# A STUDY ON RATE OF RETURN ON INVESTMENT (ROI) OF SKILL TRAINING PROGRAMS FOR PRIMARY AND ELEMENTARY TEACHERS IN PUNJAB

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## Abstract

Skill development programs are defined as the initiatives or activities which enhance the abilities, knowledge, and competencies of individuals for having better livelihoods. Data of the study collected through questionnaire. Sample size of the study of 1024. First calculate the descriptive analysis and find out how training affects the teacher's performance. Second part of the study we apply the logit model and find rate of return of beneficiary respondents is regressed on education, job experience, positive, area and learning materials. Education, area and learning materials are positively and significantly related to the rate of return on such skill investments. The education of the teacher and learning materials of the training contribute to improving the learning outcomes by odds of 1.11 and 3.07 respectively and are also statistically significant at 1% level of confidence. Similarly, instructors belonging to urban areas have better trained students relatively to the teachers from rural areas.

**Keywords:** Rate of Return, Skill Development, Education

## 1. Introduction

Skill development programs are defined as the initiatives or activities which enhance the abilities, knowledge, and competencies of individuals in specific areas. The objective of these programs is to equip the participants with the required skills to succeed in their professional and personal life. Various forms can be taken by the skill development programs including training sessions, workshops, certifications, apprenticeships and online learning platforms. The common skills development programs include technical skills development, soft skills development, business skills and entrepreneurship development, vocational skills development, leadership and management development along with personal development skills (World Bank, 2017).

The primary and elementary teachers are a class of educators that work with the children in their early stages and typically between preschool to 11 to 12 years old. These teachers play an important role in building the educational, social and emotional foundation of the child and they work towards the development of curriculum development, classroom and

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instruction management, individualized instruction, progress monitoring and assessment, student development and support along with parent and community engagement (Allen & Kelly, 2015). Hence, potential and integral skills are being developed by the primary and elementary educators in the children of different age groups.

For policymakers and government education departments, it is important to assess what is the optimal set of skills which should be linked with the teachers engaged in providing primary and secondary education so that it can help in enhancing the performance of the students at different levels. From decision-making point of view, it is critical to evaluate the effectiveness of the training programs by calculating return on investment or ROI of the budget spent on the training of the teachers in skill development initiatives. Hence, this study has been directed at measuring the effectiveness of skills enhancement programs in financial terms (ROI) whether such trainings optimally contribute towards enhancing the productivity, deliverance, task efficiency and other related attributes of primary and elementary teachers in Punjab. The Punjab Government spends extensively on the training and development of teachers every year and the outcomes of such investments are to be quantified in this regard. The effectiveness of such investment is measured in terms of development of the improved educational requirements in the given case. The key reasons due to which this study is needed to be performed include the lack of outcome measurement in Punjab, compliance with the efficient utilization of resources, linking investments with the educational outcomes, identifying gaps and strengths, improvement in evidence-based decision-making and continuous improvement in the given case of the research.

### 1.1: Research Objectives

The main objective of this study is to determine the impact of investment on teacher's training on enhancing their productivity in primary and elementary settings. The specific objectives of the study are:

- To determine the impact of teacher training investment on the productivity of teachers.
- To determine the impact of teacher training investment on the performance of teachers.
- To determine the impact of teacher training investment on the retention of teachers.

- To determine the impact of teacher training investment on the behavior of teachers improved with the students.
- To determine the impact of teacher training investment on the educational results of the students' performance.

**2: Literature Review**

In this paper, we explore the issue of quality disparity between graduates from emerging countries in engineering and technology compared to those in advanced countries. We investigate how firms in India, both multinational and local, engage in collaborations focusing on teaching with universities to bridge this gap and prepare students for R&D roles, thereby reducing the need for extensive on-the-job training. By conducting 65 interviews and analyzing secondary data from 10 firms, we highlight the effectiveness of collaboration between the industry and academia as a talent recruitment strategy in emerging countries. We also propose that these collaborations can serve as an alternative to traditional on-the-job training, offering a comprehensive approach that enhances both theoretical knowledge and practical skills (Borah, Malik, & Massini, 2019).

The belief among many faculty members that research success and teaching efforts are inversely related has hindered the adoption of EBT (evidence-based teaching) and effective programs of training for graduate students. To investigate this trade-off, we examined a national sample PhD life science student and assessed the impact of increased EBT training on their research preparation confidence, research communication, and publication productivity. Surprisingly, investing time in EBT did not diminish students' confidence in research, communication skills, or publication output. In fact, there was a slight positive trend, suggesting that EBT training and research preparation can complement each other (Shortlidge & Eddy, 2018).

This study aimed to assess whether quality improvement (QI) training courses effectively enhance competence of self-assessed QI content and productivity relevant to QI-related productivity. The researchers examined the impact of the "Quality Improvement Essentials" course at Nationwide Children's Hospital, which combined didactic and experiential learning over four months. Graduates from 2012 to 2014 completed a self-assessment survey to measure changes in their perceived QI competency. The survey evaluated four competency domains: QI knowledge, change implementation using data management and analysis, teams and sustaining and spreading science. Additionally, metrics such as

presentations/publications, teaching, committee involvement, leadership roles, collaboration, and certification projects were used to assess individual QI productivity. The findings state that course participation more than doubled participants' QI competence on self-assessed basis in all domains, with competency increasing over time rather than degrading (Thomas, et al., 2018). It is highlighted that investment in training increases the productivity of employees (Bernier and Cousineau 2010).

**2.1 Training Investment and Teacher Deliverance**

The global pandemic has highlighted the importance of relevant planning for the ever-changing times of past, present and future. Teacher's Continuous Professional Development (CPD) is extensively vital for the social and economic development of a nation. The NEP 2020 focuses on holistic learner development aligned with 21st-century education needs and cultural identity. Since its development from 2009, the center has trained around 18,000 teachers using various models on the basis of curriculum, values integration, innovative pedagogies, instructional strategies, and technology integration. The COVID-19 pandemic necessitated a shift to online platforms, demonstrating the effectiveness of models of training and alignment with national objectives. To prepare for the future, an online model of knowledge management is proposed for capacity building of teachers (Rana & Sharma, 2021).

This study aimed to perform the situational analysis of capacity building of teachers in the districts of Kohat, Hungu, Karak in KPK, Pakistan, with reference to the 2013 reforms of education. The conduct of random interviews was done of 540 teachers using a multistage sampling procedure. The findings revealed that age significantly influenced teachers' attitude towards improving primary education, experienced teachers and qualified staff had a significant impact on student achievement. Consistent training contributed to capacity enhancement, but some teachers lagged behind in participating, leading to incompetence in the reformed regime (Islam et al., 2019).

The pandemic exacerbated the challenges faced by disable children due to a poor structure of digital nature and a lack of trained teachers. The findings reveal that these children experienced academic setbacks and faced biases related to COVID-19. The unpredictable nature of education opportunities for learners with disabilities necessitates the implementation of disability-focused measures to prevent significant disruptions to their education (Ressa, 2020).

According to Nardir, A. (2007), developing a teacher's educational expertise and capabilities that are compatible with educational policies is the main purpose of teacher training. This will enable instructors to effectively convey information. A research on the effect of teacher expertise on the teaching and learning process in 14 Sub-Saharan African nations, which was commissioned by UNESCO, provides support for this evaluation. He presents the case that teachers' professional development is an essential component that would significantly raise students' academic achievement. Currently, professional development is the sole setting in which teacher training is offered. The results of some students' tests showed that teacher preparation had no effect on their overall academic performance, but those of other students showed that it could improve grades when it was intensive and content-focused, according to Knoblaunch, D., and Chase, M. (2015). Their study examined the effectiveness and benefits of teacher preparation in rural, suburban, and urban schools. Wesh (2006) asserts that the goal of teacher preparation is to provide educators with the information they need to engage students and aid them in performing better on final exams.

Studies show that teachers who have received training are more capable of controlling the classroom environment and delivering content. In 2003, Tel Aviv-based researcher Ruth Zuzovosky conducted a study on teachers' credentials. The study found that support policies and Increased opportunities, trainings, and benefits for participating in content-based training for professional growth should be the initial focus of interventions for teachers. This study is supported by the findings of a study by Bizimana, B., and John, A. (2014) that comprised 619 respondents, 81 school administrators, 160 teachers, and 378 pupils. The goal of the study was to determine how the Huye District's secondary schools' content delivery, resource accessibility, and teacher preparation interacted.

According to the study, teachers who have little to no training or knowledge of the subject they are teaching are depriving their pupils of the most essential skills and dispositions. Bizimana, B., and John arrived to the conclusion that teachers who used resources while delivering information were perceived doing so in a clear and engaging manner. The European Centre for the Development of Vocational Training (CEDEFOP) (2011) also highlighted the economics and benefits of training.

### 2.2. Training Investment and Improved Attendance

This study examines how PIED (perceived investment in employee development) affects worker attitudes through social and economic exchanges. Data from 545 employees were collected through a questionnaire survey. The findings support social exchange theory, showing that exchange of social perceptions mediate the relationship between job commitment and PEID, while economic exchange perceptions mediate them negatively. Social and economic exchanges also partially or fully mediate the relationship between job satisfaction and PIED. Employers should invest in employee development as a form of social exchange to enhance commitment and satisfaction. They should also consider employees' perceptions and conduct surveys to assess the impact of training investments (Jung & Takeuchi, 2019).

A qualitative study was conducted in United Kingdom investigating the key reasons behind the low attendance of teaching sessions of university in case of increasing tuition fees. The use of focus groups was done by the study and four main themes were identified including a lack of connection to the university, teaching content being dissatisfying, external pressures and a consumer mindset of students. The research has highlighted the need of universities addressing these factors and modifying their practices for the better support of the students (Oldfield et al., 2019).

This paper explores the perception and effect of development and training initiatives on the workers' lifelong learning and human capital in the labor market. A total of 450 questionnaires were used to assess the level of training participation in public and private institutions. Technological changes, globalization, and other factors emphasize the importance of continuing adult education and lifelong learning. The study highlights on-the-job training as the most common practice in Kosovo, with the age group of 21-35 utilizing training for learning purposes and the age group of 51-65 using it for both learning and sharing information. Compulsory training is positively correlated with on-the-job training, and the results of Information Technology training vary depending on the education level. Overall, this research provides insights into employees' perspectives on training, including its various purposes and impact on the job market (Beqiri & Mazreku, 2020).

### 2.3. Training Investment and Problem-Solving Skills

This paper highlights the need to enhance self-monitoring and self-regulation skills in problem-solving tasks within STEM education. While

research on self-regulated learning has mainly focused on other learning contexts, such as memorization or reading, this review focuses on problem-solving tasks that require mental effort. The first part of the review demonstrates that engaging students in challenging and active learning activities during problem-solving can enhance their self-monitoring and self-regulation skills at an item level, helping them identify which problems require further practice. The second part explores self-monitoring and self-regulation at the task sequence level, emphasizing the importance of considering students' performance and mental effort invested in prior tasks when selecting new ones (Gog, Hoogerheide, & Harsel, 2020).

A recent study has provided evidence that teaching learned material on video to an imaginary peer student is more beneficial for learning compared to simply reviewing the content. The research aimed to explore the effectiveness of video-based teaching in acquiring problem-solving skills using worked examples, while also considering factors such as cognitive load, worry, and arousal. Participants in the study were exposed to worked examples related to troubleshooting electrical circuits. They were then assigned to either teach the material on video or review the examples again. The study aimed to analyze the impact of cognitive load, worry, and arousal on the learning process. Teaching resulted in higher perceived cognitive load, increased arousal, and better performance on posttest problems. (Vincent et al., 2019).

This study focuses on the importance of software engineering education and the challenges in developing practical skills within limited course durations. To address this, the study introduces a flipped classroom approach in a course of software engineering, accompanied by a diagnosis system of smart learning. An experiment was conducted comparing the approach of flipped classroom with the approach of traditional classroom. The results indicate that the proposed research significantly works on enhancing students' problem-solving, motivation, learning strength and attitude. By shifting to a learner-centered environment and incorporating innovative pedagogy, students were able to better apply software engineering concepts and technologies to real-world problems (Lin, 2019).

**2.4. Training Investment and Teacher Retention**

This grounded research study aimed to identify the key supports that contribute to teacher retention. A total of 60 teachers were surveyed, and 10 teachers who had received significant support during their early

teaching years were interviewed. The researchers sought to know whether the level of support and assistance positively influenced the teachers' longevity and perceived instructional performance in terms of profession. Furthermore, they explored whether the instructional strategies and techniques that were based on research to introduce to these teachers in their starting years remained influential throughout their later years of teaching (Reitman & Karge, 2019).

California has been experiencing a worsening teacher shortage since 2015. The increased demand for teachers due to economic growth has clashed with a sharp decline in the supply of new teachers. Consequently, there has been a notable increase in the recruitment of unprepared teachers, particularly in school districts that cater to high-need students. The shortage of qualified teachers is most pronounced in special education, mathematics, and science, and is also expanding in bilingual education, which corresponds to areas with high teacher turnover rates. This document suggests evidence-based policy recommendations that the state of California could implement to ensure a consistent pool of adequately trained teachers, thereby establishing a sustainable workforce (Hammond, Sutcher, & Thomas, 2018).

**2.5. Training Investment and Increased Enrollment of Students**

Hafeez et al., (2020) in their study explained the relationship between student achievement and school enrollment size with a focus on four primary schools. With the help of the findings of the study, it has been identified that the enrollment size of the school increases, the achievement of the students decreases and vice-versa. The findings of the study have identified the impact of large school populations on the outcomes of the students and emphasized the need of issue of increased enrollment in the primary education for improving the quality of education.

Buerger & Bifulco (2019) in their study examined the impact of charter schools on the efficiency of school district costs and efficiency using the New York State data between the years of 1998/99 to 2013/14. The analysis was done with the use of difference-in-differences model regarding the effects of student composition and enrollment. An expenditure function is then estimated to measure costs associated with achieving performance standards for students of different needs and enrollments. The findings of the study indicate that charter schools' results in higher educational costs and surpasses short-term efficiency gains. However, in long-run scenarios,

these costs are offset by the efficiency gains and the overall charter schools have a mixed effect on school district costs and efficiency.

**2.6. Training Investment and Resource Utilization**

This study examined the impact of a training program focused on leader mental health on employees' resource utilization and leader's communication regarding mental health and available resources. Using a wait-list control design, the findings showed that leaders who received the training were more likely to share information about resources and mental health, demonstrate support for employees' mental health issues, and actively encourage resource utilization. These results suggest that a 3-hour mental health training for leaders can lead to significant behavioral change up to 3 months after the training (Dimoff & Kevin, 2019).

This article shares the outcomes of interviews conducted with senior HR executives and professionals from 25 organizations, aiming to investigate the reasons behind and outcomes of HR outsourcing. The study findings indicate that companies employ HR outsourcing for both operational and strategic reasons. To manage outsourced HR functions, organizations utilize various approaches, including just-in-time HR management, sell and lease-back HR programs, and do-it-yourself HR. Based on the insights gained from the interviews, the article offers guidelines for various aspects of HR outsourcing. These include vendor selection, managing the transition to outsourcing, maintaining effective vendor relations, and monitoring vendor performance. The authors emphasize that HR outsourcing is not merely a passing trend but a practice that can add value to the HR value chain. It can also contribute to the transformation of HR into a business partner and a strategic contributor to the organization's overall objectives. By outsourcing certain HR functions, companies can focus on their core competencies while relying on specialized vendors for HR-related tasks. This approach allows organizations to streamline operations, improve efficiency, and access external expertise. However, it is crucial to carefully select and manage vendors, ensuring that they align with the organization's values and objectives. The findings of this study highlight the potential benefits of HR outsourcing and provide practical recommendations for successful implementation. By leveraging outsourcing effectively, companies can optimize their HR functions and enhance their ability to contribute strategically to the organization's goals (Greer, 2021).

## 2.3 Research Hypothesis

Based on the comprehensive review of literature, the research hypotheses have been developed as follows:

**$H_1$**: There is relationship between the impact of teacher training investment and the productivity of teachers.

**$H_2$**: There exists relationship between the impact of teacher training investment and the retention of teachers.

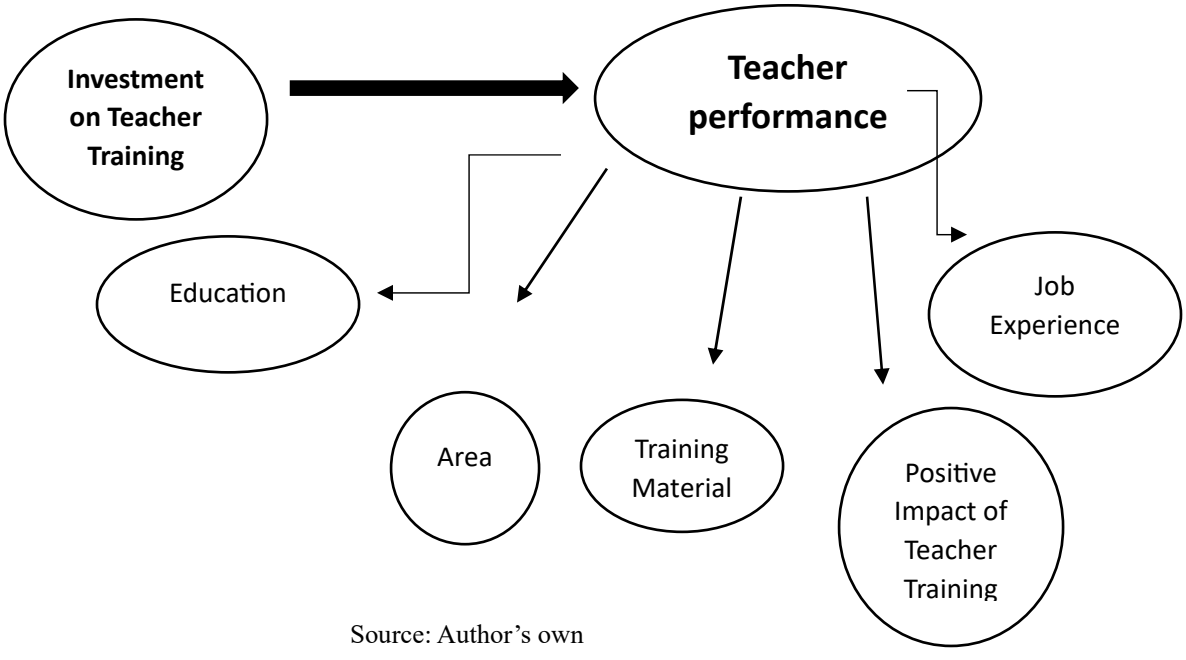
**$H_3$**: There is relationship between the impact of teacher training investment and the behavior of teachers with students.

**$H_4$**: There is relationship between the impact of teacher training investment and the educational results of teachers.

These hypotheses are to be validated in the next segments of the study with the help of a comprehensive data analysis.

## 3. Conceptual Framework

The study's conceptual framework has been drawn as follows on the basis of the developed hypotheses:




Source: Author's own

The education of teachers plays a crucial role in improving the overall quality of education and can indirectly contribute to increase the teacher performance Well-educated teachers possess a deeper understanding of

subject matter and teaching techniques. They can effectively convey complex concepts to students, making learning more engaging and productive. This can lead to improved student performance, which in turn can lead to higher graduation rates and better outcomes. Educated teachers often have better strategies to engage students in the learning process. When students are actively involved and interested in their studies, they are more likely to remain in school, reducing dropout rates. Creating effective teaching training materials can have a positive impact on the performance of the teacher. Moreover, in education by enhancing the quality of instruction, increasing teacher effectiveness, and improving student outcomes. Well-structured training materials ensure that teachers receive consistent and high-quality training regardless of who is conducting the training. This consistency translates to more uniform and effective teaching practices, leading to better learning outcomes for students. This, in turn, maximizes the educational investment made in each student. Hence, in this case, the teacher training productivity is being dependent on the investment made on the development and enhancement of such training programs in this regard. The validation of this relationship has been done in the subsequent chapters of research methodology and data analysis in the given case.

The teacher's performance, of course, is greatly influenced by how long he/she has been teaching. Therefore, the teacher's experience in teaching can be used to measure the teacher's performance. The teaching experience that has been possessed by a teacher is decisive to achieve the learning outcomes of the students because the teachers who have been teaching for some years are considered to have adequate knowledge and experience in implementing the learning. The teachers who are beginners or new ones will need some teaching experience to gain from the learning process. Besides the teaching experience, the training is also a factor that affects the teacher's performance in the classroom. The teachers who have good professional performance in curriculum implementation have the task of designing learning programs, implementing learning, and assessing the learning outcomes of students. While improving the performance of a teacher is needed e.g. give the opportunities for the teachers to develop all of their potential such as being involved in the seminars, following training in making the syllabus, be the member of the teacher's organization, and other educational training so that the teacher has 4 competency standards. Gomes states that the training is an attempt to improve the performance of a worker

concerning the work that is being undertaken and is currently under their responsibility, or that is related to their job. Therefore, training is the best solution to organizational problems. The training is intended to correct the skills shortages. The teacher is a worker in a school. He/she works to educate the students in order to reach the goal of education in Indonesia. That is why, to improve the teaching performance, the teachers must, of course, be aware of the new information, skills, and the desire to learn must be maintained, so that performance will be increased. Leading the learners in constructive discussions in complex issues is a very difficult question in teaching (Sivarajah et al., 2019). The role of instructor is very important in discussion teaching method. An instructor must be good leader to lead the discussion and learners in the classroom. The learners may ask questions or comments during the discussion. A good leader has the ability to answer all the questions raised by the learners. For all these challenges, the instructor must have a proper plan before the discussion session (Su et al., 2016). The instructor must be prepared for the bad comments in the discussion method (Abdulbaki et al., 2018). In discussion teaching method, the instructor may use different tools to conduct the discussion session. The tools may be projector, computer laptop for presentation and learning materials

## 4. Data and Data Collection

To accomplish this research for better public policy, due to cost and time constraint, present study could not be expanded to whole of the country. However, this study is restricted to one province (Punjab) of Pakistan, which covers the more than half population of overall country. The data for this study is collected from people in the districts of Lahore, Faisalabad, Multan, and Rawalpindi. The reason for choosing these four larger districts is to ensure that Punjab is covered. Punjab is separated into three regions: Central Punjab, Southern Punjab, and Northern Punjab. As the proportion of population is more than 56% in central Punjab, so to give the more weight to this region, two cities (Lahore and Faisalabad) are selected from central Punjab. While one major city, Multan' and 'Rawalpindi' are chosen from each region of Southern and Northern Punjab respectively.

The four districts were then subdivided into separate tehsils, and respondents(teachers) were chosen at random from each stratum (tehsil). The city Lahore has been divided into five tehsils namely: Lahore Cantt., Lahore city, Model Town, Raiwind and Shalimar tehsil. Multan has been divided into four tehsils namely: Jalalpur Pirwala, Multan city, Multan Sadar and Shujaabad tehsil. Rawalpindi has been divided into seven tehsils,

which include: Gujjar Khan, Kahuta, Kallar Sayyadan, Kotli Sattiyan, Murree, Rawalpindi and Taxila. Faisalabad has been divided into six tehsils, which include: Chak Jhumra Tehsil, Faisalabad City Tehsil, Faisalabad Sadar Tehsil, Jaranwala Tehsil, Sammundri Tehsil and Tandlian Wala Tehsil.

The next issue is sampling and sample design. If data is not collected through an appropriate sampling, it leads to miss-leading hypothesis and results. The sample size for this study is based on the total teacher for the four districts under consideration. During the first stage, the following formula is used to determine the total percentage sample for each district.

$$\mathbf{n} = \frac{z^2\, P(1-P)N}{z^2\, P(1-P)+Ne^2} \quad \textbf{..... (3.1)}$$

Where, 'z' is the value (1.96) at 5% confidence interval, P is the prevalence rate and 'e' is the probability of error (0.025) in equation 1 at 5% confidence interval. While 'N' denotes population size of four districts from which sample is drawn. As the value of P is unknown, so to find the value of P, maximize the product of P(1-P) and equalize its first derivative to zero. This procedure is adopted to get the sample size as large as possible. Thus

$$d/dP\ \{P(1-P)\} = 0 \quad \textbf{..... (3.2)}$$

After solving (2), we get P= 0.5

The sample distribution is calculated in the first stage for each school based on the weight calculated in step 1. In the second stage, stratified sampling is estimated for sample distribution among these school for all districts based on teacher proportions, using the below formula (3.3);

$$n_i = \frac{N_i * n}{N} \quad \textbf{..... 3.3}$$

### 4.1. Questionnaire Design

Questionnaire is divided into two parts parts:

In part 'A', personal information is asked about respondent personal information Information in part 'B' requires miscellaneous information about related to training and learning.

### 4.2. Demographic Profile of Respondents

The demographic profile of the respondents is shown in Table-1 below. 28.03 percent of respondents reported having a family of 2-4 people, 50 percent reported having a family of 5 to 7 people, and fewer than 1% reported having a household of 14 to 17. 34 percent of respondents were between the ages of 30 and 35, 48 percent were between the ages of 36 and 40, and 14 percent were between the ages of 41 and 50. More over 97 percent of responders were men, and only 3 percent were women.

**Table 1 :Demographic Profile of Respondents**

| Sr No | Variable | Frequency | Percentage (%) |
|---|---|---|---|
| 1 | **Family members** | | |
| | 2-4 | 287 | 28.03 |
| | 5-7 | 521 | 50.88 |
| | 8-10 | 177 | 17.29 |
| | 11-13 | 29 | 2.83 |
| | 14-17 | 10 | 0.98 |
| 2 | **Age (Years)** | | |
| | 30-35 | 352 | 34 |
| | 36-40 | 494 | 48 |
| | 41-50 | 148 | 14 |
| | 51-above | 30 | 3 |
| 3 | **Religion** | | |
| | Christian | 16 | 1.56 |
| | Muslim | 1008 | 98.44 |
| 4 | **Gender** | | |
| | Male | 996 | 97.27 |
| | Female | 26 | 2.54 |
| | She-male | 2 | 0.2 |
| 5 | **Education** | | |
| | Master | 917 | 89.55 |
| | Bachelor | 10 | 0.97 |
| | Above master | 97 | 9.47 |
| 6 | **Marital status** | | |
| | Single | 168 | 16.41 |
| | Married | 856 | 83.59 |
| 7 | **Area of Household** | | |
| | Rural | 652 | 63.67 |
| | Urban | 286 | 27.93 |
| | Semi- Urban | 86 | 8.4 |

**4.3.Descriptive Analysis**

Table-2 displays the beneficial effects of teacher development and training on students' performance. When asked, 49.61 percent of respondents said

they agreed, 1.27 percent said they were neutral, and 39.84 percent said they strongly agreed that training improves student performance.

**Table 2. Positive impacts of teachers training and development on students' performance.**

| Responses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 409 | 39.94 |
| Agreed | 508 | 49.61 |
| Neutral | 13 | 1.27 |
| Disagreed | 32 | 3.13 |
| Strongly Disagreed | 62 | 6.05 |
| **Total** | **1024** | **100.00** |

Similarly, just 3.13 percent of respondents said that they disagreed with the statement on the impact of teacher growth and training on students' academic performance, and 6.05 percent of respondents strongly disagreed.

**Table 3. Teachers' training and development programs improve job performance.**

| Responses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 311 | 30.37 |
| Agreed | 594 | 58.01 |
| Neutral | 50 | 4.88 |
| Disagreed | 42 | 4.10 |
| Strongly Disagreed | 27 | 2.64 |
| **Total** | **1024** | **100.00** |

Table-3 displays how work performance is improved by teacher development and training programs. 30 percent of respondents strongly agreed that teacher development and training increased job performance, and 58.01 percent of respondents agreed that job performance improved as a result of the teacher development and training. In a similar vein, 2.64 percent of respondents said they strongly disagree that teacher training has increased job performance, while 4.88 percent said they are neutral.

**Table 4 Teacher's job experience improve performance.**

| Responses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 289 | 28.22 |
| Agreed | 626 | 61.13 |
| Natural | 47 | 4.59 |

| | | |
|---|---|---|
| Disagreed | 42 | 4.10 |
| Strongly Disagreed | 20 | 1.95 |
| Total | 1024 | 100.00 |

Table 4 demonstrates how job experience enhances teachers' performance. More than 60% of teachers who responded agreed that employment experience benefited teacher performance, and 28.22% of respondents strongly agreed. Similarly, fewer than 2% of respondents claimed that professional experience had not improved the teacher's performance.

**Table 5: Teachers' commitment on job improvements.**

| Responses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 258 | 25.20 |
| Agreed | 620 | 60.55 |
| Natural | 83 | 8.11 |
| Disagreed | 45 | 4.39 |
| Strongly Disagreed | 18 | 1.76 |
| **Total** | **1024** | **100.00** |

Table 5 demonstrates how teacher training increases a teacher's commitment to teaching. A quarter of respondents (25%) indicated that they strongly believe that teacher training increases the instructors' dedication to their jobs, while a majority (60%) indicated that they agree. Less than 5% of respondents disagreed that teacher training increased teacher commitment to their jobs.

**Table 6 The trainers do adhere to trainee talent.**

| Responses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 268 | 26.17 |
| Agreed | 620 | 60.55 |
| Neutral | 73 | 7.13 |
| Disagreed | 39 | 3.81 |
| Strongly Disagreed | 24 | 2.34 |
| **Total** | **1024** | **100.00** |

Trainers do pay attention to trainee talent, as seen in Table-6. 60.55 percent of respondents agree, and 26.17 percent strongly agree. In a similar way, 2.34 percent of respondents strongly disputed that the trainers do adhere to trainee talent, while more than 5 percent of respondents said they are neutral.

**Table 7 Examinations at the end of each training period**

| Responses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 270 | 26.37 |
| Agreed | 658 | 64.26 |
| Neutral | 51 | 4.98 |
| Disagreed | 32 | 3.13 |
| Strongly Disagreed | 13 | 1.27 |
| **Total** | **1024** | **100.00** |

The exam that is given at the end of each training session is described in Table-7. More than 60% of respondents agree that the examiner should take the exam after the training when we ask the questionnaire at the conclusion of each training session, with 26.37 percent strongly agreeing.

**Table 8 Certificates are provided at the end of learning.**

| Responses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 317 | 30.96 |
| Agreed | 589 | 57.52 |
| Neutral | 61 | 5.96 |
| Disagreed | 32 | 3.13 |
| Strongly Disagreed | 25 | 2.44 |
| **Total** | **1024** | **100.00** |

Table 8 displays the respondents' opinions regarding learning certificates. More than 50% of respondents said they agree that learning certificates are issued by the institute, and more than 30% of respondents said they strongly believe that certificates are gained after training. Similarly, 2.44 percent of respondents strongly disputed that the respondents had not received a certificate of training from the institute.

**Table 9: The trainees volunteer to demonstrate during Training.**

| Responses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 278 | 27.15 |
| Agreed | 671 | 65.53 |
| Neutral | 34 | 3.32 |
| Disagreed | 33 | 3.22 |
| Strongly Disagreed | 8 | 0.78 |
| **Total** | **1024** | **100.00** |

The replies regarding trainees offering to volunteer to demonstrate during training are shown in Table 9. According to the findings, a sizeable majority of survey participants (92.68%) think that trainees volunteer to demonstrate

during training. A smaller percentage either expressed no opinion (3.32%) or disagreement (3.22%). The lowest percentage of respondents—0.78%—strongly disagreed.

**Table 10: Learning materials are adequate and relevant**.

| Responses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 273 | 26.66 |
| Agreed | 646 | 63.09 |
| Neutral | 62 | 6.05 |
| Disagreed | 37 | 3.61 |
| Strongly Disagreed | 6 | 0.59 |
| **Total** | **1024** | **100.00** |

The replies to the question of whether learning materials are adequate and relevant are shown in Table 10. This information suggests that the majority of respondents (89.75%) think the learning materials are sufficient and pertinent. Lesser numbers agreed with the statement (3.61%), opposed (3.61%), or strongly disagreed (0.59%) with it.

**Table 11: Employee who performs well is rewarded.**

| Responses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 269 | 26.27 |
| Agreed | 646 | 63.09 |
| Neutral | 50 | 4.88 |
| Disagreed | 33 | 3.22 |
| Strongly Disagreed | 26 | 2.54 |
| **Total** | **1024** | **100.00** |

The replies to the question of whether or not well-performing employees receive rewards are shown in Table 11. This information suggests that most respondents (89.36%) think that good performers are rewarded. A lower percentage agreed with the statement (4.88%), disagreed (3.22%), or strongly disagreed (2.54%).

**Table 12: Group discussions and assignment done by trainees.**

| Responses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 264 | 25.78 |
| Agreed | 667 | 65.14 |
| Neutral | 49 | 4.79 |
| Disagreed | 32 | 3.13 |
| Strongly Disagreed | 12 | 1.17 |
| **Total** | **1024** | **100.00** |

Table 12 displays the responses in relation to the trainees' group discussions and tasks. This information suggests that many respondents (90.92%) think that trainees complete group projects and assignments. A lower percentage agreed with the statement (4.79%), disagreed (3.13%), or strongly disagreed (1.17%).

**Table 13: Time for training program is sufficient.**

| Responses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 201 | 19.63 |
| Agreed | 609 | 59.47 |
| Neutral | 101 | 9.86 |
| Disagreed | 89 | 8.69 |
| Strongly Disagreed | 24 | 2.34 |
| **Total** | **1024** | **100.00** |

The responses to the question of whether the training program had enough time are shown in Table-13. According to the research, most respondents (79.10%) think the time allotted for the training program is adequate. Fewer people either agreed (8.69%) or took a neutral position (9.86%). The least number of respondents—2.34%, strongly disagreed with the statement.

**Table 14. Promotion after training**

| Responses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 193 | 18.85 |
| Agreed | 634 | 61.91 |
| Neutral | 106 | 10.35 |
| Disagreed | 74 | 7.23 |
| Strongly Disagreed | 17 | 1.66 |
| **Total** | **1024** | **100.00** |

The frequency and percentage distribution of responses regarding promotions following training are shown in this table. The cumulative percentage represents the entire number of responses received up to that moment. For instance, the cumulative percentage for the statement "Strongly agreed" shows that 18.85% of respondents strongly agreed with it, while the cumulative percentage for the statement "Agreed" shows that 80.76% of respondents either strongly agreed or agreed.

**Table 15: Professional Development sessions helped your behavior with students.**

| Reponses | Freq. | Percent |
|---|---|---|
| Strongly agreed | 192 | 18.75 |

| | | |
|---|---|---|
| Agreed | 637 | 62.21 |
| Neutral | 99 | 9.67 |
| Disagreed | 52 | 5.08 |
| Strongly Disagreed | 44 | 4.30 |
| **Total** | **1024** | **100.00** |

The responses of different people regarding how professional development sessions affected their interactions with students are shown in the table you gave. The cumulative percentage shows the total up to that point of the respondents' selections. For instance, the cumulative percentage for the statement "Strongly agreed" shows that 18.75% of respondents strongly agreed with it, while the cumulative percentage for the statement "Agreed" shows that 80.96% of respondents either strongly agreed or agreed.

## 5. Empirical Model

Rate of Return = F (EDU, POV, JEX, LM, AREA)

**Explanatory Variables**

EDU = Education of Teacher in Years

POV = positive impacts of teachers training.

JEX = job experience

LM = Learning materials

Area = {“1”, if Rural; “2” if Urban}

An OLS regression of *yi* on *xi* ignores the discreteness of the dependent variable and does not constrain predicted probabilities to be between zero and one. A more appropriate model is the **logit model,** which specifies

$$p_i = \Pr[y_i = 1|x_i] = \frac{\exp(\beta_1 + \beta_2 x_i)}{1 + \exp(\beta_1 + \beta_2 x_i)}$$

and clearly ensures that $0 < pi < 1$. Maximum likelihood estimation leads to parameter estimates. The implied odd ratios for the logit model equals

$$\frac{dp_i}{dx_i} = \frac{\exp(\beta_1 + \beta_2 x_i)}{(1 + \exp(\beta_1 + \beta_2 x_i))^2}\beta_2.$$

### 5.1. Performance of Teachers

Below Table 16 reports the results of logit model, where rate of return of beneficiary respondents is regressed on education, job experience, positive, area and learning materials.

**Table: 16 Performance of Teachers**

| Variables | Odd Ratio | S.E | Z | p>z |
|---|---|---|---|---|
| **EDU** | 1.1118 | 0.0.177 | 6.67 | 0.0000 |
| **LM** | 1.1037 | 0.0984 | 1.11 | 0.2680 |
| **JEX** | 3.0653 | 0.4072 | 8.43 | 0.0000 |
| **POV** | 1.0038 | 0.0141 | 0.27 | 0.002 |
| **2.Area** | 0.2139 | 0.0509 | -6.48 | 0.0000 |
| **CONSTANT** | 0.2280 | 0.1025 | -3.29 | 0.0010 |
| **LR Chi_2** | 127.75 | | **Prob. Chi_2** | 0.0000 |
| **No. of Obs.** | 1106 | | **Log Likelihood** | -600.56 |

**Source: Author's own Calculations**

Education, area and learning materials is positively and significantly related to rate of return on investment. The education of teachers plays a crucial role in improving the overall quality of education and can indirectly contribute to increasing the rate of return on investment (ROI) in education. Well-educated teachers possess a deeper understanding of subject matter and teaching techniques. They can effectively convey complex concepts to students, making learning more engaging and productive. This can lead to improved student performance, which in turn can lead to higher graduation rates and better outcomes. Educated teachers often have better strategies to engage students in the learning process. When students are actively involved and interested in their studies, they are more likely to remain in school, reducing dropout rates. Creating effective teaching training materials can have a positive impact on the rate of return on investment (ROI) in education by enhancing the quality of instruction, increasing teacher effectiveness, and improving student outcomes. Well-structured training materials ensure that teachers receive consistent and high-quality training regardless of who is conducting the training. This consistency translates to more uniform and effective teaching practices, leading to better learning outcomes for students. This, in turn, maximizes the educational

investment made in each student. Education of the teacher and learning materials of the training intend to improve the class results by odds of 1.11 and 3.07 respectively and are also statistically significant at 1% level of confidence. Similarly, those teachers belonging to urban area have higher significant class results relatively to teacher of rural areas. Although Teacher training plays a crucial role in improving the rate of return on investment (ROI) in education. Effective teacher training can lead to numerous benefits that positively impact student outcomes, institutional reputation, and financial performance. Teacher training programs provide educators with opportunities to learn about the latest pedagogical techniques, educational theories, and teaching methodologies. As teachers improve their skills, they become more effective in the classroom, leading to better learning outcomes for students Trained teachers can employ a variety of engagement strategies that cater to different learning styles. This leads to increased student interest and participation, which in turn can improve retention rates. When students are satisfied with their learning experience, they are more likely to recommend the institution to others. Teacher having more experience the result of that class also improved because teacher got more training than newly conducted teacher.

## 6. Conclusion

Skill development programs are defined as the initiatives or activities which are enhanced to develop the abilities, knowledge, and competencies of individuals in specific areas. The calculation of ROI of skill training programs is a complex task because these programs entail the benefits of social nature. The objective of these programs is to equip the participants with the required skills to succeed in their professional and personal life. Various forms can be taken by the skill development programs including training sessions, workshops, certifications, apprenticeships, and online learning platforms. The common skills development programs include technical skills development, soft skills development, business skills and entrepreneurship development, vocational skills development, leadership, and management development along with personal development skills (World Bank, 2017). Data of the study collected through questionnaire. Sample size of the study of 1024. First calculate the descriptive analysis and find how training affects the teacher's performance. Second part of the study we apply the logit model and find rate of return of beneficiary respondents is regressed on education, job experience, positive, area and learning materials. Education, area and learning materials are positively and

significantly related to the rate of return on. Education of the teacher and learning materials of the training intend to improve the class results by odds of 1.11 and 3.07 respectively and are also statistically significant at 1% level of confidence. Similarly, those teachers belonging to urban areas have higher significant class results relatively to teacher of rural areas. Although Teacher training plays a crucial role in improving the rate of return on investment (ROI) in education. Effective teacher training can lead to numerous benefits that positively impact student outcomes, institutional reputation, and financial performance.

## 7. Recommendations

The investigation indicated that just a small portion of the academic staff had received training since they began working for the Government of Punjab. The report suggests that the Punjab government should provide regular training sessions specifically for academic professionals. These training courses need to cover leadership development, pedagogy, supervision, and research development. Teachers should be incentivized to get training.

Availability of funds and resources be ensured for quality training of teachers. Duration of pre-service and in-service training should be enhanced. Scope of curriculum for training and development of teachers should be enhanced modern cross cutting curriculum be included in training modules. The focus of the training program for the teachers should be learning by activity instead of theory. Online training modules, courses, and workshops be arranged for teachers living in remote areas.

Access to Online libraries in collaboration with local/ internal institutions is made available by use of modern technology. Conducive environment in schools i.e. Latest IT equipment etc. should be provided to teachers in the schools to encourage the participation in training programs.

Teacher's access to latest articles, research studies, and journals should be enhanced. Educational/learning trips of well-known institutes imparting quality education in the country be arranged for the Government teachers for on-hand learning experience of the techniques being applied in those institutions.

A robust mechanism should be developed for Pre-training and post-training evaluation of the training programs and high achievers should be rewarded. The training institutions for the teachers should be established at divisional level to facilitate local teachers to avoid dislocation cost. Logistics facilities should be provided to enhance participation of teachers of remote areas.

## Compliance with Ethical Standards

- **Conflict of Interest:** There is no conflict of Interest.
- **Informed consent:** NA
- **Funding information:** NA
- **Ethical approval:** Not Required
- **Data Availability Statement:** The data will be provided upon request anytime.

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