

Education for Sustainable Development (ESD) in Pre-Service Teachers Education Curriculum at Pakistan: Current Status and Future Directions

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Abstract

The concept of Education for Sustainable Development (ESD) grasps attention of the world after the UN decade (2005-2014) of Education for Sustainable Development. People from all over the world realized the need of its integration on all levels of education. This study was also designed to explore the level(extent) of integration of the components of ESD in teachers training courses of elementary program of B.Ed. 4-year. And also obtained the opinion of experts about incorporating ESD in courses of B.Ed. 4-year elementary program. For this purpose, semi structured interviews of experts and alignment matrix for analysis of courses of B.Ed. 4-year program was developed, based on three key ESD components i.e. are, social & culture, economics and environment. The findings of the research revealed that majority of the courses of B.Ed. 4-year elementary program were not aligned with the three components of ESD; however, the experts strongly recommended the integration of the components of ESD in the courses of B.Ed. 4-year elementary program.

Keywords: Education for Sustainable Development, Teacher Education, B.Ed. 4-Year Elementary Program

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Introduction

History of ESD traced back to the report of Brundtland Commission which has its own original definition which states that, "Sustainable development is development that meets the needs of the present without compromising on the ability of future generations to meet their own needs" (UNO, 1987). This definition reflects that the real meaning of development is the utilization and better management of resources not only for the needs of existing population, but also for the future generations to fulfill their needs and demands. Management of resources and its proper utilization need appropriate training of individuals within the educational institutions. Education for Sustainable Development (ESD) also refers to the understanding and knowledge of social, economic and environmental features of sustainable development (Symons, 2008). The social component of ESD deals to educate the citizens as it involves in understanding the role and importance of social institutions and its contribution to the attainment of social change and training of individuals for resolving differences and conflicts. (Pigozzi, 2005).

Education for Sustainable Development (ESD) involves the training of individuals and building of skills and knowledge for practical solutions of social, economic and environmental problems of their surroundings (Samuelsson & Kaga, 2008). Both teachers and training institutions of teachers are the key agents who can promote and shift ESD to young students since their early stage of education (McKeown & Hopkins, 2014). Economic, environmental and energy crises in Pakistan have adversely affected the population and their quality of lives, therefore it may be essential to create awareness and sensitize the population for adopting sustainable habits. Consequently, the role of teachers and their training become more important, as the teachers have the art to transfer the theme of ESD to produce balance human beings who indorse respect for others cultures and traditions as well as for eco-system (Kalsoom, Qureshi and Khanam, 2019).

Teacher Training has a key role in attainment of sustainability (Rickinson, 2001). Teacher's training institutions and teacher education have a key role in promoting the basic theme of education for sustainable development. Teachers are in direct contact with students in class and they may guide better the young generation for sustainable consumption of resources (Esa, 2010). According to McKeown & Hopkins (2014) the report of UNO on decade of ESD has shown a gradual shift of ESD through teachers. The report reflected that ESD has been slowly included

in teacher education and teachers have played a better role in educating the children in classrooms about the concept of ESD. However, the teacher education in Pakistan is ignoring the aspect of creating awareness about ESD in future teachers (Kalsoom, Qureshi & Khanam, 2019). To tackle the problems such as extremism, issues of peace, pollution, wastage of resources, the training of individuals become indispensable which can be materialized through capacity building of teachers (Shaukat, 2016). The researches have proved that teachers have limited knowledge of ESD, could not relate the existing problems of their local context to content knowledge during teaching in classrooms. Thus, it is necessary to enhance the capacity of teachers through pre-service teacher education by introducing the courses based on ESD for creating awareness in students about the social and environmental problems (Evans, Whitehouse and Hickey, 2012).

Worldwide the people realized that the current economic progress is not sustainable, therefore there is a need to focus on training of citizens, awareness of communities and education of citizens as they are the key factors to move the societies toward sustainability (Basera, 2016). The main purpose of pre-service teachers training is to study those pragmatic techniques which are beneficial for future teacher as well as for students in classrooms. Therefore, the essential skills, knowledge and attitudes for ESD can be shifted through teachers training to community at large (Waltner, Rieb, & Brock, 2018). The challenges of globalization have changed the trends of education so, nations all over the world are working on capacity building of teacher. The system of education is highly dependent on the teachers as they are the source of achieving the objectives of education, therefore the current focus to achieve the goals of ESD is on training of teachers (Louis, Leithwood, Wahlstrom & Anderson, 2010).

Teaching and acquisition of knowledge for sustainability is an evolving trend in education. It is basically an understanding of the vision which enable the teachers to tackle the problems for example population explosion, gender equity, environmental problems, poverty, urbanization and reduction of resources in their surrounding and further inculcate the awareness in students (Pauw, Gericke, Olsson. And Berglund, 2015). Revision of the courses of pre-service teacher education to incorporate the components of sustainable development might have brought positive change in understanding of prospective teachers and might shift this change to the young generation to gain understanding, attitude and skills and attitudes for sustainable future. Hence the current study also designed to identify the level of alignment of the components of ESD in

teacher education curriculum of B.Ed. 4-year elementary program and obtain the perceptions of the National Curriculum Review Committee for integration of ESD in teacher education at pre-service level. The research revealed that the theme of ESD is not incorporated in pre service teachers training courses of B.Ed. 4-year elementary programs, while the specialists have highly recommended its integration in the courses. However, the shift in ESD into teachers training has been made all over the world.

Review of Related Literature

Teacher education refers to the preparation of teachers through post service and on- service trainings for improvement of students learning (Khan & Haseeb, 2017), while ESD (Education for Sustainable Development) means, utilization of every type of resources for existing as well as for coming generation. Teacher education and ESD have close relationship as teachers are consider as a key agent for promoting ESD to students and communities at large (UNESCO,2018). The Teachers training program of B.Ed. 4-year elementary program deals to the training of teachers who further teach in schools to students of elementary grades in Pakistan. Elementary level education is an important stage of schooling because it is the stage where the teachers mold the minds of the young children through their teaching. Therefore, the knowledge of ESD can be induced in the minds of the students through teaching easily since their early stage of schooling life.

Numerous studies have reported that inclusion of Education for sustainable development in teachers training have positive effects on their awareness, training and capacity building. The study of Michail, Stamou and Stamou (2007) shows that the primary school teachers in Greece have less knowledge of environmental component of ESD which resulted in their misconception of that ozone layer depletion is associated with greenhouse effect. Similarly, the Evans et al. (2012) research reported that inclusion of a course on Education for Sustainable Development in programs of pre service teachers training is important for inculcating the concept in the minds of students in schools. The components of ESD such as extremism, peace and war, environmental issues, tolerance, hunger, poverty and other issues which threat the life and peace needs to be addressed by the teachers in class rooms but it needs a proper training since their pre-service education which is not reflected in the courses of pre-service teacher education in Pakistan(Jumani & Abbasi, 2015).The research of Atmaca (2017)

reported that the teachers have to complete many tasks in the classrooms and highlighting the importance or issues of ESD may get ignored due to heavy work load on teachers, therefore, there is a dire need of inclusion the courses on ESD, especially practical activities based on ESD during teaching practicum, which will enable the student teacher to make conscious efforts for teaching about ESD to students in classrooms. Furthermore, Tomas, Girgenti and Jackson (2017) conducted a study on the attitude of pre-service teachers towards Education for Sustainability after studying the course on ESD. The findings reflected that the teachers' attitude was changed positively towards the social and environmental problems after a course and they developed knowledge, attitude and skill for teaching of ESD in schools. Similarly, the research of Laurie, Tarumi, McKeown and Hopkins (2016) indicated that incorporating of ESD in preparatory training programs of teachers contribute in quality education in different ways at primary and secondary level of education. The research also recommended that teaching learning process transform when the contents of teacher education included ESD. Consequently, the pedagogies promote values, perspectives and skills inside the classrooms which are essential for nurturing of societies. The results of the study of Anderson (2013) also shows that the course on ESD have positively affects the perceptions of prospective teachers that how to teach the issues related to ESD to students in classrooms. Therefore, the shift of ESD to communities is essential to be held through teaching. The study of Esa (2010) also emphasized on inclusion of ESD in post service teachers training. The study revealed that the teachers keep themselves aware from the issues such as recycling the wastages, water pollution, climate change, preservation of energy and intercultural understanding, for transmitting the knowledge of ESD to students. The study of Tuncer et al. (2009) reported that until and unless the teachers themselves have not positive and friendly attitude and concerns for environmental problems, eventually it is unlikely that the students will be literate for environmental problems. Teachers of technical and vocational education can play a better role in promoting societal wellbeing and community development. They can promote a culture of sustainability and healthy environment among the different communities through training of individuals based on the values such as integrity, peace, resolving conflicts, tolerance and respect for others culture (Chinedu, Mohamed & Ajah, 2018). In-depth study of the literature led the researcher to include three components of ESD i.e. environment. social & culture and economic in the research study. The sub-components of the main three

categories were also identified. The sub-components of environment are, saving natural resources, population growth, environmental cleanliness, resources utilization, damages to environment by human, polluted environment and environmental knowledge. Similarly, the sub-component of social and culture are: causes of poverty, rural development, preservation of energy, saving water, illiteracy rate in Pakistan, discrimination in health and nonviolence, while the components of economic are the war & conflict among the generations, peace & harmony, traditions & tolerance, rights & duties and intercultural understanding. To sum up, the significance of ESD (Education for Sustainable Development) in different fields of education, derived from the review of literature, motivated the researcher to analyze the courses of 4-year program of B.Ed. with reference to the components of ESD and to find out the opinion of specialists about ESD for teacher education.

Objectives

- i. To find out the extent of inclusion of the components of ESD in courses of B.Ed. elementary program of four years.
- ii. To explore the opinion of the experts for incorporating the components of ESD in pre-service teacher education of B.Ed. 4years elementary program.

Research Question

- i. What is the level of alignment between ESD and curriculum of pre-service teachers' education of B.Ed. four years' elementary program?
- ii. What is the perception of the members of National Curriculum Review Committee of Pakistan to incorporate the components of ESD into pre-service teacher curriculum?

Methodology

Research Design

This study based on mixed method research design which includes quantitative and qualitative research methods. The research involves Sequential Explanatory Design which deals to the collection and analysis

of quantitative data followed by the collection and analysis of qualitative data. Both types of data support each other at the stage of interpretation (Creswell, 2014).

Population

Population of this study includes all (Twenty-Seven) Members of National Curriculum Review Committee who were involved in the process of curriculum development of B.Ed. four years' elementary program. Total courses of B.Ed. four years' elementary program were also under the study for analysis.

Sample

The random sampling technique was applied for selection of National Curriculum Review Committee (NCRC) members from population. Therefore 19 members were randomly selected from 27 members of NCRC under the procedure of random sampling technique. For this purpose, the list of NCRC members were obtained from Higher Education Commission of Pakistan (HEC), their names were written on 27 papers separately and then randomly 19 papers were picked. In this way the member of NCRC were selected for interviews to obtain the qualitative data for research. 31 courses of B. Ed 4-year elementary Program were also under the study for analysis in the light of the components of ESD. These were all those courses which outlines were developed and documented by Higher Education Commission of Pakistan (HEC) during 2012.

Instrument

The literature was reviewed thoroughly and components of ESD (Education for Sustainable Development) were derived from literature. Furthermore, as self-designed alignment matrix based on the components of ESD was developed for analyzing the 31 courses of B.Ed. four years' elementary program. The alignment-matrix consisted of three categories i.e. aligned, partially aligned and not aligned. The parts of alignment matrix coded as (Aligned =1), (Partially Aligned =2) and (Not Aligned =3). Questions for semi structured interviews were also developed to identify the opinion of the National Curriculum Review

committee (NCRC) about incorporating the components of ESD in teachers training program (B. Ed 4 year elementary).

Validity of the Instrument

The research tools were put forward for experts' opinion to attain the validity of the tools. For this purpose, 9 experts from the field of Education were selected and obtained their opinion on the alignment matrix and questions of the interview. They excluded some items from alignment matrix as they were carrying the same meaning according to their opinion. Therefore 7 items under each component of ESD were mentioned. Similarly, the experts observed some of the questions of interviews were not clear for understanding of interviewees, therefore, the statements of the questions of semi structured interviews were modified in the light of the opinion of experts.

Data Collection

31 courses of B.Ed. 4-year elementary program were analyzed by using alignment matrix. The components of ESD were simply defined with little explanation in the courses were considered as partially aligned while the detailed discussion on the components of ESD in the courses was considered as fully aligned under alignment matrix. But the components which were not discussed in the courses at all, were considered as not aligned. Similarly, the interviews of experts /National Curriculum Review Committee were conducted by the researcher personally. The experts were informed in advance and time schedule for interview was fixed with them. The semi structured interviews were focused on obtaining the perceptions of the specialists about three components i.e. environment, economic and social & culture of ESD for incorporating in teachers training program. For the purpose of analysis, the experts' interviews were recorded.

Data Analysis

The Quantitative data obtained from analyzing the courses by applying alignment matrix, was analyzed by using percentages for each item of three components of ESD. While the qualitative data obtained in the form of interviews was transcribed and coded. Furthermore, the themes were also derived with their descriptive explanations.

Results

Table 1

Level of alignment of Environmental component of ESD in courses of B.Ed. 4 years' program.

Statement	Aligned		Partially Aligned		Not Aligned	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Saving natural resources	0	0%	4	12.90%	27	87.09%
Population growth	2	6.45%	0	0%	29	93.54%
environmental cleanliness	0	0%	2	6.45%	29	93.54%
resources reutilization	1	3.2%	3	9.67%	27	87.09%
damages to environment by humans	1	3.2%	2	6.45%	28	90.32%
polluted environment	1	3.2%	2	6.45%	28	90.32%
Environmental knowledge	1	3.2%	3	9.67%	27	87.09%

The courses of four years' program of B.Ed. were analyzed through application of alignment matrix in the light of environmental components of ESD. The analysis revealed that the alignment of the components of saving the natural resources was (0%), partial alignment was (12.90%) while in 87.09% courses it was not aligned. Similarly, the notion of population growth was aligned in 6.45% of course and in 0% courses it was partially aligned but in 93.54% was not aligned. The sub component environmental cleanliness was aligned in 0% courses and partially aligned in 6.45%courses however in 93.54% courses it was not aligned. Moreover, resources reutilization resources were aligned in 3.2% courses and was partially aligned in 9.67% course while it was not aligned in 87.09% courses of B.Ed. four years' program. The subcomponent of damages to environment by humans was aligned in 3.2% courses, was partially aligned in 6.45% courses while it was not aligned in 90.32% of courses. Similarly, the component of polluted environment was aligned in 3.2% of courses, partially aligned in 6.45% courses. However, in 90.32% courses it was not aligned. Likewise, in 3.2% courses the

environmental knowledge was aligned and was partially aligned in 9.67% courses. While in 87.09% courses of B.Ed. four years program it was not aligned. So the conclusion of the above data of the table reflected that the alignment of the environmental component of ESD was missing in 87.09% to 93.54% courses of B.Ed. four years' program.

Table 2

Level of alignment of economic component of ESD in courses of B.Ed. 4 years' program.

Statement	Aligned		Partially Aligned		Not Aligned	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Poverty causes of society	0	0%	1	3.2%	30	96.77%
Rural development	1	3.2%	0	0%	30	96.77%
Preservation of energy	1	3.2%	5	16.12%	25	80.64%
Preservation of water resources	1	3.2%	4	12.90%	26	83.87%
Illiteracy in Pakistan	1	3.2%	2	6.45%	28	90.32%
Disparity in health	0	0%	0	0%	31	100%
Nonviolence	1	3.2%	0	0%	30	96.77%

The above table reflects the alignment of the economic component of ESD which states that the sub component of poverty causes of society was aligned in 0% of the courses and partially aligned in 3.2% of the courses while, it was not aligned in 96.77% of the courses of B.Ed. 4 years' program. The component, rural development was aligned in 3.2% of courses and partially aligned in 0% of courses however it was not aligned in 96.77% courses. Likewise, in 3.2% courses the component of preserving the energy was aligned and was partially aligned in 16.12% of courses, but it was not aligned in 80.64% of courses. The sub component preserving the resources of water was aligned in 3.2% courses and in 12.90% courses it was partially aligned. while it was not aligned in 83.87% of courses. The subcomponent illiteracy in Pakistan was aligned within 3.2% course, but partially aligned within 6.45% courses whereas

it was not aligned in 90.32% of course. Similarly, in 0% course the subcomponent disparity in health was aligned, partially aligned in 0% courses however in 100% courses of four years B.Ed. program it was not aligned. The sub component nonviolence was aligned in 3.2% of course, partially aligned in 0% of courses whereas in 96.77% courses of four years B.Ed. program it was not aligned.

Table 3

Level of alignment of Social & culture component of ESD in courses of B.Ed. 4 years' program.

Statement	Aligned		Partially Aligned		Not Aligned	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
War & conflict among generation	1	3.2%	1	3.2%	29	93.54%
Peace and harmonious society	2	6.45%	3	9.67%	26	83.87%
Traditions of our society	1	3.2%	13	41.93%	17	54.83%
Citizens' rights & duties	1	3.2%	0	0%	30	96.77%
Preservation of cultural heritage	0	0%	2	6.45%	29	93.54%
Intercultural understanding	0	0%	1	3.2%	30	96.77%
tolerance	1	3.2%	1	3.2%	29	93.54%

The quantitative result of the above table shows that the sub component war & conflict among generation under a social& culture component of ESD was aligned in 3.2% of courses, partially aligned in 3.2% courses and in 93.54% courses it was not aligned. Similarly, Peace as well as harmony of society was aligned in 6.45% courses and was partially aligned in 9.67% whereas was not aligned in 83.87%courses. Likewise, in 3.2% courses societal traditions was aligned, in 41.93% courses it was partially aligned while in 54.83% courses the concept was not aligned. The sub component of citizens' rights and duties in 3.2% courses was aligned and in 0% courses the aspect was partially aligned,

however, was not aligned in 96.77% of the courses. Moreover, sub component maintenance of cultural heritage in 0% courses was aligned, in 6.45% courses was partially aligned but in 93.54% courses the concept was not aligned. Similarly, in 0% courses the sub component Intercultural understanding was aligned, in 3.2% courses this was aligned partially but was not aligned in 96.77% of courses. Furthermore, the sub component tolerance was aligned in 3.2% courses, in 3.2% courses it was aligned partially and alignment was missing in 93.54% courses of B.Ed. program of 4 years.

Qualitative Analysis

The semi structured interviews were conducted from National Curriculum Review Committee (NCRC) members. The focused of the interviews was on the components of ESD and its inclusion in curriculum of four years B.Ed. elementary program.

The interviews of the experts were quitted when a level of saturation was achieved after interviewing 11 members of NCRC. The views of the experts were recorded, transcribed and obtained themes from them as following:

Concerns about Environment

Majority of the (85%) of the experts were of the view that teachers training courses/contents needs to improve according to the current environmental needs of the society. They said that incorporating the components of ESD will enable the student- teachers to address environmental issues in its real term. Majority (89%) of the experts were of the view that serious environmental problems are caused due to inadequate knowledge about environment in pre-service training of teachers so, upgrading the pre-service teachers training courses in the light of ESD is essential. They further argue that the problems such as population burden, damaging the environment and saving the forests is the main issues of today which need serious attention. The experts expressed their views that drastic environmental changes in different regions of a glob are occurring and these changes affect not only the climate but also humans as well all other creatures living on the globe.

Integration of Emerging Trends

Almost all of the experts were of the opinion that the trends in

education are changed now. The focus on factual knowledge is shifting to the knowledge and awareness about societal problems and issues along with their solution. They said that it become indispensable that emerging trends and problems need to be addressed in the courses of teachers training in order to equipped them with challenges of new time. The experts viewed that globalization brought many positive and negative changes with itself so in current scenario it needs to focus on importance of adopting own culture, promoting peace and tolerance in society and preserving the cultural heritage for coming generations. Therefore, the teacher education should be adequate to address these important matters.

Generate Resource Utilization Skills

Majority of the experts said that the pre-service teacher education must focus on creating a skill and attitude for utilization of resources. They said that the pattern of utilization of resources need to be taught to students but it is only possible when the teacher aware about the importance of saving all kinds of resources and poverty alleviation through rural development. They further said that avoiding the conflicts among the groups of society and elimination of violence is also important to be highlighted in pre service teacher education.

Teacher as Reformer and its Challenges

Majority of the expert said that the role of a teacher is like a reformist and symbol of bringing unity in society. But on the other hand, the job of a teacher is also become more challenging to fulfil the current needs of the society. If we want to build a nation with a progressive mind we have to invest on teachers' training and their education. Teacher has a crucial role to not only to train the students in the field of knowledge but also to train them for acceptance and adopting their own local culture. Only a trained teacher can mould the mind of the students towards achieving the goals of peace and tolerance of society.

Discussion

The Findings of this research revealed that the three major ESD components i.e. are environment, economic, social and culture were not aligned in most of the courses of four years B.Ed. elementary program.

While the experts' (NCRC Member) interviews strongly supported that the courses of B.Ed. four years need to be revised and the main three components of ESD needs to be incorporated. The overall findings of this research are in line with the research of Tomas et al., which supports the inclusion of Education for Sustainability for teacher education at pre-service stage. According to their research the students of B.Ed. have shown positive change in their attitude and knowledge about issues of sustainability after completing the course on education for sustainability(EFS) during their first semester of B.Ed. program and the students also found it relevant to their training program. Similarly, the research of Andersson, Jagers, Lindskog and Martinsson (2013) also reported a positive effect on the attitude of student teachers towards social and environmental problems after studying the course on SD during their pre-service teachers training program. This research further argued that ESD can be easily transferred to communities through teachers as teachers play effective role in molding the opinion of students towards a positive change.

The research of Symons (2008) also reflected positive concerns for training of teachers about ESD (Education for Sustainable Development) during their education before service. Their research has reflected that the poor knowledge of the components of sustainable development aroused from the lack of training of teachers, therefore they cannot train the students properly for issues of environment of their local context. Similarly, the study of Tuncer et al., highlighted the importance of environmental literacy for pre-service teacher education. They conducted research on students of pre-service teacher education and found that the problems of pollution, poor utilization of natural resources and wastage of water are the serious issues to be addressed in teacher education at the stage of pre-service. Research of Chinedu et al. (2018) also supported the need of reorienting teachers training programs by integration of Economic social, and environmental elements of ESD in curriculum of vocational teachers training programs. The study of Jumnai & abbasi (2015) also reflected that the concept of ESD is missing in the objectives of teachers training programs and teachers have inadequate knowledge about ESD (education for sustainable development), their research supported the revision of teacher education programs in the light of current social and economic needs as low level of tolerance and extremism have adversely affected the society.

Conclusion

The findings based conclusion revealed that the three components of ESD economic, environment and social & culture along with its sub components are not aligned in the courses of B.Ed. four years' elementary program, although the courses of B.Ed.4-year elementary program were developed during 2012 and more than a decade has been passed but no revision in the light of ESD has been taken place. The National Curriculum Review Committee members were strongly recommended the revision and inclusion of the concepts and components of ESD in the courses of B.Ed. 4years elementary program.

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