



Incorporating Green Skills in Vocational Education & Training in Pakistan: The Educators' Perspectives

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Vol. 3, No. 1 (Winter 2023)

Pages: 42 – 52

ISSN (Print): 2789-441X

ISSN (Online): 2789-4428

Key Words

Green Skills, Sustainable Development, Environment, Recycling, Vocational Educators

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Abstract: Technical abilities, knowledge, moral principles, and attitudes to support the environment, known as "green skills", are necessary for the workforce to create and support sustainable social, economic, and environmental results in business, industry, and the community. Vocational educators contribute to the creation of trained workers with green competencies. This study investigates how vocational educators feel about teaching learners green skills and the many green skills that may be used in classrooms. This study is a qualitative inquiry that collects data by conducting a capacity-building session at STEP Institute of Art, Design and Management about greening skills from 40 participants. The respondents believe that although the institute may provide basic knowledge of green skills, skilled instructors are needed to apply these abilities in practical situations. Additionally, these abilities may be incorporated into various disciplines to give students a comprehensive understanding of sustainability. The respondents also mention recycling and material management as skills that might be used in vocational training institutes to reduce water and energy usage. Although implementing these green skills in the classroom is a significant challenge for instructors, students will be inspired to dedicate themselves to the cause of the environment. Therefore, all parties involved must work together to develop greening skills so that the general public and vocational institutes fully know the value of protecting the environment.

Introduction

The green economy, green development, green communities, green urbanization, green education, and other sustainability-related topics are often discussed in today's society. Every person has to care about the environment if they are to live sustainably. It guarantees that the nation's leaders and human capital have the proper attitude toward and understanding of the need for balanced environmental improvements in all parts of life. It is essential to start imparting green skills to learners at a young age. Because of ecological concerns and the need to develop the environment sustainably, environmental learning was first included in the educational

system. To improve the quality of the environment, it also strives to raise awareness and foster the development of skills, knowledge, attitudes, values, understandings, and dedication that will ideally aid in resolving environmental issues (Sola, 2014). It is crucial to foster a culture of green technology among students of all levels via creating a successful curriculum, as stated in the 4th strategy of the 11th RMK. According to Strieska-llina, Haro, and Jeon's (2011) research of 21 industrialized nations, it is beneficial to adopt green skill training in both formal and informal education since there is a strong need for these talents in the creation of a green economy. For

instance, the Green Skills Agreement (GSA) was ratified by the Council of the Australian Government (COAG) in November 2009 and was drafted by the Australian government in conjunction with business, industry, and community groups. With the signing of this agreement, it is thought vital for the educational system to provide instruction in developing green skills; this green component is especially significant in technical and vocational training, from which the industry seeks after graduates.

Green Skills

In the twenty-first century, any human group that works in any capacity inside an enterprise must possess "Green Skills." This is consistent with the claim made by Buntat and Othman (2012) that green skills, sometimes referred to as soft green skills, should be used in conjunction with green careers and jobs. The Missouri Green Jobs Report, published by the Missouri Economic Research and Information Centre in 2009, touched on this subject and highlighted the efficacy of self-competence (also known as personal effectiveness competencies) as one of the green skill subfields. According to the research, these abilities are essential living methods appropriate for all job kinds in every company across all fields of employment and industries. Green talents are defined by CEDEFOP (2009) as knowledge, skills, values, and attitudes that are essential for societal growth and assist in establishing an effective and sustainable resource management system. All industries, including education, construction, business, and all workforce levels, need workers with green skills. According to the preliminary research by Goldney, Murphy, Fien, and Kent (2007), the community is now somewhat conscious of the environment and understands the need for education to develop learners' green abilities.

The Australian government has given a framework for developing green skills in the TVET sector to preserve the goals of the Green Skills Agreement. The goal is to coordinate all activities,

make it possible to identify and share best practices and reduce the wastage of usable natural resources and duplication of effort. In contrast, Vona, Marin, Consoli, and Popp's (2015) research discovered that green talents are a collection of abilities connected to design, manufacturing, management, and monitoring technology. This research also found that environmental rules lead to technological advancements and enhance the need for highly advanced technical and analytical capabilities inside enterprises. There are two types of green competence: overt (hidden) competence and apparent competence (Mohd Sharil, Azman & Ruslina, 2015). Hard or complex green competency refers to apparent technical competence, whereas soft green competency refers to sheltered competence.

The conversion of a traditional economy to a green economy thus requires the development of green talents. According to the OECD (2014), technical skills, values, and attitudes are also referred to as "green skills" required in the workplace. Similarly, the International Labor Organization (ILO) and CEDEFOP (2009) have started a study project to look at the essential organizational structure competencies that would assist various establishments through adjustments to a green economy. According to CEDEFOP (2009), the area of TVET, which will develop skilled labour and preservation agents, receives more attention than the idea of green skills.

Literature

Green Skills: As Initial Information

Children in elementary schools are taught to comprehend and act by following the concepts connected to environmental and social concerns, according to Hayward's (2012) research. Learners should be exposed to ecological sustainability skills since they are the sustainability or catalysts who will inherit the environment and interact with families and the community (Stuhmcke, 2012). Other components, such as green skills, are

required to create competent learners. Green skills should thus be included in schools' curricula (Arasinah et al., 2016). It is necessary to introduce green technology and skills to primary school pupils before they transfer to secondary institutions. When these environmentally conscious students go on to a higher level of study, they will be able to apply what they have learned to tasks and procedures that result in environmentally friendly products. They may use their knowledge and abilities before considering the factors contributing to green development. Green skills and knowledge are necessary for developing a green economy and public awareness of environmental issues and the nation's sustainable development (Asnawi & Djatmiko, 2016). Unfortunately, some learners are unaware of environmental problems due to a lack of environmental education. Additionally, there are not enough public forums or media outlets to serve as educational resources for kids (Carbonel et al., 2015).

Equipping Teachers' Needs with Green Skills

In order to encourage pupils to gain green skills, teachers should create intelligent teaching tactics. Teachers may motivate pupils to produce content by using a little positive emotion. All of these initiatives have the potential to entice students to join the push for green talent (McCoy, O'Brien, Novak, & Cavell, 2012). The design process and advancement of green technology should be considered while analysing the government's attempts to deploy green technology. Students are educated and encouraged to create by designing and manufacturing simple goods that are useful to our nation and ecologically sustainable. On a more advanced level, we can develop technology that can create valuable items without wasting resources like water and electricity. The new eco-friendly designs must be workable and marketable for domestic and international needs (Arasinah et al., 2016).

While this is going on, research by Arunkumar (2012), Nagra and Kaur (2014), and others discovered that some instructors still have poor levels of green skills and are unaware of the significance of environmental protection. To create a green economy, they need extensive training in these abilities (Jahonga et al., 2015; Majumdar, 2011). Teachers need to understand the idea of environmental education, its challenges, and solutions. Teachers may then use the information to teach kids about protecting the environment (Nagra & Kaur, 2014; Nagra, 2010). According to 2013 research by Kennedy and Chow, instructors in Asia are less confident in teaching environmental themes.

Green Skills to be Interluded in Every Subject/Topic

Lethoko (2014) investigated the connections between government policies on the green economy, education, and training to understand how the educational sector in South America reacted to the green economy. According to the research, the green economy may impact employees' competency in three ways: reviving green development, advancing green technology, and cultivating green skills. The need for qualified personnel in the business is growing simultaneously, yet there is still a shortage of competent individuals on the market. This is due to several obstacles or unsolved problems in using green talents. It is necessary to address challenges relating to green skills via education and training initiatives that successfully teach personnel in the construction industry in these matters. According to Jagannathan (2013), education and training should concentrate on the knowledge, expertise, and experience required by every aspect of greening the economy and society. Scientific and technological knowledge is required to reduce pollution and build low-carbon cities, transit networks, and pleasant habitats. The report also asserts that ensuring that education and training institutions become more progressive and visionary is crucial. Asnawi and Djatmiko (2016)

emphasized the need to meet professional green workers' demands since they significantly impact the development of a sustainable and resilient community. A new training curriculum must be created, and initiatives to promote green businesses must be launched.

Diversity of the Students

Students are aware of and sensitive to environmental concerns but find it extremely challenging to put their theoretical understanding into reality. Expertise in applying environmental aspects is a sustainable practice; however, it has been discovered that the implementation of this practice is still at a low level (Hanifah et al., 2014). Schools are crucial in fostering a better awareness of the environment. It is a fundamental principle that may influence a person's knowledge, attitudes, and behaviour. The research also discovered challenges in implementing these green skills in schools, including whether the institution can help students actively adhere to linked personal and social agendas connected to the future community. The findings of this research demonstrate that while environmental education is included in the vocational curricula for most students in a few nations, the outcomes vary, and there are different opportunities for learners to become aware of local environmental issues. Only the learners' potential to learn from the lessons may determine the outcome. Mukoni (2013) and Sola (2014) discovered that the community, students, and instructors are unaffected by the environmental education information taught to learners via the institute curriculum. In order to foster a passion for the environment, technical and vocational education plays a crucial role in transmitting green technology and skills.

Reuse of Materials and Material Management

When learners work on a project, using resources that are not necessary will save expenses and encourage ingenuity as well as frugality. They benefit from a greater understanding of the value

of the resources around them and being able to use them in various inventive ways. Because of this reason, it is crucial to foster learners' awareness of and behaviors related to recycling old materials, particularly in RBT-related topics. Recycling used materials may protect the environment and encourage people to live more sustainably. Green technology-related skills subjects should be included in the curriculum and introduced to students as early as possible to ensure that the information is ingrained in their memory. The government wants to develop highly competent human capital while preserving sustainable development and green technologies (Hanifah et al., 2014). Recycling is defined as "not merely the conservation of resources that went into the manufacture of particular elements but added value embedded in it" Pan, Cotton & Murray (2012) and McDonough, Braungart and Clinton (2013). We can carry out redesigned innovation by using the abilities and information. Therefore, if people can add value to a product via the process of reuse, including economic, intellectual, emotional, and material worth, it may be referred to as being "upcycled." Communities are urged to make green living a way of life (Sabri & Yong, 2006; Sola, 2014). Governments have implemented many programmes and provided incentives to the populace to encourage them to adopt environmentally friendly behaviours, such as bringing their own containers when they shop for food and refraining from using Styrofoam or unsustainable plastic containers (Carbonel et al., 2015). Women are more likely to take action to safeguard the environment, such as switching off lights to conserve power, sprucing up the neighbourhood, planting trees, reducing water use, and sorting waste (Raudsepp, 2001; Ifegbesan, 2010). Additionally, when they go shopping, they carry their own bags.

Minimize the Use of Electricity and Water

By adopting energy-efficient lighting, users should prioritize acquiring electrical equipment

that uses less energy. Even though energy-efficient appliances are more costly than standard equipment, power will still be saved. However, much energy is conserved, and this will decrease any adverse environmental impacts. The results of Staufer, Zahrer and Lechner's (2012) interviews with teachers reveal a poor level of preparation for teaching sustainable development. Even though the subject of sustainable development is included in the school curriculum, instructors give it less attention. Energy consumption will decrease as more green technology are adopted, and the energy saved may be put to other uses (Torbay, 2015). The green growth plan may lessen environmental dangers and ecological harm while strengthening the quality of growth, bolstering the food supply, and saving water and energy. This technique can lower greenhouse gas emissions and preserve ecosystems, improving the quality of life and standard of living (Razeman, 2011; Mohd Khairul, 2006; Sola, 2014). The efficient use of energy may be managed via sustainable usage and practices, lowering the carbon footprints of buildings, transportation, goods, and services (Dalia, 2009). In order to determine the skills required for the low-carbon green employment that will be accessible in the industry's future, skills-intensive research has been done, according to Defra (2008).

Brown (2013) looked at how four distinct cohort types influenced the growth of green skills in Australia's TAFE (Technical And Further Education) institutions. TAFE management, TAFE instructors, TAFE students, and cohorts that are representative of the community or industry are among the four distinct cohort groups. The majority of respondents to this survey are optimistic about these green abilities. But some risks might materialize. There will be an increase in the number of jobs available as a result of the many changes in employment and skill use. Market sectors in the recycling, green building, water system sustainability, renewable energy, and energy-saving industries are all growing.

Each job or profession begins with applying and considering skill sustainability.

Research Objectives

The following areas are taken as objectives and adopted for existing research after reviewing the existing literature and contemporary practices of vocational institutes.

1. Vocational institutes that are concerned with resource efficiency are more likely to adopt practices to green their institutes.
2. Vocational institutes with diverse students are more likely to adopt practices to green their institutes.
3. Vocational institutes with a clear commitment to environmental sustainability are more likely to adopt practices to green their institutes.
4. Vocational institutes with an initial understanding of the benefits of greening are more likely to adopt practices to green their institutes.
5. Vocational institutes that have updated curricula are more likely to adopt practices to green their institutes.
6. Vocational institutes that reuse materials are more likely to adopt practices to green their institutes.

Research Questions

1. How are vocational institutes concerned with resource efficiency more likely to adopt greening practices?
2. How are vocational institutes with a diversified student body more likely to adopt greening practices?
3. In what ways are vocational teachers with a clear commitment to environmental sustainability more likely to adopt greening practices?
4. In what ways are vocational institutes with an initial understanding of the benefits of greening more likely to adopt practices to green their institutes?

5. How are vocational institutes with an updated curriculum more likely to adopt practices to green their institutes?
6. How are vocational institutes which reuse materials more likely to adopt practices to green their institutes?

Methodology

The qualitative research design represents the participants' distinctive thoughts and points of view. An exploratory research technique is suitable as this study analyses complex and little-studied themes. In qualitative research, the researcher draws on the viewpoints of numerous respondents to get insights and an in-depth understanding of a topic that has received little prior study (Stebbins, 2001). To give a broad background for the crucial issues, a researcher may utilise their imagination and allow the respondents to discuss the occurrences using an exploratory research technique (Stebbins, 2001). A face-to-face session was conducted to build capacity and gather the participants' firsthand accounts and their analyses of these interactions. A total of 40 vocational educators from a leading private vocational education provider, STEP-Institute of Art Design and Management, were part of the session.

Additionally, every participant in the focus group had direct contact with the learners. The group included assessors, academic management, and administration staff.

Little study has been done in Pakistan on understanding vocational educators' perceptions and understanding of incorporating green skills in vocational institutes. Due to this, it was essential to compile the insightful opinions of related stakeholders involved in the vocational education sector. Because of this, the purposive sample approach was employed to target vocational educators from STEP-IADM specifically. In order to get better data and understand the participants' perceptions, a survey form was also given to the participants

after the session. One-on-one interaction was also conducted with each participant to understand their thoughts about green initiatives across the campus.

Research Findings

All of the respondents' expectations indicate that the fostering of green skills in training institutes involves four factors: knowledge of these skills is appropriate as initial information for students; teachers must be equipped with green skills; teaching of these skills can be incorporated into each subject or topic; and diversity of the students who will be receiving the knowledge. In addition, the responses instruct the students in specific green skills, such as resource management and material reuse, as well as reducing water and energy use. As a result, developing and using green skills in the classroom is necessary for future employment in the business. Statements and comments of participants have been shared below to include key research findings.

Green skills: as initial information: As an introduction, "I believe that encouraging these abilities in vocational institutes is a wonderful idea, and we need to encourage these positive ideas to be understood and implemented by our students," said one participant. She further added,

Since exposure is necessary from the beginning, and we take things readily at the beginning. Right, we have to "bend the bamboo from the stalk." Could the acceptance be delayed if we begin at a later stage?

That is why we must start with the fundamentals. When pupils become used to the traditional ways, it will become a part of their foundation and impact them. In the long term, it will affect the environment and the country. These abilities must be emphasised from the ground up so the environmental impact may be seen.

Equipping teachers' needs with green skills: One participant shared his thoughts:

"If teachers comprehend and possess the necessary abilities, they may explain more plainly so that the learners can thoroughly learn this element of skills."

Another participant added:

"...because not all instructors are knowledgeable of and skilled in these abilities, it would be advantageous if all teachers had these abilities. They would find it simpler to manage and teach these green skills to learners."

"Some instructors still don't comprehend these abilities since they are complex; we must first observe, study, practice, apply, and observe everything. We must do research first, and we will only become acquainted".

Green skills to be interluded in every subject/topic:

"The main drawback is that they are green talents and that they are not well articulated. These abilities are taught or practised indirectly by vocational instructors who bridge many subject areas."

"Greening skills can only be used as interludes; even in test problems, we cannot use it further. Since these talents act as interludes, we cannot track any of their consequences."

"We may teach green skills only as interludes in the vocational context, not by presenting the learners with one subject to study. Each life skills subject is open to be interluded with green skills". Counting on the basic life skills in a vocational context, one participant shared:

"If the vocational learners' projects are related to life skills, then we could be allowed to pause from the elements of workshop cleanliness. Like, we do not throw away the material waste since it can be recycled."

Another participant suggested;

"Green skills and talents can be promoted in many areas, including interior designing, textiles, design creation and execution, fabric manufacturing, and creating promotional campaigns".

Diversity of the students: Commenting on the impact of a diversified student body and its impact on promoting green skills, one participant said:

"Not all students in the Life Skills topic are exceptionally bright. This indicates that there are students who are bright and have completed the work and those who are not very bright and unable to accomplish it. Therefore, it is not easy to get all of the same."

Another participant shared:

"Perhaps from the perspective of the student's attitudes, whether or not they want to do it. This is something that requires careful instruction over time. Because of their poor understanding, applying life skills is difficult."

"It is better suited for students at the front of the class (high academic standing), yet I'm not suggesting that students in the back of the class (poor academic standing) cannot accomplish it at all. However, the learners in front of the class can understand how the goods are used."

However, supporting the presence of a diversified students body and its positive impact on the acceptance and flourishing of green skills, one participant commented:

"Acceptance by the students varies widely, depending on whether they want to do it or don't want to, which presents a bit of difficulty, but it has the potential to pay heavily. Students with different levels of learning who represent different backgrounds are more likely to allow, accept and practice any newer skills, including greening skills. This will also allow welcoming heterogeneous ideas and concepts."

Reuse of materials and Material management:

Educators with vocational backgrounds have creative ideas about reusing material for conducting classes. One participant said:

"Using materials like ice cream sticks rather than discarding them. Try to put together a project and bring value to it can be utilized by design students in all domains; fashion, textile, interior, or graphic design."

While commenting on the choice of materials that have to be used in vocational projects, one participant shared:

"I only need to let them know that they have the freedom to create anything using the resources that are readily accessible to them, such as unused pipes and recycled materials. Now I intend to encourage learners to map their creativity while writing the reports on their material selection and handling aspect for every project, which also means that learners may utilise their imaginations to turn waste items into products like sculptures."

Some participants also concentrated on waste skills related to waste materials and design, such as measuring correctly and maximising the use of wood to prevent waste. One of them suggested:

"I have done this in class, particularly with excess wood, by separating it, reusing it, and turning it into something new. I informed my students that green skills had been used indirectly."

Almost all participants agreed that typically there is stress on focusing the skill of reuse in vocational instruction of students' projects.

Minimize the use of electricity and water: While building the participants' capacity and understanding of the idea of circular economy and sustainable development, the importance and use of natural resources were discussed. A few participants believed we still stand at a basic level when it comes to utilizing resources, and this is due to deficient awareness. One participant shared:

"Indirectly, we often remind students that the air conditioner should only be used after recess and to turn off the lights and fans while leaving the classroom."

"Learners are urged to turn off everything not in use and to turn off the faucet after using it in order to save water, yet there is little change in the overall behaviours of learners. Perhaps more institutional policies need to be implemented to see a drastic change with more advocacy!"

Another participant agreed and shared:

"I always encourage turning off all the switches and making sure to disconnect any plugged-in devices if we want to lower our power cost; however, a lot more is required to be done."

Discussion

The study results demonstrate that instructors believe green skills should be promoted as soon as feasible while learners are still in the foundational stages of learning. This can be done with a strong orientation to green skills at the beginning of their vocational education so that they can incorporate that learning at all later stages of training. Students who are taught green skills early on in their schooling will be able to use them consistently until they enter the workforce. They must be exposed to knowledge and abilities relevant to environmental sustainability.

The majority of the respondents believe that for instructors to instruct learners effectively, they must possess green abilities. Instructors must be knowledgeable and confident while preparing the instructional techniques that will entice students to acquire green skills. This is because it is difficult for instructors to include environmental education in their lessons since they are unfamiliar with the idea. The benefit is that each topic of life Talents or other disciplines might include one of these green skills. TVET uses the Education for Sustainable Development (ESD) phenomenon to create a professional workforce with sustainable green capabilities. TVET, as a whole, needs to emphasize these green skills to help build resilient communities.

Due to the diversity and variety of learners, instructors have difficulty training them to use these abilities. Depending on each student's unique aptitude, different pupils are accepted. Different learners with varying degrees of information acceptance and comprehension may be found in the same class. Weaker pupils require guidance from their lecturers to do the intended assignment within the allotted time. TVET education contributes to disseminating green

skills among students, instructors, and the community.

According to the research results, instructors have indirectly taught pupils green skills via the Life Skills course. Each person has to be sensible in managing material waste; thus, material management and waste material reuse are two skills that should be taught in vocational schools. Students may acquire design skills and utilise them to create original designs out of recycled materials that add value. Utilizing old or wasted resources reduces the need for new materials and allows for the use of recycled items in everyday life. The process may also be made into a profitable business with careful design.

Teachers often teach students to use as little water and power as possible in the classrooms. Students must be advised to turn off all electrical equipment before leaving class and to turn off the faucet. Instructors do not pay enough attention to sustainable development, even if it is a subject in the curriculum. Practice and development of green skills, such as energy conservation, water system sustainability, green development, recycling, and low-carbon skills, are necessary for future green employment in the sector. Therefore, it is important to stress these abilities while teaching the public via the media or instructing students in the classroom. Nowadays, almost every profession has some connection to environmental sustainability or green capabilities.

Conclusion

Based on the results of this research, educational and training institutions should consider strategies to educate the next generation about the value of protecting the environment for everyone's health and well-being. It would be very beneficial for the instructors to be exposed to genuine environmental scenarios to influence the attitudes and actions of the vocational learners. Only when instructors have received environmental education and sustainability

training can they impart sustainability-related skills, information, values, attitudes, and behaviors to their pupils. Therefore, it would be the community's responsibility to put a green strategy implementation into reality to address national or even global environmental challenges. In addition to helping students develop the skills they need to succeed in the workforce, vocational institutes play an important role in ensuring the sustainability of the environment

References

- Alwi, A., Kamis, A., Affandi, H.M., Younus, F. A. N., & Rus, R. C. (2017). Green skills: Innovation in a subject Design and Technology (D&T) in ICEDU Proceeding of the 3rd *International Conference on Education*, 3, 145-154.
- Arunkumar, J. (2012). A study on assessment of environmental awareness among teacher trainees in teacher training institutes. *International Journal of Research in Social Sciences*, 2(3), 312-321.
- Asnawi, & Djatmiko, (2016). A challenge of vocational education for preparing green employment. *The International Journal of Technical and Vocational Education*, 11(2), 154-160.
- Brown, M. (2013). The development of green skills through the local TAFE Institute is a potential pathway to regional development. *International Journal of Training Research*, 11(1), 27 - 43.
- Carbonel, Adora, & Agbisit (2015). Global environmental issues awareness and the perceived remedial measures. *International Journal of Advanced Research in Management and Social Sciences*, 4(11), 148-161.
- CEDEFOP (2009). *Future skill needs for the green economy*, Briefing Report. Greece: European Centre for the Development of Vocational Training. Luxembourg: Publications Office of the European Union.
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education* (6th ed.). New York, NY: Routledge.

- Coljin, B. (2014). Green jobs in Europe and the increasing demand for technical skills. *NEUJOBS Working Paper No. 4*(2).
- Creswell, J. W. (2012). *Educational Research: Planning, conducting and evaluating quantitative and qualitative research* (4th ed), Boston, MA: Pearson Education.
- Daban, Ş., & Kahyaoğlu, M. (2013). The relationship between teacher candidates' environmentally responsible behaviours and attitudes towards green advertising. *Procedia-Social and Behavioral Sciences*, 106, 3046–3051.
- Defra. (2008). *A framework for pro-environmental behaviour*. London: Department for Environment, Food and Rural Affairs.
- Fein, J. & Guevara, J. R. (2013). *Skills for a green economy: Practice, possibilities and prospect. Technical and Vocational Education and Training Issues, Concern and Prospect*, (19), 255–263.
- Goldney, D., Murphy, T., Fien, J., & Kent, J. (2007). *Finding common ground: Is there a place for sustainability education in a vet?* A national vocational education and training research and evaluation program report. National Center for Vocational Education Research (NCVER).
- Hamid, Z., Yusri, K., Azlan, A. L. Yahya, B., & Zubaidah, A. (2016). Generic green skills: Industry and perspectives on technical education and vocational training (TVET). *The Online Journal for Technical & Vocational Education and Teaching in Asia*, (6), 1–13.
- Hayward, B. (2012). *Children, citizenship and environment: Nurturing a democratic imagination in a changing world*, London: Routledge.
- Ifegbesan, A. (2010). Exploring secondary school student's understanding and practices of waste management in Ogun State, Nigeria. *International Journal of Environmental and Science Education*, 5(2), 201–215.
- Ismail, B.L., Kamis, A., Kob, C.G.C., Kiong, T. Z., & Rahim, M. B. (2016). Integrating element of green skills in the 21st century learning in ICEDU. *Proceeding of the 3rd International Conference on Education*. 3, 305–314.
- Jagannathan, S. (2013). *Education and skills in Asia: Responding to greening economies*. Technical and Vocational Education and Training: Issues, Concerns and Prospects, 19, 265–280.
- Jahonga, W. M., Ngore, P. R., & Muramba, V. W. (2015). Transforming and greening TVET for sustainable development in Western Kenya. *European Journal of Research and Reflection in Management Sciences*, 3(2), 63–71.
- Kennedy, K. & Chow, J.K.F. (2013). *Schooling's contribution to a sustainable future in Asia: Can schools develop 'green' citizens?* In R. Maclean, S. Jagannathan, & J. Sarvi. (Eds). *Development for Inclusive and Sustainable Growth in Developing Asia-Pacific*, Dordrecht and Manila: Springer and ADB, 345–367.
- Lethoko, M. (2014). Green economy job projections vs green skills: Is there a link between present skills base and the projected numbers in South Africa? *International Journal of African Renaissance Studies*, 9(2), 113–132.
- Majumdar, S. (2011). *Transforming TVET for meeting the challenges of the green economy*, meeting report, 27–30 October. Bonn, Germany.
- McCoy, O'Brien, Novak, V., & Cavell, M. (2012). Toward understanding roles for education and training in improving green jobs skills development. *International Journal of Construction Education and Research*, 8(3), 186–203.
- McDonald, G., Condon, L., & Riordan, M. (2012). *The Australian green skills agreement policy and industry context, institutional response and green skills delivery*. Broadway, Australia: TAFE Directors Australia.
- McDonough, W., Braungart, M., & Clinton, B. (2013). *The upcycle: Beyond sustainability--designing for abundance*. Macmillan.
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco: Jossey-Bass.

- Mukoni, M. (2013). Environmental education in Zimbabwean secondary school: Greening of transformative social change?. *International Journal of Asian Social Science*, 3(4), 971– 991.
- Nagra, V., & Kaur. R. (2013). Environmental education awareness among upper primary school teachers. *Indian Stream Research Journal*, 3(7), 1–4.
- Nagra, V., & Kaur. R. (2014). Environmental education awareness and ecological behaviour of school teachers. *Asian Journal of Multidisciplinary Studies*, 2(11), 36–43.
- OECD (Organisation for Economic Co-operation and Development). (2014). *Green skills and jobs*, OECD Green Growth Studies. OECD Publishing. ISBN: 978-92-64-20870-4. [accessed 10 July 2015]. <http://www.oecd.org/risk>.
- Pan W., Cotton D., & Murray P. (2012). Integrating research informed teaching into sustainable construction education, *Journal of Education for the Built Environment*, 7(1), 94–117.
- Pavlova, M. & Huang, C. L. (2013). *Advancing employability and green skills development: Values education in TVET, the case of the people's Republic of China*, in *skills development for inclusive and sustainable growth in developing Asia-Pacific*. Technical and Vocational Education and Training. Issues, Concerns and Prospects, 18, 327–343.
- Rahman, S. N. A., et al. (2016). Portable pem fuel cell system: *Water and heat management*, 11, 122–136.
- Raudsepp, M. (2001). *Some socio-demographic and socio-psychological predictors of environmentalism*. *TRAMES*, 5(4), 355–367.
- Sabri, M. F., & Yong, T. Y. (2006). *Tahap keprihatinan alam sekitar dan amalan kepenggunaan hijau pengguna di Petaling Jaya, Selangor, Pertanika*. *Journal of Social Science & Humanities*, 14(2), 95–109.
- Sola, A. O. (2014). Environmental education and public awareness. *Journal of Educational and Social Research*, 4(3), 333–337.
- Staufer, A. Zehrer, G., & Lechner, D. (2012), *Green skills and training as a starting point for prospective green jobs in the cross-border region Upper Austria and South Bohemia in skills for green jobs: A global view: synthesis report based on 21 country studies*. Geneva. International Labour Office (Chapter 9), pp. 127 – 140.
- Strietska-Ilina, O., Hofman, C., Duran Haro, M., & Jeon, S. (2011). *Skills for green jobs: A global view*. Synthesis Report Based on 21 Country Studies. Executive Summary. Geneva: International Labour Organisation.
- Stuhmcke, M. S. (2012). *Children as change agents for sustainability, an action research case study in a kinder garden*. Doctor of education dissertation, Faculty of Education. Queensland University of Technology.
- Vona, F. Marin, G. Consoli, D. & Popp, D. (2015). *Green skills*. National bureau of economic research, NBER Working Paper No. 21116.