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Implementing Undergraduate Standards and Curricula for ESD in Teacher Education in Mongolia

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Abstract*—Implementing and promoting ESD in teaching at university level has been a leading role since the time the term "ESD" was introduced into the late 20th century education system and was strengthened since SDGs were brought into the 21st century education. The aim of this study is to analyze the integration of ESD in Teacher education standards and curricula which are being implemented at Mongolian National University of Education. Therefore, it aims to evaluate its implementation how students perceive awareness and consciousness of ESD. Research methods were used are content analysis, survey and literature review. The conclusion related to the study aims shows that there are feasible and reasonable standards and curricula to implement ESD in teacher training process. Although, as a result of the research, there is a contrary point that implementation of ESD in the standards and curricula is not fully effective and in the process of classroom teaching, the standards and curricula may have not been implemented successfully*.

***Keywords*—** *Education for Sustainable Development, teacher education, teacher training standards and curricula, its implementation*.

I. Introduction

As the world enters the digital era, the integration of technology-enhanced and competency-based teacher education has been given emphasis along with raising awareness on Sustainable Development Goals. The advancement of education for sustainable development (ESD) in higher education is deemed "essential for constructing a sustainable future and for positioning young individuals at the core of development" (Wals, 2013, p. 5). This duty and significance of ESD is acknowledged by UNESCO (2005) and the United Nations Economic Commission for Europe (UNECE). Additionally, the Lüneburg Declaration of 2001 emphasized the importance highlighted in Chapter 36 of Agenda 21 (1992), asserting that Higher Education must have a vital role in enhancing education's capacity to tackle sustainable development issues. The Declaration encourages universities to endorse the Declaration and pledge to realign education towards sustainable development.

Teachers are the key to achieving all of the SDG 4 targets and preparing students to become responsible citizens capable of working towards an environmentally sustainable, globally interconnected, equitable and diverse society. Particularly, teachers who work in teacher training institutions play an important role for further promotion and implementation of ESD. The main aim of this study is to analyze the integration of ESD in Teacher education standards and curricula which are being implemented at Mongolian National University of Education which is the only national teacher training university in Mongolia, it needs to look for concepts that are related to the three spheres of sustainability – environment, society and economy – as well as themes of sustainability that are important to the local community or country. Another goal is to evaluate its implementation how students perceive awareness and consciousness of ESD. In this study using qualitative and quantitative research methods that require a keen sense of observation, awareness, and sensitivity of researcher to conditions which might be relevant to the phenomena being studied.

Objectives

This study was focused on the two main aims:

- To analyze the integration of ESD in teacher education standards and curricula which are being implemented at Mongolian National University of Education
- To evaluate its implementation, the focus is on how students perceive awareness and consciousness of ESD

II. Literature Review

The importance of Sustainable development is emphasized by the United Nations General Assembly's conclusion that the survival of societies and of the planet are at risk (UN, 2015). Sustainable development was also defined as 'meets the needs of the present without compromising the ability of future generations to meet their own needs' by the Brundtland Commission in1987 (WCED, 1987). The years 2005 to 2014 were declared the UN Decade of Education for Sustainable Development (ESD) in recognition of ESD as integral to educational quality and an enabler for sustainable development (UNESCO, 2014b). Education for sustainable development is a dynamic concept that applies all aspects of public awareness, education, and training to enhance the understanding of the relations among the issues of sustainable development and to develop the knowledge, skills, attitudes, and values that will allow people of all ages to assume responsibility for creating and enjoying a sustainable future.

Education can play a crucial role in fostering sustainability (UNESCO, 2006) since SDGs were brought into the 21st century education. SDG 4 promotes inclusion, quality and equity in education (UNESCO, 2017). Furthermore, teacher education programs have a potentially important role to play in promoting sustainability, especially given SDG 4, in the transformation of society towards a more sustainable pathway of development. Teacher education focusing on fulfilling its role as one major driving force for sustainable development,

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requires a reorientation of learning processes. A transformation of teacher education has already started through the integration of sustainability-related topics into existing curricula. Curricula and standards of teacher education program have to include sustainability issues and concepts and need a pedagogical framework which relates to education for sustainable development. All of the teacher training standards and curricula have been renewed at Mongolian National University of Education since 2014. We intended to integrate Education for Sustainable Development into the standards and curricula in teacher training programs.

III. METHODOLOGY

Mongolian National University of Education (MNUE) is one of the largest universities in Mongolia and it has 8 schools such as School of Social Sciences and Humanities, School of Mathematics and Natural Sciences, Teacher's School, School of Fine Arts and Technology, School of Physical Education, School of Pre-School Education, School of Educational Studies and Teacher's School in Arkhangai Province.

Our university is a national teacher training institution, which has been carrying a leading role in preparing teachers and professionals in the education sector. Today the University boasts more than 15000 students of postgraduates and undergraduates. Moreover, there are about 29 academic programs for preparing teacher and 12 academic programs for preparing professionals in the education sector. In other words, the university recommends over 30 kinds of teacher profession such as Math teacher, foreign language teacher, chemistry teacher, history teacher and so on.

Content capacity of undergraduate programs has to be more than 120 credits and its content consists of general foundation courses, teacher education courses and professional courses.

Totally, 120 credits

I. General foundation courses – 25 credits
   1. Compulsory courses – 21 credits
   2. Elective courses – 4 credits

II. Teacher education courses – 21 credits
   1. Compulsory courses – 14 credits
   2. Teacher education practicum – 3 credits
   3. Elective courses – 4 credits

III. Professional courses – 78 credits
   1. Compulsory courses – 70 credits (It includes 5 credits experiment teaching practicum and 5 credits teaching practicum)
   2. Elective courses – 8 credits

In order to fulfill the first aim, the study has been done to analyze 11 standards and 11 curricula of General foundation courses and 6 standards and 6 curricula of Teacher education courses that are compulsory for all university undergraduates of Mongolian National University of Education who are majoring as a teacher. The study was carried out in 2022. In this research work, we have chosen the following General foundation courses:

- Information and Communication Technology
- English-II
- Mongolian language and scripts and Stylistics
- History and Culture of Mentality
- Creative thinking
- History and Culture of the Mongolians
- Physical Education-I
- Physical Education-II
- Natural Sciences
- Disaster management
- Volunteering

All courses are compulsory for the students. They comprise totally 21 credits. Studying the general foundation courses can give the students following opportunities to be global citizens with the following social skills such as creative, critical and logical thinking, as well as to become individuals with an enough professional ethics, who understand their professional values and essentials and with good knowledge of decisions making and problem solving by gaining the core knowledge and skills of social, humanity and natural sciences. In other words, the general foundation courses can be supportive courses to the students to become a responsible person in modern era to deliver their knowledge and abilities to the young generation.

Moreover, we also have chosen teacher education courses such as *Introduction of Teacher Profession, General Psychology, Educational Psychology, Basics of Teaching and Learning, Teaching Theory and Methodology and Research Methodology*. They comprise totally 14 credits. The objective of the teacher education courses at MNUE tries to focus on acquiring the undergraduate students the following skills: equipping the prospective teachers with necessary pedagogic skills; enabling the future teachers to acquire understanding of child psychology; understand the significance of individual differences of child and to take appropriate steps for their optimum development; as well as enhancing skills to make proper use of instructional facilities. Therefore, the objective addresses to prepare a responsible global citizen who is willing to develop continuously and walk together in the era of information technology development.

In the frame of the second aim of the research, a sustainability consciousness questionnaire (SCQ) was used and 108 students from MNUE aged 17–26 years old were participated in order to evaluate implementation of standards and curricula. There were 86 female students (79.6%) and 22 male students (20.4%). The majority of students (89%) who took part in the survey were in the third and fourth year of their studies, the smallest number were in their second year (11%). All of the students studied the following courses that we had analyzed. There were 35 students (32.4%) from School of Natural Sciences and Mathematics, 42 students (38.8%) from School of Humanities and Social Sciences, 5 students (4.6%) from School of Educational Studies, 8 students (7.4%) from School of Pre-school Education, 10 students (9.3%) from School of Physical Education, 2 students (1.9%) from School of Fine Arts and Technology and 6 students (5,6%) from Teacher's School.

IV. FINDINGS

Researchers analyzed the integration of ESD in Teacher education standards and curricula which are being

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implemented at Mongolian National University of Education. Surprisingly, all standards and curricula had been developed since 2014.

As a result of it, they found out the 46 concepts and items (20 concepts or items of Socio-cultural elements, 16 concepts or items of Environmental elements, 10 concepts or items of Economy elements) that are ESD-related knowledge from international ESD standards and curricular frameworks. 13 concepts or items of ESD-related skills and 8 concepts or items of ESD-related attitudes and values were found.

The followings provide a summary of two kinds of documents (standards and curricula) that we analyzed.

ESD-related knowledge and concepts

TABLE 1. Socio-cultural elements in 17 standards and 17 curricula

Knowledge and concepts	Standards	Curricula
Social development	76	70
Social conflict	29	35
Democracy	64	58
Human rights	76	82
Gender, gender equality	47	52
Good governance	29	35
Free publishing	35	41
Corruption	11	11
Cultural heritage, its protection	88	88
Globalization, isolation	64	70
Equality for all, equity	58	64
Peace and safety	58	70
Human development, formation	70	76
Differentiation	29	35
Discrimination	23	29
Inequity	35	41
Traditional knowledge	47	59
Religion	35	41
Health	58	74
Prevention from accident and danger	41	47

TABLE 2. Environmental elements in 17 standards and 17 curricula (by percentage)

Knowledge and concepts	Standards	Curricula
Agriculture, grazing usage	35	47
Industry, mining	29	35
Urbanization	29	35
Various kinds of biological species	41	53
Ecosystem degradation	47	59
Water, water sanitation	47	53
Air	35	41
Soil	23	29
Pollution	35	41
Waste	23	29
Climate change	41	53
Desertification, Deforestation	17	23
Ecological footprint	11	17
Energy, energy resources	47	59
Natural disaster	23	41
Natural resources	23	29

TABLE 3. Economy elements in 17 standards and 17 curricula (by percentage)

Knowledge and concepts	Standards	Curricula
Market economy	17	29
Proper use	88	88
National industry	35	41
Import and export	23	29
Economical inequity	35	41
Social responsibility of company	23	29
Loan and debt	11	23
Unemployment	17	23
Poverty	17	23
Movement /social, geographical/	11	29

TABLE 4. ESD-related skills in 17 standards and 17 curricula (by percentage)

Skills	Standards	Curricula
Understanding and thinking of problems	100	100
Collecting, processing and analyzing information (comparing, classifying, measuring., etc)	100	100
Systematic Inventive thinking	94	94
Analyzing, evaluating, concluding and decision making based on the survey	88	94
Creative thinking, self-expression	94	100
Determining the participatory sides and their interests and needs	88	94
Team-working	100	100
Cooperative learning	94	94
Problem solving	100	100
Negotiating	82	88
Self-evaluation, assessment and management	88	94
Perspective thinking	88	94
Futures thinking	82	88

TABLE 5. ESD-related attitudes and values in 17 standards and 17 curricula (by percentage)

Attitudes/ Values	Standards	Curricula
Participation	100	100
Responsibility	82	88
Ethics	76	82
Understanding self and others' values	70	82
Respecting others	76	82
Peace making	70	76
Protecting environment	76	76
Respecting gender equity	58	64

It includes three components such as ESD-related knowledge and concept, ESD-related skills, and ESD-related attitudes and values. The integration of ESD-related skills in Teacher education standards and curricula is efficient. Moreover, ESD-related attitudes and values are reasonably integrated. Some of the items such as ''respecting gender equity, peace-making and protecting environment'' are less than others. However, ESD-related knowledge and concept are not reflected in Teacher education standards and curricula, sufficiently. According to the "General procedure for designing undergraduate standards and curricula", it was observed that the standards and curricula at MNUE have focused on to acquire students giving the below mentioned skills namely, analyzing, problem solving, decision making, planning and implementing skills, self-study skills, team-working and communicative skills.

Students' consciousness

The students' perspectives on sustainability matters following the educational experience were evaluated utilizing the sustainability consciousness questionnaire (short version) created by Gericke, Boeve-de Pauw, Berglund, and Olsson. This questionnaire consists of 27 items that are divided into nine sections. On the first level, the three components of consciousness, which are knowingness, attitudes and behaviour, are analyzed with each level of consciousness divided into three items. At the same time, each section is also divided in order to cover the three dimensions of SD (environment, society and economy). This allows the knowingness, attitudes, and behaviour within each dimension

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of sustainability of the students to be measured. The questionnaire's responses are composed of a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree".

Statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
SUSTAINABILITY KNOWINGNESS **Environmental** 1. Reducing water consumption is necessary for sustainable development.	6	7	33	39	26
2. Preserving the variety of living creatures is necessary for sustainable development (preserving biological diversity).	10	7	22	45	27
3. For sustainable development, people need to be educated in how to protect themselves against natural disasters.	12	4	26	49	20
Social 4. A culture where conflicts are resolved peacefully through discussion is necessary for sustainable development.	8	4	38	39	22
5. Respecting human rights is necessary for sustainable development.	8	7	27	40	29
6. To achieve sustainable development, all the people in the world must have access to good education.	8	10	32	41	20
Economic 7. Sustainable development requires that companies act responsibly towards their employees, customers and suppliers.	9	6	28	39	29
8. Sustainable development requires a fair distribution of goods and services among people in the world.	6	8	20	47	30
9. Wiping out poverty in the world is necessary for sustainable development.	9	5	28	40	29
SUSTAINABILITY ATTITUDES **Environmental** 10. I think that using more natural resources than we need threatens the health and well-being of people in the future	17	14	26	31	23
11. I think that we need stricter laws and regulations to protect the environment.	8	7	21	36	39
12. I think that it is important to take measures against problems which have to do with climate change.	8	5	25	38	35
Social 13. I think that everyone ought to be given the opportunity to acquire the knowledge, values and skills that are necessary to live sustainably.	10	8	22	46	25
14. I think that we who are living now should make sure that people in the future enjoy the same quality of life as we do today.	8	6	22	42	33
15. I think that women and men throughout the world must be given the same opportunities for education and employment.	8	5	19	30	49
Economic 16. I think that companies have a responsibility to reduce the use of packaging and disposable articles.	8	7	20	38	38
17. I think it is important to reduce poverty.	8	4	18	39	42
18. I think that companies in rich countries should give employees in poor nations the same conditions as in rich countries.	5	8	47	28	23
SUSTAINABILITY BEHAVIOUR **Environmental** 19. I recycle as much as I can.	7	6	22	38	38
20. I always separate food waste before putting out the rubbish when I have the chance.	9	15	38	28	21
21. I have changed my personal lifestyle in order to reduce waste (e.g., throwing away less food or not wasting materials).	7	15	31	41	17
Social 22. When I use a computer or mobile to chat, to text, to play games and so on, I always treat others as respectfully as I would in real life.	12	19	37	25	18
23. I support an aid organization or environmental group.	8	8	33	26	36
24. I show the same respect to men and women, boys and girls.	8	4	21	33	45
Economic 25. I do things which help poor people	8	9	38	36	20
26. I often purchase second -hand goods over the internet or in a shop.	30	33	25	15	8
27. I avoid buying goods from companies with a bad reputation for looking after their employees and the environment	10	9	38	31	23

All of the students' answers are moderate. The results show that the students have mid sustainability awareness values for most of the dimensions assessed, except for the behaviour in the economic dimension for which the descriptive analysis shows lower scores. The response of 'neutral' is more. So, students' awareness or consciousness of sustainability may be critical. Results of the present contribution revealed that the sample of students hold higher levels of sustainability attitudes (in the three dimensions of

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sustainable development, but above all towards social aspects) comparing others.

Limitation

There may be some possible limitations in this study. We have seen two major limitations in this study that could be addressed in future research. First, the study focused on the General foundation courses and Teacher education courses that are compulsory for all undergraduate students of MNUE who are majoring as a teacher. We couldn't comprise all of the courses. Second, observing the process of classroom teaching is more worthwhile in order to have good result of the research.

V. CONCLUSION

The conclusion related to the research objectives shows that there are feasible and reasonable standards and curricula to implement ESD in teacher training process. It needs to concern some of the ESD-related knowledge and concepts, especially economy and environment elements.

Although, as a result of the research, there is an inverse point that implementation of the standards and curricula in teaching processes is defined as ineffective or insufficient as we analyzed students' consciousness of sustainability. So, we need to improve whole actions related to the implementation of SD and ESD.

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Biography

Davaasuren Dagvasumberel graduated from National University of Mongolia as an English linguistic researcher in 2007. She has been working as an English teacher for 15 years at Mongolian National University of Education. Her research interests are ESD in teacher education, comparative linguistics, teaching English for specific purposes and methodology in differentiated classroom.

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