

**RESEARCH PAPER****Analysis of Social Development and Higher Education Curriculum for Sustainable Development: Issues and Challenges**

¹Dr. Syeda Tasneem Fatima, ²Prof. Dr. Muhammad Yousuf Sharjeel* and ³Dr. Syeda Aliya Fatima

1. Ex. Assistant Professor, Department of Teacher Education, Federal Urdu University Gulshan Campus-Karachi-Sindh, Pakistan
2. Professor, College of Education, Faculty of Liberal Arts and Human Sciences, Ziauddin University North Campus-Karachi Sindh, Pakistan
3. Lecturer, Department of Teacher Education, Federal Urdu University Gulshan Campus-Karachi Sindh, Pakistan

*Corresponding Author

muhhammad.sharjeel@zu.edu.pk

ABSTRACT

The objective of this study was to examine the impact of SDG curriculum in the aligned content of higher education and to analyze feasibility to incorporate SDG Goals in the curriculum of higher education. The study employed survey research employing a sample of n= 17 high education faculty members from four institutions and a sample of n= 28 students in various undergraduate degree programmes. The questionnaire comprised n= 29 items on SDG Goal infusion in the curricula. The results showed that 79 % teachers were seriously interested to incorporate SDG in their professional settings. The study concludes that unless we reform the higher education plans and integrate the contents of SDG Goals, we will not be able to achieve the targets to experience a new world for the next generation. The recommendation is to change the instructional framework, provide sufficient resources in public and private sectors and change the curricula in social sciences courses to adjust SDG goals.

KEYWORDS Adolescence, Multicultural Representations, Social Imagination, Social Responsibility, Young Adult Literature

Introduction

This study integrates the theoretical perspectives of SDG-integration in the universities' curricula across the country. Various strategies are discussed and proposed plans to integrate the curriculum are presented. Development of a nation depends largely on its economic growth and developmental plans it induces with skilled and knowledgeable manpower. This context is essential to integrate a developmental framework. This plan was developed to be popularly known as the framework of Sustainable Development Goals (SDGs). This framework was developed to guide amongst the member countries investments for the sake of a newer and safer world for the next generation. The plan of sustainable development goals induced a concept of a better world not only for the youth of the countries that are the members, but also for the children who were considered to be stakeholders of the future as a robust investment in the future until the year 2030. The infusion of the SDG Goals is an integral component for the sake of improving the modern curricula specifically in the context of higher education across Pakistan.

Out of the 17 proposed goals, goal 4 was the major focus for the sake of educational standards and its related 10 targets. What delineates in this context is the fact that SDG was supposed to be integrated in the true spirit as Pakistan signed the treaty as a member of UNO in the year 2015 in the context of higher education. This was related with the notion that quality of education sustained in the member countries would bring the world to the

hopes that the next world will be a better place to live with sustenance and survival skills. Goal 4 amongst the 17 goals was most identified and recognized as a game changer as it focused more specifically on the quality and type of curriculum that could uplift the survival strategies and a real and effective means for the enhancement and improvement. The major concern of goal 4 was the sustainability and effectiveness of classroom-based quality of curriculum in universities. This philosophy matched with the earlier version. The SDG plan clearly and overwhelmingly identified the needs to change the current curriculum practices and procedures. The world has recently undergone a huge change in technological and innovation arena. This fast-paced change has also impacted the pedagogic practices around the world. Higher education curriculum reforms and assessment strategies have also been impacted by the SDG goals.

Integrating SDG Goal 4 as well as other plausible goals is the ultimate criteria of curricular reforms in Pakistan. This is a point of concern that unlike other countries, Pakistan has not been able to address the issues of SG in its curriculum offered in universities. The universities need to focus through its Sciences and Social Science programmes a sustainable curricula for the manageability dependence to grow in the next five years. The targets set by UNO in 2015 for the year 2030 seem arduous and uphill as the country is lacking in resources and financial management. SDG-based curriculum needs to be based on curiosity and consistency. The stakeholders must experience social and economic cohesion and at the same time encounter the anti-integrity elements, anti-social reforms, psychological impediments and social justice through the curricular reforms. When 2015 saw the changing scenarios of the globe, there came a powerful urge to experience the required SDG goals in terms of learning dynamics across the globe.

Initially, after 1945, many education systems inherited externally determined curricula that mirrored the prevailing wisdom in the developed world, with a time lag. These curricula often leaned towards conservative traditions, reflecting the preferences of colonial elites more interested in maintaining the status quo than fostering innovation. When enrollment rapidly expanded, especially after political independence, curriculum renewal took a back seat to increasing enrollments. Adoption involves taking materials largely unchanged from foreign sources, adaptation modifies existing curricula to suit local conditions, and local development creates curriculum based on the attributes of a particular system.

In the 1970s, there was a proliferation of curriculum development activities, often oriented towards adopting or adapting what was considered good practice from developed countries. Primary curriculum development lagged behind secondary, and higher education remained largely untouched. Public examining and assessment systems changed slowly, often failing to reflect new curricular emphases. Publishers played a significant role in shaping curriculum development, extending their interests into new learning technologies. After the 1990 World Conference on Education for All, there was a shift in investment patterns towards primary education, with decreased international interest in post-primary education. Globalization, in its various forms, has influenced curriculum development post-Millennium. Increasing international student mobility, linking national and international qualification systems, and new technologies are leading to convergence in form and content at an unprecedented rate. However, paradoxically, internet-associated technologies make it more possible to respond to diversity in need and capability.

Countries with successful education systems that have undergone significant curriculum development over several decades demonstrate that there are no quick solutions for those embarking on similar journeys. Systematic, incremental change with consistent approaches across the curriculum has proven more enduring than massive

system-wide transformations, even though the latter may be alluring, their lasting impact remains elusive. From experience, at least five different approaches to curriculum development can be identified, each carrying assumptions about the purposes and processes of curriculum development.

Literature Review

Sustainable development programme (2013) described how the world would prepare itself in the next decade. The draft of UNO was prepared in 2015 with an aim to achieve the targets in 2023. This was affirmed by a studies by the World Bank (2016). This study was on global monitoring report. The United Nations Development Programme (2015) also brought to light some fundamental approaches in the context of development and sustainability. The literature on the review was abundant even prior to 2015 on how the world was supposed to be prepared for an overwhelming change that was impeding and irresistible in nature. Sustainable Development Solutions Network (2015) and Sustainable Development Solutions Network. (2013) also generated the similar data on how the targets would be set for the next 15 years in an action agenda for sustainable development. 2013 report was enhanced through the addition of environment as an active agenda for the curriculum in universities. The report was published simultaneously from France and New York as an action plan.

Another SDG study was conducted in 2014 on sustainable development solutions in New York at the National Network and Institute for Sustainable Development and International Relations. (2014). This study was set on the targets for pathways and solutions to the emerging scenarios. The target was focused primarily on decarbonizing the world in the context of producing such electrical and electronic equipment, instruments, machines and appliances that were environment-friendly. Collier and Antonio et al. (2013) worked on harnessing natural resources for a livable world in the context of safe and secure world specifically for the next generation. Espey, Walecik and Kuhner (2015) worked on SDG goals in New York in the context of an organization that caters to the needs of individual and team members. *Similarly*, Gunn (1978) described why it is an essential aspect to implement solution for better work efficiency. Habimana (2015) researched on a project that demanded the effective mechanism for SDG data management. This study was published in New York as a result of a funded project. Another study by Kroll (2015) discussed SDG in the context of a country' financial resources and access to its natural wealth. The study asked the basic question whether a rich country could survive safely and securely with protected environment and immediate locale. Rowlands (2015), Sachs (2014), Schmidt-Traub & Sachs (2015) worked similarly on the project to safeguard the environment. Their research produced one impact that focused environmental protection on SDG. Their studies created an awareness to combat factors that impede human efficiency and performance. Sustainable Development Knowledge Platform. (2015) was a report from the UN pertaining to the developmental plans and goals followed by another study in the similar direction by Swanson, Bizikova, Thrift and Roy (2014). An early study was carried out by on the Post-2015 UN Development Agenda in (2012).

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Material and Methods

The study employed survey research employing a sample of $n= 17$ higher education faculty members from four institutions and a sample of $n= 28$ students in various undergraduate degree programmes. The samples were approached through a written consent letter and follow up strategy. Participants were given a series of questions in the form of a questionnaire that comprised $n= 29$ items on SDG Goal infusion in the curricula. Measures to incorporate the changes in the higher education curricula and their assessments are proposed. The study also took into consideration a holistic approach towards revising the subjects taught in the universities across Pakistan. Literature search and reforms were added aspects of the study. The participants comprised public and private higher education students who registered their opinion on SDG Goals and their infusion in the curricula.

Filled and completed questionnaires were received from the participants through personal visits, online mode and emails. The consent letters were sent a week before the actual study was planned. The other aspect of the methodology was the content analysis of the courses and their contents in various courses in sciences and social sciences. Only a few occasions was their evidence that SDG Goals were addressed on the topic of environment. The contents of courses in social sciences, education psychology, sociology, sciences and other management courses were analyzed. It was ensured that each item on the questionnaire was fairly understood prior to responding to them.

Results and Discussion

The study results show mixed outcomes which require further enhancement. First, the curricular reforms in the context of SDG target the activities and actions that the learners in the higher education have to perform in the real classes. Historically held formats were the criteria of the earlier versions of curriculum until 1945. These earlier measures lacked harmony and effectiveness in the curriculum in the early years in many countries. These reforms showed deeper insight and vision towards structural and infrastructural development for effective SDG. These older units of institutions recorded a rapid growth of institutions, but none emphasized on the SDG goals specifically in the context of health,

hygiene and environment. During this blind acceptance of curricular models, a race was witnessed that generated the evidence that curriculum was accepted as a core competence model of pedagogic excellence. There were many factors historically that composed the curricula in these nations. One amongst these was economic survival coupled with social integrity. The SDG goal was set to reform the curriculum in accordance with the global needs and in the context of subsequent patterns of curriculum development. Table 1 illustrates the SDG structure and its utilization across the globe. It was the specific need of the curricula to seek changes in its activities and contents. SDG has been under discussion in many aspects in Pakistan. The global reform agenda included the revision of the curricula for the sake of enhanced learning and teaching context. This was a historic aspect to change the curricula of higher education. The 17 SDG goals introduced the reform agenda towards the alteration and substitution of the syllabus and assessment strategies. The history has it that curriculum substitution and the alteration of the contents was supposed to bring a positive change not only in the environment, but also the safety and security where all children could live in peace and harmony.



Figure 1: SDG Composition and Goals

SDG Goal 1 is No Poverty. This can be infused in the curriculum by adding chapter/s of Science and Social Studies curriculum. Students may be assigned small tasks in groups and pairs to collect evidence of areas where there is abject poverty. A social development plan may carry poverty alleviation through donor agency assistance. The other forms of reforms per SDG is arranging an awareness campaign as part of social development plan. SDG Goal 2 is Zero Hunger. This agenda of UNO accord may be infused in the curricula by lecture and talks. Activities in the curriculum may be introduced and a social project may be introduced to alleviate the rate of hunger across the country. The services of multiple NGOs may also be added as chapters in the Social Studies and Pakistan Studies as well as in the subject of English from Grade VI to Grade XII. SDG Goal 3 is Good Health and Well-Being. This may also be introduced in the curriculum through adding a chapter on health and hygiene in the prevailing science subjects across the public and private education systems in Pakistan. A unified curricula of SDG may be introduced as a compulsory measure to introduce health and hygiene. The examination of various Examination Boards in Pakistan must have one single curricula for the SDG-base questions. This can be a measure to augment the endeavours of the political and social agenda.

SDG Goal 4 is the Quality Education. This is the most pertinent aspect of all the 17 SDG goals. Quality has been referred to as the sum total of all the experiences that are geared towards the refinement, improvement, sustenance and solidarity to make the learning experiences as effective and beneficial as possible. Quality Education is the most essential aspect of the SDG as it directly pertains to the educational parameters, pedagogic excellence and precautionary measures to excel in education. Goal 5 is Gender Equality. This can be infused by virtue of lesson focused on gender-based stories and contents that are related to gender equity. Lessons may be prepared in Social Studies, Urdu and English

subjects. Special stories may be written in terms of characters written for women and mother and sisters and wives. Such stories can yield a culture of respect and care among the male members of the society. Dramas and plays in the annual prize distribution programmes may also be organized in the educational organizations for the same purpose. Gender equity may be discussed on open platforms and forums too. Universities may be active agent in this regard. Goal 6 is Clean Water and Sanitation. This can be discussed in lessons of science and other subjects too. Clean water significance may also be discussed in classrooms and some projects may also be assigned as social service projects. Water-based tasks may be shown in classrooms through videos and documentaries.

Goal 7 is about Affordable and Clean Energy. This may be infused in the curriculum by adding lessons in science and social studies on ways to save energy and produce newer sources of energy. Goal 8 is about Decent Work and Economic Growth. This may be introduced in the curriculum of Grade IX and X as a compulsory measures where the courses of Economics are taught and studied. Goal 9 is about Industry, Innovation and Infrastructure. This may be developed by virtue of field trips and excursions to various sites. Reduced Inequalities is Goal 10. Higher education curriculum may be developed to create awareness about the social infrastructure and equity among people of a poor country. Funding may be provided to the countries and students may be asked to carry out the reports published by U.N.O in various countries. Goal 11 is about Sustainable Cities and Communities. The contents of this goal may be developed by virtue of social studies and Pakistan Studies content. Students can develop their own projects as part of their annual examinations. Goal 12 is Responsible Consumption and Production. This can be done in the curriculum by organizing various guest lecture series. Various organizational heads may be invited to lecture students in universities and give effective demonstrative lessons to create awareness about it.

Goal 13 is Climate Action. This can be introduced in the curriculum of Science and Social Studies in Grade IX. Climatic awareness and changing world temperature can be taught through activities in these subjects and through discussions and debates and role plays. Science exhibitions may also be hosted by public and private educational organizations as well as NGOs. Goal 14 is Life below Water. This can be added through lessons in English, Science, Social Studies and other social science subjects. Saving the aquatic life may be considered as a priority in social and cultural contexts. Goal 15 is Life on Land. This can be infused in the curriculum by virtue on showing documentaries and specially published texts and manuals. Goal 16 is Peace, Justice and Strong Institutions. This can be set in the curricula by creating lessons contents focused on peace drives, contributions of peace leaders and global drive to bring peace to the world. There must be systems to prevent wars amongst countries for material gains such as land, money and oil. The last Goal 17 is partnerships for the goals. This goal is crucial as the member countries need to boost mutual cooperation strategies and systems.

Table 1
SDG Goal Inclusion in Curriculum

No	Goal	Possibility in HE Curriculum	Target Subject	Action
1	Goal 1	Yes	Social Studies and English	Immediate
2	Goal 2	Yes	Social Studies and English	Immediate
3	Goal 3	Yes	Science and Social Studies	Immediate
4	Goal 4	Yes	English and Social Studies	Immediate
5	Goal 5	Yes	English and Social Studies	Immediate
6	Goal 6	Yes	Social Studies and English	Immediate
7	Goal 7	Yes	Science and Social Studies	Immediate

8	Goal 8	Yes	English and Social Studies	Immediate
9	Goal 9	Yes	English and Social Studies	Immediate
10	Goal 10	Yes	English and Social Studies	Immediate
11	Goal 11	Yes	Social Studies and English	Immediate
12	Goal 12	Yes	Science and Social Studies	Immediate
13	Goal 13	Yes	English and Social Studies	Immediate
14	Goal 14	Yes	English and Social Studies	Immediate
15	Goal 15	Yes	English and Social Studies	Immediate
16	Goal 16	Yes	English and Social Studies	Immediate
17	Goal 17	Yes	English and Social Studies	Immediate

Approaches to Curriculum Development

1. **Systems Approaches:** View educational institutions as part of a broader system with identifiable goals. Curriculum development is initiated to achieve these goals, generated by the political system. The focus is on designing and implementing programs to reach these defined ends, aiming for educational outcomes aligned with changing circumstances.
2. **Bureaucratic Approaches:** Defined within general system goals, these approaches have static characteristics. Rules, regulations, and legal obligations serve as benchmarks against which curriculum development is judged. Curriculum development is initiated to meet administrative criteria and may follow fixed cycles of official approval.
3. **Scientific Approaches:** Centered on research and evaluation, these approaches prioritize understanding the needs of learners, the learning process, and curriculum effectiveness. The curriculum developer engages in basic and applied research to enhance the design of learning materials and curricula, often incorporating formative experiments and meticulous processes of trial, evaluation, and revision.
4. **Problem-Solving Approaches:** Focus on addressing organizational challenges within educational institutions. Curriculum developers identify problems, diagnose difficulties, and offer solutions, which may or may not involve curriculum development. The emphasis is on being a process helper, guiding institutions through problem analysis and action planning.
5. **Charismatic Approaches:** Difficult to classify, these approaches are unique to individuals and circumstances. Individuals in influential positions with strong beliefs initiate curriculum development based on their educational philosophy. Motivated by conviction rather than research, these approaches may seek to change organizational goals based on inspirational insights and personal beliefs.

These diverse approaches reflect the complexity of curriculum development, with each having its own strengths, weaknesses, and implications for educational systems. The model's value lies in its simplicity, serving as a reminder to consider proposals in all these areas and how decisions interact, rather than focusing narrowly on a single element. More importantly, it emphasizes that the curriculum development process is not a linear progression from goals to objectives to content selection to teaching methods to assessment. Instead, it is an iterative process that moves back and forth between each domain. A second simple model beneficial for curriculum developers focuses on the temporal dimensions of the curriculum development process. Planning requires an understanding of the past, involves action in the present, and necessitates the identification of future outcomes. The curriculum development process must consider antecedent conditions that precede the development of new curricula, the transactions in the present shaping the curriculum in

action, and the achievement of future aims serving as a criterion for measuring relative success or failure. Stake, a renowned evaluator, developed a model providing a useful heuristic matrix for curriculum developers. The process of curriculum in higher education across Pakistan is specifically a process rather than an event. This developmental phase comprises various factors to indulge in the completion of developing process. The national process of curriculum in Pakistan in general goes through the following steps. These steps are essential for the successful orientation of a specific curricula under a given context.

When the development of a curriculum is in process, the experts need to create related activities and action that can address SDG goals. This applies specifically Goal 4 that deals with the Quality of Education. This direction is likely to yield a process of collegiality for the development of curricula against the national objectives and synchronization. Programme execution and programme evaluation are the next phase of the lessons. A detailed working in the real classrooms is required with the teachers and the students to measure how well the activities would suit the SDG targets for Goal 4 and its subsequent clauses. The required detailed working out of learning programmes and their evaluation against the pre-set goals is another milestone to be achieved in SDG goals. The other form of curriculum development model emerged from the political and bureaucratic scenario. This model comprises rather a sluggish system as it depends on the political agenda of curriculum targets. They often lack dynamism and diversity to address the defined and targeted goals. The curriculum in this aspect is strictly order-driven not demand-led in nature. There are rules and orders, social structure of a society, a set syllabus and various legal and ethical consideration in the model. The targets to achieve in these forms of curriculum are provincial and low in nature and complexity. Things are appraised against a set governing policy and not much space is provided to the stakeholders such as students, teachers, institutional management and parents. State rules are always governing the policy and the contents in the second form of curriculum model. The SDG text introduces a 'new agenda' for sustainable development, emphasizing inclusive and equitable quality education at all levels.' Despite the frequent mention of education (22 times), the focus is primarily on access and participation, with limited clarity on learning objectives, content, or pedagogy for sustainability. Goal 4 is notably quiet on sustainability, mentioned only in target 4.7. Removing the term "sustainable" from target 4.7 reveals a focus on ensuring learners acquire knowledge and skills for development, with an emphasis on education for development, human rights, gender equality, peace, non-violence, global citizenship, and cultural diversity. The SDGs, particularly in education, are criticized for being 'more of the same,' lacking a compelling vision or diagnosis of existing shortcomings. They are viewed as a list rather than a recipe, similar to the previous MDGs. While achieving all SDGs is desirable, it doesn't guarantee development, and they don't serve as a comprehensive development strategy or aid in redefining the curriculum.

The curriculum is intricately linked to the educational context, and aspirations for a new education paradigm in the SDGs seem context-blind. Global goals must resonate with national priorities to be effective. The current SDG for education lacks a distributional character, a significant omission given that poverty results from wealth distribution. Additionally, the SDGs are presented statically, lacking mechanisms for evolution. Education is central to development, transferring capabilities through the curriculum. However, the SDGs position education more as part of development rather than a means to achieve it. There's a missed opportunity to discuss the kind of education needed for transformative development, especially in areas like climate-friendly practices, human rights respect, and economic advantage. The SDGs and Goal 4 have yet to advance discussions on the type of education valued for specific purposes. There's a call for more insight into what education for the 21st century should entail, considering the cognitive gaps among students in different countries and disparities within low-income countries.

The lack of a convincing theory of change and a clear link between the new education goal and sustainable development raises questions about how the SDGs will differ from previous goals and targets. The absence of guidance on curriculum changes is noted, and the claim that the SDGs have mapped the road to sustainable development is criticized as aspirational without a deep understanding of the history of sustainable development. In conclusion, the study expresses a need for more empirical demonstration, drawing from decades of curriculum development experience, to address innovation that responds to effective demand, aligns with national development priorities, and is pulled by users rather than pushed by providers.

Target 4.7 seems to encompass at least 10 somewhat unrelated objectives amalgamated into one. It stands out as the lengthiest education goal among the SDGs, suggesting either a lack of consensus within the drafting committee or a commitment to inclusivity at the expense of precision, embodying a "no goal left behind" approach. This is not to undermine the value of the sentiments underlying this target or targets. However, a seasoned curriculum developer would instinctively inquire: What is the precise definition of sustainability? Aren't many of these elements already integral to well-designed national curricula developed over the past five decades? What will be displaced from the already congested national curriculum to accommodate these aspects? Isn't it logical for global citizenship education (GCED) to be preceded by citizenship education, and what is the current global state that benefits from the rights and responsibilities of its citizens? Furthermore, what are the clearly articulated learning outcomes in terms of observable behaviors that can be assessed? The clarity of the "transformation required" would significantly improve if the necessary thinking were explicitly communicated. While assertions may find agreement within certain circles, many experienced teachers might be taken aback to discover that they are perceived as having a limited understanding of rationality. It is uncertain on what grounds they should prioritize traditional knowledge systems over the evident desire of parents and students for knowledge and skills relevant to the 21st century and access to higher education.

Conclusion

While the final verdict is pending, the SDGs, particularly in the realm of education, seem to replicate familiar patterns, echoing my contention from 2012. They lack a novel and compelling vision and fall short of offering a plausible diagnosis of the deficiencies in the existing system. Like the MDGs, the SDGs are more of a list than a comprehensive recipe. While achieving all the SDGs could enhance global well-being, there's a consensus that the flagged outcomes are desirable. However, the collective Goals do not ensure automatic development, nor do they serve as a standalone foundation for a development strategy or contribute significantly to reshaping the curriculum.

The curriculum is intricately tied to the educational context, yet the ambitions for a new educational paradigm seem oblivious to contextual nuances, lacking specific examples within particular systems. For global goals and objectives to have an impact, they must align with national priorities; otherwise, they risk being disregarded. The current SDG for education lacks a distributive character – a significant oversight, especially considering the role of wealth distribution in perpetuating poverty. Furthermore, the SDGs are presented in a static manner, devoid of evident mechanisms for evolution. In contrast, the MDGs remained unchanged for 15 years, a duration exceeding the relevance of typical corporate development strategies and outlasting the tenure of many democratic governments. A static curriculum over such a prolonged period is bound to lose relevance. To enhance durability and resilience, the curriculum implications of the SDGs should be

conceptualized as dynamic, responsive, and adaptable to changing circumstances—an advancement over both EFA and the MDGs.

Education stands at the core of development, as learning not only generates but also transfers capabilities. The curriculum plays a pivotal role in shaping the experiences of both learners and educators, organizing the acquisition of knowledge and skills, and facilitating efficient and equitable access to opportunities. While education may not guarantee enlightenment or freedom from superstition, it significantly enhances the likelihood of achieving these outcomes. In the context of the Sustainable Development Goals (SDGs) and Goal 4, education is positioned more as an integral part of the definition of development than as a means to accomplish it. However, the ongoing discourse falls short in advancing discussions on the specific nature of education that should be valued for various purposes. There is a missed opportunity to delve into transformative aspects that influence minds, hands, and hearts, offering insights into an educational framework designed to promote development that is environmentally sustainable, respects human rights, and is economically advantageous.

The SDGs lack a compelling theory of change and a clear vision for "good" development, particularly concerning education systems. When examining Goal 4 in isolation, it appears quite similar to the Jomtien and Dakar goals and targets. The text does not elaborate on how the new education goal and its ten targets are more or less likely to lead to sustainable development compared to previous sets of goals and targets. Additionally, there is no clear explanation of how the new education goals will align with the other SDGs, most of which have educational dimensions. The rationale behind the strategy of "reaching the furthest behind first" is not adequately explained, especially in cases where systemic failure to deliver services exists, rather than being confined to the margins of fundamentally sound education systems. Moreover, there is a lack of guidance on the significant or minor curriculum changes that should result from the implementation of the SDGs.

The ambitious assertion that "we have mapped the road to sustainable development" in a concise document seems more like an expression of hope than a thoroughly planned strategy. This claim appears to lack a comprehensive understanding of the history of sustainable development, dating back to the Brundtland Commission in 1987, which introduced the concept into mainstream development theory. Transforming education requires more than rhetorical definitions; it should undergo empirical testing and demonstration. Sustainable development, as defined by the Brundtland Commission, aims to meet present needs without compromising those of the future. The implications for national curricula are significant, prompting a critical examination of lessons learned from decades of curriculum development. Key considerations include fostering innovation that is user-driven rather than provider-driven, responsive to effective demand, grounded in a coherent epistemology, and contributing to national development priorities.



Figure 2: Curriculum Map and SDG

Recommendations

The Sustainable Development Goals (SDGs) of 2015, must be linked in particularly with Goal 4 on education and its curriculum (Target 4.7), underscore the vital role of education in development. This emphasis reflects earlier movements such as the 1960s advocacy for science and technology education and national curriculum development. However, the emphasis on "learning" must be accompanied by a thoughtful consideration of what and why we teach. The title recommends a need to question the efficacy of current approaches. Drawing lessons from both successful and unsuccessful past curriculum development endeavors in diverse socioeconomic contexts is essential before forging ahead. Despite progress, there is a pressing need for comprehensive evaluation and refinement to ensure that SDG education truly becomes the driving force behind sustainable development.

More SDG-based curricula must be introduced in the formal classes of higher education. This can be achieved through developing new course contents and course outlines in both science and natural science classes. The study also recommends that a research project be assigned to students in the universities as their Final-Year Project, FYP. This can lead to a sense of protecting environment, promotion of health and safety and a hygienic learning culture. Following are some of the key recommendations and consideration in developing an SDG-oriented curriculum:

- Selection of a trained team of experts
- Selection of key national or provincial objectives and purposes
- Selection of contents adequate for the conceptual framework and integrity
- Deciding the nationally-integrated synchronization process of lessons
- Developing the SDG-based contents of a lesson against the given objectives
- Selecting suitable activity-based teaching methodology
- Developing the scenario for the lesson delivery
- Arranging the resources of the lessons based on the set criteria
- Developing a model lesson plan to be integrated in the process
- Pilot-teaching of the SDG-integrated contents in a selected institution
- Reflecting the SDG-based model of lessons
- Revising the lesson with SDG contents, targets and goals

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