Basic Science Students as Agent of Change for Sustainable Development

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This study investigated basic science students' awareness, attitudes and actions for sustainable development in Gusau Metropolis of Zamfara State. Three research questions and three research hypotheses guided the study. The population for this study comprised of all the basic science students in Gusau Metropolis of Zamfara State while a sample size of 480 students were selected for this study. Survey research design was adopted for the study through convenient sampling method. Three validated instruments were used in the study. Frequency and percentages were used in answering the research questions while independent sample t-test was used in testing the research hypotheses. Results revealed that there was a significant difference between male and female basic science students on awareness of sustainable development as a change agent in Gusau Metropolis of Zamfara State, there was a significant difference between male and female students on the attitudes towards sustainable development as a change agent in Gusau Metropolis of Zamfara State, and there was a significant difference between male and female students on their actions towards sustainable development in Gusau Metropolis of Zamfara State. It was recommended that more awareness campaign should be created to bring to the attention of more students issues like the consequences of poverty, malnutrition, lack of water, and the importance of mental health.The basic science students should development a positive attitudes and empathy for people in poor and vulnerable situations like child labourers, empathy for the malnourished, those suffering from illness, and empathy for people discriminated against, and empathy for people suffering from injustice in the country.The basic science students should be taught about ways to use technology to empower poor people, they learnt about the use of new technologies for sustainable development, and to create partnership to promote sustainability.

Keywords: *sustainability, awareness, attitudes, actions, metropolis.*

Introduction

The concept of sustainable development was borne out of the global link between environmental problems and socio-economic concerns and, also because earlier conceptions and approaches to development only focused on economic and physical development despite the multi-dimensional and complex nature of development (Bellu, 2011). The Bruntland report defined sustainable development as development that meets the needs of the present without compromising the ability of the future generation to meet their own needs (Itaru and Ugbe, 2018). Ahenkan and Osei-Kojo (2014) quoting (OECD, 2001) defined sustainable development as the development path along which maximization of human well-being for today's generation does not lead to the decline in the well-being of the future generation. This implies that sustainable development takes into consideration the interest of both the present and future without compromising any of them.

Education for sustainable development allows every human being to acquire knowledge, skills, attitudes, and values necessary to shape a sustainable future for our children and children-children. According to Nayar (2013) sustainable development is a development that meets the needs of the present without compromising the ability of future generation to meet their own needs. Nayar (2013) further noted that sustainable development promotes critical thinking and decision making in a collaborative manner and basic science students as agent of change will take advantage to explore and create opportunities to learn and examine how the resources, they use affect the earth and how they can maximize it. According to Ekweme, Ekon and Ezenwa-Nebife (2016) education for sustainable development includes learning about the environment, interacting with the environment to make choices and prevent harmful activities in the environment.

It is expected that the basic science students as leaders of the future generation are to put in their best while studying in schools should be conversant with SDGs three pillars of economic welfare, environmental quality, and social coherence. Education for sustainable development involves preparing people to cope with, think critically about, and shape social, economic, political, and ecological conditions characterised by change, uncertainty, risk, and complexity (Stevenson, Ferreira, Davis, and Evans, 2012). Sunthonkanokpong and Murphy (2019) investigated the awareness, attitudes, and actions of Thai pre-service, industrial-education teachers regarding economic, social, and environmental sustainability. The survey items were derived from learning objectives provided by UNESCO in relation to 17 sustainable development goals (SDGs). The results revealed an average overall higher percentage for in the categories of attitudes (90%) and action (91%) than for awareness (69%). the result further shows that the lowest ranked items in the categories of attitude and action were related to SDG 5, gender equality. Muhammad, Huma, Abdou Mohammad, Feybi, Jiri and Youseef (2019) explored students' competence development in technology education through investigating their awareness of sustainability in Pakistan. An in-depth survey of higher education students was conducted to investigate their awareness level of sustainability. A total of 159 students from various public-sector universities of Pakistan reported their awareness towards sustainability. The results shows that 71% of the students were unaware of the term sustainability in their respective field, only 17% students know the basic definition of sustainability, and 12% of the students have just an idea of how sustainability is related to technology education. In the light of the above reviewed literature, the purpose of this study is to investigate basic science students as agent for sustainable development in Gusau Metropolis of Zamfara State. The specific objective of the study includes to.

1. Examine basic science students' overall awareness for sustainable development as agent of change.
2. Investigate basic science students' attitude toward sustainable development as a change agent, and
3. Explore basic science students' action toward sustainable development as a change agent.

Research Questions

The following research questions guided this study:

1. What is the basic science student's overall awareness for sustainable development as a change agent in Gusau Metropolis?
2. What is the basic science students' attitude toward sustainable development as a change agent in Gusau Metropolis?
3. What is the basic science students' action toward sustainable development as a change agent in Gusau Metropolis?

Research Hypotheses

The following research hypotheses were formulated to guide this study:

1. There is no significant difference between male and female basic science students on awareness for sustainable development as a change agent in Gusau Metropolis
2. There is no significant difference between male and female basic science students on attitudes towards sustainable development in Gusau Metropolis.
3. There is no significant difference between male and female basic science students on their action toward sustainable development as a change agent in Gusau Metropolis.

Methodology

The research design used for this study is a descriptive survey which involved a survey of the perception of basic science students. Three research questions and three research hypotheses guided the study. The population consists of all males and females of basic science students in Gusau metropolis of Zamfara State. A convenient sampling method was used in selecting four hundred and eighty (480) secondary school basic science students within the metropolis. The instrument used for data collection was developed and validated by the researcher titled Sustainability awareness, attitudes, and actions questionnaire. Frequency and percentages were used in answering the research questions while independent sample t-test was used in testing the research hypotheses.

Results

Research Question One

What is the basic science student's overall awareness for sustainable development as a change agent in Gusau Metropolis of Zamfara State?

Table 1: Opinions of the Basic Science Students' overall Awareness for Sustainable Development in Gusau Metropolis of Zamfara State

S/N	My knowledge of	Very High		High		Low		Very Low	
		F	%	F	%	F	%	F	%
1	The consequences of poverty	240	50	48	10	96	20	96	20
2	The consequences of malnutrition	192	40	96	20	144	30	48	10
3	The importance of mental health	240	50	96	20	96	20	48	10
4	The importance of education as a driver for sustainable development	240	50	96	20	96	20	48	10
5	The role of education for ensuring the equality of males and females	96	20	240	50	96	20	48	10
6	The consequences of lack of water	240	50	96	20	48	10	96	20
7	The health impact of energy production	96	20	240	50	48	10	96	20
8	The relationship between employment and economic growth	192	40	96	20	96	20	96	20
9	The need for sustainable ICT infrastructure	144	30	96	20	144	30	96	20
10	How inequality is a major cause of societal problems	192	40	144	30	96	20	48	10
11	The needs for waste reduction, recycling, and reuse	240	50	96	20	96	20	48	10
12	How individual life choices influence environmental development	192	40	96	20	48	10	144	30
13	Which human activities contributes most to climate change	240	50	96	20	96	20	48	10
14	What renewable energies such as wind turbines can promote sustainability	240	50	96	20	48	10	96	20
15	How unsuitable production of technologies can harm the habitats of wildlife	240	50	144	30	48	10	48	10
16	The injustice in my country	192	40	96	20	48	10	144	30
17	The importance of global cooperation to ensure access to technology	144	30	192	40	48	10	96	20

Table 1 above shows the results of the opinion of the basic science students on the overall awareness for sustainable development in Gusau Metropolis of Zamfara State. 288 respondents representing 60 percent agreed that they are aware of the high consequences of poverty while 192 respondents representing 40 percent disagreed. It implies that the students are aware of the consequences of poverty as an agent of change. 288 respondents representing 60 percent agreed that they are aware of the consequences of malnutrition while 192 respondents representing 40 percent disagreed. 336 respondents representing 70 percent agreed that they are aware of the importance of mental health as an agent of change for sustainable development while 144 respondents representing 30 percent indicated low level of the importance of mental health. 336 respondents representing 70 percent agreed that there is high level of awareness of the importance of education as a driver for sustainable development while 144 respondents representing 30 percent disagreed. 336 respondents representing 70 percent agreed that they are aware of the role of education in ensuring the equality of males and females while 144 respondents representing 30 percent disagreed. 336 respondents representing 70 percent agreed that they have a high level of awareness of the consequences of lack of water for sustainable development while 144 respondents representing 30 percent indicated low level of awareness. 336 respondents representing 70 percent agreed that they have high level of awareness of the health impact of energy production for sustainable development while 144 respondents representing 30 percent disagreed. 288 respondents representing 60 percent agreed that they are aware of the

relationship between employment and economic growth for sustainable development while 144 respondents representing 30 percent disagreed. 240 respondents representing 50 percent agreed that they are aware of the need for sustainable ICT infrastructure for sustainable development while 240 respondents representing 50 percent disagreed. 336 respondents representing 70 percent agreed that they are aware of how inequality is a major cause of societal problems while 144 respondents representing 30 percent disagreed. It indicated that inequality is a major cause of societal problems. 336 respondents representing 70 percent agreed that they have high knowledge of the need for waste reduction, recycling, and reuse while 144 respondents representing 30 percent disagreed. 240 respondents representing 50 percent agreed that they have knowledge of how individual lifestyle choices influence environmental development while 240 respondents representing 50 percent disagreed. 336 respondents representing 70 percent agreed that they have knowledge of which human activities contributes most to climate change while 144 respondents representing 30 percent disagreed. 336 respondents representing 70 percent agreed that they know how renewable energies such as wind turbines can promote sustainability while 144 respondents representing 30 percent disagreed. 288 respondents representing 60 percent agreed that they have knowledge of how unsustainable production of technologies can harm the habitats of wildlife while 192 respondents representing 40 percent disagreed. It implies that the students have knowledge of how unsustainable production of technologies can harm the habitats of wildlife. 288 respondents representing 60 percent agreed that they have knowledge of the injustice in the country while 192 respondents representing 40 percent disagreed. 336 respondents representing 70 percent agreed that the have knowledge of the importance of global cooperation to ensure access to technology while 144 respondents representing 30 percent disagreed. It means that the respondents have knowledge of the importance of global cooperation to ensure access to technology.

Research Question Two

What is the basic science students' attitude toward sustainable development as a change agent tin Gusau Metropolis of Zamfara State?

Table 2: Opinion of the Basic Science Students Attitude toward Sustainable Development as a Change Agent in Gusau Metropolis of Zamfara State

S/N	I feel	Very True		True		Untrue		Very Untrue	
		F	%	F	%	F	%	F	%
1	Empathy for people in poor and vulnerable situations such as child labourers	192	40	96	20	96	20	96	20
2	Empathy for people in the world who are malnourished	240	50	144	30	48	10	48	10
3	Empathy for people who are suffering from illness	192	40	96	20	96	20	96	20
4	That education for sustainable development is important	192	40	192	40	48	10	48	10
5	Empathy with people who are different from what is normally expected in the community regarding to gender	144	30	144	30	96	20	96	20
6	Responsible for my own water use	288	60	48	10	48	10	96	20
7	That sustainable energy use is important	192	40	144	30	48	10	96	20
8	That labour right for migrant workers are important	240	50	96	20	96	20	48	10
9	That access to basic ICT infrastructure is important	240	50	48	10	144	30	48	10
10	Empathy for people who are discriminated against	288	60	48	10	48	10	96	20
11	Responsible for environmental of my own lifestyle	288	60	96	20	48	10	48	10
12	Responsible for the environment	144	30	96	20	144	30	96	20
13	That we need to do something about industry related greenhouse gases	240	50	96	20	48	10	96	20
14	Empathy with people whose lives are affected by changing fishing practices	192	40	144	30	96	20	48	10
15	Empathy with non-human life such as wild animals in the forest	144	30	144	30	96	20	96	20
16	Empathy with people suffering from injustice in my country	288	60	96	20	48	10	48	10
17	That global access to the internet is important	144	30	144	30	96	20	96	20

Table 2 above shows the results of the opinion of the basic science students' attitude toward sustainable development as a change agent in Gusau Metropolis of Zamfara State. 288 respondents representing 60 percent agreed that they feel empathy for people in poor and vulnerable situations such as child labourers while 192 respondents representing 40 percent disagreed. It implies that the students have empathy for the poor and vulnerable people in the society. 384 respondents representing 80 percent agreed that they have empathy for people in the world who are malnourished while 96 respondents representing 20 percent disagreed. It means that the basic science students have empathy of the malnourished in the society. 288 respondents representing 60 percent agreed that the have empathy for people who are suffering from illness while 192 respondents representing 40 percent disagreed. It indicated that the students have empathy towards people suffering from illness. 384 respondents representing 80 percent agreed that they feel that education for sustainable development is important while 96 respondents representing 20 percent disagreed. It means that education for sustainable development is important. 288 respondents representing 60 percent agreed that empathy with people who are different from what is normally expected in the community regarding to gender while 192 respondents representing 40 percent disagreed. 336 respondents representing 70 percent agreed that they feel responsible for their own water use while 144 respondents representing 30 percent disagreed. It implies that the students are responsible for their own water use as part of sustainable development. 336 respondents representing 70 percent agreed that they feel that labour rights for migrant workers are important while 144 respondents representing 30 percent disagreed. It means that labour rights for migrant workers are important. 288 respondents representing 60 percent agreed that they feel that access to basic ICT infrastructure is important while 192 respondents representing 40 percent disagreed. It implies that the students feel that access to basic ICT infrastructure is important. 336 respondents representing 70 percent agreed that they feel empathy for people who are discriminated against while 144 respondents representing 30 percent disagreed. 384 respondents representing 80 percent agreed that they feel responsible for environmental impact of their own lifestyle while 96 respondents representing 20 percent disagreed. It means that the students feel that they are responsible for environmental impact of their lifestyle. 240 respondents representing 50 percent agreed that they feel responsible for the environment while 240 respondents representing 50 percent disagreed. 336 respondents representing 70 percent agreed that they feel the need to do something about industry related greenhouse gases while 144 respondents representing 30 percent disagreed. It indicated that the students feel the need to do something about industry related greenhouse gases. 336 respondents representing 70 percent agreed that they feel empathy with people whose lives are affected by changing fishing practices while 144 respondents representing 30 percent disagreed. 288 respondents representing 60 percent agreed that they have empathy for non-human life such as wild animals in the forest while 192 respondents representing 40 percent disagreed. 384 respondents representing 80 percent agreed that they have empathy with people suffering from injustice in the country while 92 respondents representing 20 percent disagreed. It implies that the students have empathy with people suffering from injustice in the country. 288 respondents representing 60 percent agreed that global access to the internet is important while 192 respondents representing 40 percent disagreed. It indicated that they students agreed that as an agent of change, global access to the internet is important for sustainable development.

Research Question Three

What is the basic science students' action toward sustainable development as a change agent in Gusau Metropolis of Zamfara State?

Table 3: Opinion of the Basic Science Student Action toward Sustainable Development as a Change Agent in Gusau Metropolis of Zamfara State

S/N	I will learn from teachers	Very Likely		Likely		Unlikely		Very Unlikely	
		F	%	F	%	F	%	F	%
1	About ways to use technology to empower poor people	288	60	48	10	48	10	96	20
	About how to change their own lifestyles to fight against hunger	240	50	48	10	96	20	96	20
3	How to use technology to promote their health	192	40	144	30	96	20	48	10
4	The basics skills needed for the 21st century	240	50	96	20	48	10	96	20
5	How to identify gender discrimination	288	60	48	10	48	10	96	20
6	How to use technology to calculate their own water footprint	144	30	192	40	96	20	48	10
7	About renewable energy technology	144	30	144	30	144	30	48	10
8	About new technology for sustainable development	96	20	240	50	96	20	48	10
9	About ICT recycling and disposal	192	40	192	40	48	10	48	10
10	How to use technology to reduce inequality in the society	144	30	144	30	96	20	96	20
11	About sustainable residential energy use	192	40	192	40	48	10	48	10
12	About environmental impact of technology production	144	30	192	40	48	10	96	20
13	To use technology to promote knowledge of climate change	96	20	192	40	144	30	48	10
14	About sustainable marine energies	192	40	48	10	96	20	144	30
15	About how technology can threaten biodiversity (e.g., habitat loss, deforestation)	192	40	96	20	144	30	48	10
16	To use technology to connect with groups that are experiencing injustice	192	40	144	30	48	10	96	20
17	To use technology to create partnership to promote sustainability	144	30	96	20	96	20	144	30

Table 3 above shows the results of the opinion of the respondents on basic science students' action toward sustainable development as a change agent in Gusau Metropolis of Zamfara State. 336 respondents representing 70 percent agreed that they will learn from their teachers the likely ways to use technology to empower poor people while 144 respondents representing 30 percent disagreed. It implies that the basic science students will learn from their teachers about the ways to use technology to empower poor people. 288 respondents representing 60 percent agreed that they will learn from their teachers about how to change their own lifestyles to fight against hunger while 192 respondents representing 40 percent disagreed. It means that the basic science students will learn from their teachers about how to change their own lifestyles to fight against hunger. 336 respondents representing 70 percent agreed that they will learn from their teachers how to use technology to promote their health while 144 respondents representing 30 percent disagreed. It indicated that the students would learn from their teachers how to use technology to promote their health. 336 respondents representing 70 percent agreed that they will learn from their teachers the basic skills needed for the 21st century while 144 respondents representing 30 percent disagreed. It means that the students will learn from their teachers the basic skills needed for the 21st century. 336 respondents representing 70 percent agreed that they will likely learn from their teachers how to identify gender discrimination while 144 respondents representing 30 percent disagreed. It implies that the students will learn from their teachers the like ways on how to identify gender discrimination. 336 respondents representing 70 percent agreed that they will likely learn from their teachers how to use technology to calculate their own water footprint while 144 respondents

representing 30 percent disagreed. It indicated that the respondents would learn from their teachers how to use technology to calculate their own water footprint. 288 respondents representing 60 percent agreed that they will learn from their teachers about renewable energy technology while 192 respondents representing 40 percent disagreed. It means that the students will learn from their teachers about renewable energy technology. 288 respondents representing 60 percent agreed that they will learn from their teachers' new technologies for sustainable development while 192 respondents representing 40 percent disagreed. It implies that the students will learn from their teachers' new technologies for sustainable development. 384 respondents representing 80 percent agreed that they will learn from their teachers about ICT recycling and disposal while 96 respondents representing 20 percent disagreed. It means that the students will learn from their teachers about ICT recycling and disposal. 288 respondents representing 60 percent agreed that they are likely to learn from their teachers how to use technology to reduce inequality in the society while 192 respondents representing 40 percent disagreed. 240 respondents representing 50 percent agreed that they will learn from their teachers about sustainable residential energy use while 240 respondents representing 50 percent disagreed. 336 respondents representing 70 percent agreed that they will learn from their teachers about the environmental impact of technology production while 144 respondents representing 30 percent disagreed. It means that the students will learn from their teachers about the environmental impact of technology production for sustainable development. 288 respondents representing 60 percent agreed that they will learn from their teachers the likely way to use technology to promote knowledge of climate change while 192 respondents representing 40 percent disagreed. It implies that the students will learn from their teachers the ways to use technology to promote knowledge of climate change. 240 respondents representing 50 percent agreed that they will learn from their teachers about sustainable marine energies while 240 respondents representing 50 percent disagreed. 288 respondents representing 60 percent agreed that they will learn from their teachers about how technology can threaten biodiversity while 192 respondents representing 40 percent disagreed. It means that the students will learn from their teachers about how technology can threaten biodiversity. 336 respondents representing 70 percent agreed that they will learn from their teachers the like way to use technology to connect with groups that are experiencing injustice while 144 respondents representing 30 percent disagreed. It implies that the students will learn from their how to use technology to connect with groups that are experiencing injustice. 240 respondents representing 50 percent agreed that they will likely learn from their teachers' way to use technology to create partnership to promote sustainability while 240 respondents representing 50 percent disagreed

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Hypothesis One

There is no significant difference between male and female basic science students on awareness for sustainable development as a change agent in Gusau Metropolis of Zamfara State.

Table 4: Summary of Independent Sample T-Test on the Difference between Male and Female Basic Science Students on Awareness for Sustainable Development in Gusau Metropolis of Zamfara State.

Gender	N	Mean	S D	T calculated	T critical	Df	Sig (p)
Male	288	51.33	16.26	2.93	1.96	478	0.003
Female	192	47.25	12.63				

From table 4 above, the t-calculated value of 2.93 is greater than the t-critical value of 1.96 at 0.003 level of significance. This implies that there is a significance difference between male and female basic science students on awareness for sustainable development in Gusau Metropolis of Zamfara State. The mean score for male students of 51.33 and the mean score of female students of 47.25. The hypothesis which states that there is no significant difference between male and female basic science students on awareness for sustainable development was rejected. Implying that there was a significance difference between male and female basic science students on their level of awareness for sustainable development in Gusau Metropolis of Zamfara State.

Hypothesis Two

There is no significant difference between male and female basic science students on their attitude toward sustainable development as a change agent in Gusau Metropolis of Zamfara State.

Table 5: Summary of Independent Sample T-Test on the Difference between Male and Female Basic Science Students on their Attitude toward Sustainable Development in Gusau Metropolis of Zamfara State.

Gender	N	Mean	S D	T calculated	T critical	Df	Sig (p)
Male	288	52.33	17.13	3.35	1.96	478	0.001
Female	192	47.50	12.57				

From table 5 above, the t-calculated value of 3.35 is greater than the t-critical value of 1.96 at 0.001 level of significance. This implies that there is a significance difference between male and female basic science students on their attitude toward sustainable development in Gusau Metropolis of Zamfara State. The mean score for male students of 52.33 and the mean score of female students of 47.50. The hypothesis which states that there is no significant difference between male and female basic science students on their attitude toward sustainable development was rejected. Implying that there was a significance difference between male and female basic science students on their attitude toward sustainable development in Gusau Metropolis of Zamfara State.

Hypothesis Three

There is no significant difference between male and female basic science students on their action toward sustainable development as a change agent in Gusau Metropolis of Zamfara State

Table 5: Summary of Independent Sample T-Test on the Difference between Male and Female Basic Science Students on their Action toward Sustainable Development in Gusau Metropolis of Zamfara State.

Gender	N	Mean	S D	T calculated	T critical	Df	Sig (p)
Male	288	50.83	16.38	3.59	1.96	478	0.000
Female	192	47.75	13.19				

From table 5 above, the t-calculated value of 3.59 is greater than the t-critical value of 1.96 at 0.001 level of significance. This implies that there is a significance difference between male and female basic science students on their action toward sustainable development in Gusau Metropolis of Zamfara State. The mean score for male students of 50.83 and the mean score of

female students of 47.75. The hypothesis which states that there is no significant difference between male and female basic science students on their action toward sustainable development was rejected. Implying that there was a significance difference between male and female basic science students on their action toward sustainable development in Gusau Metropolis of Zamfara State.

Discussion of the Findings

This study investigated basic science students as agent of change for sustainable development in Gusau Metropolis of Zamfara State. Three research questions and three research hypotheses guide the study.

Research question one which is on the awareness of the basic science students on sustainable development as change agent was analysed using frequency and percentages and the results shows that the basic science students were aware of the consequences of poverty, malnutrition, lack of water. The students were also aware of the importance of education as a driver for sustainable development, mental health, the role of education for ensuring the equality of male and female, they are aware of the relationship between employment and economic growth. The need for sustainable ICT infrastructure, and the importance of global cooperation to ensure access to technology.

Research question two which is on basic science students' attitude toward sustainable development as a change agent was analysed using frequency and percentages and the results revealed that they feel empathy for people in poor and vulnerable situations, malnourished people, people suffering from illness, people who are discriminated against, people whose lives are affected by changing fishing practices, people suffering from injustice and non-human life. They also feel that education for sustainable development is important, responsible for their own water use, responsible for the environmental impact of their own lifestyle, responsible for their environment, and that global access to the internet is important.

Research question three which is on the basic science students' action toward sustainable development as a change agent was analysed using frequency and percentages and the results indicated that the students will learn from their teachers about ways to use technology to empower poor people, about how to change their own lifestyles to fight hunger, about new technologies for sustainable development, about renewable energy technology, about new technologies for sustainable development, about ICT recycling and disposal, about residential energy use, about environmental impact of technology production, and about sustainable marine energy. The students indicated that they also learnt from their teachers how to use technology to promote their health, how to identify gender discrimination, how to use technology to calculate their own water footprint and how to use technology to reduce inequality in the society.

Hypothesis one which states that there is no significant difference between male and female basic science students on awareness for sustainable development as a change agent in Gusau Metropolis of Zamfara State was tested using independent sample t-test and the result revealed that there was a significant difference between male and female students on their awareness for sustainable development in Gusau Metropolis of Zamfara State. Therefore, the hypothesis is rejected.

Hypothesis two which states that there is no significant difference between male and female basic science students on their attitude toward sustainable development as a change agent in Gusau Metropolis of Zamfara State was tested using independent sample t-test and the result indicated that there was a significant difference between male and female basic science students on their attitudes towards sustainable development in Gusau Metropolis of Zamfara State. The hypothesis was rejected.

Finally, hypothesis three which states that there was no significant difference between male and female basic science students on their action toward sustainable development as a change agent in Gusau Metropolis of Zamfara State was analysed using independent sample t-test and the result shows that there was a significant difference between male and female student on their action towards sustainable development in Gusau Metropolis of Zamfara State. Therefore, the hypothesis is rejected.

Conclusion

Based on the findings of this study, the following conclusions were arrived at; the students were aware of the consequences of poverty, malnutrition, lack of water, and they also know the importance of mental health, education as a driver for sustainable development, and the injustice in the country. It was also concluded that they have empathy for the poor and vulnerable, the malnourished, people suffering from illness and their environment. Finally, it was concluded that they learnt from their teachers about ways to use technology to empower poor people, about how to change their own lifestyle to fight against hunger, how to use technology to promote their health, and how to identify gender discrimination.

Recommendations

The following recommendations were suggested for the study.

1. More awareness campaign should be created to bring to the attention of more student's issues like the consequences of poverty, malnutrition, lack of water, and the importance of mental health.
2. The basic science students should development a positive attitudes and empathy for people in poor and vulnerable situations like child labourers, empathy for the malnourished, those suffering from illness, and empathy for people discriminated against, and empathy for people suffering from injustice in the country.
3. The basic science students should be taught about ways to use technology to empower poor people, they learnt about the use of new technologies for sustainable development, and to create partnership to promote sustainability.

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