

## Article

# Connections of Transformative Education with Bhutan's Pedagogical Ideas for Promoting Sustainability Education

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**Abstract:** The study aims to clarify how transformative education teaching and learning ideas have been incorporated into sustainable development-focused education in Bhutan. Sustainable development is included in various ways in the Educating for Gross National Happiness Training Manual (GNH TM) developed by the Ministry of Education of Bhutan in 2013. GNH-focused education aims at developing students' respect and critical thinking for the well-being of human beings and the environment. The article provides an overview of 26 selected articles published in peer-reviewed scientific journals from 1991–2021. Altogether, 12 sustainable development-focused transformative education articles were analyzed in detail using qualitative content analysis. The results of the study show that transformative education is reflected in many ways in the teaching goals, objectives, contents, and methods introduced in the GNH TM units. Consequently, transformative education and teaching have become part of teaching in Bhutan's schools, with an emphasis on sustainable development and protection of the environment. However, for a sustainable future, active student-centered teaching and learning methods should be used in a more diverse way.

**Keywords:** transformative education; teaching methods; sustainability education; educating for GNH training manual; content analysis methods



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## 1. Introduction

There is an urgent need for transformation in the world in all areas of life to save the world from the problems of an unsustainable way of living. In this study, transformation is understood as described by Filho et al. [1] as “a process of questioning and redefining one's frames of reference, experiences and assumptions to generate new meanings and new visions of future” (p. 289). Transformative education is seen as a way to develop students' awareness of themselves and their environment [2–4]. According to Freire et al. [5,6], education should awaken critical awareness among students and prepare them to actively change their own reality. The UNESCO document [7] emphasizes “an action-oriented, transformative pedagogy, which supports self-directed learning, participation and collaboration, problem-orientation, inter- and trans disciplinary and the linking of formal and informal learning” (p. 2). In particular, values and related actions can give rise to critical reflection that can lead to behavioral change.

The heart of sustainability lies in ethical issues relating to three concepts: continuance, orientation, and relationships [8]. From the perspective of continuity, the concept of sustainability refers to the idea of stability over time. Sustainability in this context refers to the inherent ability of systems (e.g., ecosystems, economic systems), entities (e.g., species, buildings, capitals) and processes (e.g., evolution, activities), or the ability of man to maintain them in the context of dynamics and change. The concept of “orientation” refers to the idea that sustainability is the main goal that should guide the actions of individuals and communities [8]. This has been stated in many political and educational reports [9–15]. The concept of “relationship” is the core idea in the Brundtland Report. This is reflected in the definition of sustainable development [15]: “Sustainable development is a process of

change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to meet human needs and aspirations” (p. 46). Later on, sustainable development is mostly perceived as a socio-economic system that enables human needs, but also as long-term progress towards well-being and improvement of the overall quality of life in accordance with environmental constraints [16].

The sustainability of society depends on the ability and willingness of humans to shift their behavior and institutions toward maintaining ecological integrity in human relationships with the Earth. Education has a good chance of influencing this shift when teaching and learning are developed according to action-oriented transformative education, which is characterized by “people-nature interdependence, future focus, common agendas for sustainability and personal and societal behavior regarding production and consumption” [17] (p. 17). Agenda 2030 is seen to be important for the development of innovative education, including innovation-driven transformative changes in education based on the Sustainable Development Goals (SDGs) [18]. According to SDG 5 [19], education should address social and power aspects as well as gender equality to reduce gender inequality and improve human well-being. The effects of the COVID-19 pandemic could undo the progress made so far on gender equality and women’s rights. The COVID-19 pandemic undermines gender equality in all regions [19]. Women play an important role in ensuring a safe life both at home and in healthcare. Thus, improving sustainability education and supporting participation in society through it is important not only for human beings but also for the planet. For example, recommended teaching and learning approaches in this sense are interdisciplinary and multidisciplinary, and methods include problem-based learning, self-directed learning, participation, and cooperation [20,21]. The COVID-19 pandemic has increased e-learning, bringing new challenges to teaching and learning. Important strategies to overcome them are adherence to social distancing and health practices, maintaining communication and collaboration between teachers and students, using modern teaching techniques, and motivating students to work online [22].

In Bhutan, the social and individual transformative change is based on the Gross National Happiness (GNH) development principles created in 1971. The key principles are defined as four GNH pillars: (1) sustainable and equitable socio-economic development, (2) conservation of environment, (3) preservation and promotion of culture, and (4) good governance [23,24]. Efforts are also made to develop the school system in accordance with the principles. The Ministry of Education of Bhutan has launched several initiatives to reform the education systems aimed at improving the quality of education [25]. It arranges teacher training courses and has also published a teacher guide called the Educating for Gross National Happiness Training Manual (GNH TM) [26]. This teacher guide has been used in annual one-week teacher training courses.

The contents of the GNH TM include the values and principles of Bhutan’s GNH development principles and show how these values are implemented in basic education teaching [27]. The goal of the comprehensive GNH education guidelines is expressed in the prologue to the GNH TM [26]: “Through our academic disciplines, the purpose is not to gather information and knowledge from different topics and chapters prescribed in the syllabus, but to gain insight into the nature of phenomena that make our universe” (p. IX). According to the GNH TM, key values emphasize that students need to understand that they are genuine human beings, and they learn by realizing their full and true potential. According to the GNH education values, students learn to be ecologically literate, contemplative, and analytical in their understanding of the world. The values of teaching emphasize the release of students from greed and excessive desires. It has been stated in the GNH TM [26] that “There is absolutely no better place to begin the transformation that is needed, than with education” (p. XII).

In these times, when climate change is turning into a climate crisis, and climate disasters are increasing both in frequency and severity [28], the crucial question regarding education is how education can support sustainable development. To the best of our

knowledge, although studies on transformative education and sustainability education have been published in reasonable amounts, little research has been published evaluating, comparing, and discussing which transformative goals, objectives, contents, and methods are useful to promote sustainability education. According to Dorji et al. [25], the pedagogical ideas used in the training courses of teachers in Bhutan are based on transformative pedagogy. Thus, we wanted to investigate what kind of transformative pedagogical ideas have been included in the GNH TM.

The study was guided by the following research questions:

- (1) What kind of teaching and learning goals and objectives, content knowledge, and teaching and learning methods have been included in transformative education?
- (2) What kind of teaching and learning goals and objectives, content knowledge, and teaching and learning methods have been included in the GNH TM units?
- (3) How do transformative ideas relate to the teaching and learning goals and objectives, content knowledge, and teaching and learning methods expressed in the GNH TM units?

The results are expected to contribute to the development of sustainability education to support the shift towards sustainable living and well-being.

## 2. Transformative Education

Transformative education, based on Paulo Freire's critical pedagogy, is seen as a way to develop students' awareness of themselves and their environment [2–4]. According to McLaren and Leonard [29], Freire offered a system where the power of learning is shifted from the teacher to the student. This shift provides the students with the opportunity to empower themselves through their own learning.

Mezirow [3] introduced the concept of transformative education, which is based on a realistic view of the contemporary way of living and possible paths to the improvement of human life. A key principle of transformative education is a shifting of consciousness to alter our way of seeing and being in the world [3,4]. Mezirow defined transformative education as a learning process using a prior interpretation to construe a new or revised interpretation of the meaning of one's environmental experience in order to guide future action. Today, transformative learning theory is codified into the next dominant strands: the emancipatory, the critical reflexive, the developmental, and the extra-rational [30].

Transformative learning theory in its emancipatory strand arose from the work of Paulo Freire [31]. By working on educating the poor in Brazil, Freire developed a theory of transformative learning he called conscientization, referring to consciousness raising through critical reflection. According to Sterling [32], this means a deep structural shift of thoughts, feelings, actions, and consciousness that dramatically and permanently alters our way of seeing the world and being in the world. Therefore, teaching approaches should focus on elements relating to the processes of learning, rather than the accumulation of knowledge [4].

The critical–reflexive strand of transformative learning theory arose in the late 1970s. Thomas Kuhn's [33] idea of revolutionary and evolving scientific paradigms was particularly important, helping to form Mezirow's concepts of meaning schemes, meaning perspectives, and their transformations. Meaning schemes are made up of knowledge, beliefs, value judgements, and feelings that constitute interpretations of experience. A meaning perspective is a general frame of reference, worldview, or personal paradigm made up of a collection of meaning schemes [34]. When new experiences happen to an individual and they cannot be integrated into an active meaning perspective, the individual must either reject the experience or undergo a perspective transformation. This perspective transformation is at the heart of Mezirow's strand of transformative learning theory. To make meaning therefore means to make sense of an experience, making an interpretation of it. When we subsequently use this interpretation to guide decision-making or action, making meaning becomes learning. We learn differently when we are learning to perform than when we are learning to understand what is being communicated to us [4].

The developmental strand was created by Larry Daloiz [35]. It differs significantly from Freire and Mezirow in that transformation depends less on reflexivity and rationality, and more on holism and intuition. For Daloiz, the transformative process is focused on personal change and self-actualization. The extra-rational strand, again, presented by Robert Boyd, is focused on individuation. Boyd's idea of transformation is concerned with the emotional and spiritual dimensions of learning, and their integration into daily experiences. According to Boyd, learners are transformed by becoming aware of aspects of themselves that they are not fully conscious of [36]. Both Daloiz and Boyd also emphasized the emotional and intuitive dimensions of transformative learning, and thus represented a holistic education that must be present in learning for sustainability.

Several studies are informing how transformative pedagogy have been interpreted and applied since Mezirow [3] introduced his concept. For example, Morrison [37] studied transformative pedagogy, concluding that a transformative, progressive educational approach promotes social justice and democratic ideals to transform students and society. Howard [38], in turn, emphasized that deep transformative learning is designed to take students forward into the next century. Furthermore, the studies of Morrison [37], Howard [38], and Hughes [39] showed that transformative pedagogy creates transformative classroom cultures, which facilitate students' engagement with learning, critical engagement with their world, and challenging the reasoning of neoliberalism.

The recent study by Salovaara et al. [40] concluded that during these times of global environmental crisis, societal unrest, economic turbulence, and global pandemic, it seems clear that a fundamentally new understanding of interconnected existence is needed to better understand and treat these issues. The aim of Salovaara's research was to discover the efficiency of employing the pedagogy of interconnected learning on the types of sustainability transition narratives. The perspectives to the sustainability transition, according to the students of the study, are changes that aim at educating a global society of sustainability-minded decision-makers, professionals, consumers, and citizens—in short, a sustainability-enlightened society. Salovaara et al. [40] concluded that some level of sustainability education is necessary and foundational to all types of transition narratives and interconnected sustainability education. These enriched understandings could further open students to be able to recognize and explore new perspectives to produce innovative and transformative solutions for sustainability.

Interestingly, the results of the study of Filho et al. [1] showed how transformative pedagogy was interpreted and implemented in education in universities and primary education across seven countries. The study showed that there are pedagogical challenges in transformative teaching in both academic and primary education. For example, the importance of connecting values of education for sustainability and transformative learning in community engagement and the ability to deal with complexity and uncertainty should be pursued [41]. When looking at an existing or developing a new interpretation of the environment, the previous interpretation of environmental experience should be used to guide the future operations of the organization [4]. This idea was also emphasized by Filho et al. [2], Howlett et al. [42], and Remington-Doucette et al. [43]. They pointed out that educators need to rethink the organizational learning process to enhance students' understanding of the drastic consequences for human life resulting from the overexploitation of a planet with finite resources. The environmental (biophysical) dimension of sustainability has been traditionally overemphasized in sustainable development curriculum integration. More holistic approaches, including transformative education, stress the importance of cultural-based approximations aimed at encouraging the understanding of the underlying causes of the unsustainability of current trends.

Furthermore, according to the research results of transformative learning, Filho et al. [1] argued that disciplinary boundaries should be set aside, and integration of non-academic knowledge and expertise should be promoted. It is a difficult task to perform but, with persistence, it is possible. Indeed, despite the lessons learned from the best practices in implementing an inter-transdisciplinary approach by changes integrated into curricula

in collaboration with the community, there are barriers to integrate sustainability and transformative learning [44]. Holistic teaching methods such as transformation education refer to a process of questioning and redefining one's frames of reference, experiences, and assumptions to generate new meanings and new visions of the future [1].

During the last few years, transformative education practices have also been discussed in Bhutan. Dorji et al. [25] studied the transformative education practices in Bhutan's education. Twenty teachers took part in face-to-face interviews. The results of the study show that nearly all the participants shared the opinion that transformative pedagogy promotes the synchrony of social interaction and sense of individual accountability among the students. Sixteen participants also answered that transformative pedagogy enables students to leverage active participation in the class, construct their own knowledge, feel motivated, and develop self-confidence. It appears, according to the study, that transformative pedagogy has positive implications for Bhutanese classroom teaching. However, 19 participants maintained that the practice of transformative pedagogy is relatively difficult with thick curricula in place. Eighteen participants expressed that the practice of transformative pedagogy makes it difficult to cover syllabi on time. It was also revealed that the overcrowded classroom structure and affinity towards the lecture method largely impede the practice of transformative pedagogy.

### 3. Material and Methods

#### 3.1. Data Collection

In this qualitative study, the focus was to clarify how transformative education teaching and learning ideas have been incorporated into sustainable development-focused education in Bhutan. The material consisted of articles on transformative education and the Educating for Gross National Happiness Training Manual (GNH TM).

The material was selected by applying the method presented by Álvarez-García et al. [45]. For a systematic review, we identified international research in peer-reviewed journal articles using a consistent search strategy, established the criteria for the selection of articles to be considered, and analyzed them based on clear and precise criteria and dimensions [46].

The search strategy was based on a selection of keywords related to transformative education. A word search was conducted in relation to the terms "transformative education", "transformative pedagogy", "transformative learning", "goals of transformative education", "objectives of transformative education", "contents of transformative education", "teaching methods of transformative education", "learning methods of transformative education", and "teaching and learning processes in transformation education". The articles for the analysis were sourced from scientific databases such as ERIC, Web of Science, Education Database, and Google Scholar. For each scientific database, a hierarchical search strategy was applied, starting from the simplest combination of Boolean forms and then progressing to more complex forms. Additionally, manual examinations of key research journals in transformation education were performed. All searches were done in English. These initial searches of the scientific databases and the manual examinations of scientific journals came up with over 2000 search results, from which 26 articles were chosen based on the sustainable development ideas included in the titles and/or the abstracts of the articles for review (covering 1991–2021).

Subsequently, the following data collection criteria were used to select data for the more detailed analyses:

1. Scope: international research;
2. Type of research: empirical research on teaching and learning goals, objectives, content knowledge, and teaching and learning methods in transformative education;
3. Period: January 1991–July 2021;
4. Target groups: students in primary and secondary schools and universities;
5. Language: English;
6. Quality: academic papers published in scholarly refereed journals.



Only 12 articles (Appendix A) met these inclusion criteria and were chosen for the analysis. The rejected articles did not include elements of sustainable development or included more general descriptions of large courses or education programs, not about the teaching or learning goals, objectives, content knowledge, and methods themselves. The chosen articles were published in 2010–2021.

From the GNH TM, we selected the six GNH Training Manual units for analysis, because they include the core education ideas of Gross National Happiness Education [47]. The units are Unit I GNH Contextualize in education, Unit II Meditation and mind training, Unit III Infusing GNH into school curriculum, Unit IV Broader learning environment, Unit V Holistic assessment of children, and Unit VI Media literacy and critical thinking. Both the selected articles and the units were examined qualitatively.

### 3.2. Methods of Analysis

The study searched for how the teaching and learning goals and objectives, content knowledge, and teaching and learning methods in the GNH TM units reflect transformative pedagogical ideas focusing on sustainability education and sustainable living. In transformative education, the key is to provide content and experiences that allow students to interact with the content themselves to enhance their learning. The focus on teaching and learning should be student-centered and meaningful and relevant to the students [48].

The material was analyzed using content analysis methods [49,50]. Deductive content analysis was used to analyze the teaching and learning goals and objectives and the levels of content knowledge presented in the selected articles and in the GNH TM units. Teaching and learning methods were also analyzed first by using deductive content analysis. Thereafter, all the other teaching methods were analyzed inductively.

To deductively analyze the teaching and learning goals and objectives presented in the selected articles and in the GNH TM units, the measurement instrument 1, based on the extended Bloom's taxonomy, was used [51,52]. In this taxonomy, the level of knowledge is the first one. At this level, the student is able to recall, remember, and identify things. He/she is able to answer questions on the basis of the information he/she remembers and to define concepts, to describe phenomena, to list, to name, or to identify a variety of subject-specific issues. He/she is able also to search for textbook-related information presented in a textbook or other sources. At the second level, comprehension, the student is able to interpret graphic and symbolic information and transform information into graphics or symbols. He/she is able to classify the things and phenomena and to explain the relationships between them. He/she is able to describe things and ideas, to use relevant materials, and to draw conclusions about them. In addition, he/she is able to justify his/her answer or decision. At the third level, application, the student is able to use methods or theoretical concepts in new situations and produce an answer by reasoning. At the fourth level, analysis, the student is able to divide the whole into parts so that he/she understands the meaning of the parts and is able to explain the relationships between the parts from the point of view of the whole. The student is also able to compare the properties of different systems and to draw conclusions. At the fifth level, synthesis/creation, the student is able to plan a way to solve a problem or present an idea. He/she is able to combine the analyzed parts into either the same whole or a new one. For example, development and design take place at this level. At the sixth level, evaluation, the student is able to evaluate the correctness and value of things, materials, statements, and discussions, or to criticize an idea or procedure.

The levels of content knowledge were analyzed deductively using measurement instrument 2 based on Bloom's new taxonomy [52] according to Aksela et al. [53] (Table 1). Here, the levels of knowledge form a hierarchical system. The dimension of knowledge forms a continuum in which knowledge changes as it moves upwards from the concrete to the increasingly abstract. Correspondingly, the categories of the thought process become more cognitively demanding. The lowest knowledge level is the level of fact knowledge, and it is by nature more concrete than concept knowledge. The third level is method knowl-

edge. It includes both fact and concept knowledge and the highest level, metacognitive knowledge, includes all the previous ones.

**Table 1.** The new taxonomy of Bloom adapted from Aksela et al. [53].

Levels of Knowledge	Criteria
Fact knowledge	Terminology of transformative education, knowledge on details, and basic elements
Concept knowledge	Classification of knowledge, principles, generalizations, theories, models, and structures
Method knowledge	Know-how, teaching and research techniques, and methods
Metacognitive knowledge	Comparing transformative education to traditional education; strategic knowledge, contextual knowledge, and self-knowledge

To find out about teaching and learning methods, the selected articles and the GNH TM units were first analyzed deductively based on measurement instrument 3 [54,55]. Measurement instrument 3 includes the following types of teaching and learning methods: teacher's presentation, teacher's inquiry, teaching discussion and argumentation, group work, games, roleplays or debates, inquiry-based learning, problem-oriented learning, problem-based learning and problem-solving learning, experiential learning, experimental learning, and information and communication technology (ICT). Thereafter, all the other teaching methods were analyzed inductively. Attention was also paid to whether different teaching methods were used together.

Qualitative content analysis includes the potential risk of misinterpreting texts as well as the inherent subjectivity of categorization [56]. In order to ensure the reliability of the process, two members of the research team first conducted the selection of information units, the categorization, and the subsequent analysis independently. The analysis process was dialogical by nature. The final decisions were made through e-mail and phone discussions where both researchers argued why the content of the article should be placed into a certain category or categories. The typical discussion involved a reflection on the interpretation of the goals and objectives expressed in the articles. The discussion continued until consensus was reached and clear arguments were found.

The generalizability of our results relates to the selection of analyzed data. To ensure that our categorization decisions were based on comprehensive understanding of the article, we decided to read the whole article before categorizing it. We also based our analysis on what the authors of the articles had explicitly written rather than what we in some cases thought we could read between the lines as the authors' intentions. As such decisions always include elements of subjective interpretation, joint discussions about each article were essential in deciding which aspects of the instructional process the article emphasized. This procedure ensured that decisions were not based on a single person's first impression of an article but on well-argued joint discussions. Because of the dialogical nature of the analysis, we did not see a need for calculating an inter-rater reliability. Researcher triangulation was an essential part of our analysis process. Our research group consisted of a doctoral student and experts in biology education, environmental education, and sustainability education, with the latter and the third member of our research team also being experts in educational sciences and experienced teacher educators and researchers.

## 4. Results

### 4.1. Transformative Education Goals, Objectives, Content Knowledge, and Teaching and Learning Methods in the Analyzed Articles

#### 4.1.1. Goals and Objectives in the Analyzed Articles

The main goal of transformative education was seen in achieving an ecologically and socially just world for future generations under natural conditions (article 11). Achieving a sustainable future requires creative thinking about human–environment interactions and the ability to identify, resolve, and reconcile conflicts between different values, preferences,

and beliefs related to social, environmental, and economic systems, using sustainability as a compass (article 7). Thus, students' personal growth, cultivation of sustainability awareness, and comprehension of sustainability and sustainable development are crucial for empowering students to change their perspectives (article 12).

To achieve the goals, students should be fostered to understand, based on the inter-connected approach, what kind of solutions are needed for the environment and human well-being from a future perspective. Deep understanding about different global issues related to sustainable development and the value of indigenous knowledge systems are seen as important, and therefore students should be encouraged to develop their critical thinking (articles 5,6,10), systems thinking (article 7), and reflective thinking (article 6). In order for these thinking skills to lead to a change in values, attitudes, and behavior, students should reflect on their assumptions and beliefs—for example, through inter-disciplinary and transdisciplinary knowledge (articles 6,7,8,11) and community-based learning (articles 1,7,12).

The objectives of thinking levels reached the highest, i.e., the evaluation level, in all other analyzed articles except in article 4, where the highest thinking level was the synthesis level. Values and worldviews are seen as crucial in the design of transformative teaching for developing comprehension and applying it. Students' relationships with teachers and their peers were also thought to be important and thus, students' communication skills and emotional stability should be fostered (article 9). Dymont and Hill (article 8) stressed that the development of knowledge, skills, values, and worldviews is necessary for people to act in ways that contribute to more sustainable patterns of living, whereas Howlett et al. (article 6) emphasized that it is important to develop students' "planetary consciousness", i.e., students' ability to integrate, connect, encounter, and reconcile multiple ways of looking at the world.

#### 4.1.2. Levels of Knowledge in the Analyzed Articles

All analyzed articles included fact, concept, method, and metacognitive knowledge. The most important items of fact knowledge were sustainability principles, sustainable development, and sustainable development education (articles 4,7,8,11,12). Climate change, global warming, biodiversity, environmental disasters, ecological impact (articles 5,12), and health care (article 1) were seen as concepts that are important to teach.

Concept knowledge should include the concept of sustainable development in all its complexity and ambiguity (articles 6,12). The difference in the money code and life code value systems, good government (article 2), and a justice system, democracy, and citizenship (articles 8,11) were mentioned as examples of what many believe are life-based and life-protective.

In terms of method knowledge, practical exercises related to sustainable development were important issues. Attention should be paid primarily to environmental sector knowledge, with particular emphasis on school gardens, tree planting, recycling, and reuse (article 8). In addition, Howard (article 2), Howlett et al. (article 6), and Remington-Doucette (article 7) emphasized the importance of ICT knowledge.

Metacognitive knowledge should include a self-directed inquiry concerning the process of being—not only individually, but also in community with other humans and non-humans (article 12). It comprises various dimensions such as ethics, aesthetics, and culture, as well as non-material values, e.g., mutual help, solidarity, and compassion (article 5). It leads one to examine critically one's own beliefs, values, and knowledge (articles 5,12) and to develop new epistemologies and ways of knowing, as well as critical consciousness and agency (article 9). Metacognitive knowledge also includes the idea that students understand the depth of their own learning, and the ways in which it could be developed (article 3) to build their own learning (article 9). It supports students to critically examine how they think, and encourages them to constructively challenge one another's perspectives (article 9) and change their own relationships with other humans and with the natural world (articles 1,3,6,10).



In summary, it can be stated that teaching and learning should support students in developing the knowledge and skills needed to understand issues and phenomena. The amount of information is not as important as its quality. In ever-changing and unpredictable situations, students should be given the opportunity to become aware of what is at the core of what they are learning [53].

#### 4.1.3. Teaching and Learning Methods in the Analyzed Articles

The most mentioned teaching and learning methods in transformative education were experiential learning, group and teamwork, and discussion and argumentation (Table 2). Inquiry-based, problem-oriented, problem-based, and problem-solving learning were also referred to as good teaching and learning methods. The next most popular were teacher's presentations and information and communication technology (ICT). The least mentioned were questions asked by the teacher, experimental learning, roleplays and debates, and games.

**Table 2.** Teaching and learning methods mentioned in the analyzed articles ( $n = 12$ ) [51,52].

Teaching and Learning Methods	Article Number	Total
Experiential learning	1, 2, 3, 5, 6, 7, 8, 10, 11, 12	11
Group and teamwork	1, 2, 3, 4, 5, 6, 7, 10, 11	9
Discussion and argumentation	2, 3, 4, 5, 6, 9, 10, 11, 12	9
Inquiry-based learning	1, 2, 3, 5, 7, 9, 10, 11	8
Problem-oriented, problem-based, and problem-solving learning	2, 3, 4, 5, 6, 7, 10, 12	8
Teacher's presentation	5, 6, 9, 11, 12	5
Information and communication technology (ICT)	2, 6, 7, 10	4
Questions asked by the teacher	6, 9	2
Experimental learning	2	1
Roleplays and debates	5	1
Games	7	1

In addition to the teaching and learning methods mentioned above, the articles also included other ones. According to Filho et al. (article 5), capacity building, empowerment, and support for participatory approaches are crucial in transformation education. Cooperative group learning was seen as a useful way of teaching and learning (article 11), as well as collaboration (articles 3,4,6,11,12). Collaboration should take place both within the school (whole-school approach) (article 5) and in interaction with the local community (authentic environment) (articles 1,2,5,11,12). It was emphasized that it would be a good idea to involve students' everyday events inside and outside the classroom in their learning processes (article 10). Systemic action research again could help to see the world differently and to understand what is happening in the "real world" (article 1). In solving real sustainability problems (articles 4,7), it is important to combine expert and academic knowledge with practical and traditional knowledge of non-university actors and stakeholders such as non-governmental organizations (NGOs) (article 5). Future-focused visioning projects, where students choose a real-world sustainability problem and propose a solution to their problem using the sustainability science problem-solving methodologies, could offer an excellent possibility for this kind learning (article 7). Service-learning (community-based learning) as a collaborative teaching and learning method is also worthy of highlighting (articles 2,5,12). Such knowledge can also increase interdisciplinary understanding (article 7).

Reciprocal collaboration between teachers and students' puts emphasis on students' role in the construction of knowledge (article 9). A very useful learning method is the case-study method based on the cognitive and affective domains for defining the means for achieving goals for the logical analysis of a problem, coping with the emotional aspects of a problem, and choosing among a variety of solution options (article 7). Learning diaries

again provide an active way of critically reflecting on events, thoughts, and actions and considering future possibilities (articles 10,11,12). Reflection can be enhanced through portfolios, journals, scripts, and reflective essays that can be completed by hand or digitally (article 10). Concept maps make it easy to structure information and your own thoughts (article 7).

The use of art, photography, film, and other forms of visual expression (article 10); storytelling, music, and singing (article 12); and modeling through software applications (article 7) are good ways to stimulate reflection. Future-focused visioning methods (e.g., back casting) (article 7) and contemplative practices such as mindfulness meditation and yoga (article 12) are also mentioned as useful teaching and learning methods.

#### *4.2. Teaching and Learning Goals, Objectives, Content Knowledge, and Teaching and Learning Methods in the GNH TM Units*

##### *4.2.1. Goals and Objectives in the GNH TM Units*

A main goal of GNH education is GNH citizenship. This includes the values of kindness, integrity, and justice to oneself, the lives of others, and the well-being of the planet. (GNH TM Unit 1). This means that students should adopt ecological literacy, an analytical worldview (GNH TM Unit 4), and meditation and mind training (GNH TM Unit 2). In addition, spiritual development and gender sensitivity are important goals (GNH TM Unit 4).

The objectives of thinking levels reached the highest level, the evaluation level, in all GNH TM units.

It is stated in all GNH TM units that the students should be able to identify GNH values and understand and appreciate the philosophy of GNH. They should understand the environment, society, and economy from a holistic perspective. Important concepts to understand are “culture” and “child-friendly school”. Culture is seen as “the cultivation of sweetness and light and the environment is an extension of our own selves” (GNH TM Unit 4, p. 46). The UNICEF concept of a “child-friendly school” means a school that is “inclusive, healthy and protective for all children, gender sensitive, effective with children, and involved with families and communities—and children” (GNH TM Unit 4, p. 50). Students should develop positive thinking, mindfulness, and calmness. They should be resourceful, skillful, creative, and productive; manage time efficiently; but also be analytical and reflective, and have good communications skills. They should also offer help to others and take responsibility towards self, family, community, and the country (GNH TM Unit 1).

Important teaching and learning objectives also include critical thinking and media literacy. Media literacy is seen as education that aims to increase the students’ understanding and enjoyment of how media work, how they produce meaning, how they are organized, and how they construct reality. Students should become critical consumers of information from various media. Media literacy also aims to provide students with the ability to create media products (GNH TM Units 4,6).

Evaluation is mentioned in every GNH TM unit. This concerns holistic assessment, including cognitive, psychomotor, and affective learning domains. Formative assessment is used on a daily basis and summative assessment is carried out at the end of the course or project to assign students a course grade. GNH values should be so deeply felt and internationalized that they manifest simply and naturally in all situations—in and out of school. Not only teachers but also students should develop their self- and peer-evaluation skills in this respect but also otherwise (GNH TM Unit 5).

##### *4.2.2. Levels of Knowledge in the GNH TM Units*

The knowledge levels in the other analyzed GNH TM units included fact, concept, method, and metacognitive knowledge; the exceptions were GNH TM Units 5 and 6, which did not include method knowledge. The most important facts to be taught are GNH values and principles. They should be included in every subject (GNH TM Units 1,3). Article 19 of the Convention on the Rights of the Child is also one of the key issues to be taught. It

requires that children be protected from “all forms of physical and mental violence, injury and abuse, neglect or negligence treatment, maltreatment or exploitation, including sexual abuse” (GNH TM Unit 4, p. 51).

In addition to the issues and concepts of the subjects, the GNH domains under four pillars include key teaching and learning elements. Pillar 1, “Sustainable & Equitable Socio-economic development”, covers the standard of living, health, and education. Pillar 2, “Environment Preservation”, focuses on ecological literacy. Pillar 3, “Promotion and Preservation of Culture”, includes use of time, psychological well-being, community vitality, and cultural diversity. Pillar 4, “Good Governance”, means to conduct and experience sharing activities (GNH TM Unit 1). Other important concepts are considered to include meditation and mind training (GNH TM Units 1,2), citizenship (GNH TM Units 1,4), and media literacy (GNH TM Unit 6).

As regards method knowledge, it is important to know how to contextualize teaching for GNH learning. Familiarity with methods of meditation and mind training is also seen as important (GNH TM Unit 2). To develop students’ metacognitive knowledge, GNH values and principles should be infused into the school curriculum, integrating them in every interdisciplinary subject with appropriate contextual knowledge (GNH TM Units 1,3). Individual reflection using critical thinking concerning one’s own beliefs (GNH TM Units 1,2,4,6), and different dimensions of learning environment foster students’ learning processes (GNH TM Units 4,5).

#### 4.2.3. Teaching and Learning Methods in the GNH TM Units

Educating for GNH addresses the head (cognitive), heart (affective), hand (psychomotor), and home (social) domains of the student (GNH TM Unit 1). The findings of teaching and learning methods in the GNH TM units are presented in Table 3.

**Table 3.** Teaching and learning methods mentioned in the GNH TM units ( $n = 6$ ) [51,52].

Teaching and Learning Methods	UNIT Number	Total
Teacher’s presentation	1, 2, 3, 4, 5, 6	6
Questions asked by the teacher	1, 2, 3, 4, 5, 6	6
Teaching and learning discussion and argumentation	1, 2, 3, 4, 5, 6	6
Group and teamwork	1, 2, 3, 4, 5, 6	6
Experiential learning	2, 4	2
Roleplays and debates	3, 4	2
Games	3	1
Inquiry-based learning	3	1
Problem-oriented, problem-based and problem-solving methods	4	1

The most mentioned teaching and learning methods were teacher’s presentation (guidelines and demonstrations), questions asked by the teacher, teaching and learning discussion and argumentation, and group and teamwork. Discussions during teaching and learning processes took place between the teacher and their students but were often also conducted as student–student and small group discussions. In group and teamwork, the size of the groups varied from working in pairs to larger groups depending on the topic. Working in pairs was recommended as an icebreaker to support participants in interacting with unfamiliar people. Other interactive learning methods beside group and teamwork were also mentioned. Experiential learning was used during meditation and outdoor education (e.g., field trips). Games (e.g., Hot Potato), inquiry-based learning, and problem-oriented, problem-based, and problem-solving methods were the least used teaching and learning methods.

In addition to the teaching and learning methods mentioned above, the units also included others. Individual and cooperative activities were stressed in general (e.g., GNH TM Units 1,3,5,6). Examples of individual methods were mentioned, e.g., different kinds

of writing (e.g., essays) (GNH TM Unit 6), quizzes on GNH and subject issues (GNH TM Unit 1), as well as daily diaries on one's own learning (p. XXIV). Media literacy and critical thinking were integrated with learning processes using presentations, videos, TV and radio programs, the Internet, mobile phones, newspapers, textbooks, and magazines. Brainstorming sessions were also used to develop these skills (GNH TM Units 1,3,4,5,6, p. XXI). Stories, metaphors, and songs (GNH TM Unit 3) as well as sports, arts, music, and crafts were also used for fostering GNH citizenship (GNH TM Unit 4). Service learning was seen as encouraging local partnership (GNH TM Unit 4). Case studies (GNH TM Units 4,6, p. XXIII) and simulations (e.g., a UN conference on the rights of the child) (GNH TM Unit 4) were examples of cooperative methods, because they give a chance to analyze persons, events, decisions, periods, projects, and institutions by looking at real situations. They also allow participants to discuss, plan, implement, and use problem-solving openly without individual ethnic, socio-political, or cultural inhibitions.

Meditation and mind training (GNH TM Unit 2) was seen as an important part of GNH education. It includes different forms: breath meditation, passing the water bowl, mindfulness in walking, guided light meditation, lotus meditation, and rainbow meditation.

#### *4.3. Connections of Teaching and Learning Goals, Objectives, Content Knowledge, and Teaching and Learning Methods Expressed in GNH TM Units with Transformative Teaching and Learning*

The main goals and objectives in both the analyzed articles and the GNH TM units concern values and worldviews in teaching and learning. Both in the analyzed articles and in the GNH TM units, creative and critical thinking are seen as important skills, encouraging students to develop innovative solutions for sustainability. The GNH TM units also emphasize critical thinking for the well-being of the environment and democratic ideas for future development.

The content of both the analyzed articles and the GNH TM units includes themes (e.g., sustainable development, ecological and media literacy, citizenship) that promote the possibility of active participation in society and the community. The content of the subjects should be taught using an interdisciplinary approach. Both the analyzed articles and GNH TM units also share a view on the benefits of different meditation practices for learning through enhancement of concentration, memory, and discipline. Mind training gives students an opportunity to empower themselves through their own learning. Both the curricula of transformative education and GNH education need to be developed by integrating academic and non-academic knowledge without disciplinary boundaries. This idea should be reflected not only in the selection and implementation of the content, but also in the use of teaching and learning methods.

In both the analyzed articles and the GNH TM units, co-operative and collaborative teaching and learning methods are emphasized. This is shown, e.g., by many mentions of group work, outdoor activities (article 12, GNH TM Unit 4), case-study methods (article 7, GNH TM Units 4,6, p. XXIII), and service learning (articles 2,5,12, GNH TM Unit 4). Learning diaries (articles 10,11,12, p. XXIV) and other kinds of writings (e.g., essays) (articles 6,10, GNH TM Unit 6), stories, art, and music (article 12, GNH TM Unit 3) are also used in both transformative and GNH education.

In summary, it can be stated that according to the pedagogical ideas of both transformative education articles and GNH TM, learning takes place when students are actively engaged and interactive.

## **5. Discussion**

The study aimed to clarify how transformative education teaching and learning ideas have been incorporated into sustainable development-focused education in Bhutan by analyzing how transformative ideas relate to the teaching and learning goals and objectives, content knowledge, and teaching and learning methods expressed in the GNH TM units.

The findings of the study show that there are several connections between the analyzed transformative education articles and the GNH TM units. Both the analyzed articles and the

GNH TM units emphasize values and worldviews in teaching and learning. These values and worldviews seem to form a new ethical framework that is congruent with Brundtland's original definition of sustainable development [57]. In transformative education, the goal is to find solutions to environmental and human well-being issues from a future perspective. GNH education also sees the human–environment relation as crucial to sustainability. To achieve this goal, education must focus on the key goals of sustainable development, which are to develop people's awareness and to increase participation and cooperation through holistic education [58]. As the COVID-19 pandemic undermines gender equality in all regions [19], sustainability education should address social and gender issues as well as gender inequalities in order to reduce gender inequalities and improve human well-being. Thus, the role of women in maintaining a safe life both at home and in society could be supported.

The objectives of thinking levels in most of the analyzed articles and in all GNH TM units cover the levels of knowledge, comprehension, application, analysis, synthesis, and evaluation. In article 4, the level of evaluation was not taken into account. Howlett et al. (article 6) emphasized the importance of developing students "planetary consciousness." The concept of GNH citizenship includes a similar idea related to the well-being of the planet. Consideration of planetary boundaries is paramount. If natural life-support systems collapse, human existence is also endangered. Achieving a sustainable future requires an interconnected approach, creative thinking about environment–human interactions, and critical thinking when identifying, resolving, and reconciling conflicts between different values, preferences, and beliefs related to environmental, social, and economic systems [43]. According to the GNH TM units, critical thinking also plays a big role as regards the well-being of the environment and democratic ideas.

Evaluation was mentioned in 11 of the analyzed articles. The GNH TM units also see evaluation as an important part of education. According to Brown et al. [59], evaluation is a function of information gathering and feedback that can be used to achieve objectives and improve processes and to learn and adapt. Evaluation also means setting a value or evaluating quality, effectiveness, or value. Supporting students and staff to take previous environmental experience into account [4] through criteria that assess the use of natural resources (e.g., ecological and carbon footprint calculations) could cut waste and reduce the institutional footprint and the use of plastics in the school environment. Evaluation can also address social issues such as health and well-being, gender equality, and inequality, in which case it can be used to help solve social problems.

Different levels of knowledge (fact, concept, method, and metacognitive) were identified in all 12 analyzed articles. Climate change is turning into a climate crisis, and climate disasters are increasing in both frequency and severity [28]. In the analyzed articles, climate change was also seen as the most important topic to teach. Global biodiversity loss was seen as another important topic (articles 5,12) and "a socially just world" was the third important issue that should be addressed in teaching (article 11, GNH TM units). Although the share of people living in poverty and hunger has decreased in recent decades, the non-equalities between the richest 1% and poorest 99% are increasing rapidly [58]. An in-depth understanding of the above topics requires metacognitive knowledge, meaning knowledge of cognition in general as well as awareness and knowledge of one's own cognition. It includes strategic knowledge; knowledge about cognitive tasks, including appropriate contextual and conditional knowledge; and self-knowledge.

In the analyzed articles, metacognitive knowledge included a self-directed inquiry concerning the process of being and living. Meditation and mind training were considered a gateway into the deeper dimensions of learning (article 12, GNH TM units). Individual reflection using critical thinking about one's own beliefs fosters students' learning processes. The transformation process of students can be supported by the framework of learning experiences (learning to know—cognitive domain, learning to do—conative domain, learning to live together—social domain, and learning to be—emotional domain) [60].



Sustainable development was considered to be a core concept, as expected, both in the analyzed articles and in the GNH TM units. The analyzed articles (articles 6,12) highlighted all dimensions of the concept, as did the GNHTM units. For example, the ecological dimension should be taught in terms of environmental protection, the social and cultural dimension in terms of the promotion and preservation of culture, and the economic dimension in terms of sustainable and equitable socio-economic development.

In terms of method knowledge, information concerning practical exercises related to sustainable development was seen as important in all the analyzed items. These results support the study by Glavić [58], who stated that education for sustainable development should start with the definitions of sustainable development.

The teaching and learning methods mentioned in the analyzed articles and the GNH TM units differ from somewhat each other. The results show that the teaching methods identified in the GNH TM units were mostly teacher-centered methods like teacher's presentation (guidelines and demonstrations), questions asked by the teacher, and teaching discussions between the teacher and their students. These kinds of teaching methods tend to focus on the lower three levels of Bloom's taxonomy: knowledge, comprehension, and application, developing memory skills at the expense of critique and evaluation [61]. Student-centered teaching, for its part, encourages students to be active learners to shift classroom power from teacher to students. The teacher is a facilitator rather than a knowledge provider [62]. Many kinds of student-centered methods were mentioned both in the analyzed articles and in the GNH TM units, e.g., experiential learning, problem-oriented and problem-solving methods, problem-based learning, inquiry-based learning and project-based learning, collaborative learning, case-study methods, debates, games, role plays, and service learning. Such active-learning methods can support a structural change in students' thoughts, feelings, actions, and consciousness, which can permanently change the way they see and are in the world [32]. Active teaching-learning processes increase retention of knowledge [63] and develop motivation and higher-order learning [64] and practical skills [65]. They can also strengthen the links between the cognitive and affective domains and lead to improved social skills [65]. Problem-oriented and problem-based methods [58] can enhance students' learning when they work together using ICT. Good strategies for e-learning during pandemics and beyond are adherence to social distancing and health practices, maintaining communication and collaboration between teachers and students, using modern teaching techniques, and motivating students to work online [22]. Collaboration supports students to make their own thinking visible [66]. Service learning can be seen as part of place-based pedagogy in local environments and communities through the use of local features, phenomena, and issues as context and scaffolding for content [67]. It can also produce greater confidence, stronger motivation toward learning, and a greater sense of belonging and responsibility. In addition, through service learning, students can develop more positive relationships with each other, with their teachers, and with the surrounding communities [68]. According to Fuglei [69], inquiry-based learning, project-based learning, and service-learning are especially useful methods of transformational education.

Besides the teaching methods mentioned above, brainstorming, newspapers, simulations, and student-centered assessment are mentioned in the GNH TM units. According to previous studies, more student-centered assessment methods where students can learn actively should be used instead of teacher-centered assessment [70].

In addition to the above-mentioned teaching methods, the analyzed articles mention, e.g., the back-casting method, which is very useful as a vision method focusing on the future (Article 7). The GNH TM units also had methods that are very useful for saving the environment, electricity, and water, and for promoting eco-literacy. All of the above methods can be considered examples of transformative pedagogy [3,4].

## 6. Conclusions

This study aimed to answer the following question: How have transformative education teaching and learning ideas been incorporated into sustainable development-focused

education in Bhutan? From a critical analysis of both the selected transformative articles and the GNH TM units, evidence has led us to the following conclusions.

The results of this study show that transformative education and teaching have become part of teaching in Bhutan's schools, with an emphasis on sustainable development, sustainable living, and protection of the environment. Even if the concept of transformative education is not part of the GNH TM, the teaching goals, objectives, contents, and methods show that transformative education principles and ideas are part of education in Bhutanese schools.

We understand that the main lesson of this study is related to the challenge related to the assessment of transformative education and sustainability education based on published articles and the GNH TM units without having visited the institutions and discussed with the stakeholders. Evaluation is a complex task with particular difficulties, such as understanding the concepts of sustainable development and transformative education in different institutions. There are cultural differences in schools and different environmental factors vary worldwide. Pedagogical concepts are also expressed in different language due to the different traditions and cultural backgrounds.

To the best of our knowledge, although studies on transformative education and sustainable development education have been published in reasonable numbers, there are very few studies comparing these two approaches. Although our analyses of recent research on transformative teaching goals, objectives, content knowledge, and methods included several details, a holistic view of the educational processes is needed for an understanding of all the effects. All teaching situations are, of course, context- and subject-dependent, and therefore any list of the most or least effective teaching principles and ideas cannot be arranged. From a practical point of view, we hope that the analyses at least provide ideas of how to use these results to promote a transformative approach and sustainability aspects in teaching to develop curricula. The analyses in previous studies, e.g., [32,62–65,70], also emphasize active teaching and learning methods as factors increasing students' interest in and knowledge of sustainability. Students' relationships with and connectedness to nature [71] and environmental consciousness [72,73] are important factors in any attempt to create a sustainable future [74]. The results of the analyses also emphasize a great need for several comparative studies of teaching goals, objectives, content knowledge and methods, and their careful evaluation in relation to the expected results.

As for the trustworthiness of the study [75], the design and implementation of the study was negotiated among the researchers throughout the research process. The study procedures were carefully documented to review and verify data throughout the study. The analysis of the data was carried out independently by two researchers. At the end of the analysis process, the researchers compared and discussed their classifications until a unified view was reached. The results were also compared with previous studies.

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