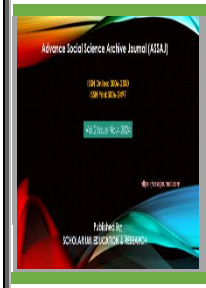

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ADDRESSING SUSTAINABLE DEVELOPMENT GOAL (SDG): ANALYZING THE TEACHERS' READINESS ABOUT TRANSFORMATIVE PEDAGOGICAL PRACTICES AT COLLEGE LEVEL

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ABSTRACT

In 2015, United Nations has introduced the sustainable development goals (SDGs) and vision 2030 agenda for peaceful, healthy prosperous and egalitarian world. The goals of SDGs and vision 2030 can be achieved through transformative pedagogy. The aim of the research is to examine how teachers engage students in learning, thinking, research and publishing in research journals to address the transformative pedagogy. 293 college teachers and students participated in the survey. To validate the questionnaire, the experts' judge the content and then it pilot tested. The reliability of the questionnaire was .78. The chi-square for independent statistical technique applied to analyze the data. The research concludes that college teachers engage students in collaborative learning and critical thinking. Whereas they do not engage students in self-directed learning, creative thinking, projects, case studies and publication in research journals.

Key Words: Sustainable development goals (SDGs), transformative pedagogy, college teachers, self-directed learning, collaborative learning, critical thinking, creative thinking, research projects, case studies & journals.

INTRODUCTION

The contemporary age is unique in laying the foundations of new knowledge, skills and values in sciences and arts. There are many reasons for this, but the most important reason is that teachers have abandoned the traditional method of teaching and have started giving priority to new methods of teaching. Transformative pedagogy has an important place in these new methods. In transformative pedagogy, teachers develop students' learning, intellectual / visual, research and publishing skills. Students are using these skills to create new knowledge in the near future.

Every era has its own methods to solve the problems and issues regarding the poverty, hunger education, health, and climate etc. for peaceful and prosperous world with the help of education, curriculum and instruction. Transformative pedagogy is an essential method of instruction to solve the problems of contemporary world. It is type of critical

inquiry that enables students to analyses and understand the social realities of their own lives and community. Students discuss, frequently act in a ways in which these realities might be transformed through various forms of social actions (Cummins, 2004)

Transformative teachers engaged themselves in reflective practices in order to review progress of teaching and performance of students analytically (Balderrama, 2008). It is dynamic, engaged and engaging pedagogical process. It also focuses on contemporary issues as active learning instrument for pro-active responses (Salama, 2016). The chief objective of the study was to analyze the teachers' transformative pedagogical practices for sustainable development. A research question was formulated as: what transformative pedagogical practices have been used during teaching-learning process in the classroom to address the sustainable development?

Research Objectives

The objectives of this study were:

The research had the following objectives:

1. To analyze the college teachers' practices to engage students in learning.
2. To explore the college teachers' practices to engage students in thinking.
3. To examine the college teachers' practices to engage students in research.
4. To investigate the college teachers practices to engage students in publication.

Literature Review

Introduction

The United Nations Sustainable Development Goals (SDGs) have 2030 as their target year to address global issues comprising poverty, inequality, climate change, environmental deterioration and peace and justice. The target of 17 Sustainable Development Goals (SDGs) concentrates specifically on Goal 4 which centers on ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all (UN, 2015). Educational transformations with substantial impact need to occur to reach this educational objective particularly within higher education institutions.

Teachers lead the academic development of classrooms by creating suitable environments to teach students necessary capacities required for achieving the Sustainable Development Goals. To guarantee that higher education institutions take part in the SDGs educators should be evaluated for their capability to implement transformative teaching methods.

This review analyzes the relationship that exists between SDGs alongside transformative pedagogical practices as well as the teacher readiness to execute these practices in college environments. Studies and peer-reviewed journal articles published in the recent times provide relevant key themes and findings about the subject.

Sustainable Development Goals (SDGs) and Higher Education

Goal 4 stands out by focusing on achieving inclusive education which must be both equitable and of high quality. Higher education institutions (HEIs) play an essential part in developing knowledge and skills as well as values which secure the SDGs'

accomplishment. Higher education institutions are tasked with student involvement in sustainability education that covers global challenges together with student roles in their solution (Leal Filho et al., 2015).

Many recent studies demonstrate why SDGs need to be incorporated into the curriculum structure of HEIs. University curricula that embed SDGs enable students to have an improved grasp of sustainability thus developing their capability to become essential contributors to worldwide solutions as reported by Lozano et al. (2017). Educational institutions need teachers to change their teaching methods toward sustainability through practices that break away from traditional educational processes to use interactive student involvement.

Transformative Pedagogical Practices

The SDGs gain proper focus through transformative education that promotes active learning and collaborative group work and sharpens critical thinking abilities (Sterling 2016). The essential characteristic of transformative pedagogy involves moving from instructor-directed teaching towards student-focused instruction. Under this teaching model the instructor functions as a guide who leads students to study actual world issues while helping them find suitable solutions. The transformative methods remain essential for the SDGs because they prepare students to act as change-makers who possess both capabilities and outlooks for handling environmental issues and social inequalities and justice problems (Bryan & McCann, 2019). The achievement of the SDGs demands such strategies which develop both critical thinking and action abilities (Lansang, 2020).

Teachers' Readiness for Transformative Pedagogical Practices

The integration of Sustainable Development Goals within higher education depends heavily on educators developing readiness for using transformative educational methods. The educational concept of readiness includes educator understanding combined with skills and positive classroom attitudes alongside personal teaching beliefs (Robinson & Hullinger, 2008). Several elements determine teachers' willingness to use transformative teaching methods because they impact their training development and receive institutional backing and possess specific educational ideologies (Kreber, 2015).

Research indicates that teacher proficiency with SDGs as well as their education method integration can enable higher education to develop sustainability-focused cultures (Schultz & DiNapoli, 2018). Teaching professionals who understand the Sustainable Development Goals and feel competent about sustainability instruction tend to become adept at using transformative educational methods (Barth et al., 2020). The readiness of educators to adopt new educational approaches heavily depends on their teaching-related attitude toward change and innovation. The educational mindset of teachers regarding change determines their selection of teaching methods that teach learners to think critically while taking action for society.

Student-centered and sustainability-focused teaching methods obtain implementation tools through workshops and training programs that also host seminars for teachers. Research demonstrates that these initiatives need to be

designed to match individual teacher requirements and local teaching environments to achieve results (Tilbury, 2014).

Barriers to Teachers' Readiness for Transformative Pedagogy

The widespread understanding of transformative pedagogy as a means to achieve the Sustainable Development Goals faces challenges because teachers encounter multiple obstacles in their implementation. The main impediment that stands in the way of pedagogical change is insufficient backing from institutions. The traditional educational structures of numerous educational institutions direct them to foster disciplinary knowledge while rejecting sustainability-focused learning (Sweeney et al., 2019). Educators experience challenges when implementing transformative pedagogical methods because institutional support is crucial to overcome the obstacles of modifying established teaching lessons and evaluation methods.

The shortage of educational training sessions for teachers hinders their ability to acquire knowledge about transformative teaching methods and SDGs. Persisting challenges that teachers face in sustainability integration exist because they lack both training and suitable resources for their classroom (Nash et al., 2020). The principles of transformative pedagogy face resistance from educators because their current beliefs about teaching and their learning approaches are in direct opposition to these methods (Müller & Grosse, 2021).

Time pressures along with big classes prove to be considerable obstacles for bringing transformative teaching techniques into practice. Time limitations in teachers' schedules together with large classroom sizes create challenges for teachers trying to deliver sufficient time for student-oriented teaching practices (Brandenburg et al., 2017). The assessment methods utilized by various institutions which fail to support the objectives of transformative pedagogy make it harder for teachers to implement new methods (Evans et al., 2021).

Strategies for Enhancing Teachers' Readiness for Transformative Pedagogical Practices

Several strategies exist to boost teacher readiness by removing obstacles which stand against transformative teaching methods. The advancement of SDG understanding requires educators initially to gain internal knowledge of these global targets. School programs along with faculty training sessions and institutional educational programs can help achieve sustainability education (Vlachopoulos, 2020). Educational faculties must provide teachers with opportunities to experience the SDGs so they can discover methods of incorporating these goals into their classroom instruction.

School institutions must create comprehensive support frameworks to help teachers who choose transformative learning methods. Educational institutions should give teachers access to resources that enable them to use innovative teaching approaches while also providing attractive incentives (Hegarty et al., 2019). Educational facilities should establish sharing platforms for teachers to exchange both experiences and best practices which create environments that back transformative teaching methods (Akinsola & Arulogun, 2019).

Third and last it is essential to develop institutional environments which support all developments. The leaders of educational institutions need to show their dedication

toward pedagogical transformation and sustainability training by making the SDGs integral to teaching methods and education plans. Institutional strategies with sustainability focus along with supportive environments for teaching innovation and interdisciplinary teamwork will achieve these goals (Hopkins et al., 2018).

Methodology

The survey research method used to collect information about the transformative pedagogical practices of college teachers. Educational and academic researchers employ the survey design to find out the characteristics and opinions of research participants (Brewer, et. al., 2019). So, survey research is assumed to investigate the opinions of college teachers and students about the transformative pedagogical practices of teachers. The population of the study consists of 312 teachers and 1200 students of post-graduate classes of the six colleges in Lahore and Faisalabad, Punjab-Pakistan. By simple random sampling, 293 participants including 127 (43.3%) college teachers and 166 (56.7%) students were selected. Furthermore, based on gender, there were 62 (48.8%) male and 65 (51.2%) female college teaches. According to the participants' level of education, 11 (8.7%) of the college teachers were Ph.D., 62 (48.8%) were M.Phil., and 54 (42.5%) were M.A/M.Sc. Based on the faculty bifurcation, 56 (44.1%) college teachers belonged to sciences and 71 (55.9%) were from social sciences departments. According to the college teachers' designation, 15 (11.8%) were professors, 73 (57.5%) were assistant professors and 39 (30.7%) were lecturers. Based on the college teachers' teaching experiences, 35 (27.6%) had 11-15 years, 58 (45.7%) had 6-10 years, and 34 (26.8%) had 1-5 years. The students of postgraduate classes crosschecked the transformative pedagogical practices of college teachers. There were 93 (56%) boys and 73 (44%) were girls. When the students were distributed according to the semester, out of these, 66 (39.8%) were studying in semester 7, 76 (45.8%) students in semester 6, and 24 (14.5%) were in semester 5. Based on the departments, 82 (49.4%) students belonged to the sciences groups, and 84 (50.6%) to the social sciences.

For data collection, a set of questionnaires were developed that were based on the literature on sustainable development goals and transformative pedagogy. The content of questionnaires was endorsed by experts' opinions and through the pilot testing process. The transformative pedagogical practices were determined through using the five-point Likert scale ranging from strongly agree to strongly disagree. Employing the Cronbach' alpha, the reliability was determined, which was. The questionnaires were distributed in college teachers and students. Collected data were analyzed by employing the chi-square test of independence

Results

Table 2

Chi-Square Test of Independence for Teacher Engages Students in Self-Directed Learning

Statement	Category	SD	DA	A	SA	df	χ2	Sig.	Cramer's V
	Teachers	38 13.0%	65 22.2%	19 6.5%	05 1.7%	3	6.349	.09	.14

Teacher engages students in self-directed learning.	Students	40 13.7%	87 29.7%	20 6.8%	19 6.5%				

Note: SD= Strongly Disagree, DA= Disagree, UD= Undecided, A= Agree, & SA= Strongly Agree

Table 2 shows the analysis of the chi-square test for independence. It reports no significant difference between the college teachers and students' attitude towards the college teachers engage students in self-directed learning $\chi 2$ (3, n = 293) = 6.349, p > .05, V = .14. The effect size shows that there is a medium association between the opinions of college teachers and students. Both college teachers and students do not agree that college teachers engage students in self-directed learning. So, it concludes that the college teachers do not engage students in self-directed learning to address the transformative pedagogy.

Table 3

Collaborative Learning

Statement	Category	SD	DA	A	SA	df	χ2	Sig.	Cramer's V
Teacher engages students in collaborative learning.	Teachers	38 13.0%	17 22.2%	34 11.6%	38 13.0%	3	7.861	.04	.16
	Students	38 13.0%	44 15.0%	41 14.0%	43 14.7%				

Table 3 shows the analysis of the chi-square test for independence. The results suggest a significant difference between the college teachers and students' attitude towards the college teachers engage students in collaborative learning $\chi 2$ (3, n = 293) = 7.861, p < .05, V = .16. The effect size shows that there is a medium association between the opinions of college teachers and students about teacher engages students in collaborative learning. So, it concludes that the college teachers engage students in collaborative learning to address the transformative pedagogy.

Table 4

Critical Thinking

Statement	Category	SD	DA	A	SA	df	χ2	Sig.	Cramer's V
Teacher engages students in critical thinking.	Teachers	18 6.1%	07 2.4%	48 16.4%	54 18.4%	3	17.627	.00	.24
	Students	29 9.9%	34 11.6%	59 20.1%	44 15.0%				

Table 4 shows the analysis of the chi-square test for independence. The results suggest a significant difference between the college teachers and students' attitude towards the college teachers engage students in critical thinking $\chi 2$ (3, n = 293) = 17.627, p < .05, V = .24. The effect size shows that there is a strong relation between the opinions of college teachers (34.8%) and students (35.1%) about teacher engages students in critical thinking. So, it concludes that the college teachers engage students in critical thinking to address the transformative pedagogy.

Table 5
Creative Thinking

Statement	Category	SD	DA	A	SA	df	χ2	Sig.	Cramer's V
Teacher engages students in creative thinking	Teachers	44 15.0%	36 12.3%	26 8.9%	21 7.2%	3	7.031	.07	.15
	Students	44 15.0%	72 24.6%	28 9.6%	22 7.5%				

Note: SD= Strongly Disagree, DA= Disagree, UD= Undecided, A= Agree, & SA= Strongly Agree.

Table 5 shows the analysis of the chi-square test for independence. It reports no significant difference between the college teachers and students' attitude towards the college teachers engage students in creative thinking $\chi 2$ (3, n = 293) = 7.031, p > .05, V = .15. The effect size shows that there is a medium relation between the opinions of college teachers and students about the teacher engages students in creative thinking. So, it concludes that the college teachers do not engage students in creative thinking to address the transformative pedagogy.

Table 6
Assign Projects

Statement	Category	SD	DA	A	SA	df	χ2	Sig.	Cramer's V
Teacher engages students in research projects	Teachers	42 15.0%	37 12.3%	27 8.9%	21 7.2%	3	4.695	.196	.12
	Students	43 14.1%	71 24.2%	31 10.6%	21 7.2%				

Note: SD= Strongly Disagree, DA= Disagree, UD= Undecided, A= Agree, & SA= Strongly Agree.

Table 6 shows the analysis of the chi-square test for independence. It reports no significant difference between the college teachers and students' attitude towards the college teachers engage students in research projects $\chi 2$ (3, n = 293) = 4.695, p > .05, V = .12. The effect size shows that there is a medium relation between the opinions of college teachers and students about the teacher engages students in research projects. So, it concludes that the college teachers do not engage students in research projects to address the transformative pedagogy.

Table 7
Assign Case Study

Statement	Category	SD	DA	A	SA	df	χ2	Sig.	Cramer's V
Teacher engages students in research case studies	Teachers	48 16.4%	40 13.7%	24 8.2%	15 5.1%	3	6.237	.101	.14
	Students	48 16.4%	76 25.9%	25 8.5%	17 5.8%				

Note: SD= Strongly Disagree, DA= Disagree, UD= Undecided, A= Agree, & SA= Strongly Agree.

Table 7 shows the analysis of the chi-square test for independence. It reports no significant difference between the college teachers and students' attitude towards the college teachers engage students in research case studies $\chi 2$ (3, n = 293) = 4.695, p > .05, V = .12. The effect size shows that there is a medium relation between the opinions of college teachers and students about the teacher engages students in research case studies. So, it concludes that the college teachers do not engage students in research case studies to address the transformative pedagogy.

Table 7

College teacher engages students in publishing in research journals

Statement	Category	SD	DA	A	SA	df	χ2	Sig.	Cramer's V
Teacher engages students in publishing in research journals	Teachers	25 8.5%	26 8.9%	42 14.3%	34 11.6%	3	6.329	.094	.14
	Students	41 14.0%	50 17.1%	41 14.0%	34 11.6%				

Note: SD= Strongly Disagree, DA= Disagree, UD= Undecided, A= Agree, & SA= Strongly Agree.

Table 9 shows the analysis of the chi-square test for independence. It reports no significant difference between the college teachers and students' attitude toward the college teacher engages students in publishing in research journals $\chi 2$ (3, n = 293) = 6.329, p > .05, V = .14. The effect size shows that there is a medium relation between the opinions of college teachers and students about the teacher engages students in publishing in research journals. Therefore, it was concluded that college teachers did not involve students in the publication of research journals to resolve transformative teaching methods

Discussion

The sustainable development goals (SDGs) have now become the universal goals. To eliminate the poverty, protect the earth, and enjoy a peaceful and prosper life to all human by 2030, the United Nations introduced the SDGs in 2015. The SDGs mention 17 goals, of which the goal number 4 is on the quality of education. This goal ensures that everyone strives to provide inclusive and fair quality education and to take advantage of educative and learning opportunities for a lifetime (UNESCO, 2017). This research conducted to address the sustainable development goals (SDGs) and it aimed to examine the transformative pedagogical practices of teachers at college in Punjab, Pakistan. The key objectives were to analyze the college teachers' practices to engage students in learning, thinking, research and publication. A research question developed which help in achieving the objectives of the study. The question is whether college teachers implement transformative pedagogical practices at colleges. One hundred and twenty-seven college teachers and one hundred sixty-six students had taken part in the research. They had been selected through simple random sampling. The results got by applying the Chi-Square test of independence.

Education is the only effective way to get the intentions of SDGs and the quality of education (Kopnina, 2020; Lewin, 2019; Pongiglione, 2015). The teachers has to fulfill

his/her key role through transformative pedagogy. In transformative pedagogy, the students acquire knowledge, skills and dispositions through learning, thinking, researching and publishing.

Self-directed learning (SDL) is an essential skill and it aims to develop the skill of inquiry in students (Toit-Brits, 2020). Teachers keep the students engaged with this skill. It is the responsibility of the teachers to develop self-directed learning aptitude in students (Toit-Brits & Zyl, 2017). But the current research finds that the college teachers do not engage students in self-directed learning to address the transformative pedagogy. There are many barriers to this transition. It has found that the education system, the curriculum, syllabi, and non-engaging teaching methods are main hindrance to transmit the self-directed learning in students. Furthermore, the training of teachers can enhance teachers' capability in transforming self-directed learning in students (Yasmin et al, 2019). Revamping and aligning the curriculum and teaching methodology, self-directed learning of students may become reality. To escalate the competence of self-directed learning, college teachers manipulate the collaboration learning (CL) in students (Lee & Mori, 2020). Because collaborative learning helps the students to grasp from peers, group fellows, and classmates. It found that the college teachers engage students in collaborative learning to address the transformative pedagogy. The results of this study is consistent with the findings that found high level of students' engagement provide a positive experience for teachers and students (Jafar, 2016). The college teachers are engaging the students in collaborative learning with a very limited terms, which do not improve students' capability of generating new knowledge and skills. But there is need of online collaborative activities and programs because it enriches collaboration and production of knowledge (Jarvela & Hakkinene, 2005; Zhu, 2012). Both for teachers and students, the online collaboration provides more advanced practices and horizons. Likewise, whatever the type of learning, it further enhances the mental and intellectual abilities of the students. Therefore, broadening students' thinking is an important part of transformative pedagogy.

Critical thinking includes describing the problem, finding the evidences and proofs, analyzing the data, raising the questions and making strong decisions (DiYanni, & Borst, 2020). Critical thinking is a form of thinking in which students' ability to reflect and analyze is created so that they can not only solve their problems but also make useful decision. Crafting critical thinking in students has the status of rocket science for college teachers. Because this skill requires the college teachers to put his/her full teaching ability into practice. But the current study finds that the college teachers engage students in critical thinking to address the transformative pedagogy. The finding of this research is a line with Gruber & Boreen (2003) who have noticed that teaching critical thinking expand the literacy skills of college students. Furthermore, the results of this study are similar to Piergiovanni (2014) who says that college education is expected to inculcate critical thinking in students. Similarly, inculcating creative thinking in students is an important teaching skill of college teachers. The current research finds that the college teachers do not engage students in creative thinking to address the transformative pedagogy. This pedagogy enables students'

creativity so that they can solve their problems in new ways (Hargrove & Nietfled, 2015; Thomas, 2010). What are the reasons that college teachers do not promote creative thinking in students? There are many reasons for this. The pedagogical philosophy that teachers have to adopt emphasizes on transmission rather than transformation of knowledge, skills and values. Which in turn affects the curriculum and teaching methods. Therefore, there should be a change in teaching philosophy, curriculum and teaching methodology so that college teachers adhere to the components of transformative pedagogy for producing creative thinking in students.

Engaging students in research projects and case study as well the publication in research journals is a valuable teaching strategy at colleges. The current research finds that college teachers do engage students in research projects and case studies, additionally, they do not engage students to publish their research in scientific journals. It finds that it is beneficial to introduce the undergraduate research at college level, however, the college environment is not favorable for this activity. Because, it is invaluable for both teachers and students (Marciniak, 2020). Thus, college teachers do not prefer to accomplish this responsibility in colleges. But Walkington (2015) finds that engaging students in research projects provide them transformatry experience. Furthermore, there is an issue of publication. Because, there are no research journals, which publish undergraduate students researches in Punjab or elsewhere in Pakistan.

Conclusions

The aim of this study was to analyze the teachers' readiness about transformative pedagogical practices at college level with respect to sustainable development goals. the Therefore, this research concludes that college teachers engage students in collaborative learning and critical thinking. Whereas they do not engage students in self-directed learning, creative thinking, projects, case studies and publication in research journals. To achieve the goals of sustainable development goals, it is prime requisite to focus on transformative pedagogy in college teaching. Otherwise, the system of education will face the same situations as experienced in millennium development goals (MDGs). The system of education failed to achieve the targets of millennium development goals. And it hardly attained the 70% literacy rate throughout Pakistan. So, it is very compulsory to address the sustainable development goals and especially the goal 4, which is on the quality of education. And the target 4, the quality of education can achieve through focusing on transformative pedagogy.

Recommendations

Based on the conclusion, the research recommends the following suggestions:

1. The teaching philosophy of teaching in college may shift from transmission to transformation.
2. There is need to review the curriculum of undergraduate discipline to address the sustainable development goals.
3. The college teachers should provide professional training in transformative pedagogical practices in conducting and supervising the researches of students.
4. There is a need of research journals at college level to publish undergraduate students' research projects and case studies

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