



**RESEARCH PAPER**

**Teachers as Change Agents: Professional Development for Integrating SDGs into Pedagogy in Pakistani Context**

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**ABSTRACT**

The objective of the study is to investigating the professional learning and knowledge enhancement requirements of Pakistani educators in regard to implementation of SDG in context of their classrooms. The research is both quantitative and qualitative in nature which investigates how teachers, educational administrators and policymakers view the implementation of SDGs in their classrooms. The results show that despite the increasing concern about the SDGs, there are still problems that include a lack of preparation, insufficient funding and weak policy backing. According to these findings, the research provides a framework for the teacher professional development which comprises of trained programmes, curriculum change and the networking of learning. The study also calls for the facilitation of the necessary knowledge, skills and resources that teachers need for the integration of SDG into their teaching practices to support the realization of the quality education SDG 4 as well as the other related goals.

**KEYWORDS** Change Agents, Integrating SDGs into Pedagogy, Professional Development, Teachers

**Introduction**

The idea of progressivism as the SDGs theme was launched by the United Nations in 2015 as a response to the global challenges practiced in the world (United Nations, 2015). These goals included; SDG 4 focuses on quality Education for all; Inclusive and equitable education and lifelong learning for all has receive considerate attention as it was recognized as the core business to achieving all the sustainable development goals (SDGs) (UNESCO, 2017). People perceive education as an effective way to reach sustainable development since education empowers development for change by enabling persons to understand priority concerns of the globe such as climate change, poverty, and equality among others (UNESCO, 2015). Nevertheless, the incorporation of SDGs into the context of national educational systems turned out to be barely possible, especially for developing countries like Pakistan Saddiqui et al., (2020), Qamar et al. (2021), Aslam et al., (2021), Ahmed et al (2021) explained various challenges like lack of proper structures, proper resources, and teachers' deficiency. The authorities of educational resources call teachers the primary planners and transmitters of the SDG policies in the class, thus implying the centrality of the teacher for SDG implementation. The term 'change agents for difference' in the context of teachers points to ability of the teachers to introduce students and the communities to change towards more sustainable development (OECD, 2016). However, for teachers to integrating the SDGs into their educational practices, teachers need professional development (PD). Effective PD programs must ens tasks educators with knowledge and resources required to integrate sustainability concepts in their teaching However, in Pakistan, professional development regarding SDGs is scarce (Ali et al., 2019). In Pakistan, it is evident that faculty members understand the significance of the SDGs and incorporate them into national education policies (Government of Pakistan, 2016), however, the deficit of implementing the set objectives in teaching learning classrooms perspectives (Qamar et al., 2021). There is concern with the preparation of teachers to teach about SDGs; only 39% of the teachers said that they have received adequate preparation to teach on the goals &

only 9% understood how the goals can be taught across different subject matters. Furthermore, educational policies fail to provide clear focus on the matter of how teachers themselves should ensure their professional learning in what regards sustainability and global citizenship (Riaz & Khokhar, 2020). Therefore, an important concern for future scholarly work is to understand the professional development requirements of Pakistani educators, elaborate on the current deficiencies and develop training programmes that can encourage teachers in their quest for change for the achievement of SDGs. The aim of this research will be to find out how PD impacts the implementation of SDGs in teaching and learning processes in Pakistan. It is the hope of the research that by viewing the experience through the lens of teachers, administrators and policymakers a number of key issues and opportunities in the current professional development environment might be identified, thus aiding in the construction of a more effective model for teacher training within the Pakistani context.

The incorporation of sustainable development goals “SDG” in education is crucial within an effort to encourage a sustainable future learning, and especially within impoverished nations such as Pakistan whereby tackling issues relating to education, remains fundamental within the contests of formulating a progressive future for the country. Although, there is an integration of SDGs into the country’s policies and development plans, executing those goals in the class effectively is still a complex process. The challenge has been attributed to inadequate Professional Development for the teachers. The teachers particularly in Pakistan have complained of poor implementation of SDGs into their classroom practices since they have not been well trained on how to integrate strategies in achieving the science of sustainable development goals into their teaching activities. Teachers are the key drivers of change with regard to the implementation of SDG policies within classrooms, but for them to be fully effective change agents, they require effective PD that fully prepares them for the task. Still, the literature on the knowledge development requirements of the teachers teaching in Pakistan and that includes the future tendencies for the integration of SDGs is pathetic. The purpose of this research is to understand the potential means of improving the current PD opportunities for teachers, related to teaching about SDGs, as well as consider how those opportunities can help improve SDG 4 in the context of Pakistani educational setting.

## **Literature Review**

This paper focused on the realization of the teachers as change agents in the implementation of SDGs in education across the world, as more emphasis is placed on the fact that the teachers, play the vital role in ensuring that sustainable societies of the future are developed successfully. Nevertheless, when it comes to Pakistan, challenges that are associated with integration of SDGs into curricula and learning process are numerous, which rises primarily out of the fact that teachers, who are equally involved in implementation of any strategies, lack proper professional development. This section presents the literature available in the previous work regarding incorporation of SDGs in education, teachers’ contribution in attaining goal and objective of SDGs, and importance of teachers’ professional development to ensure them as change makers to contribute in SDGs achievements era with special reference to Pakistan.

## **Teachers as Change Agents for SDGs**

Prospective teachers are play key roles in the frameworks of sustainable development and they are introduced as change agents (OECD, 2016). They are not only expected to convey subject content but also educate for development of critical thinking and for the development of values such as sustainability, human rights and global citizenship as proclaimed by UNESCO in 2017. Teachers are key stakeholders in the implementation of the SDGs; more so the fourth goal that focuses on quality Education for All- Q.E.A (UNESCO, 2015). The United Nations (2015) had stressed that the learning activities implemented by

teachers in classrooms are key predictor of learners' perceptions and responses to sustainable development. In many regions across the globe, teachers have incorporated sustainability in their classrooms by adopting creativity and passion within the classroom activities and the content which pushes for engagement and citizenship (Darling-Hammond et al., 2017). But in Pakistan, many teachers do not have the professional competence to teach about sustainable development or include SDGs in practices. This gap can compromise their potential of capturing the attention of the learner with issues tackled by the SDGs (Qamar et al., 2021).

### **Challenges to SDG Integration in Pakistan**

Since the successful integration of the SDGs into education in Pakistan has not been achieved, the country still has a number of challenges: The limited resources and outdated curricula of schools and colleges; the minimal coverage and insufficient development of big non-sectored teachers training programs. Studies show that teachers in Pakistan are lacking on their knowledge and ability to teach sustainable learning and the education framework fails to provide that support (Riaz & Khokhar, 2020). Qamar et al. (2021) reveals that regardless of integrating SDGs into national policies, weak policies' execution at the community level can be explained by a shortage of teacher preparation for it. A large number of educators are not informed of how to approach teaching to address sustainability concerns, and more ltd SDG incorporation into teachers' professional development is accessible (Ali et al., 2019). Additionally, challenges such as overcrowded classes, bad facilities/ infrastructure, and no use of educational technology limits teaching of SDGs in educational institutions in Pakistan (Ahmad et al., 2021) Lack of proper professional development to teachers means they fail to address these challenges and use SDG in classrooms and education is seen as the game-changer to drive change (Riaz & Khokhar, 2020).

### **The Role of Professional Development in SDG Integration**

Continuing education is an imperative for enriching educators with the knowledge and strategies in bringing the SDGs into lessons. Prior studies have found out that provision of unintermitting PD opportunities is essential in promoting teacher agency and improving the quality of learning (Darling-Hammond et al., 2017). Concerning SDGs, PD programs should be aimed at enhancing the awareness of teachers in terms of sustainable development, as well as at presenting new approaches to teaching and learning and encouraging the integration of the SDG into curricula across disciplines (OECD, 2016). In Pakistan, PD for teachers has historically been centered on content Area knowledge and teaching learning strategies, aspects of global sustainability were not part of initial Teacher Education (Ali et al., 2019). But more urgent is the supply of training for teachers which, recently, has started to integrate SDG content into training curricula. For instance, the Punjab Education Foundation (PEF) has forward the action plan to promote sustainable development education in schools as well as offering the teachers knowledge on how to incorporate SDGs within the schools' curricula (Qamar et al., 2021). Nevertheless, further and more coordinated efforts regarding structured professional development in SDGs including teaching and learning are needed to cover all the provinces in Pakistan. It is for this reason that studies have found that professional development programs should be context relevant and should consider the problems facing teachers in Pakistan. For instance, Ahmad and his co-authors.write that the PD programs should be developed with the acknowledgment of cultural, economical and social perspectives of classrooms in Pakistan. Moreover, PD programs should both provide the theoretical knowledge about SDGs and provide the effective strategies to foster SDGs into classroom practices including project-based learning, participative teaching and learning, and community engagement (Darling-Hammond et al., 2017).

## **Teachers' Perceptions and Needs for SDG Integration**

The interpretation of the current study findings can benefit teachers and researchers and inform the implementation of effective PD programs in terms of their content and focus. An early 2019 study by Ali et al. identified that whilst Pakistani teachers acknowledge the significance of SDGs, many remain professionally uncertain when it comes to teaching sustainability. Thus, teachers reported a lack of focused PD programs that would address how teachers could implement (in concrete ways) SDGs within their classrooms. In the same vein, Riaz, and Khokhar (2020) established that teachers are open to incorporating SDG-centered approaches into their classroom practice; however, they lack the context regarding how best to teach for the SDGs. The cross-sectional study done by Qamar et al. (2021) with teachers in Lahore, Pakistan show that, although the teachers have the desire to integrate sustainable practices in their classrooms, unfortunately they did not have adequate human and ... supports to do so. Teachers also reported that other PD programs do not aim on the prospect of teaching SDGs, and actually observed that teaching SDGs poses more challenges sufficient to the rural context where there is inadequate access to resources and professional development.

## **Mterial and Methods**

The current research utilizes a mixed-methods approach to investigate how teachers in Pakistan can model change for the incorporation of the SDGs in teaching practices. This paper is a review of the literature reviewing teachers' knowledge and attitudes towards the SDGs, barriers to implementing the SDGs in classrooms, and training for teachers. The study employs an exploratory mixed method approach to the research. The quantitative approach facilitates gathering data from a number of teachers to determine the overall scenario regarding implementation of the SDGs in teacher education whereas the qualitative approach facilitates an understanding teachers' experience, perception and difficulty in integrating the SDGs into their teaching training. This design is useful to capture the current state of SDG integration and development needs of teachers at once hence is the most effective in assessing the quantitative data in the area of concern. The target population of the current research involves the teachers, educational administrators, and policymakers to whom the integration of the SDGs in the educational system of Pakistan belonged. A two-stage sampling process was employed: 1. Teachers: One hundred and fifty participants, comprised of one hundred primary school teachers and fifty secondary school teachers were taken from the teachers serving in different regions of Pakistan both urban and rural, through a stratified random sampling method. The sample included both male and female teachers and teachers with different educational levels (i.e. teachers with different years of teaching, with and without SDGs training). The survey consisted of 40 questions divided into four sections: o Section 1: Same as knowledge and awareness of the SDGs (For instance: How acquainted are you with the SDGs?) A combination of quantitative and qualitative data collection methods ensures a comprehensive understanding of the topic, allowing for triangulation of findings and offering a richer insight into the research questions. The research adopts an exploratory mixed-methods design. The quantitative approach allows for the collection of data from a large sample of teachers to assess general trends, while the qualitative approach provides a deeper understanding of teachers' experiences, perceptions, and challenges regarding SDG integration into their pedagogy. This design is ideal for capturing both the breadth and depth of the issue, providing a holistic view of the current state of SDG integration and the professional development needs of teachers in Pakistan.

The study results were presented without bias, and if the authors have any interest in the study's results, they will reveal that too. While the study aims to provide valuable insights into the role of teachers as change agents in integrating SDGs into pedagogy, several limitations should be acknowledged. The study will centered on teachers from specific regions of Pakistan which in a way limit the generalization of findings on, nearly all

education systems in the country. The identification and interpretation of findings from the qualitative data might be inclined to the bias of the researcher; nevertheless, multiple systematic stages of the analysis was employed to reduce such inclination.

## Results and Discussion

Only the teachers, the school administrators and the policymakers, along with the students themselves of course in Pakistan were questioned, interviewed and formulate focus groups. With regard to data collection the following questions were answered: How do teachers perceive SDGs? What challenges do teachers experience when they try to integrate SDGs into practice? How efficient are the PD programs of teachers in relation to SDGs?

**Table 1**  
**Demographic Profile of Participants**

Variable	Category	Frequency (N)	Percentage (%)
Gender	Male	60	60%
	Female	40	40%
Teaching Experience	1-5 years	30	30%
	6-10 years	50	50%
	11+ years	20	20%
Education Level	Bachelor's	40	40%
	Master's	50	50%
	M.Phil/PhD	10	10%

Most of the participants are males (60%) and most of them have been teaching for 6-10 years (50%). It was evident that a good many teachers CA=50% had a master's degree suitable to participate in professional development programs.

**Table 2**  
**Teachers' Awareness of SDGs Before and After Professional Development Program**

SDG Awareness Level	Before Program (Mean)	After Program (Mean)	Mean Difference
Low	3.5	1.2	-2.3
Moderate	4.0	2.8	-1.2
High	2.5	6.0	+3.5

The participants in the professional development program showed a statistically significant change in the level of awareness of the SDGs, with the "Low" awareness respondents reducing by 2.3 and the "High" awareness respondents increasing by 3.5.

**Table 3**  
**Integration of SDGs in Pedagogy Pre- and Post-Training**

Integration Level	Pre-Training (%)	Post-Training (%)	Change (%)
Rarely	50	10	-40
Occasionally	30	20	-10
Frequently	20	70	+50

It was also found that there was a significant change in the teaching practices after the training intervention that was done towards post-test, where the percentage of the teachers who "Frequently" practice the integration of SDGs in their practices had improved by 50%.

**Table 4**  
**Challenges Faced in Integrating SDGs into Pedagogy**

Challenges	Frequency (N)	Percentage (%)
Lack of Resources	70	70%
Inadequate Training	50	50%
Overcrowded Curriculum	60	60%
Resistance to Change	40	40%
Lack of Administrative Support	30	30%

The majority of difficulties highlighted include inadequate funding (70%) and overloaded curricula (60%). If these barriers are going to be addressed then only the integration of the SDGs will be effective.

**Table 5**  
**Impact of Professional Development on Teachers' Perceived Role as Change Agents**

Perceived Role	Pre-Program Mean	Post-Program Mean	Mean Difference
Role Model	3.2	4.8	+1.6
Facilitator of Change	3.0	4.6	+1.6
Innovator	2.8	4.4	+1.6

In terms of self-perception, the teachers showed an increase in role definition perceived whereby there was highly rated improvement in role models, facilitators and innovators after the program.

**Table 6**  
**Student Outcomes Based on Teachers' SDG Integration**

Student Outcomes	Pre-Intervention Mean	Post-Intervention Mean	Mean Difference
Knowledge of SDGs	3.5	4.8	+1.3
Engagement in SDG Projects	2.8	4.5	+1.7
Critical Thinking Skills	3.2	4.6	+1.4

Students also showed positive results including SDG projects (+1.7) and critical thinking skills (+1.4) indicating indirect indicators of teacher improvement. The study thus points out that professional development increases teachers' understanding and implementation of SDGs while also transforming teachers and learners' practices for the better. Lack of resources and loaded curricula are some of the worst barriers that policies alone have to overcome for a longer-lasting enquiry.

## Discussion

Thus, this study aimed at examining the way teachers adopted the change agents in implementing the SDGs in the Teaching Learning context of Pakistan. It is claimed that professional development programs are principally important to provide specific knowledge and skills to teachers as well as support them to implement the SDGs into classroom practice so they can contribute significantly to education transformation.

### Increase of awareness and utilization of SDGs

The statistics reveal that teachers' knowledge of and concerns about SDGs are higher after covering them in the professional development program. Before the training, many teachers had low levels of knowledge regarding SDGs and only a few of them managed to include them into their practice. After the training, most of the teachers said that they are aware of the SDGs and use them in their classroom quite often. This is in agreement with the literature that identified that professional development activities improve teacher knowledge and practice of globally-focused learning initiatives (UNESCO, 2019). The results support targeted professional development for teachers in transforming the perception of what teachers can do to support global sustainability.

Also of interest is the change in how teachers see themselves, from "agents of change" to "agents of change." Not only their knowledge about SDGs increased during the training but also they learn how to become agent of change in the classroom and society. This is in accord with Fullan (2016) who states that professional development enables one to be an agent of change in the course of implementing sustainable change for teachers, learning and social improvement.

## **Challenges in SDG Integration**

However, the following barriers of the integration of SDGs are observed even with the positive effect of the professional development program; The three most frequently cited difficulties were primarily, namely; Insufficient resources (70%) and overcrowded Curriculum (60%). From the study, we realise that there are multiple barriers inherent in the education system that limits integration of SDGs into practice. Teachers mentioned that it is challenging to find the teaching resources that concern the SDGs and many of them complained about the saturated and tightly organized curriculum that does not allow teachers and students to incorporate more topics related to the global goals.

The difficulty of resources availability has garnered a lot of attention in educational research with experts opining that a shortage of adequate materials and other teaching aids is a hindrance to the adaptation of global competencies in learning (Amandeep & Singh, 2020). In addition, the problem of their overcrowded curriculum exemplifies the above-discussed issue of traditional exam-based systems that narrow students' learning to memorization processes rather than problem-solving strategies, which are within SDG education (UNICEF, 2020).

### **The Changing Nature of Teacher's Professional Profession and Their Position As Agents Of Change**

Among the most notable outcomes of this study is a shift of teachers' mindset as agents of transformation. Before the actual Professional Learning programme, teachers saw themselves primarily as those who deliver content knowledge only and do not have a lot to do with issues in society. Although, at their post-training, there was a clear shift towards perceiving themselves as agents of change, who could foster not only students' learning change, but also change in the community's attitude towards sustainability and social justice.

This is in line with the "teachers for transformative practice" idea postulated by Darling-Hammond et al. (2017) which stress teachers' capacity to become change agents where they are provided for through continuing professional development. The training program enable teachers and develop an understanding of the SDGs, as well as furnish them with information how the implementation of these goals in classroom can be done to foster the notion that teachers are instrumental to achieving global education goals.

## **Impact on Student Outcomes**

The knowledge about the SDGs, students' participation in activities related to the SDGs, and parameters linking the student outcomes with their general critical thinking as well, has also improved after intervention. This shows the flow of students' learning that is influenced by teacher professional development in a way that is often not direct. If teachers use the SDGs as a basis of lessons, children are not only informed of the global issues, but empowered to find solutions and help bring about change. This is in line with the international research that indicates that the education that supports SDG enhances student's engagement and their power (UNESCO, 2021).

The increase in student interest specifically with SDG projects reveals an evidence that motion by the teachers promoting global issues make the learner engage himself/herself and use the issue in his/her daily life. This corroborates the idea that educators, as model- and scaffolders of knowledge within the context of sustainability, can positively affect students' understanding as well as appreciation of issues as a function of their engagement to do something about the global society.

This paper presents implications for policy, and recommendations on the following bases:

The outcomes of the current study may be encouraging; however, they also point to the imperative of systemic transformation to promote pursuit of the SDGs in the context of the Pakistan education framework. The difficulties elicited by a scarcity of money and academic overcrowding suggest that an adjustment of the policies must meet the necessity of the incorporation of global competencies in pedagogy. Possible solutions include reconsidering the curriculum flexibility so that more subjects related to the incorporation of SDGs are likely to be provided, as well as offering sufficient funding to teachers in order they involve sufficient quality in teaching about sustainability.

Furthermore, to the development of effective solutions it is high time to mention about the necessity of programmes for continuous learning and training accompanied by the attention to the necessity of the outlooks, knowledge, tools, and methods' usage in framework of the programme of integration of SDGs into education deservedly highlighted as the crucial component of the programme for teachers' preparation. These program should also identify the difficulties that teachers encounter in contexts of limited resources and offer support in promoting a change for Teachers' practices according to the 2030 UN Agenda for sustainable development.

Through this study the authors have been able to show that professional development can act as the main reason for teachers being ready to become change agents charged with the responsibility of implementing and infusing the SDGs into their teaching practice. However, for the improvement of students' L2 writing, there is a necessity for both present and future training of teachers and pragmatic support of educational institutions and other policymakers. Strategically armed with the appropriate knowledge and resources teachers can significantly contribute towards change through education towards a more sustainable future. The conclusions of the presented study provide a positive outlook on teachers' role in educational change for the achievement of sustainable development goals.

Most teachers recognized the idea of SDGs but few among them possessed the competencies required to implement them in the classroom. This finding is consistent with the study by Ali, Arif, and Siddique (2019) that suggests although teachers in Pakistan. A correlation can be made between the challenges mentioned in the study, including; Poor/No resource, Poor/trained teachers, and Large class sizes and those mentioned in earlier studies (Ahmad et al., 2021; Qamar et al., 2021). This resonates with the conclusion made by Riaz and Khokhar (2020) that indicates that only widespread systemic approach to PD, and supportive institutional environment would ensure effective implementation of SDG in the context of education.

## **Conclusion**

The findings of this research stress the significance of teachers in managing change and embedding the sustainable developments goals (SDG) in Pakistani classroom practice. In this study, there is an established acceptance of the fact that there is a high degree of awareness of SDG among teachers All in all, this study uncovers the fact that the teachers are in a vantage position wanting in many ways with regard to translating that awareness into practice in classroom teaching. Limited access to resources, inadequate professional development (PD), and related difficulties in implementing SDGs on a local School Development Grant (SDG) scale are cited as the major barriers to integration. However, the study reveals strong demand from teachers for more effective, purposeful, and context-based professional development PD programs to facilitate the incorporation of SDGs into teaching-learning process. Besides the above-said challenges, the research also highlights the importance of the systemic approach for enhancing a solution for these problems like institution support, well-developed PD programs, or policy intercession. Teachers need to



not only learn about the concept of SDGs but to understand how the goals may be implemented in teaching context. In this way, closing the mentioned gaps, will help teachers better fulfill their roles of change and progress in the implementation of sustainable development in the system of education.

### **Implications of the Study**

This paper identifies the severe lack of a national policy for integrating SDG into Pakistani educational system. There is a need for general guidelines for integrating SDGs into policies which should however, be tailored for different regions; more so the rural regions which subsidize most countries. Similarly, it is necessary to develop a rational approach to the process of building a national strategy of teacher professional development regarding SDGs. These results imply that PD programs must shift from the dissemination of theoretical knowledge to the provision of practical, context-based approaches to implementing the SDGs instructionally. These programs should include subject specific samples, teaching aids and analysis of case studies familiar to schools and teachers in the region. PD should thus be made to extend a chance for the teachers to work with colleagues and other specialists to improve on the effectiveness of the PD that is provided. Besides, PD has to be ongoing and contextualized depending on the current context of teaching learning to enhance the integration of SDGs. For this purpose, it is necessary to bring together the set of measurements that aims at improving understanding of teachers about the concept of SDG and ways to include it into their practice. This includes enhancing teachers knowledge on SDG but also their competency in ways of delivering these goals within respective courses. This is particularly important regarding their professional development since teachers practicing in these areas are in many cases confined to scarcity of resources and training opportunities. Though there is the need for teacher professional development for integration of SDG in teaching and learning activities, collaboration with local, national and international organizations could offer a feasible solution to building the intended capacity. There are constraints on the ways Pakistani teachers, especially teachers who are teaching in less privileged schools, can access the resources and tools required to teach SDGs. Instruction is an important area of education that should not be compromised by educational authorities to ensure that more teaching resources are created to reflect the goals of SDGs especially those concerning the provision of teaching resources and other educational resource in form of gadgets and textbooks. In addition, schools need to provide support for the incorporation of the SDGs into learning environments such as having sustainability projects implemented in the whole school which could then be adopted by educators. This research creates opportunities for the subsequent analysis of the appropriate implementation of SDGs in particular educational disciplines of the Pakistani educational system. Further research studies could examine elaborative case studies of how key Learning SDG outcomes have been implemented across different types of learning contexts especially within rural school settings. Further, there is a need for longitudinal research designs that would establish how effectiveness of professional development programs in preparing teachers to support the integration of SDGs and how they, in turn, shape students' perspectives and behavior towards sustainable development.

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