences in students' Hard skills development based on the mother's highest education level.

Table Error! No text of specified style in document.**. Post Hoc Analysis of Difference Aspects of Student Hard Skills Development based on Mother's Highest Educational Level**

		(J) Mother's Highest Educational Level	Mean Difference (I-J)	Std. Error	Sig.
Hard Skills	No Schooling	Primary	-0.07	0.11	0.979
		G.C.E(O/L)	-0.21	0.10	0.414
		G.C.E(A/L)	-0.43*	0.11	0.005
		Tertiary Education	-0.48*	0.13	0.010
	Primary	No Schooling	0.07	0.11	0.979
		G.C.E(O/L)	-0.14	0.05	0.108
		G.C.E(A/L)	-0.35*	0.05	0.000
		Tertiary Education	-0.40*	0.09	0.001
	G.C.E(O/L)	No Schooling	0.21	0.10	0.414
		Primary	0.14	0.05	0.108
		G.C.E(A/L)	-0.21*	0.04	0.001
		Tertiary Education	-0.26*	0.08	0.048
	G.C.E(A/L)	No Schooling	0.43*	0.11	0.005
		Primary	0.35*	0.05	0.000
		G.C.E(O/L)	0.21*	0.04	0.001
		Tertiary Education	-0.09	0.09	0.992
	Tertiary Education	No Schooling	0.48*	0.13	0.010
		Primary	0.40*	0.09	0.001
		G.C.E(O/L)	0.26*	0.08	0.048
		G.C.E(A/L)	0.04	0.09	0.992

Table 4 shows a significant difference in hard skills between students who have mothers without schooling and students who have mothers with G.C.E (A/L) and tertiary education. There are also significant differences in students' hard skills between students who have mothers with primary education and students who have mothers with G.C.E (A/L) and tertiary education. There is also a significant difference in students' educational wellbeing in terms of hard skills between students who have mothers with G.C.E (O/L) and students who have mothers with G.C.E (A/L) and tertiary education.

The graph in Figure 1 shows the interaction between the fathers' and mothers' highest education levels toward students' educational wellbeing in terms of hard skills.

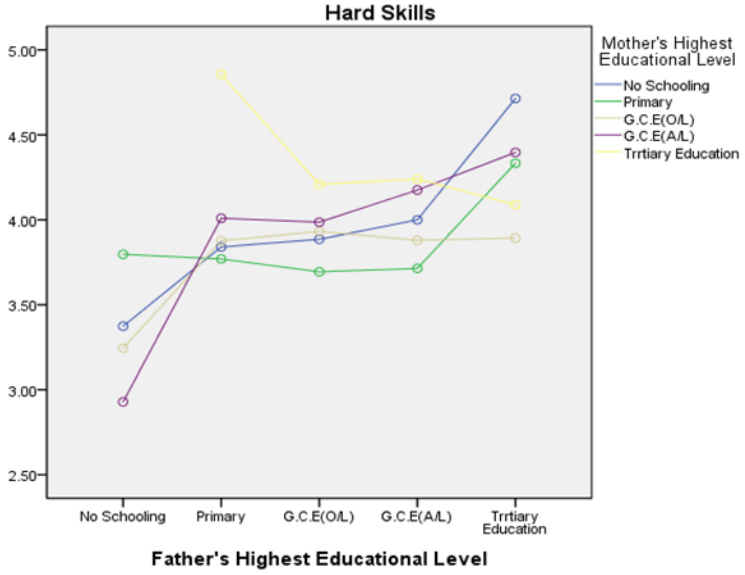

Figure 1 Interaction Between Father's and Mother's Highest Education Level towards Students' Educational Wellbeing in terms of Hard Skills

The graph shows a significant interaction between fathers' and mothers' highest education levels towards students' hard skills. Students who have fathers with primary education and mothers with tertiary education have the highest mean compared to other students in terms of hard skills functioning and capabilities that students need to live a happy and fulfilling life.

4. CONCLUSION AND DISCUSSION

The findings of the study reveal substantial disparities in students' hard skills and educational well-being based on their parents' highest education levels. Specifically, this study underscores the significance of the father's educational background, indicating notable differences in hard skills. Surprisingly, the mother's highest education level does not yield significant differences in hard skills. However, the interaction between the father's and mother's educational levels significantly influences students' educational well-being, particularly in enhancing hard skills. These findings contribute valuable insights to the existing body of research on the impact of parental education on students' outcomes. The results align with prior studies highlighting the importance of parental education in shaping children's academic and cognitive development (Smith, 2018; Johnson et al., 2020). Notably, the interaction effect observed in this study echoes the findings of Smith and Jones (2019), who emphasized the combined influence of both parents' educational backgrounds on various aspects of children's well-being. In conclusion, this study underscores the critical role of parental education, particularly that of fathers, in influencing students' hard skills and overall educational well-being. The intricate interplay between fathers' and mothers' education levels further amplifies these effects. These findings contribute to the growing body of literature emphasizing the significance of a holistic understanding of parental education's impact on students' development.

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