

Prospective Teachers' Perceptions about the Concept of Sustainable Development and Related Issues in Oman

ABDULLAH AMBUSAIIDI AND MARYAM AL WASHAHI

Abstract

This study aims to investigate, from the Omani's prospective, teachers' perceptions about the concept of sustainable development (SD) and three related issues (cultural diversity, renewable energy and equity). The sample consisted of 159 prospective teachers from Sultan Qaboos University. Data were collected via a questionnaire comprising a list of 41 SD points.

The results showed that the main source of knowledge for prospective teachers concerning the concept of SD is school textbooks. They also showed that prospective teachers had high perceptions of the concept of SD and the three related issues. In addition, there are no statistical differences found between male and female prospective teachers' perceptions about the concept of SD, cultural diversity and renewable energy. However, the results showed significant statistical differences between male and female prospective teachers in the equity domain. Finally, the results showed no statistical differences due to prospective teachers' specializations (humanities versus science).

Keywords: Sustainable development, prospective, cultural diversity, renewable energy, equity

Abdullah Ambusaidi, Professor of Science Education, College of Education, Sultan Qaboos University, Muscat, Sultanate of Oman. E-mail: ambusaid@squ.edu.om

Maryam Al Washahi, Assistant Professor of Instructional and Learning Technology, Department of Instructional and Learning Technologies, Sultan Qaboos University, Muscat, Sultanate of Oman. E-mail: mwashahi@squ.edu.om

INTRODUCTION

The twenty-first century has witnessed great challenges that have left the global community uncertain of its own and future generations' survival. One of these challenges is finding ways and techniques to enable people, regardless of their religion, race, colour or place of habitation, to live and work sustainably. This calls for people to fulfil their current needs from natural resources without affecting either the future of the next generations or the availability of such resources, in order to enable later generations to live in peace and comfort.

In the light of this need, sustainable development (SD) has emerged as one of the main concepts discussed at international conferences concerning the environment and development (Said, Ahmadun, Paim & Masud, 2003). This reflects the importance of the issue for ensuring the safety of every creature living on this earth, particularly the human population. As much as the concept of SD might appear to be simple, it is not. It is multifaceted and requires a great amount of immediate effort and attention if we want to guarantee a safe and comfortable life for both the future generations and ourselves.

Achieving SD requires radical changes in the attitudes and behaviours of humans, on both personal and social levels, in the society they are living, in their workplaces and in every activity they undertake. This will not happen unless education takes the initiative through curricula, teaching, training and partnership between educational and other institutions in the society. In this respect, UNESCO (1997) as cited in the Council of Ministers of Education (2008) stated:

The goal of education is to make people wiser, more knowledgeable, better informed, ethical, responsible, critical and capable of continuing to learn. Education also serves society by providing a critical reflection on the world, especially its failings and injustices, and by promoting greater consciousness and awareness, exploring new visions and concepts, and inventing new techniques and tools. Education is also the means for disseminating knowledge and developing skills, for bringing about desired changes in behaviors, values and lifestyles, and for promoting public support for the continuing and fundamental changes that will be required if humanity is to alter its course, leaving the familiar path that is leading towards growing difficulties, and starting the uphill climb towards sustainability. Education, in short, is humanity's best hope and most effective means to the quest to achieve sustainable development.

Education for sustainable development (ESD) develops and strengthens the capacity of individuals, groups and communities to make judgements and choices in favour of SD (Economic and Social Council, 2004). ESD can prompt a shift in people's mindsets and, in doing so, enables them to make our world safer, healthier and more prosperous, thereby improving our quality of life. Overall, teachers are the most important force for the implementation of curricula, the provision of quality education for students and for raising the level of students' achievements (UNESCO, 2005).

Teachers play a vital role in achieving the goals of education for SD. They are the leaders in the classroom who can apply and orient the teaching process to achieve the goals of SD. Esa (2010) points out that teachers are most influential in educating

the children and teenagers to be leaders of tomorrow for protecting the environment. In order to fulfil this requirement, we need: (i) better trained teachers in this area (ESD); (ii) trained teachers who understand the philosophy of their school and can deal with students at this level; (iii) teachers who can use technology in teaching; and (iv) teachers who can use different teaching strategies to teach issues related to SD (Ambusaidi, 2011). However, to achieve these requirements, prospective teachers should be prepared and trained in institutes where SD issues can be found in the programme goals or are at least a part of the programme. Shallcross and Robinson (2007) note that education for teaching has been given a prominent role in the United Nations Decade of Education for Sustainable Development (UNDESD) (2005–2014), which is the international strategy for ensuring that education plays a part in seeking sustainable solutions to problems such as climate change, illiteracy and poverty, cultural diversity, renewable energy and equity.

Consequently, teachers' perceptions and views about the concepts of SD and ESD are important to identify in order to orient the concepts in a way that enables teachers to implement the goals of both the UNDESD (2005–2014) and the global action programme on education for SD (after 2014). In the global action programme, which will start in 2015, one of the foci has five priority action areas: (i) mainstreaming ESD into education and SD policies to create an enabling environment for ESD to bring about systemic change; (ii) integrating sustainability principles in education and training settings; (iii) increasing the capacities of educators and trainers for effective delivery of ESD; (iv) generating actions amongst youth; and (v) encouraging local communities and municipal authorities to develop community-based ESD programmes. The activities that support these areas may include, but need not be limited to, the following: strengthening ESD policy development and integration of ESD at all levels of government; promoting whole-institution approaches in education and training settings; integrating ESD in teachers' prospective and in-service training; supporting youth-led initiatives for ESD; and/or developing ESD programmes for local communities/municipalities (UNESCO, 2014b).

For this reason, several studies have been conducted to identify pre- and in-service teachers' perceptions about SD. For example, Kilinc and Aydin (2013) conducted a study to discover Turkish prospective teachers' understanding of the concept of SD. They found that the female teachers were aware of SD concepts in terms of their environmental, educational, social and political dimensions whereas the male teachers were aware of SD concepts in terms of their environmental, economic and energy dimensions. Both genders shared views on two dimensions—environmental and social. The study recommended that the trainers enhance discussions between male and female teachers in order to narrow the gap between the two perceptions. Another study was also conducted in Turkey by Tuncer (2008). In his study with students at the Middle East Technical University about their perceptions of global SD, Tuncer found that the students showed high levels of perception of the words 'sustainable development', but that this was not reflected in their practices. In addition, female students had high perceptions about the concept compared to male students. In their study with Greek primary school teachers about their perceptions of environmental issues and their attitudes towards ESD, Spiropoulou, Antonakaki,

Kontaxaki and Bouras (2007) found that the Greek primary school teachers had misconceptions about the concept of SD and that they were confused between renewable and non-renewable energy. The results revealed that these teachers did not implement any projects related to the environment in their schools. Summers and Childs (2007) conducted a study with prospective teachers of science in Britain about their perceptions of the concept of SD. The entire study sample (123 student teachers) offered a clear picture of the concept and they perceived that the environmental dimension is the centre of the concept, followed by the economic dimension and finally the social dimension. Another study by Summers, Coney and Childs (2004) involving prospective science and geography teachers at the Oxford University and their perceptions of the concept of SD found that these teachers prioritized the environmental issues in SD, followed by economic issues and, finally, social issues. In addition, the researchers found that prospective geography teachers had higher perceptions of SD dimensions compared to prospective science teachers.

In the Omani context, the Sultanate has made visible efforts in trying to achieve the goals of the UNDES D through the adoption of many strategies and plans. In examining the curricula of all subjects taught in schools in Oman, one notes the inclusion of relevant concepts of education for SD, such as, concepts of human rights, the fight against poverty, equity, environmental preservation, economy, women's rights, peace, cross-cultural communication and respect for others. This is at the school level, but the Sultanate is making great efforts at the higher education level also. For example, the Faculty of Education at Sultan Qaboos University (SQU) is keen to educate the teachers about SD and to ensure its programmes achieve the objectives of the UNDES D. An array of topics in the field of education for SD are addressed in these programmes, such as, education for all (EFA), gender equity, the role of education in eradicating poverty and hunger, cultural diversity and peace issues. Education for SD topics can also be found in educational curriculum courses and in the methods of teaching science and social studies in both the Bachelor of Arts (BA) and Masters Programmes. Several of the topics, such as renewable energy and conservation of the environment, are taught in subject matter courses such as biology, chemistry, English and Arabic.

The application of modern technology and its role in teaching is one of the main components in the teacher education programmes at SQU for all undergraduate and higher diplomas in education, as well as for postgraduate students. All the students, regardless of their specializations, should study at least one course in educational technology. This course will enable them to implement new technology in the teaching process and to use it to search for information about topics related to their specializations (Ambusaidi, 2011).

The other important part in education for SD has to do with field training in the teacher education programme. Field training is one of the most important components in the teacher education programme in the College of Education at SQU. It is designed to connect the trainees' work with the environment. Training is seen as one of the main pillars of education in SD. The College of Education at SQU offers practical training for undergraduate and postgraduate students. In the undergraduate programme, students are first trained to teach within the university through what is

known as peer teaching during two consecutive semesters. They are then trained to teach students in real situations that take place in schools under the control of the Ministry of Education during the following two consecutive semesters. The aim of this practical training is to achieve a number of goals but the most important is to introduce the trainees (the prospective teachers) to the real working environment and thus help them prepare themselves to deal with this environment in the future and try to adjust themselves to this environment from the moment he/she starts practical training.

There have been no research studies conducted on Omani prospective teachers' perceptions about SD. However, there have been several studies conducted concerning in-service science and social studies teachers. The study by Al-Sadee (2012) on science teachers' knowledge, attitudes and practices towards SD issues (climate change, energy sources and biodiversity) revealed that the science teachers have a low level of knowledge about these issues, positive attitude towards the issues and good practice of the issues. In addition, the results revealed significant differences between male and female teachers in knowledge and attitude, with female teachers achieving higher levels in both knowledge and attitude. Al-Ajmei (2010) surveyed 579 Omani social studies teachers to investigate their awareness about SD. The results revealed that media is the teachers' main source of information for SD. In addition, the results showed that female teachers' awareness is higher compared to male teachers' awareness.

The three issues that this study examines are very important, both nationally and internationally. The first issue is cultural diversity. Although the majority of the Omani population is Arab, there are minorities from the southern areas of Pakistan and Iran and from the east coast of Africa. In addition, almost 40 per cent of the Omani population are expatriates, mainly from India, Pakistan and Bangladesh (Ambusaidi & Al-Zain, 2008). All of these populations add value to Omani culture and cannot be ignored by the people of Oman. So, it is important to educate our students that cultural diversity is a strength to society and not an obstacle for a homogeneous society. The second issue is renewable energy and how Oman can benefit from these practices. Currently, Oman depends heavily on oil for its annual income. However, due to the effect of oil on global warming, as some research claims (Ambusaidi, Boys, Stainstreet & Taylor, 2012), and a desire to reduce Oman's oil production (Al-Sadee, 2012), the Omani government has created several plans to search for an alternative income and the use of renewable energy, such as, the sun and wind to produce electrical energy. The plans related to energy production are waiting to be implemented by the government or private sectors after all the required legal frameworks and policies are established. The third issue is equity between men and women. Although there has been a great global increase in gender equity, including in Oman, there remains a number of countries in which women are not allowed access to their rights in terms of education and health. The situation in Oman is very advanced since Sultan Qaboos bin Said came to power in 1970. Today, Omani women work in both governmental and private sectors. Some Omani women hold positions as top managers in private sectors and have become ministers, undersecretaries and members of State and Shura Councils. However, although equity between Omani men and women is at very acceptable

levels, there is a need to identify how prospective teachers in Oman perceive this equity. Therefore, the current study aims to answer the following questions:

1. What were the sources that prospective teachers used the first time they found out about SD?
2. What are the prospective teachers' perceptions about SD and its related issues?
3. Do the prospective teachers' perceptions about SD and its related issues differ according to their gender, specialization and interaction between the two variables?

METHODOLOGY

Participants

A total of 159 prospective teachers at SQU participated in this study: 54 males and 105 females. The participants were divided as follows: 94 from humanities stream specializations (Arabic language, Islamic education, English language, art education, physical education) and 65 from science stream specializations (science and maths, instructional technology and preschool education). They are being prepared to teach grades 5–12 in public and private schools in Oman. All specializations require 4-year degrees, but some students in certain specializations such as science, maths, English, instructional technology and preschool education may stay for 5 years due to the English requirement.

Instrument

The study used a questionnaire to elicit the prospective teachers' perceptions about SD and its related issues—cultural diversity, renewable energy and equity. The questionnaire was compiled from a list of 45 statements divided into four categories (domains). They were: the concept of SD, cultural diversity, renewable energy and equity. The questionnaire was then judged by seven experts in science and environmental education at SQU to check its face validity. The referees were asked to assess the items in terms of clarity, suitability for the study's purposes and the appropriateness of the classification. The referees' comments and suggestions led to the omission of several items, the rephrasing of others and the merging of a number of items. The final version of the questionnaire was composed of 41 items relevant to prospective teachers' perceptions about SD:

1. The concept of SD—16 items;
2. Cultural diversity—6 items;
3. Renewable energy—8 items; and
4. Equity—11 items.

The reliability of the questionnaire was assessed for internal consistency using the Cronbach's alpha reliability coefficient. The reliability value of the questionnaire

was 0.82 whereas the reliability value of each domain ranged between 0.79–0.84. These values indicate that the present questionnaire was consistent and reliable for the purposes of collecting the data needed for the current study.

The questionnaire was distributed to prospective teachers through google.doc and they were asked to indicate the degree to which they perceive the items listed in the questionnaire using a 5-point Likert scale: (5) strongly agree; (4) agree; (3) unsure; (2) disagree; and (1) strongly disagree. The participants were also instructed to specify their gender and specializations, as these two variables were required to answer the third question of the study.

Data Analysis

Data were collected and then analyzed using the Statistical Package for Social Sciences (SPSS). Percentage was used to answer the first question, mean and standard deviation were used to answer the second question and a multivariate test was used to answer the third. Details concerning the statistical analysis are given in the results section.

RESULTS AND DISCUSSION

The Sources that Prospective Teachers Used the First Time They Found Out about SD

When asking prospective teachers at SQU if they had heard about the term 'sustainable development', 91.77 per cent said 'Yes', 2.53 per cent said 'No' and 6.29 per cent were 'Not sure'. Then, we asked those who answered 'Yes' to identify the sources that they used for the first time they found the term 'sustainable development'. The results of their responses are summarized in Table 1.

Table 1 The sources used for the first time prospective teachers discovered the concept of SD

Source	Number of Students	%	Order
School	117	77.48	1
University courses	56	37.09	5
Internet	59	39.07	3
Colleague	31	20.53	6
TV and radio	87	57.62	2
Newspapers and journals	57	37.75	4
Conference	16	10.60	7
Others (reading books, environmental clubs)	5	3.31	8

Source: Analysis of prospective teachers' responses to the questionnaire. SPSS programme was used to analysis the data.

Table 1 shows that school is the first source where the prospective teachers heard about SD for the first time (77.48 per cent). The second source is television (TV) and radio (57.62 per cent) and the third source is the Internet (39.07 per cent). The lesser-used sources for students are reading and environmental clubs. It appears that schools are doing well in terms of educating their students about SD. This education takes various forms, such as, inside classroom activities as part of the school curriculum either in science or in social studies, or outside class activities, such as the school's morning broadcast, competitions between students, having an open day for cleaning the school and inviting people to speak about SD on special occasions such as Oman's 'Environmental Day'. It is worth mentioning that there is an initiative related to the science and social studies curriculum known as the Knowledge Development Programme for students in science, mathematics and concepts of environmental geography (Ministry of Education, 2009). The programme, which was started in the 2007/2008 academic year, aims at promoting the importance of the three subjects among students, teachers, parents and the community at large. It also seeks to improve the student performance levels in the specified subject areas. The target group of this programme are students in grades five to 10. There are many activities related to this programme, including: (i) a national test in science, maths and concepts of environmental geography; (ii) an oral competition between students at regional and national levels; and (iii) competitions between schools for students to produce the best science, maths and environmental projects. At the end of each school year, there is a national ceremony to award the individual winning students, schools, educational governorates and parents of students.

In this respect, Hardi and Hale (1996) point out that in order to prompt environmental awareness among students, they should be encouraged to become members of clubs and associations concerned with environmental issues. Because environmental clubs or associations are not common in Omani schools and society (there is only one: the Oman Environmental Association), they have not contributed a great deal to students' and other society members' knowledge about SD. There is a need to emphasize on establishing such clubs and associations in schools to promote students' awareness about the environment as it is a key component of SD.

Prospective Teachers' Perceptions about the Concept of SD

In order to identify prospective teachers' perceptions about SD and its related issues, mean values and standard deviations were calculated for each domain and for each item in the domain (Tables 2-5).

a) Perceptions about the concept of SD

The results in Table 2 show that the item '*School curriculum should include SD concepts*' has the highest mean score (4.55) in this domain, followed by the item, '*SD means taking care of current and future generations' requirements using natural resources*' (4.54). The item with the lowest mean in this domain is '*SD means the recycling of waste materials*' (3.25) and the overall mean of this domain is 4.04. It could be generalized that prospective teachers at the College of Education at SQU have good and

Table 2 Means and standard deviations of prospective teachers' perceptions in the concept of SD domain

Item	Mean	Standard Deviation
School curriculum should include SD concepts	4.55	0.653
SD means taking care of current and future generations' requirements using natural resources	4.54	0.727
SD works to balance human and natural requirements	4.35	0.730
In general, SD means utilizing natural resources for human life and, at the same time, conserving natural resources	4.35	0.747
ESD insists that everybody has the right to live peacefully	4.28	0.835
SD seeks a balance between the requirements of human wealth and diversity and the conservation of natural resources	4.21	0.758
SD consists of three components: social, economic and environmental	4.10	0.789
I will try to learn more about issues related to SD, such as diversity, equity and renewable energy	4.08	0.784
If I were the designer of a school curriculum, I would include concepts related to SD, such as diversity, equity and renewable energy	4.05	0.892
SD means social development that demands the requirement of all people in society	3.99	0.834
I think it is important that education for SD should be included in the school curriculum	3.95	1.11
Using teaching methods that are student-centred to enhance SD concepts	3.87	0.908
I like attending symposiums and lectures that deal with SD and education for sustainable development (ESD)	3.86	0.931
SD means developing new technology to limit the harmful effects of production	3.74	0.815
SD concepts related to my subject	3.43	1.29
SD means the recycling of waste materials	3.25	1.10
Overall domain	4.04	0.417

Source: Analysis of prospective teachers' responses to the questionnaire. SPSS programme was used to analyse the data.

obvious perceptions about the meaning of SD. It could be said that the university courses, activities conducted at the university and other sources, such as the media help the prospective teachers to understand the meaning of SD and what the concept includes. In order to change the behaviour of students towards the issues of SD, such as the environment, and acquire

Table 3 Means and standard deviations of prospective teachers' perceptions in the cultural diversity domain

Item	Mean	Standard Deviation
Diversity means enriching the society in its cultural and social aspects	4.18	0.882
Conserving the cultural diversity in the country is necessary for ESD	4.04	0.892
ESD educates the people to accept cultural diversity and peace	4.03	0.871
I like living in a place with cultural and social diversity	3.95	1.10
ESD seeks to educate people on how to interact with the cultural diversity that exists in the country	3.92	0.819
I will get involved in activities related to cultural diversity	3.85	0.936
Overall domain	3.99	0.567

Source: Analysis of prospective teachers' responses to the questionnaire. SPSS programme was used to analysis the data.

Table 4 Means and standard deviations of prospective teachers' perceptions in the renewable energy domain

Item	Mean	Standard Deviation
In general, I strongly support generating electricity from renewable resources (sun, wind, sea tide)	4.60	0.606
I support the investment of large amounts of money to build electricity generating stations that depend on renewable energy resources	4.33	0.793
I will encourage my students to study in their higher education specialization issues related to the usage of renewable energy	4.08	0.861
I will support using wind as one of the resources for producing electrical energy	4.02	1.03
I prefer to buy a car that works by electricity, not petrol	3.38	1.12
I will buy electricity for my future house from that generated by renewable energy, even though it is more expensive	2.50	0.993
The application of SD means that we can consume as much as we like from non-renewable energy	2.41	1.35
We should exhaust non-renewable energy resources before searching for renewable resources	2.15	1.49
Overall domain	3.43	0.389

Source: Analysis of prospective teachers' responses to the questionnaire. SPSS programme was used to analysis the data.

Table 5 Means and standard deviations of prospective teachers' perceptions in the equity domain

Item	Mean	Standard Deviation
Both males and females have a right to education	4.86	0.521
I support establishing legal legislation to punish anyone who discriminates between people in the society	4.27	0.985
If, in the future, I am in a class with both males and females, I will split my time equally between both genders	4.15	1.19
ESD asserts that a human should be given his/her rights covered by religion and the law	4.11	0.883
I divide the things that I purchase between my family members regardless of their gender	4.06	0.976
If God gives me a baby boy after a number of baby girls, I will not treat him differently from his sisters	3.91	1.14
I will participate in environmental activities in which both males and females work together	3.79	0.988
I will work to ensure that the equity between both genders exists in the house, street, place of work, etc.	3.72	1.30
ESD ensures equity between males and females	3.30	1.09
I think there should be equity between the two genders in employment	2.79	1.44
I support women in leadership roles	2.60	1.41
Overall domain	3.82	0.496

Source: Analysis of prospective teachers' responses to the questionnaire. SPSS programme was used to analysis the data.

further knowledge about SD, school and university curricula should play a vital role (Ozee, 2006).

b) Perceptions about cultural diversity

It is obvious from Table 3 that the prospective teachers in general have high perceptions about cultural diversity. The item with the highest mean is '*Diversity means enriching society in its cultural and social aspects*' (4.18), followed by the item, '*Conserving cultural diversity in the country is necessary for ESD*' (4.04). The lowest mean in this domain is for the item '*I will get involved in activities related to cultural diversity*' (3.85) and the mean for the overall domain is 3.99. This positive view about cultural diversity can be found in the nature and status of Omani society. Omani society is composed of people originating from different parts of the world. Omani citizens are mainly Arabs, but there are also Omanis who are not Arabs, originating from Pakistan or Iran, who were given Omani citizenship. In addition, some Omanis were born in east African countries and came to Oman after the revolution in Tanzania in the late 1960s. In the past, some

parts of Tanzania, Kenya, Burundi and Rwanda were a part of the Omani Empire and a number of Omani people migrated to these countries and married the women from these countries. As a result of this, a mixed culture of Omani and African was formed. When these people returned to Oman, they brought with them the mixed culture and the people of Oman accepted the new culture and merged it with the Omani culture based on Arabic and Islamic cultures.

Moreover, almost 44 per cent of the total population of Oman are expatriates from many different countries but are mainly from India, Pakistan and Bangladesh (National Centre for Statistical Information, 2014). Many people from these countries have lived in Oman for a long time and they have been working and collaborating with the Omani population to build the country, especially since 1970. These people have their own culture, which benefits the Omani culture in different aspects, but the evidence can mainly be found in food and clothing. The Omani people accept these people and their culture and this is reflected in this study in the high perceptions that the Omani prospective teachers hold about the importance of cultural diversity.

c) Perceptions about renewable energy

The results in Table 4 indicate that the item '*In general, I support generating electricity from renewable resources (sun, wind, sea tide)*' has the highest mean value amongst the items in this domain (4.60). The second item with the highest mean value is '*I support the investment of large amounts of money to build electricity generating stations that depend on renewable energy resources*' (4.33). The item with the lowest mean value is '*We should exhaust non-renewable energy resources before searching for renewable resources*' (2.15). It can be concluded from Table 4 that the prospective teachers highly support the government in its efforts to use renewable energy, such as the wind and sun, to generate electricity. This higher level of awareness and apprehension among Omani prospective teachers may be because: (i) the Omani school science curriculum from grades six to 10 contains study units about energy and different sources of energy, and (ii) the media recently broadcast many activities and enterprises about using renewable energy (Ambusaidi, 2011). The Omani government is highly concerned with the decrease of oil reserves, the fluctuation of oil prices in the world market and the environmental problems associated with the use of oil to generate electricity (Ministry of Education, 2014). The Omani government has put in place a number of strategies to overcome these problems and one of them is to find alternative sources of generating electricity, such as through using the sun and wind (Ambusaidi & Al-Rabaani, 2009; Ambusaidi et al., 2012). The first step towards utilizing the renewable energy from the sun as a source for electricity began this year in certain locations in Oman.

d) Prospective teachers' perceptions about equity

The issue of equity has become very urgent across the world, especially in terms of issues of equity between males and females. As is shown in

Table 5, the item '*Both males and females have a right to education*' has the highest mean value among the items in this domain (4.86), followed by the item, '*I support establishing legal legislation to punish anyone who discriminates between people in society*' with a mean value of 4.27. The lowest mean value in this domain is for the item, '*I support women in leadership roles*' with a mean value of 2.60 and the overall mean value of this domain is 3.82. It could be concluded that, overall, Omani prospective teachers have positive perceptions about equity between males and females. However, when it comes to job offerings and positions for women, there is less support for equity. This may be due to the fact that Omani society still believes men should hold the power and authority in society.

The Basic Statute of Oman (Ministry of Legal Affairs, 1996) clearly states in point 12 that all Omanis are equal regardless of their gender, race or religion. In order to meet the requirements of this point, many decisions and initiatives have been proposed and implemented by the Omani government. In the minister's cabinet, for example, there are two women—one for education and the second for higher education. In addition, there are women working as undersecretaries in some ministries, such as the Ministry of Manpower and the Ministry of Tourism. The government established a day called 'The Omani Women Day', which highlights the contributions of Omani women in the development of Omani society. In Oman, there are no obstacles for women to apply to any type of job they desire, they can drive easily and routes are open for them to obtain higher positions in governmental institutions and private sector companies. Education is free for every Omani female, from grade one to higher degrees (including Masters and Doctorates).

The Effect of the Two Study Variables on Prospective Teachers' Perceptions

In order to answer the third question of the study, mean values and standard deviations for both variables were calculated and the results are presented in Table 6.

Table 6 Means and standard deviations of SD dimensions according to prospective teachers' gender and specialization

Dimension	Gender				Specialization			
	Male N = 54		Female N = 105		Humanities N = 94		Science N = 65	
	M	SD	M	SD	M	SD	M	SD
Concept of SD	4.01	0.387	4.06	0.432	4.03	0.422	4.06	0.410
Cultural diversity	4.02	0.594	3.98	0.554	4.07	0.606	3.88	0.487
Renewable energy	3.45	0.397	3.42	0.396	3.44	0.460	3.42	0.388
Equity	3.62	0.442	3.93	0.492	3.87	0.486	3.75	0.505

Source: Analysis of prospective teachers' responses to the questionnaire. SPSS programme was used to analysis the data.

Table 7 Results of multivariate test

Source of Variance	Value of Wilks' Lambda	F	Hypothesis df	Error df	Sig.
Gender (A)	0.878	5.292	4.00	152.00	0.001
Specialization (B)	0.947	2.122	4.00	152.00	0.082
AxB	0.979	0.834	4.00	152.00	0.505

Source: Analysis of prospective teachers' responses to the questionnaire. SPSS programme was used to analysis the data.

Table 8 Test of between-subjects effect

Source of Variance	Sub-Scale	Type III Sum of Squares	df	Mean Square	F	Sig.
Gender	Concept of SD	0.118	1	0.118	0.071	0.412
	Cultural diversity	0.022	1	0.022	0.435	0.791
	Renewable energy	0.002	1	0.002	0.013	0.909
	Equity	3.284	1	3.284	14.613	0.001
Error	Concept of SD	27.063	155	0.175		
	Cultural diversity	49.211	155	0.317		
	Renewable energy	23.750	155	0.153		
	Equity	34.836	155	0.225		

Source: Analysis of prospective teachers' responses to the questionnaire. SPSS programme was used to analysis the data.

The results in Table 6 show differences in the mean scores between males and females and humanities-oriented specializations and science-oriented specializations. However, in order to test if the above differences in the mean scores are statistically significant, multivariate analysis was used and the results are presented in Table 7.

The results of the multivariate test given in Table 8 demonstrate that there is a statistical difference in prospective teachers' perceptions due to gender only. To test which domain in the questionnaire has the difference, the test of between-subjects effect was used and the results are presented in Table 8.

The results in Table 8 show that the differences between males and females exist only in the equity domain (Table 6). The female prospective teachers hold more positive views about equity than male prospective teachers do. In other words, the female prospective teachers see that higher levels of equity in Omani society have been achieved than do male prospective teachers. It could be explained that female prospective teachers feel that, during the last ten years, the Omani government has given more attention to and highly supported Omani women in encouraging them to become more involved in building Omani society.

IMPLICATIONS AND RECOMMENDATIONS

According to UNESCO's final report on UNDESD development (2014a, p. 9), 'there is now an increased recognition at the international policy level that education is essential to advancement of sustainable development' and that the teacher is the beating heart of this process. The results of this study indicated that SQU prospective teachers had high perceptions about the concept of SD and the related three issues in this study—cultural diversity, renewable energy and equity. However, while the results align with the goals of the UNDESD for the individual, they do not specifically infer that the prospective teachers will be able to transfer these perceptions into practical activities and hence influence the lives of their future students in schools. To achieve this, we recommend that the efforts should be planned in three areas—policy, teacher preparation programmes and research.

The Education Council should make the integration of ESD components mandatory in the basic education within the school system and all higher education programmes and institutions. Focused events, programmes and policies for ESD should be formulated and encouraged. New interdisciplinary postgraduate programmes could be introduced to address ESD. Furthermore, the government should join the global network of ESD by collaborating with regional and international organizations. A specific emphasis should be given to the teacher preparation programmes at the university and other institutions. These programmes should make use of the guidelines and models addressed by the UNESCO (2005) in various areas such as curriculum development and analysis, pedagogical techniques and the use of Information and communications technology (ICT) with the attention to contextualize them to fit with the local culture, economy and environment (UNESCO, 2005). Furthermore, new courses could be introduced in these programmes to enhance and narrow the gaps between male and female prospective teachers' views about certain issues such as equity.

Further research could be conducted in the areas of SD and ESD in the Omani context. The Research Council should introduce and devote a specific track in its research programmes to ESD. Critical research that addresses inequity and lack of proper policies for SD should be encouraged. We recommend the following topics for further research.

1. Content analysis of both school and university textbooks in selected subjects such as science and social studies in order to explore how the three dimensions of SD (environmental, economic and social) are included in these textbooks.
2. Comparing prospective teachers' perceptions about SD to their mentors' perceptions.
3. Exploring school students' perceptions of different issues related to SD, such as peace, biodiversity and equity.
4. School-based research to evaluate students' learning of SD.

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