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Role of Education in Promoting Renewable Energy for Sustainable Development

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Abstract: *Education has a significant impact on the understanding and reaction to environmental problems, especially those related to energy usage. Renewable energy has been widely known as an essential solution to climate change, pollution, and energy resource shortage. The main objectives of the study is to explore how educational practices influence students' knowledge of renewable energy, develop their skills, and shape their attitudes and behavior toward sustainability. A qualitative approach was used to gain In-depth insights from 30 participants, including 12 teachers and 18 university students from different disciplines. Data were collected through six focus group discussions, each following a systematic structure with opening, introductory, transition, key, and concluding questions. The discussions focused on participants' knowledge of renewable energy, how they learned it, and the impact of education on their skills, attitudes, and behavior. Findings revealed that education significantly improves awareness of renewable energy and sustainability. Collaborative learning and group discussions enhanced students' critical thinking, problem-solving, teamwork, and communication skills. Challenges were identified, including limited curriculum coverage, insufficient teacher training, lack of practical activities, and low institutional support. Based on these findings, the study recommends integrating renewable energy topics throughout the curriculum, increasing teacher training, providing more hands-on learning opportunities such as projects and field trips, and promoting interactive, collaborative learning to strengthen skills and sustainable behavior. The study demonstrates that well-structured and interactive education can effectively raise awareness, develop essential skills, and foster positive environmental behaviors, contributing to long-term sustainable development.*

Keywords: Renewable energy, sustainability education, collaborative learning, behavioral change, teacher training

Introduction

The concept of sustainable development has become a serious worldwide agenda where countries are grappling with the inter-related issues of global warming, environmental destruction and an escalating energy need. Production and consumption of energy are the epicenter of these issues, as the further reliance on fossil fuels is one of the causes of greenhouse gas emissions, depletion of resources, and the lack of balance in nature. The solar, wind, hydro, and biomass power sources provide environmentally friendly sources of energy capable of sustaining an economy, ensuring social stability, and promoting

long-term development (United Nations, 2015). Although technological innovation and policy interventions have made renewable energy infrastructure development faster, the effective implementation of the sustainable energy systems will be impossible without technical solutions only.

The education plays a very important role in facilitating sustainable energy transitions by influencing the individual's knowledge, attitudes and behaviors regarding the use of energy and responsibility towards the environment. Education helps people to become energy literate, gain the appropriate skills, and establish values that facilitate the utilization of renewable energy and conservation. The education process also helps in developing the workforce as future employees are equipped with the new green jobs and new ideas on the renewable energy sources, and systems (UNESCO, 2017). Therefore, education operates as a supportive force, as well as a strategic force of sustainable development through renewable energies.

Learning has the greatest impact at the level when it is more than mere consumption of knowledge in solitude and is influenced by discussion, contemplation and experience. The interactive learning conditions, including discussions and collaborative learning, enable the joint construction of meaning, challenging of assumptions, and linking of theoretical knowledge and lived realities by learners. Regarding renewable energy education, such collective practice is needed in order to comprehend not only technical details but also social, behavioral, and institutional aspects of sustainability. Nevertheless, there is quite a lack of qualitative research studies that address the manner in which educators and learners jointly perceive and experience renewable energy education and how these experiences are collectively relevant to awareness and skills as well as behavior change.

Education can be used to facilitate renewable energy in enhancing sustainable development using a qualitative research method that addresses focus group approach. Through guided group discussions with educators and university students, the research is able to capture the collective views as to how education experiences influence the development of renewable energy awareness and skills as well as pro-environmental behavior. The focus group approach allows the participants to look back on the educational practices as a team and recognize strengths and weaknesses of the current systems, as well as present the common problems associated with curriculum integration and institutional support.

Education plays a very important role in raising awareness on renewable energy, developing positive attitudes towards sustainability and developing cognitive and practical skills. Respondents stressed that dialogue and interactive learning activities reinforced their knowledge on the concepts of renewable energy and promoted environment-friendly behavior.

Problem Statement

While most people have known about the importance of renewable energy as a possible solution to sustainable development, there is still low adoption rates of renewable energy because of the lack of awareness among the general population, lack of professional competence, and poor participation of the society. Renewable energy concepts are either poorly covered or covered as marginal issues in most educational systems. Moreover, teachers are usually untrained trained in specialization, and students have little experience on real life applications of renewable energy. The lack of this linkage between education and sustainable energy objectives impedes the establishment of an educated and competent people who will be able to facilitate renewable energy transitions. Thus, the importance of the critical analysis of the role of education in promoting the use of renewable energy and the existence of gaps are the elements that restrict the efficiency of education implementation.

Objectives of the study

The following are the two objectives that helped to conduct the study:

- To observe the role of education in developing skills and shaping behavior for promoting renewable energy

- To explore the role of education in promoting awareness and understanding of renewable energy to support environmental sustainability

Significance of study

Education plays a significant role to enhance renewable energy and sustainable development. Education can change individual and community decisions concerning the use of energy by informing people, building skills and promoting green habits. Learning how learning affects the knowledge of people, how they feel and how they act about renewable energy will help teachers, curriculum designers and policymakers develop programs that are useful and work well. The research demonstrates the accumulation of energy knowledge, acuity of thought, and planetary concern through the learning experiences. Ideas on how to make lessons that could teach useful skills, solve problems, work with other people, change habits are provided in practice. Education may empower people socially to utilize renewable energy, participate in green projects and take action to reduce environmental degradation. In policy, the results can be used to design policies that align school programs with more sustainability objectives, such as increasing clean energy and achieving national and international targets such as the UN Sustainable Development Goals (SDG4: Quality Education and SDG7: Affordable and Clean Energy).

Literature review

Sustainable Development and Education.

Education is also crucial to sustainable development because it determines the ways people perceive, believe, and behave regarding environmental and social challenges (UNESCO, 2017). Education sustainable Development (ESD) involves integration of sustainability ideas into education hence students are able to make sustainable decisions. Educational institutions, community initiatives, and career education create environmental awareness, encourage critical thinking and sustainable behavior (Tilbury, 2011; Sterling, 2010).

Energy and Sustainability in Education.

Education also has an effect on energy consumption and sustainability. It makes individuals understand various energy sources, balance choices and embrace sustainable living. Research indicates that energy literacy enhances the attitude toward renewable energy and adoption of energy saving practices, and it facilitates clean-energy policies (Owens and Driffill, 2008). Students acquire the knowledge and practical skills that they require to engage in sustainable energy shifts both at the individual, institutional, and societal level.

The Price of Experiencing and Interacting.

Education will continue to have an influence that is more than students understand. Their perception of learning, their relationships with others and their exchange of ideas are also important. A powerful tool in this case is the focus group discussions (FGDs). During group discussions, learners exchange their knowledge, correct their false beliefs, and create an awareness of sustainability and renewable energy problems collectively.

Renewable Energy Awareness and Education.

The initial move in the use of renewable energy is awareness. Students informed about renewable energy understand environmental issues and energy problems-related problems, which promote pro-environmental behavior, which has been proven by research (IRENA, 2021; UNESCO, 2017). The perceptions of learners are formed through science programs, environmental education and community campaigns.

However, it is not enough to be aware. Students should have an opportunity to share ideas, think over experiences, and connect theory with reality. FGDs provide this chance. Students and educators share

ideas, challenge assumptions and argue about solutions within a group environment. This will enhance knowledge and increase interest in renewable energy issues.

Renewable Energy Education and Skill Development.

Through education, learners develop practical and cognitive capabilities on how to adopt and put renewable solutions to energy into practice. Vocational and higher-level education programs are based on renewable energy systems, management, and policy implementation (IRENA, 2021). Problem solving, team work and creativity are also generated through projects and practical learning where theory and practice are connected.

FGDs also help in developing skills. Through collaboration, the learners engage in critical thinking, collaboration, and decision-making. Participants look back, think of different ways of thinking and jointly develop solutions to sustainability issues. Such interactions equip the students with the skills required in real world energy projects and future careers in green environments.

Education and Behavioral Change toward Sustainability

Education plays an important role in shaping everyday habits related to energy use and environmental care. When students learn about sustainability in a meaningful way, they begin to think differently about their own actions. Research shows that learners who are exposed to sustainability-focused education are more likely to save energy, support renewable energy projects, and take part in environmentally responsible activities (Sterling, 2010; Owens & Drifill, 2008).

Role of Social Interaction in Sustainability Learning

Learning about sustainability is not only an individual process; it is also social. Interaction with peers and educators helps learners clarify ideas and understand different viewpoints. Group discussions create a space where participants can openly talk about challenges, doubts, and practical solutions related to renewable energy and sustainability.

Through FGDs, students and teachers learn from each other's experiences. Educators share classroom practices, while students express how learning affects their thinking and actions. This exchange of ideas makes sustainability education more practical and relatable, helping learners connect classroom knowledge with real-world situations.

Challenges in Teaching Renewable Energy through Education

While education has great potential to promote renewable energy, several challenges remain.

Focus group discussions help bring these challenges to light. Participants openly discuss gaps in teaching, lack of hands-on activities, and limited opportunities for discussion. These shared concerns highlight the need for better curriculum planning, teacher support, and learning spaces that allow discussion, reflection, and practice related to renewable energy.

Research Methodology

Research Design

In this study, the qualitative phenomenological research design was used. This design was aimed at understanding how education supports renewable energy and sustainable development using the real-life experience of the learners and teachers. The research focused on the perception of the participants towards renewable energy, the role of education in the development of their competencies and behaviors, and the challenges that they face when teaching and learning sustainability subjects. The qualitative design used in this study included a focus group discussion. The solution was chosen as it helps those taking part in the course to exchange their experiences, freely discuss their ideas, and learn about each other. Group interaction assisted in trapping the group meanings, diverse perspectives and understanding each other in regard to renewable energy education.

Population of the Study

The study population included teachers and students studying at a university level and is involved in teaching on sustainability, environmental studies, renewable energy, or similar subjects. The population is comprised of people who teach or learn about sustainability and energy issues in formal education.

Sample of the Study

A sample of 30 participants was selected out of this population and used in the study. The 12 teachers will be those who teach in secondary or higher education institutions, in subjects like sustainability, environmental science, or similar topics. The sample size was 18 students who were pursuing courses in the field of education, environmental science, engineering or sustainability. The sample was chosen due to the direct experience these participants have when it comes to the topic of renewable energy education and is able to provide meaningful information.

Sampling Technique

Participants were sampled using purposive sampling. This approach was effective in making sure that only those that had relevant knowledge and experience in the field of renewable energy and sustainability education were involved in the research.

Grouping of Participants

The sampled participants were sorted in six focus group discussions and participants were five each. Both teachers and students were included in both groups. This was a mixed grouping that was purposely meant to facilitate an open discussion, exchange of experience and interaction between teaching and learning perspectives.

Data Collection technique: Focus Group Discussions.

Focus Group Discussions (FGDs).

Focus Group Discussions (FGDs) were the primary approach since we wanted people to talk openly and share ideas among themselves. They also facilitate a participatory conversation, allow everyone to think together, and develop knowledge together- and this is precisely what you require to recreate the entire education feel in a social environment.

The only technique of data collection employed in this study was the focus group discussion. FGDs have been chosen as they allow participants to share their ideas, think collectively, and build up on the experience of others, which makes it the type of activity especially appropriate when it comes to investigating educational practices and issues related to sustainability (Morgan, 2018).

The focus group discussions took place in six discussions based on a semi-structured discussion guide in accordance with the study objectives. The most important discussion areas were:

Edification on renewable energy concepts.

Self-perceived education influence on awareness and understanding.

Learning skills by experiences in education.

The educational determinants on energy-linked behavior.

Obstacles to incorporating renewable energy education.

Each interview was recorded on audio and took up 60-90 minutes with the consent of participants. The group discussion was a source of deep, philosophical information that produced common patterns, concurrences, and differing views.

Steps Involved in Conducting Focus Group Discussions

The present study adopted Focus Group Discussion (FGD) as the primary research method to explore the role of education in promoting renewable energy for sustainable development. The following steps were followed to systematically conduct the FGDs:

Step 1: Research Topic (Awareness of Renewable Energy) Selection.

The selected topic, which was the Role of Education in Promoting Renewable Energy toward Sustainable Development, guided the participants to a focused study of renewable-energy education. It also raised the issue of awareness, and in this regard, students and teachers outlined what they knew, what learning experience they had, and how they understood solar energy and wind and biomass energy. According to the students, classroom lessons, case studies, and group projects increased their mindfulness. The choice of the topic allowed the participants to evaluate what they knew and what they had learnt, and thus provided the basis to the further discussion of the issue of renewable energy.

Step 2: Purpose and Rational of using FGD (Skill Development) clarification.

By explaining the purpose, that is, to investigate the role of education in achieving awareness, skills, and behavior, the participants were able to be open about their experiences. The use of focus group discussions enhanced interaction and development of skills. Students reported on teamwork, problem-solving, and practical learning, whereas teachers were able to note the development in research skills, creativity, and collaboration. The conversation aroused critical thinking and promoted sharing solutions.

Step 3: Incorporating the Scope of the Study and coverage (Attitudes and Behaviour Change)

The clarity of the scope that included the awareness, skills, behaviour, and challenges helped the participants to describe their experience concerning the attitude change and change in behaviour. Students talked about the way learning affected their energy-saving behavior, the use of solar solutions at home and how they could influence their peers to act sustainably. This step underscored the first-order effect of education on the behavior and disposition of the participants towards renewable energy.

Step 4: Focus Group Discussion Guide (Challenges in Education) Development.

The semi-structured guide contained questions about the teaching practice, the areas of learning, and the challenges in the institution. As a result, the issue of education challenges came up. Educators and learners discussed gaps in the curriculum, lack of training, exposure to practice and low levels of institutional support; the results presented the challenges that need to be overcome in the introduction of renewable-energy education.

Step5: Usefulness of Group Discussions)

The participants promoted dialogue and was neutral and focused during the discussion. This helped the goals of group discussions wherein the members exchanged ideas, cleared misunderstandings, and were able to learn. The moderated environment allowed the learners to co-build knowledge, think critically, and relate classroom theory to the sustainability practice in the real world.

Step 6: Identification and Selection of the Participants

Purposive sampling was used to ensure that the sample of participants was closely related to the subject of renewable-energy education. The twelve-teacher and eighteen-student cohort provided a different perception, which made all the five themes of awareness, skill development, behaviour and challenges and collaborative learning richer. The participants were diversified and this increased learning and meaningful conversations.

Step 7: Development of Attitudes and Behaviour for promoting Awareness about phenomena

Students were not afraid to share their personal practices and daily habits which were indicators of their

attitudes and behavioural changes. The presence of a friendly environment enabled the participants to speak openly about the challenges and the successes in attaining the sustainable practice.

Step 8: Skill Development and Group Learning

Sitting the participants in a semi-circle or a circle facilitated communication and discussion. This structure contributed to the development of the skills by working in groups and problem solving and strengthened the role of group discussions. The shared sitting set up allowed the participants to argue, meditate and present feasible solutions in a group.

Step 9: The Focus Group Discussions Conducting.

The duration of the six focus groups (each having five focus group participants) ranged between 60 and 90 minutes. Detailed discussion was stimulated by using open-ended and probing questions. The process strengthened awareness, skill, attitudes, challenges, and group learning in the fact that the participants shared ideas time and again and based on the experiences of the other members.

Step 10: Data Transcription and Compilation.

An audio recording and word-to-word transcription were used to record what the participants said exactly. This action retained evidence of all five discoveries which included awareness, skill development, behavioural change, educational challenges and the advantages of interactive group discussions.

Step 11 Analysis and Reporting of Data

A critical examination and analysis of the transcriptions have revealed the common patterns and common views. The results also have a clear indication that education will increase awareness, build skills, affect behaviour, expose challenges, and benefit through interactive group discussions.

Findings

The discussion of the focus group provided a good understanding of the impact of education on the renewable energy awareness, skill development, and sustainable practices. According to the findings, there are five primary themes namely, awareness, development of skills, attitudes and behaviour, education challenges, and group discussion role. These are the insights of all the 30 respondents (12 teachers and 18 students) in six focus groups consisting of a mixture of students and teachers.

Creating Renewable energy awareness.

For the focus group discussion education was regarded as one of the major means of creating awareness with regard to renewable energy. According to the students, the information given in the classroom, case studies, and group projects have aided in their understanding of solar, wind, and biomass. Students described group discussions as demystifying them and making the learning process more entertaining. The teaching profession realized that interactive sessions enabled them to identify areas of missing knowledge among the students and correct them immediately. Prior to our discussions, I was familiar with solar energy little. Hearing other students and exchanging ideas helped me realize how it can be applied into real life. – Student. Also, the participants indicated that knowing was not sufficient. They desire that lessons should contain actual examples, such as little energy projects, local case studies, or community work so that students can observe how theory becomes practice.

Development of Skills via Education.

Education was assisting students in development of thinking and practical skills. Most of them argued that teamwork or group projects and discussions made them think critically, solve problems, and work as a team. Students were observed to acquire confidence in their ability to analyze energy problems and propose solutions to them. Students acquired technical knowledge like fundamental energy system design, energy management and policy issues. Teachers observed that students were better at research,

collaboration, and innovations particularly when working in groups and doing projects. Collaboration in energy endeavors enabled students to engage in practical application of what they learnt in addressing real issues and their comprehension was therefore deeper. – Educator. The discussions established that the combination of learning through experience and other learners is more effective in enhancing skills than lectures, as research indicates about experiential and collaborative learning.

Attitudes and Behaviour Influence.

The focus group revealed that education is one more aspect that influences the student attitude and behaviour towards sustainability. A lot of students claimed that they were even more conscious of how they used energy and desired to lead environment-friendly lives. Examples given by the students included switching off unneeded devices, encouraging the use of solar at home, and making friends consider the use of energy efficiency. Teachers remarked that the students became more active in proposing sustainability projects in the school or community. Having now known and discussed renewable energy, I attempt to conserve electricity at home and even urged my friends to adopt solar lamps in our society. The discussions revealed that behaviour change will be more effective when the social and reflective interaction of the learners occurs as opposed to passive receipts of information. Shared reflection and peer support led to permanent shifts in behaviour and choices.

Issues in Education in Renewable Energy.

Although these are positive, the participants also mentioned that teaching and learning renewable energy is associated with some challenges: The discussion revealed that read about renewable energy and talk a lot about it; however, we have hardly an opportunity to work with real systems or even look at them, yet it becomes more difficult to comprehend fully. – Student. The common perception between teachers and students was that, with appropriate curriculum design, training of teachers and projects, these gaps would be reduced and the learning process would be significantly enhanced as well as student interest aroused.

Usefulness of Group Discussions in Learning.

One of the important discoveries was the significance of interactive group discussions to learning. According to students and teachers, group talks promote reflection and allow individuals to express various opinions and learn to teach and learn others. Learners were more inspired and more confident when they were able to share ideas in a secure, group environment. The discussions exposed misconceptions to teachers and they are able to guide the learning process better. Listening to the group arguments made me consider more the possibility of renewable energy and my personal contribution to this phenomenon. – Student The talking group made a form of study where contributors constructed knowledge together, challenged assumptions, and connected the concepts taught in the classroom with actual sustainability activities.

Connection Between Theory and Practice

Participants emphasized the importance of connecting classroom learning with real-life renewable energy applications. Students explained that lessons became more meaningful when they saw how concepts could be applied in everyday life or in community projects. Teachers observed that students asked more questions and engaged more actively when theory was paired with practical examples

Motivation and Interest in Renewable Energy Careers

Several students expressed that learning about renewable energy sparked interest in pursuing green careers. They felt inspired by hands-on projects, teamwork, and exposure to energy systems. Teachers noted that when students understood sustainability in depth, they became more motivated to explore career paths in renewable energy, environmental education, and energy management.

Peer Learning and Knowledge Sharing

Focus group discussions showed that participants learned a lot from each other. Students said listening to other students' experiences and ideas helped them notice gaps in their own understanding. Teachers observed that group discussion promoted exchange of insights, encouraged problem-solving, and increased confidence in students' knowledge.

Summary of Main Findings

The study indicates that education is important in the promotion of renewable energy in that it:

- Education increases awareness about renewable energy and sustainability issues.
- Students develop critical thinking, problem-solving, teamwork, and basic technical knowledge.
- Learning encourages sustainable behaviour, like saving energy and adopting renewable solutions.
- Gaps in curriculum, lack of teacher training, and limited practical exposure challenge effective learning.
- Interactive discussions and group activities improve understanding and application of knowledge.
- Connecting classroom theory with real-life projects makes learning more meaningful.
- Education motivates students to consider careers in renewable energy and sustainability fields.
- Peer learning and knowledge sharing strengthen understanding and confidence in renewable energy topics.

All in all, the results demonstrate that education and the one that employs participatory and collaborative practices can enable learners to make intelligent energy decisions and contribute to the long-term sustainable development. Renewable energy education can be even more effective through addressing the challenges.

Recommendations

Based on the findings of this study, which explored how education influences awareness, skills, attitudes, and behaviour toward renewable energy, as well as the challenges faced in teaching it, the following recommendations are suggested. These recommendations are designed to strengthen renewable energy education, enhance practical learning, and support students in developing sustainable habits and skills that can be applied in real life.

- **Integrate Renewable Energy into the Curriculum**
- Include renewable energy and sustainability topics across different subjects, using real-life examples, projects, and case studies. This helps students build awareness, connect theory with practice, and understand environmental and energy issues more deeply.
- **Teacher Training and Support**
- Provide teachers with training in renewable energy concepts, practical teaching methods, and facilitation of group discussions. Supporting teachers strengthens skill development, ensures better delivery of content, and helps address challenges in education.
- **Promote Practical, Hands-on Learning**
- Offer students opportunities for field visits, experiments, project-based work, and community energy initiatives. This develops technical skills, problem-solving, innovation, and encourages sustainable behaviour in real-life settings.

- **Encourage Interactive and Peer Learning**
- Use group discussions, teamwork, debates, and peer teaching to build collaboration, critical thinking, and reflection. Social interaction and shared learning reinforce understanding, increase engagement, and support long-term behavioural change.
- **Provide Institutional Support and Real-world Connections**
- Ensure schools and universities provide adequate resources, laboratories, and administrative support, while linking education to community projects, industry, and policy initiatives. This helps students see the relevance of learning, motivates career interest in renewable energy, and strengthens sustainable practices.

Discussion

The study explored how education influences renewable energy awareness, skill development, and sustainable behaviour using focus group discussions with 12 teachers and 18 students. Results showed that education improves understanding of renewable energy concepts, develops practical and critical thinking skills, and promotes positive attitudes toward energy use. Group discussions were especially important for shared learning, reflection, and linking classroom knowledge with real-life situations. Challenges were also identified, including limited curriculum content, untrained teachers, and a lack of practical learning opportunities. The findings highlight that education is not just about giving information but also shaping thinking, decision-making, and problem-solving skills. Active engagement through discussion, teamwork, and practical tasks strengthens understanding and encourages sustainable actions. The study suggests that schools and colleges can play a key role in promoting sustainability by designing learning experiences that involve interaction, reflection, and practical application. However, the small sample size and reliance only on focus group discussions are limitations, and results may vary in different contexts. Future research should involve larger and more diverse samples, include classroom observations or practical evaluations, and explore ways to improve teacher training, curriculum design, and teaching approaches for renewable energy education.

Conclusion

The current research has explored the role of education in the advancement of renewable energy and sustainable development relying on the wisdom of the teachers and students. The use of focus group discussions as the major technique allowed the participants to freely talk about the acquisition of knowledge about renewable energy and the impact of this learning on their cognition and behaviour and the difficulties in the existing practice of learning. The teacher and students of the university provided a balanced perspective of teaching and learning processes in the context of sustainability.

Education can be used in a significant way to create awareness with respect to renewable energy. According to the participants, classroom discussions, group work, and collaborative learning helped to have a better understanding of the concepts of renewable energy and its implementation in real-life cases. Such learning experiences did not only raise the level of knowledge, but also helped to make the learners more critically minded about the current practices, as well as helping them to think more carefully about the environmental problems and energy consumption. The research also found out that education helps in the acquisition of important skills. Students were able to improve their critical thinking, problem solving and collaborative skills through discussion-based learning and group work. The teachers noted that students became more confident in exchanging ideas and analyzing energy-related problems. These are the skills that are necessary to equip learners to address sustainability issues at the academic and real-life levels.

In terms of behaviour, the research study showed that education would generate a positive change. Many students indicated that they became motivated to learn about renewable energy, which led to saving energy, ensuring clean energy solutions, and sensitizing family and communities. At the same

time, the research revealed evident obstacles which limit the power of the renewable energy education. The most significant mentioned issues were limited coverage of the curriculum, inadequate teacher training, ineffective institutional support, and a lack of an opportunity to engage in practical learning. Such problems often hinder learners in terms of their ability to apply knowledge to long-term action. To conclude, the study proves that education has a promising potential to invest in renewable energy and sustainable development in case this process is interactive, well-supported, and closely related to real-life practice.

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